



Cove Communities

Medmerry Holiday Park

Environmental Statement (Volume 1)

663871

NOVEMBER 2023



GENERAL NOTES

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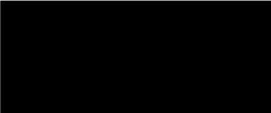
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CONTENTS

1	INTRODUCTION	1-1
	Background to Proposed Development.....	1-1
	Environmental impact assessment (EIA)	1-1
	Structure of Environmental Statement	1-2
	EIA team	1-3
	References	1-5
2	EVOLUTION OF THE PROPOSED DEVELOPMENT	2-1
	Need for the scheme	2-1
	Scheme objectives.....	2-1
	Scheme location and setting	2-1
	Consideration of alternatives	2-3
3	PROPOSED DEVELOPMENT	3-1
	Preferred option.....	3-4
	Construction phase.....	3-5
	Operational phase	3-5
	Programme of works.....	3-5
4	CONSULTATION.....	4-1
	Overview	4-1
	Stakeholder liaison	4-1
5	ENVIRONMENTAL ASSESSMENT PROCESS	5-1
	Scoping	5-1
	EIA delivery	5-1
	Assessment reporting	5-3
	Difficulties and uncertainties.....	5-4
6	BIODIVERSITY	6-1
	Introduction.....	6-1
	Relevant legislation, planning policy and guidance	6-2
	Consultation	6-4
	Approach	6-5
	Existing environment	6-18
	Embedded mitigation.....	6-49
	Predicted effects	6-54
	Mitigation	6-85
	Summary of Effects	6-92
	References.....	6-93
7	GROUND CONDITIONS.....	7-1
	Introduction.....	7-1
	Relevant legislation, planning policy and guidance	7-1
	Consultation	7-3
	Approach	7-3
	Existing environment	7-9

Predicted effects	7-12
Mitigation	7-14
Summary of Effects	7-14
References.....	7-14
8 WATER.....	8-1
Introduction.....	8-1
Statutory and planning context	8-1
Consultation	8-4
Approach	8-8
Existing Environment.....	8-12
Predicted Effects	8-13
Mitigation	8-16
Summary of Effects	8-17
References.....	8-18
9 CULTURAL HERITAGE.....	9-1
Introduction.....	9-1
Relevant legislation, planning policy and guidance	9-1
Consultation	9-5
Approach	9-6
Existing Environment.....	9-9
Predicted Effects	9-13
Additional Mitigation	9-14
Summary of Effects	9-19
References.....	9-20
10 LANDSCAPE.....	10-1
Introduction.....	10-1
Relevant legislation, planning policy and guidance	10-1
Consultation	10-3
Approach	10-3
Existing Environment.....	10-9
Predicted Effects	10-16
Additional Mitigation	10-28
Summary of Effects	10-31
References.....	10-33
11 CLIMATE	11-1
Introduction.....	11-1
Relevant legislation, planning policy and guidance	11-1
Consultation	11-5
Approach to GHG Assessment	11-7
Approach to Climate Resilience	11-17
Existing Environment - GHG Assessment.....	11-20
Existing Environment - Climate Resilience.....	11-21
Predicted Effects - GHG Assessment	11-25
Predicted Effects - Climate Resilience	11-29
Mitigation - GHG Assessment.....	11-49

Mitigation - Climate Resilience.....	11-52
Summary of Effects	11-53
References.....	11-54
12 AIR	12-1
Introduction.....	12-1
Relevant legislation, planning policy and guidance	12-1
Consultation	12-6
Approach	12-7
Existing Environment.....	12-20
Predicted Effects	12-20
Mitigation	12-27
Summary of Effects	12-28
References.....	12-28
13 MATERIAL ASSETS AND WASTE.....	13-1
Introduction.....	13-1
Relevant legislation, planning policy and guidance	13-1
Approach	13-4
Existing Environment.....	13-10
Predicted Effects	13-15
Mitigation	13-22
Summary of Effects	13-24
References.....	13-30
14 SOCIOECONOMICS	14-1
Introduction.....	14-1
Relevant legislation, planning policy and guidance	14-1
Consultation	14-6
Approach	14-7
Existing Environment.....	14-16
Predicted Effects	14-29
Mitigation	14-39
Summary of Effects	14-39
References.....	14-39
15 NOISE AND VIBRATION.....	15-1
Introduction.....	15-1
Relevant legislation, planning policy and guidance	15-1
Consultation	15-3
Approach	15-4
Existing Environment.....	15-11
Predicted Effects	15-14
Mitigation	15-16
Summary of Effects	15-17
References.....	15-17
16 TRANSPORT AND ACCESS	16-1
Introduction.....	16-1
Relevant legislation, planning policy and guidance	16-1

Consultation	16-4
Approach	16-6
Existing Environment.....	16-10
Predicted Effects	16-15
Mitigation	16-16
Summary of Effects	16-16
References.....	16-17
17 OTHER ENVIRONMENTAL CONSIDERATIONS.....	17-1
Arboriculture	17-1
Population and Human Health	17-1
Major accidents and disasters	17-2
Health and radiation	17-2
Transboundary effects.....	17-2
References.....	17-2
18 CUMULATIVE EFFECTS	18-1
Introduction.....	18-1
Scope and methodology	18-3
Difficulties and uncertainties	18-3
Mitigation	18-12
Summary of Effects	18-13
References.....	18-13
19 ENVIRONMENTAL MANAGEMENT.....	19-1
Introduction.....	19-1
Commitments	19-1

GLOSSARY

air quality standard	concentration of a pollutant, over a specified period, above which adverse effects on health and/or the environment may occur, and which should not be exceeded
alternatives	different design, layout and technological possibilities that could be considered during project development that have potential to fulfil the project objectives
ambient	of or relating to the immediate surroundings of something (e.g. ambient noise level)
ancient woodland	woodland that has existed continuously since at least AD 1600
appropriate assessment	process whereby projects, either alone or in combination, are considered to see if it can be ascertained that they will not adversely affect the integrity of a European protected site
assessment	process by which information about effects of a proposed plan, project or intervention is collected, evaluated, and used to inform decision making
baseline conditions	environment as it appears (or would appear) immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project
baseline studies	work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed
biodiversity	variety of life forms; different plants, animals and microorganisms; the genes they contain; and the ecosystems they form
catchment	drainage/basin area within which precipitation drains into a river system and eventually into the sea
committed development	development projects that are either under construction or have valid planning permissions/consents
competent authority	authority responsible for determining the application for consent, permission, licence or other authorisation to proceed with a development
construction phase	period during which the building or assembling of a Proposed Development and its infrastructure is undertaken
consultation	process by which those organisations or individuals with an interest in the area associated with the Proposed Development are identified and engaged as part of the EIA process
consultation bodies	organisations that the competent authority is required to consult by virtue of the EIA Regulations 2017
controlled waters	surface waters, ground waters and coastal waters to which UK pollution legislation applies
culvert	pipe or box-type conduit through which water is carried under a structure

cumulative impact	<p>impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project</p> <p>A cumulative impact may arise as the result of (a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project on a single receptor/ resource or (b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource.</p>
decommissioning	<p>period during which a development and its associated infrastructure are removed from active operation</p>
design event	<p>event such as a rainstorm or flood of given magnitude and probability (usually derived from previous records)</p>
discharge consent	<p>statutory document issued by the Environment Agency setting limits and conditions on the discharge of an effluent into controlled waters</p>
do-minimum scenario	<p>also known as the 'do-nothing' scenario: the conditions that would persist in the absence of the implementation of a development</p>
effect	<p>term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact with the importance (or sensitivity) of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.</p>
EIA Regulations 2017	<p>collective term for the various statutory instruments defining how the requirement and procedures for Environmental Impact Assessment is enacted and implemented in the UK</p>
emission standard	<p>maximum amount or concentration of a pollutant allowed to be emitted from a particular source</p>
emissions inventory	<p>collection of data relating to the characteristics of processes or activities that release pollutants into the atmosphere</p>
enhancement	<p>measure that seeks to improve an environmental condition and is over and above what is required to mitigate the adverse effects of a project</p>
environmental assessment	<p>method and a process by which information about environmental effects is collected, assessed and used to inform decision-making. Assessment processes include strategic environmental assessment, assessment of implications on European sites, and environmental impact assessment.</p>
Environmental impact assessment	<p>Statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. Involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations 2017, including the publication of an environmental statement</p>

environmental information	information that must be taken into account by the decision maker (the competent authority) before granting authorisation in any case where the EIA process applies. It includes the environmental statement, including any further information, any representations made by any body required by the Regulations to be invited to make representations, and any representations duly made by any other person about the environmental effects of the development
environmental management plan	structured plan that outlines the mitigation, monitoring and management requirements arising from an environmental impact assessment
Environmental Statement	document produced in accordance with the EIA Regulations 2017 that reports the outcomes of the EIA process
estuary	downstream part of a river where it widens to enter the sea
European site	sites that make up the European ecological network (also known as Natura 2000 sites). These include sites of community importance (SCIs), special protection areas (SPAs) and potential SPAs (pSPAs), special areas of conservation (SACs) and candidate or possible SACs (cSACs or pSACs), and Ramsar sites.
evaluation	determination of the significance of effects. Evaluation involves making judgements as to the value of the receptor/resource that is being affected and the consequences of the effect on the receptor/resource based on the magnitude of the predicted impact.
existing environment	see 'baseline conditions'
Habitats Regulations	The Conservation of Habitats and Species Regulations 2010, or more commonly known as the 'Habitats Regulations'. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European sites.
Habitats Regulations assessment	assessment of the impacts of implementing a plan or policy on a European site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the site
hydraulics	processes and regimes of water flow (velocities, volumes, duration, frequency etc) in hydrological systems such as surface waters and groundwater
hydrodynamics	mechanical properties of fluids, such as those concerned with flow
impact	change that is caused by an action; for example, land clearing (action) during construction that results in habitat loss (impact)
integrated pollution prevention and control	environmental permitting system that aims to prevent, reduce and eliminate pollution at source, which is implemented by the UK Pollution Prevention and Control Regulations
invertebrates	animals without backbones
method statement	document that sets out intended working or survey practices
mitigation	measures intended to avoid, reduce or compensate for adverse environmental effects

monitoring	continuing assessment of the performance of the project, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.
non-statutory consultee	organisations and bodies that may be consulted on relevant planning applications
non-technical summary	information for the non-specialist reader to enable them to understand the main predicted environmental effects of the proposal without reference to the main Environmental Statement.
operation	functioning of a development on completion of construction
phase 1 habitat survey	Recognised methodology used for collating information on the habitat structure of a particular site.
photomontage	superimposing of an image onto a photograph to create a realistic representation of proposed or potential changes to a view
piling	installation of bored and driven piles into the ground
planning authority	local authority that is empowered by law to exercise planning functions for a particular area of the United Kingdom (often the local borough or district council)
pollution	any increase of matter or energy to a level that is harmful to living organisms or their environment (when it becomes a pollutant)
preferred option	chosen design option that most successfully achieves the project objectives and becomes subject to further design and assessment
programme	series of steps that have been identified by the applicant, or series of projects that are linked by dependency
project	one (or more) aspect of a programme or plan that has been identified by the applicant and usually involves a direct physical intervention
project objectives	objectives of the project, set by the applicant
Proposed Development	a plan or project that the applicant or promoter seeks to implement
Ramsar	areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance)
receptor	defined individual environmental feature usually associated with population, fauna and flora with the potential to be affected by a project
resource	defined but generally collective environmental feature usually associated with soil, water, air, climatic factors, landscape, material assets, including the architectural and archaeological heritage that has potential to be affected by a project
roosting site (birds)	place where birds rest or sleep
roosting site (bats)	place where bats live (e.g. built structures and trees)
run-off	precipitation that flows as surface water from a site, catchment or region to the sea
Schedule 1 project	plans or projects listed in Schedule 1 of the EIA Regulations 2017
Schedule 2 project	plans or projects listed in Schedule 2 of the EIA Regulations 2017

scoping	process of identifying the issues to be addressed by the environmental impact assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered not significant.
scoping opinion	opinion provided by a competent authority that indicates the issues an environmental impact assessment of a Proposed Development should consider
screening	formal process undertaken to determine whether it is necessary to carry out a statutory environmental impact assessment and publish an Environmental Statement in accordance with the EIA Regulations 2017
sediment	organic and inorganic material that has precipitated from water to accumulate on the floor of a water body, watercourse or trap
semi-natural	habitat, ecosystem, community, vegetation type or landscape that has been modified by human activity but consists largely of native species and appears to have similar structure and functioning to a natural type
significance	see 'significance of effect'
significance of effect	measure of the importance of the environmental effect, defined by either generic significance criteria or criteria specific to the environmental topic
significant environmental effect	environmental effect considered material to the decision-making process
site of special scientific interest	main national conservation site protection measure in Britain designated under the Wildlife and Countryside Act 1981
special area of conservation	international designation implemented under the Habitats Regulations for the protection of habitats and (non bird) species
special protection area	sites designated under EU Directive (79/409/EEC) for the conservation of wild birds
stakeholder	organisation or individual with a particular interest in the project
statutory consultee	organisations that the competent authority is required to consult by virtue of the EIA Regulations 2017
study area	spatial area within which environmental effects are assessed (i.e. extending a distance from the project footprint in which significant environmental effects are anticipated to occur). This may vary between the topic areas.
threshold	specified level in grading effects (e.g. the order of significance)
visual amenity	value of a particular view or area in terms of what is seen
wildlife corridor	linear habitats/landscape features such as hedgerows that may increase connectivity by acting as routes between habitat patches
worst case	principle applied where environmental effects may vary (e.g. owing to seasonal variations) to ensure the most severe effect is assessed

ABBREVIATIONS

AA	Appropriate Assessment
AERMOD	an atmospheric dispersion model
ALARP	As Low As Reasonably Practicable
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AONB	Area Of Outstanding Natural Beauty
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
bgl	below ground level
BGS	British Geological Survey
BS	British Standard
CCoP	Construction Code of Practice
CD	Chart Datum
CDC	Chichester District Council
CEMP	Construction (or contract) Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CifA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association
CIWEM	Chartered Institute of Water and Environmental Management
CLEA	Contaminated Land Exposure Assessment tool
COMAH	Control Of Major Accident Hazards
COSHH	Control Of Substances Hazardous to Health
CRTN	Calculation of Road Traffic Noise
dB(A)	decibel (A-weighted), a unit of noise measurement
DBA	Desk-Based Assessment
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DBEIS	Department for Business, Energy and Industrial Strategy
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency OR Environmental Appraisal
EcIA	Ecological Impact Assessment
EH	English Heritage

EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EPR	Environmental Permitting Regulations
EPS	European Protected Species
EQS	Environmental Quality Standards
ES	Environmental Statement
FRA	Flood Risk Assessment
GIS	Geographic Information System
GPS	Global Positioning System
HAP	Habitat Action Plan
HAZID	Hazard Identification
HDV	Heavy Duty Vehicle
HER	Heritage Environment Record
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HRA	Habitats Regulations Assessment
HSC	Hazardous Substance Consent
HSE	Health and Safety Executive
IEMA	Institute of Environmental Management and Assessment
IfA	Institute for Archaeologists
IPPC	Integrated Pollution Prevention and Control
JNCC	Joint Nature Conservation Committee
km	kilometre
LCA	Landscape Character Area
LCZ	Landscape Character Zone
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LGV	Light Goods Vehicle
LI	Landscape Institute
LPA	Local Planning Authority
LTP	Local Transport Plan
LVIA	Landscape And Visual Impact Assessment
MAGIC	Multi-Agency Geographic Information for the Countryside
MMP	Materials Management Plan
NCA	National Character Area
NE	Natural England

NIC	National Infrastructure Commission
NNR	National Nature Reserve
NO _x	oxides of nitrogen
NO ₂	Nitrogen dioxide
NSIP	Nationally Significant Infrastructure Project
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NTS	Non-Technical Summary
NVC	National Vegetation Classification
OS	Ordnance Survey
PINS	Planning Inspectorate
PM ₁₀	Particulate Matter (with an aerodynamic diameter below 10 µm)
PPC	Pollution Prevention and Control
PPG	Planning Policy Guidance (now superseded by the NPPF) OR Pollution Prevention Guidance (also largely superseded)
RCS	River Corridor Survey
RHS	River Habitat Survey
RIGGS	Regionally Important Geological and Geomorphological Site
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SM	Scheduled Monument
SoCC	Statement of Community Consultation
SoS	Secretary of State
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
TA	Transport Assessment
TCPA	Town and Country Planning Act
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TPO	Tree Preservation Order
TRICS	Trip Rate Information Computer System
UK	United Kingdom
VEC	Valued Ecological Component

VER	Valued Ecological Receptor
WEBS	Wetland Bird Survey
WFD	Water Framework Directive
ZTV	Zone of Theoretical Visibility

1 INTRODUCTION

1.1 Background to Proposed Development

- 1.1.1 RSK Environment Limited (hereafter referred to as 'RSK') has been instructed by Cove Communities (hereafter 'the Applicant') to produce an Environmental Statement (ES) to accompany a hybrid planning application for Medmerry Holiday Park, a holiday lodge development including ancillary amenity facilities in Chichester (hereafter 'the Proposed Development'). The planning application boundary, including the red line boundary of the Proposed Development and the blue line boundary of the enhancement area (hereafter referred to as the 'Site') is shown in **Figure 1.1**.
- 1.1.2 The planning application, subject to Environmental Impact Assessment (EIA), comprises the following elements:
- Phased demolition, redevelopment and refurbishment of 308 holiday lodges
 - Construction of wetland lakes and an amenity lake and beach
 - Refurbishment of existing amenity facilities and provision of, central village hub, boathouse, children's play and picnic area, adventure playground, adventure golf and paddle tennis, beachside pool, outdoor amenity area, back of house maintenance area, associated landscaping, drainage facilities, car parking, access roads and habitat enhancement areas.
- 1.1.3 This ES has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the 'EIA Regulations 2017') (UK Government, 2017) and accompanies the Applicant's hybrid planning application.
- 1.1.4 Construction of the Proposed Development is anticipated to commence in May 2024, with completion achieved by March 2030.

1.2 Environmental impact assessment (EIA)

- 1.2.1 EIA is a process for identifying the likely significant consequences on the existing biological, physical, and human environment arising from development progression.
- 1.2.2 The process is undertaken to ensure that the environmental effects of certain types of development proposal are fully investigated, understood, and taken account of in the consenting and authorisation process.

Statutory context

- 1.2.3 The requirement that an EIA should be prepared by the promoters of certain types of development prior to consent being granted, and the process by which an EIA should be undertaken, was originally prescribed in 1985 within a European Council Directive.
- 1.2.4 The EIA Regulations 2017 set out the statutory requirements and apply where planning consent is being sought for developments under the Town and Country Planning Act 1990 Town and Country Planning (Development Management Procedure) (England) Order 2015 (as amended).

- 1.2.5 Screening procedures exist within the EIA Regulations 2017 to determine whether a development proposal qualifies for EIA.
- 1.2.6 In the case of the Proposed Development, the Applicant volunteered to produce an Environmental Impact Assessment as the Proposed Development falls under Schedule 2, category 12 (c) given the scale and nature of the Proposed Development and its potential to generate significant environmental effects.

Environmental Statement

- 1.2.7 It is a requirement of the EIA Regulations 2017 that an ES be prepared to describe the likely significant effects of a Proposed Development on the environment.
- 1.2.8 This ES accompanies the hybrid planning application and reports the formal process and outcomes of the EIA undertaken for the Proposed Development. Its purpose is to present the Proposed Development and its predicted environmental effects in a concise, objective and non-promotional manner in order to provide Chichester District Council, statutory consultees, interested bodies and the general public with sufficient information to assess its likely environmental effects.
- 1.2.9 This ES has been prepared under the supervision of, and reviewed by, persons having suitable competency in environmental impact assessment.

1.3 Structure of Environmental Statement

- 1.3.1 The ES is presented in three volumes:
- Volume 1: Environmental Statement
 - Volume 2: Figures
 - Volume 3: Appendices.
- 1.3.2 A non-technical summary of the ES has been prepared as a separate document, in accordance with the requirements of the EIA Regulations 2017.

Volume 1

- 1.3.3 Volume 1 comprises 17 sections, which are structured in the following manner.

Section 1 Introduction introduces the Proposed Development and explains the underlying objectives of the proposals, describes the statutory basis for the EIA, outlines the structure adopted in this ES and identifies the team of competent experts responsible for undertaking and reporting the EIA.

Section 2 Evolution of the Proposed Development identifies the location of the project and characterises the site and its surroundings; establishes the need for the Proposed Development; and describes the reasonable alternatives that have been considered in the development of a preferred design solution.

Section 3 Proposed Development provides a detailed description of the key design components and characteristics of the Proposed Development and associated land take; and outlines the planned timescales for construction and implementation.

Section 4 Consultation summarises stakeholder consultation undertaken during the EIA and the development of the Proposed Development.

Section 5 Environmental Assessment Process summarises the scoping process undertaken to establish the scope of the EIA, the adopted approach to the EIA and format of the individual technical assessments, and modifications made to the EIA scope that have arisen during the development and assessment of the Proposed Development.

Sections 6 to 17 Technical Assessments report the findings of the detailed environmental assessments and the residual effects on the environment predicted to occur as a result of implementation of the Proposed Development.

Section 18 Cumulative Effects identifies cumulative effects arising from the Proposed Development operating in combination with other existing and approved developments in the locality, and the interactions of predicted effects on environmental interests.

Section 19 Environmental Management contains a schedule of the environmental commitments (i.e., design and mitigation measures that are agreed and deliverable) identified in each technical assessment.

References of documents used or considered during the production of this ES are provided at the end of each section, where relevant.

Volume 2

- 1.3.4 Volume 2 comprises a series of plans, figures and photographs (referenced in Volume 1) that illustrate the relationship between the existing environment and the Proposed Development.

Volume 3

- 1.3.5 Volume 3 comprises appendices (referred to in Volume 1) containing detailed technical reports of the individual environmental assessments and other relevant supporting documentation.

1.4 EIA team

- 1.4.1 RSK has undertaken the coordination of the EIA and this ES on behalf of the Applicant.
- 1.4.2 The relevant expertise and qualifications of the experts involved in the preparation of this ES are detailed in **Table 1.1** below.

Table 1.1: EIA Team Responsibilities

Name	Qualifications	Company	Role and expertise
EIA project management team			
David Hoare	CEnv.	RSK	EIA Technical Reviewer and Project Director 23 years' experience
Tim Cramp	BSc (Hons), MSc, PhD, CEnv,	RSK	EIA Quality Reviewer 30 years' experience

Name	Qualifications	Company	Role and expertise
Hannah Hepworth	BSc (Hons), MSc (Eng), PIEMA	RSK	EIA Project Manager 3 years' experience
EIA technical specialists			
Libby Robinson	BSc (Hons), PhD	RSK	Climate Change Lead 7 years' experience
Stella Ferguson	BSc (Hons), AIEMA	RSK	Climate Change Support 2 years' experience
Geoff Cotton	BSc (Hons) Qualifying CSci	RSK	Land and Soils Lead 7 years' experience
Gwenc'hlan Tourniarnacho	BSc (Hons), MIOA	RSK	Acoustics Lead 12 years' experience
Srinivas Srimath	BEng, MEng, PhD, PIEMA, CEnv, FMIEEnvSc, CSci	RSK	Air Lead 30 years' experience
Hannah Lillis	BSc, MSc, AMIEEnvSc	RSK	Air Support 1 year experience
Andrew Sowerby	BSc (Hons), MCIWM	RSK	Material Assets and Waste Lead 15 years' experience
Thomas Webb	BSc (Hons), MSc, Qualifying CIEEM	RSK	Biodiversity Support 2.5 years' experience
Nick Henson	CEnv, MCIEEM	RSK	Biodiversity Lead 17 years' experience
Simon Maiden-Brooks	BSc (Hons) MSc CEng MCIWEM C.WEM	Herrington Consulting	Water Lead 20 years' experience
Toby Vaughan	BSc (Hons), MCIWEM	Herrington Consulting	Water (Flood Risk) 4 years' experience
Elena Corchon	MEng MSc, MCIWEM	Herrington Consulting	Water (Drainage) 9 years' experience

Name	Qualifications	Company	Role and expertise
Charlie Clews	BSc (Hons), Grad DipLA, CMLI	Clewsla	Landscape and Visual Lead 15 years' experience
Simon Coop	BA(Hons), MSc, MRTPI, MIED	Lichfields	Socio-economics Lead 20 years' experience
Mark Lever-Green	MEng	Integrated Transport Planning Ltd. (ITP)	Transport and Access Lead 9 years' experience
Chris Pine	BSc, MA	Development Archaeology Services Ltd. (DAS)	Cultural Heritage Lead 32 years' experience

1.3 References

UK Government. (2017). Town and Country Planning (Environmental Impact Assessment) Regulations 2017. *UK Government*. [Online]. Available at <https://www.legislation.gov.uk/uksi/2017/571/contents/made>

2 EVOLUTION OF THE PROPOSED DEVELOPMENT

2.1 Need for the scheme

- 2.1.1 The current site is comprised of holiday chalets that are no longer fit for habitation and will need to be replaced. Similarly, the Pink Flamingo clubhouse is no longer open to the public and requires significant refurbishment. Given the age and quality of the existing accommodation, there is a clear operation, tourism and economic needs case to implement site wide reconfiguration and enhancements across the holiday park through a comprehensive redevelopment and refurbishment scheme to ensure the long-term viability and continued success of this existing holiday park.
- 2.1.2 The redevelopment of the Site will create a modern, sustainable, and high-quality self-catering accommodation, within a landscape and nature led context. It is important to highlight that the Medmerry Masterplan will transform an existing outdated park and deliver significant economic and ecological benefits and enable climate resilience measures to be implemented.
- 2.1.3 The range and scope of proposed amenity facilities significantly improves and diversifies upon the existing offer and will therefore attract and cater for a much broader visitor base compared to the existing park.

2.2 Scheme objectives

- 2.2.1 The objectives of the Proposed Development are to:
- Enable a phased redevelopment of an existing tourist facilities over the next 10 years through a masterplan led approach.
 - Enable ongoing economic investment to maintain a high-quality tourist facility.
 - Enhance the range of amenity and leisure facilities for both visitors to the holiday park and for local residents in the area.
 - Create direct and indirect job opportunities.
 - Create indirect and direct economic benefits for the local area, through the construction and operation stages.
 - Provision of biodiversity net gain and ecological enhancements.

2.3 Scheme location and setting

- 2.3.1 The Proposed Development comprises the phased demolition, redevelopment and refurbishment of Medmerry Park to provide 308 holiday lodges, wetland lakes, amenity lake and beach, central village hub, boathouse, children's play and picnic area, adventure playground, adventure golf and paddle tennis, beachside pool, outdoor amenity area, back of house maintenance area, associated landscaping, drainage facilities, car parking, access roads and habitat enhancement areas.

Local context and history

- 2.3.2 The Proposed Development is located approximately 9.8 km south of Chichester on the existing Medmerry Park Holiday Resort. The existing site comprises of 33.3 ha within the parish of Earnley, close to Bracklesham and the Witterings.
- 2.3.3 Medmerry Park is in the countryside a short distance away from Manhood Peninsula's southern coastline. Whilst Proposed Development is in a rural location, the edges of East Wittering and Bracklesham are located immediately to the west, separated by a watercourse and the vacant fields of Medmerry Holiday Park.
- 2.3.4 Bracklesham is a suburb of East Wittering and is located c. 830 m north-west of the Proposed Development with the East Wittering centre located c. 2.5 km north-west. The smaller towns of Earnley and Almodington are located c. 1.1 km and 1.9 km north respectively. These settlements consist of a mix of residential, commercial, and holiday properties with camp sites dotted in the surrounding area.

Settlement and access

- 2.3.5 The holiday park is accessible via the coastline beaches but there is no direct vehicle access between the Site and East Wittering and Bracklesham. The single route to the Proposed Development site is along Drove Lane coming south from Earnley from A286 and Bell Lane off the Chichester Bypass.
- 2.3.6 A public footpath (PRoW no. 55) bisects the Site, leading to the beach which is located south of the site boundary. Agricultural fields bound the north, east and west edges of the Proposed Development with Bracklesham Caravan and Boat Club adjacent to the south-west boundary. Two commercial properties are also located next to the northern and eastern site boundaries, these are Oxley Sandy and 1st Chichester Storage.
- 2.3.7 The Site is immediately adjacent to two farming properties, which are accessed via a private track off of Drove Lane. This access track is owned by the applicant and provides vehicular access to the holiday park maintenance complex and a storage facility (under separate ownership) immediately adjoining the application site to the east.

Designations

- 2.3.8 The Proposed Development is not situated in a designated site however, it is located adjacent to Bracklesham Bay SSSI and 2.8 km from Pagham Harbour Special Protect Area (SPA). The fields surrounding the Site are predominately owned by RSPB forming part of the Medmerry Compensatory Habitat and is functionally linked to the Chichester and Langstone Harbours SPA.

Landform and hydrology

- 2.3.9 The landform of the Site is varied from approximately 1.6 m Above Ordnance Datum (AOD) to approximately 4.2 m AOD with the landform sloping towards the Rife that runs through the centre of Medmerry Park.
- 2.3.10 Due to the position of the Rife at the centre of the Site, the Proposed Development is located within Flood Zone 3 for rivers and watercourses. The Rife is part of a larger localised network of drainage ditches which connect to the Earnley Rife. The connection

has a direct effect on flood events in the area. It is predicted that flood risk will increase in the future due to climate change.

- 2.3.11 In addition, the majority of the Site lies within Flood Zones 2 and 3 associated with the sea due to the Proposed Development's proximity. The Site is currently protected by a naturally occurring shingle ridge with a crest height of 5.0 m AODN. However, during future climate events, it is likely that the existing Site will be flooded from waves overtopping the defences without intervention.

2.4 Consideration of alternatives

- 2.4.1 The EIA Regulations 2017 require an assessment of reasonable alternatives which are relevant to the development. The following subsections summarise the main alternatives considered during design development and how environmental considerations have been taken into account in selecting the preferred option.

Do nothing/do minimum scenario

- 2.4.2 If the Proposed Development is not taken forward, the current Medmerry Park would continue having the issues around visual amenity and flood risk as well as the underutilisation of local biodiversity enhancement opportunities.
- 2.4.3 Currently there are 66 chalets that are classed as uninhabitable. Whilst some of these units could be refurbished, a significant number are beyond repair and would still need to be redeveloped. Furthermore, the do-nothing scenario would not allow for the site wide benefits from the layout reconfiguration and landscape enhancements to be delivered or provide the extensive range of amenity uses. The overall general standard of Medmerry Park would decrease over time and therefore the attractiveness of Medmerry Park for tourists. This will have an impact on the local tourism economy resulting in reduced revenue for the community.

Alternative sites

- 2.4.4 The consideration of alternative sites has not been deemed necessary as the scope of this project is to redevelop and refurbish the existing site.

Design Evolution

- 2.4.5 Several design iterations have been undertaken which are summarised below. Throughout the process the design considerations set out in the Planning Constraints (**Figure 2.1**) have been adhered to. Further detail of the evolution of the Proposed Development is set out in the **Design and Access Statement**.

Pre-application Masterplan layout (Superseded)

- 2.4.6 Due to the history of Medmerry Park and planning refusal in January 2021, this masterplan was developed to showcase the potential to provide a sympathetic redevelopment and to address the reasons for refusal (**Figure 2.2**). It was incorporated into the 2022 pre-application submission to Chichester District Council to gain more advice. The key development parameters that were included were:

Deliver a modern high quality holiday resort within a landscape and ecology led setting, providing a more diverse range of leisure activities to retain visitors on site and attract a wider client base.

Create a range of high-quality sustainable holiday accommodation, using energy efficient materials and construction.

Retain the same number of lodges at 308. The redevelopment masterplan would replace the existing accommodation with the same number of holiday units. These units would be larger and include separate bedrooms and living space to meet modern visitor requirements.

Identification of landscape led character areas for the replacement holiday accommodation, comprising five distinct accommodation areas alongside a central activity areas area, providing refurbished and extended leisure to facilities.

Retreat of the existing building line away from the most sensitive ecological areas and coastline through the introduction of an ecological and landscape buffer to create separation with the adjoining settlements to the west, Medmerry Reserve to the east and creating a seascape character area to the south.

Raising of the Site through cut and fill from the wetlands and building design to raise the finished floor levels thereby minimising the risk of flooding within the Site from tidal events.

- 2.4.7 In addition, key benefits were identified as part of the pre-application submission, which included:

Scope to introduce other flood risk measures and address the future inherent flood risk issues for the existing site/use through redevelopment.

Reducing traffic generation by providing additional activities and facilities, which encourages longer stays and thereby reducing the need to leave the holiday park.

Securing additional jobs through the provision of additional activities and increased activity during non-peak times of the year, as well as significant number of construction and maintenance jobs.

An increase in direct and indirect spend and other economic benefits of having a new range of holiday accommodation on site which is more attractive to visitors throughout the year.

Restoring the historical coastal seascape character area by retreating buildings away from the most sensitive areas of the Site and the coastline.

Habitat creation and biodiversity enhancements next to the Medmerry Reserve to be delivered and managed through a long-term landscape and ecological management plan.

Masterplan layout Rev 02 (superseded)

- 2.4.8 The pre-application Masterplan was further refined through 2022 once the principle of redevelopment was confirmed and produced in collaboration with heritage and landscape, ecology, and tree consultants (**Figure 2.3**).

- 2.4.9 Due to landscape sensitivities, the layout was altered to reflect the informal / irregular nature of the immediate and local landscape by ensuring the layout was not overly regular. In addition, any new units in the southern area of the Site were adapted to be of special architectural character to help enhance views from key viewpoints. This proposed a challenge as it was twinned with the requirement to raise all accommodation to +4.44 m AOD due to flood risk mitigation, causing any new built forms to be more visible in the

landscape. As a result, any inclusion was careful not to detract and reduced the number of units to be built in the southern area.

- 2.4.10 With the reduced number of units in the southern areas, the development was moved to include the north of the Site. This had the bonus of being positioned away from areas of significant ecological, flood, and visual constraints.
- 2.4.11 As part of the requirements of the National Planning Policy, the proposal also needed to include ecology improvements to meet Biodiversity Net Gain (BNG). As the southern end of the Site was now not going to be developed as much, this provided area to improve biodiversity. It was therefore proposed that large expanses of wetland should be included which would also provide significant amenity enhancement. In addition, the proposal looked to seek to maximise connections to, and value, of existing habitats.

Masterplan layout Rev 05 (superseded)

- 2.4.12 Following engagement with project specialists, the masterplan evolved into a closer reflection of the current submission (**Figure 2.4**). The scheme was based on a range of baseline surveys undertaken to inform proposals. These included:

- A full topographical survey of the Site and its perimeters.
- A heritage and landscape character report.
- A desktop archaeological report.
- Full and detailed tree surveys.
- Wildlife and ecology surveys.

- 2.4.13 Although the above masterplan revision provided significant enhancement over earlier iterations, the Landscape Architect was still concerned in relation to particular areas of the proposal, which when raised to +4.44 m AOD, would provide potential for harm to key views from around the Site. These considerations were acknowledged and suitably catered for in the current masterplan proposal, including adaptations to areas which were previously identified as unacceptable.
- 2.4.14 Whilst the masterplan has been significantly adapted throughout its development, the presence of lakes and wetlands, which are reminiscent of the surrounding context of the Site has been a constant design proposal and is maintained as a key feature of the masterplan enhancement. Earlier versions of the masterplan development looked to incorporate the Broad Rife into the new wetland areas as an extension of the existing waterways, embracing the presence of water within the Site, and providing potential for enhanced habitat as well as visual amenity. These earlier schemes would demonstrate radical adaptations to the route of the existing rife, redirecting much of the existing route, and integrating its main body into new wetland areas.

Masterplan Rev 10 (preferred option)

- 2.4.15 Further extensive habitat surveys carried out throughout the Site and along the rife, identified a dense population of Water Voles which are seen to occupy selected areas of the network of water courses seen to pass through and around the Site (**Figure 2.5**). The size of the population was such that disturbance and possible translocation were not possible. Whilst the existing water courses first looked to provide limited ecological

potential, the presence of Water Voles provided tangible proof of their significance and demonstrated their ability to provide suitable habitat to local and native wildlife – a key driver in the masterplan’s development.

2.4.16 As a direct result of the identification of Water Voles along the route of the rife, it was apparent that the masterplan would need to be significantly adapted to ensure the retention and protection of all existing routes of the rife which would provide habitat for local wildlife, in addition to providing enhancements to encourage the population of Water Voles to flourish.

2.4.17 In addition, comments were taken on board during the public consultation resulting in the following changes:

The ‘Falconry Experience’ and ‘Events Space’ previously included within the amenity area at the south of the Site have been removed in favour of a dogs ‘off the lead’ zone.

The ‘Medmerry Riding School’ has been removed in favour of a picnic space/meadow. Accommodation has been re-shuffled to pull further away from the PRoW following the riding school’s removal.

Bicycle storage to amenity areas has been included throughout the masterplan.

2.4.18 This design was decided to be taken forward with more detail set out in the section below.

Alternative technologies

2.4.19 Through the development of the masterplan, the construction of the lodges has evolved from a more traditional on-site assembly of SIP panels which are prefabricated off-site, to prefabricated modular SIP lodges being fully constructed off-site, and brought onto site to be assembled. This decision allows for a reduced construction impact and is more economically viable.

2.4.20 The proposed construction process allows for a controlled, sustainable method of manufacture of lodges within a factory environment and their delivery to site for assembly. The prefabricated units are generally delivered in two parts (minimum), and bolted together on site. The process will not only reduce pollution, waste and emissions but shall also assist in shortening the construction period significantly over traditional construction methods whilst providing a range of further benefits;

2.4.21 Quality control:

Controlled factory environment improves on quality assurance and reduces on-site construction that is open to the vagaries of weather.

Prefabrication reduces adverse weather disruption to the finishes and quality of the build.

An efficient manufacture and production process using safe materials and methods reduces time spent on site, risks to human Health & Safety and the environment.

2.4.22 Lower environmental impact:

Accelerated offsite production results in reduced emissions.

Improves fuel consumption with less on-site traffic and more efficient transportation in terms of labour and materials movement.

Prefabrication in a factory setting is resource efficient, greatly reducing the demand for raw materials and reduces on site Construction time.

A factory based controlled environment allows for an efficient use of material and offers better recycling of any waste materials.

Building Cycle (End of life) improvements due to ease of dismantling and recycling.

2.4.23 Reduced Site Disruption:

Prefabrication reduces adverse weather disruption as site-based activity is greatly reduced.

There is a reduction in traffic, machinery, and material suppliers on site as a majority of the build is completed in the factory and delivered to site.

Noise, emissions, waste, traffic and visual disturbance all kept to a minimum by reducing the build time on site.

Through the reduction in build time and units being delivered near complete to site, deliveries of the units can be timed to avoid peak season when noise, traffic and visual disturbance would be most noticeable and disruptive to existing guests, visitors to the area and the local community.

2.4.24 Efficiencies:

Time and waste efficiencies will reduce the overall build cost and improve the feasibility of the project whilst offering a more sustainable and better quality of build.

Sustainable lodge design capable to take EV charging, built using efficient construction practices, renewable materials and energy efficient appliances to reduce carbon emissions.

3 PROPOSED DEVELOPMENT

3.1 Preferred option

3.1.1 This following should be read in conjunction with the Site Masterplan (**Figure 3.1**), Landscape Masterplan (**Figure 3.2**), and the **Design and Access Statement**.

3.1.2 The main elements of the Proposed Development will include:

Phased demolition, redevelopment and refurbishment of 308 holiday lodges

Construction of wetland lakes and an amenity lake and beach

Refurbishment of existing amenity facilities and provision of, central village hub, boathouse, children’s play and picnic area, adventure playground, adventure golf and paddle tennis, beachside pool, outdoor amenity area, back of house maintenance area, associated landscaping, drainage facilities, car parking, access roads and habitat enhancement areas.

3.1.3 The accommodation proposed will have a façade of sealed natural wood cladding with feature local stone for under crofts that reflects the surrounding environment and be split up into five sections:

Orchard Accommodation

Wetlands and Rife Accommodation

Lakeside Accommodation

Secret Garden Accommodation

Woodland Accommodation

3.1.4 In addition to these, amenity facilities will be refurbished as part of the Proposed Development and include:

The village hub

Boathouse store and F&B

Picnic Area with children’s play area

Adventure playground

Adventure golf and paddle tennis

A beachside pool

An activity lake and beach

Back of house facilities

Outdoor amenity area which includes tennis courts, adaptable playing field, an area for events, and an off-lead secure dog area.

3.1.5 Overall, the Proposed Development will replace 308 lodges with 308 lodges however, the number of bedspaces will increase by 158, a 13.1% increase (**Table 3.1**).

Table 3.1: Comparison of existing chalets against the proposed number of lodges.

Chalets/Lodges	Numbers of units	Number of bedspaces
Existing Chalets		

Chalets/Lodges	Numbers of units	Number of bedspaces
1 bed chalets	37	74
2 bed chalets	239	1,018
3 bed Riverside Bungalow	1	6
1 bed Bricks	8	16
2 bed Bricks	16	64
1 bed Riverside House	2	4
2 bed Riverside House	1	4
2 bed Westward House	4	16
Dimensions House/Earnley Beach Centre including three staff bedrooms	N/A	3
On site staff accommodation	N/A	3
Total	308	1,208
Proposed lodges		
Orchard: 10 x 2 bed (single storey) 12 x 3 bed (single storey) 8 x 2 bed semi detached (single storey) 10 x 3 bed semi detached (single storey)	40	204
Woodland: 17 x 2 bed (single storey) 46 x 2 bed semi detached (single storey) 50 x 2 bed terrace (two storey)	113	452
Lakeside: 14 x 3 bed (single storey) 7 x 2 bed (single storey) 54 x 2 bed semi detached (single storey) 25 x 2 bed terrace (two storey)	100	428
Secret Garden: 24 x 2 bed semi-detached (single storey)	24	96
Wetland and Rife: 31 x 3 bed (single storey)	31	186
Total	308	1,366

Orchard Accommodation

- 3.1.6 The Orchard Accommodation is located at the northern end of the Site on the opposite side of the private access road off Drove Lane where there are currently agricultural fields. It is proposed that this section will hold 40 single-storey units with a combination of two and three bedrooms that have a footprint range of 62 m² to 70 m² (excluding external decking).
- 3.1.7 In addition, each unit will have 15 m² of external decking and an outside hot tub. Each unit will have two car parking spaces with facilities to install EV charging points if the owner of the unit requires it.

Wetlands and Rife Accommodation

- 3.1.8 The Wetlands and Rife Accommodation comprises of 31 three bedroom single-storey units that have a footprint of 88 m² (excluding external decking). Nine units located on the opposite side of the rife to the rest. The area between these units and the others comprises of the PRow and rife with enhanced habitat for water voles. The other 22 units are located south of the Orchard Accommodation and are surrounded by wetland habitat.
- 3.1.9 In addition, each unit will have 20 m² of external decking and an outside hot tub. Each unit around the wetland will have two car parking spaces outside with facilities to install EV charging points if the owner of the unit requires it while the units on the opposite side of the rife will have their two parking spaces located at either end of the row of units with potential for EV charging.

Lakeside Accommodation

- 3.1.10 The Lakeside Accommodation is located at the eastern side of the Site where there are currently agricultural fields. It is proposed that this section will be split to surround two lakes. Around lake one there is proposed to be 36 single-storey units with a mixture of two and three bedrooms. Around lake two it is proposed that there are 39 single-storey units and 25 two-storey units. These will be a variety of two and three bedrooms with a footprint range of 45 m² to 88 m² (excluding external decking).
- 3.1.11 In addition, each unit will have 12 m² to 20 m² of external decking and an outside hot tub. Each unit will have two car parking spaces with facilities to install EV charging points if the owner of the unit requires it.

Secret Garden Accommodation

- 3.1.12 The Secret Garden Accommodation is located at the southern end of the Site. It is proposed that this section will hold 24 single-storey units with two bedrooms that have a footprint of 62 m² (excluding external decking).
- 3.1.13 In addition, each unit will have 15 m² of external decking and an outside hot tub. Each unit will have two car parking spaces located at either end of the secret garden accommodation area with facilities to install EV charging points if the owner of the unit requires it.

Woodland Accommodation

- 3.1.14 The Woodland Accommodation is located at the western end of the Site. It is proposed that this section will hold a mix of single-storey and two-storey units with an overall total of 113 two-bedroom units. The units will have a footprint range of 45 m² to 62 m² (excluding external decking).
- 3.1.15 In addition, each unit will have 12 m² or 15 m² of external decking and an outside hot tub. Each unit will have one car parking spaces with facilities to install EV charging points if the owner of the unit requires it.

3.2 Construction phase

- 3.2.1 The Proposed Development is planning to be constructed over a period of approximately six years via a phased approach (this is described in **Section 3.4**). This will allow the existing holiday park to continue to operate during the construction period.
- 3.2.2 Each phase will be self-contained to have minimal impact on the existing park and will be a series of demolitions and developments. Eventually, all existing lodges and associated areas of hardstanding will be removed and redeveloped into the preferred Masterplan.
- 3.2.3 Demolition is anticipated to involve bulldozers for the existing accommodation blocks, whilst each individual lodge will be constructed off-site and assembled on-site. The main building components of the units include walls, roofs and flooring that will be constructed using SIPs (Structural Insulated Panels).
- 3.2.4 The lodges will be transported to site in two parts (requiring two lorries per unit) via the existing entrance off Drove Lane. The existing internal access road and parking area will be retained and used for movement of construction vehicles.
- 3.2.5 The redevelopment of the amenity buildings will consist of reusing the shell of the existing buildings and refurbishing the interior to provide a new centralised space for the enjoyment of guests. The exception to this is the current Flamingo building. This will be demolished as it is not fit for repurpose and has a significant impact on visual amenity in the area. The land will be redeveloped into an area for pop-up dining, picnics, a children's play area, and an open-air cinema.
- 3.2.6 In addition, additional ancillary buildings will be constructed. These include the boathouse store, the stables, and the back of house facilities and maintenance buildings.
- 3.2.7 The principal activities that are expected for each phase consist of the following:
- Demolition of existing lodges.
 - Construction of temporary construction compound.
 - Earthworks in relation to the proposed ground levels, including any earthworks for lakes.
 - Construction of phase access tracks.
 - Design and construction of temporary and permanent drainage measures and cable trenches.
 - Laying of electricity cables in trenches.
 - Construction of holiday lodges and other proposed amenity and ancillary buildings.
 - Landscaping and ecological mitigation proposals.

Site reinstatement and restoration.

Outline Construction Environmental Management Plan

3.2.8 A framework Construction Environmental Management Plan (CEMP) will be submitted in support of the planning application and will set out the key measures to be employed during construction to control and minimise the impacts on the environment. The details and implementation of the CEMP will be secured by a planning condition. The purpose of a CEMP is:

To ensure nuisance levels as a result of construction and operation activities are kept to a minimum.

To comply with relevant regulatory requirements and environmental commitments.

To ensure procedures are put into place to minimise environmental effects during construction.

3.2.9 The CEMP will be informed by the recommended mitigation measures that come out of this ES report.

Outline Construction Traffic Management Plan

3.2.10 Alongside the CEMP a Construction Traffic Management Plan (CTMP) will be developed to propose measures to control the delivery of materials and staff onto the Site during the construction phases. The CTMP will also be secured by a planning condition.

3.2 Operational phase

3.3.1 Each unit will be built in line with Building Regulations 2010 to allow Medmerry Park to be partially made up of rental lodges and partially privately owned, mortgageable lodges.

3.3.2 Due to the construction phase set up, the existing Medmerry park will continue to be in operation. At the completion of each phase of construction, the newly constructed area will start operating.

3.3.3 Following Construction of Phase 5, the Medmerry Masterplan will be fully implemented, and Medmerry Park will be operational, providing 308 lodges and the range of amenity facilities for use predominately by visitors staying at the park. There will be some facilities within the Medmerry Village Hub (e.g., spa, fitness suite, restaurant, and convenience store) that will be accessible to the public subject to availability.

2.3 Programme of works

3.4.1 It is anticipated that the first phase of construction will commence in May 2024 if planning is granted. Each phase of construction will occur sequentially and be dependent on the sale of the lodges constructed during the previous phase.

3.4.2 The construction phases are described below and illustrated in **Figures 3.3 to 3.7**.

Phase 1

3.4.3 Phase 1 will involve the excavation and construction of the two wetland lakes (Lake 2 and Lake 3). The excavated material will then be used to create landscape bunding along the

northeast boundary of the Site, in addition to providing general re-levelling and localised bunds throughout new development areas. 100 lodges will be constructed around the new lakes, and the refurbishment and extension of the existing facilities will be undertaken to create:

- the Central Village hub
- a reconfigured main parking area
- a reconfigured swimming pool area
- the adventure playground
- the adventure golf and paddle tennis facilities
- landscaping, and
- the first phase of ecological enhancement.

- 3.4.4 Following the construction of the back of house compound at the east of the site, and new accommodation, 116 chalets will be demolished with new internal access roads and landscaping introduced to serve the new development areas. Overall, once Phase 1 is complete, there will be 292 lodges on site.

Phase 2

- 3.4.5 Phase 2 will comprise of the construction of the activity lake, boathouse store and the Orchard Accommodation (40 lodges). The excavated material will then be used to re-profile the ground levels of the Secret Garden Accommodation, along with landscaping.
- 3.4.6 Once the re-profiling has been completed, the construction of the Secret Garden Accommodation (24 lodges) and associated access arrangements will commence along with the demolition of 66 chalets, and the second phase of ecological enhancements.
- 3.4.7 Once Phase 2 is complete, there will be a total of 290 lodges onsite and the main southern ecological enhancement areas will be delivered.

Phase 3

- 3.4.8 Phase 3 will commence with the construction of the 113 chalets in the Woodland Accommodation along with internal access roads, a new access point, and landscaping. In addition, the southern outdoor amenity area will be construction. This will include tennis courts, adaptable playing field, and a secure off lead area for dogs.
- 3.4.9 Following this, 95 chalets will be demolished resulting in an overall total of 308 lodges once Phase 3 is completed.

Phase 4

- 3.4.10 Phase 4 will be the construction of the wetland area which will include excavation and re-profiling of the banks of the wetland. 22 lodges of the Wetland and Rife Accommodation will then be constructed along with landscaping and resurfacing of the existing internal access road up to the Central Village Hub. Once completed, demolition of 31 chalets will occur.
- 3.4.11 By the completion of this phase, there will be 299 lodges of accommodation on site.

Phase 5

- 3.4.12 Phase 5 is the final construction phase and will comprise of the following:
- Construction of the remaining 9 Wetland and Rife Accommodation lodges.
 - Landscaping and ecological enhancements along the central rife
 - Resurfacing of the internal access road up to the Central Village Hub
- 3.4.13 As a result, there will be 308 lodges of accommodation on site.

4 CONSULTATION

2.1 Overview

4.1.1 The previous owners of the site applied for outline planning permission in 2019 for the redevelopment of the Site to a static caravan park with an additional 200+ units over the existing 308 units. This was refused on five grounds:

Adverse effect on the integrity of multiple European protected sites and associated ecological assets.

Increased numbers of people occupying an area at high risk of flooding.

Significant undermining of the open and rural character of the area.

Insufficient evidence to demonstrate a particular tourism need to justify the proposals.

No s106 agreement to secure the necessary mitigation required (due to being refused).

4.1.2 Since then, the scope of the Proposed Development has reduced, and pre-application advice has been provided by Chichester District Council in September 2022 (**Appendix 4.1**).

4.1.3 Further detail can be found in the **Planning Statement**.

2.2 Stakeholder liaison

4.2.1 Consultation with statutory consultees and other organisations has been undertaken throughout the EIA process to obtain environmental data, to discuss and agree the scope of individual environmental assessments and the adopted methods of assessment, and to develop appropriate environmental mitigation measures.

4.2.2 EIA topic-specific consultation is summarised in each chapter of this ES where relevant.

Public information events

4.2.3 Non-statutory consultation was held on the 16th and 17th June 2023 to inform the public and other interested parties of project alternatives and the emerging findings of the EIA, and to elicit comment and feedback on the Proposed Development.

4.2.4 As a result of the response received by consultees, the following changes have been made to the Proposed Development:

The 'Falconry Experience' and 'Events Space' previously included within the amenity area at the south of the Site have been removed in favour of a dogs 'off the lead' zone.

The 'Medmerry Riding School' has been removed in favour of a picnic space/meadow. Accommodation has been re-shuffled to pull further away from the PRoW following the riding school's removal.

Bicycle storage to amenity areas has been included throughout the masterplan.

- 4.2.5 Overall, the Proposed Development had positive feedback with the majority of consultees agreeing that the Site needs to be redeveloped and refurbished and stating support for the application (**Appendix 4.2**).

Informal discussions

- 4.2.6 Discussion was undertaken with affected parties and landowners during the development of the Proposed Development and the EIA process.
- 4.2.7 EIA topic-specific consultation is summarised in each chapter of this ES where relevant.

2 ENVIRONMENTAL ASSESSMENT PROCESS

5.1 Scoping

- 5.1.1 Due to the previous submission of a planning application for the Site with an accompanying ES, the Applicant decided to forego requesting an EIA Scoping Opinion from Chichester District Council. They did however request Pre-Application Advice which was provided by Chichester District Council in September 2022 (**Appendix 4.1**).
- 5.1.2 The Pre-Application Advice sets out Chichester District Council's opinion on the issues that resulted in rejection of the previous application and their advice on what future applications would need to consider. In addition, the rejection letter provided by Chichester District Council for the previous application was used to inform the EIA process on this new application.
- 5.1.3 Explanations of the methods of assessment adopted and the issues identified are provided in **Sections 6 to 17** of this ES, which detail the findings in relation to the various environmental aspects considered in the EIA.

3.2 EIA delivery

- 5.2.1 Insofar as practical, a common approach has been adopted in the undertaking and reporting of individual environmental assessments.

EIA guidance

- 5.2.2 The EIA has been undertaken with regard to the following published best-practice guidance:

Guidelines for Environmental Impact Assessment, published by IEMA (2004)
UK Government Planning Practice Guidance: *Environmental Impact Assessment*.
Available on-line¹ (last update 13 May 2020)

Establishment of baseline environment

- 5.2.3 The EIA of scoped-in environmental aspects commenced with the identification and review of information relating to known, or the likely presence of, environmental receptors and resources within a defined study area in order to determine their relative value, importance and/or sensitivity towards change.
- 5.2.4 Environmental resources were defined as those environmental aspects that support and are essential to natural or human systems. These include areas or elements of population, ecosystems, watercourses, air and climatic factors, landscape, and material assets.

¹ <https://www.gov.uk/guidance/environmental-impact-assessment#contents>

- 5.2.5 Environmental receptors were defined as people (i.e., occupiers of dwellings and users of recreational areas, places of employment and community facilities) and elements within the environment (e.g., flora and fauna) that rely on environmental resources.
- 5.2.6 Desk-based data sources comprised, where available and appropriate, consultation responses; published literature; databases, records and schedules relating to environmental designations; national, regional and local policy documentation; historic and current mapping; aerial photography; and data gathered from previous environmental studies.
- 5.2.7 Site surveys were undertaken to verify and consolidate information gathered during the desk-based review, and to evaluate the relationships between specific environmental interests and their wider environmental value.
- 5.2.8 Study area extents vary in accordance with the environmental aspect being considered. For some topics, a study area has been defined as being relatively localised to the Proposed Development, while for others it has extended outward to capture the surrounding road network, distant communities, and environmentally sensitive areas. The definition of each study area has been informed by a review of the relationship between the Proposed Development and the receiving environment, the outcomes of scoping, and reference to thresholds stipulated in topic-specific EIA guidance.

Impact prediction and assessment

- 5.2.9 Impacts comprise identifiable changes to the baseline environment. These can be either beneficial (e.g., introduction of planting to screen visually detracting elements) or adverse (e.g., loss of an attractive environmental component), and can take the following forms:
- direct [primary] (e.g., loss of habitat to accommodate the Proposed Development)
 - indirect [secondary] (e.g., pollution downstream arising from silt deposition during earthworks, or as a result of development required to support a scheme, e.g., nearby road improvements)
 - transboundary
 - short-term/temporary (e.g., dust generated during construction)
 - medium-term (e.g., cutting back of planting which is subsequently allowed to regenerate)
 - long-term/permanent (e.g., improvement in air quality)
 - positive
 - negative
 - cumulative (e.g., incremental changes caused by other past, present or reasonably foreseeable actions together with those associated with the Proposed Development, or where a receptor or resource is subject to a combination of individual impacts such as air pollution, noise and visual impact associated with the Proposed Development in isolation).
- 5.2.10 Impact assessments have been both quantitative and qualitative in nature, and based on comparisons between the environmental conditions immediately prior to the assumed construction of the Proposed Development and the predicted environmental conditions resulting from its implementation. Each technical chapter of the ES describes the forecasting methods used in the EIA.

- 5.2.11 Impacts have been defined in accordance with accepted terminology and standardised methodologies to predict the magnitude of impact (or change) resulting from the Proposed Development.
- 5.2.12 Assessments have been undertaken for the construction phase and the operational phase.

Environmental effects

- 5.2.13 Effects are defined as the consequence of impacts. They are formulated as a function of the receptor/resource value, importance and/or sensitivity, and the predicted magnitude of impact.
- 5.2.14 Professional judgement, defined thresholds, established criteria and standards have been used to report the environmental effects of impacts, which can be referred to as either being prior to, or following establishment of, additional environmental mitigation.

Environmental mitigation

- 5.2.15 Environmental mitigation measures have been developed to address potentially significant adverse environmental effects.
- 5.2.16 Mitigation can take the form of agreed measures incorporated into the evolving design of the Proposed Development (e.g., environmental treatments), standard measures (e.g., best practice construction management to control dust emissions) that are enforceable through planning conditions, and measures proposed in outline (e.g., off-site planting to provide visual screening to nearby residential dwellings) that may require further development and formal agreement to ensure their implementation.
- 5.2.17 The principles adopted in the identification and development of environmental mitigation for the Proposed Development are avoidance (wherever possible), reduction (where avoidance cannot be achieved) and compensation (where reduction is unachievable or would not achieve the required level of mitigation).

Significance of environmental effects

- 5.2.18 The significance of an environmental effect has been established by way of reference to the value, importance and/or sensitivity of affected resources; the number and sensitivity of affected receptors; impact magnitude, duration, frequency and extent of effect; and the reversibility of effect (or the extent to which the adverse effects can be effectively reduced).
- 5.2.19 Further detail of the significance of environmental effects are provided in Sections 6 to 15 of this ES.

3.2 Assessment reporting

- 5.3.1 Each individual assessment follows a comparable format to ensure consistency in reporting the existing environmental conditions and the potential effects on them arising from implementation of the Proposed Development.

Introduction introduces the assessment topic under consideration.

Relevant Legislation, Planning Policy and Guidance outlines statutes, guidance, policies and plans relevant to the environmental interests forming the focus of the assessment.

Consultation summarises the stakeholder engagement including dialogue with statutory consultees and with other stakeholders and where relevant the influence on the EIA.

Approach identifies and describes the scope of the assessment, the methods and criteria adopted, relevant guidance followed, and any assessment limitations, assumptions or difficulties encountered and the design basis.

Existing Environment describes the features and characteristics associated with the baseline environment.

Predicted Effects reports the predicted impacts on the baseline environment during the construction, operational and decommissioning phases.

Additional Mitigation details all measures that have been incorporated into the design of the project and/or agreed as deliverable, including proposed monitoring where applicable.

Summary of Effects summarises the nature and significance of residual environmental effects that are predicted to remain, post-implementation of mitigation measures.

References any guidance, legislation referred and/or studies referred to are referenced in this section.

2.3 Difficulties and uncertainties

- 5.4.1 The EIA has been undertaken, and the resulting ES has been compiled, using the material made available to the EIA team by the Applicant and members of their project team, together with other readily available and publicly accessible material including existing literature and studies, as well as communication with Chichester District Council. To the best of our knowledge, the information used as a basis for the assessment is accurate and up to date. The Applicant is not aware of any uncertainties of the underlying information or of any constraints that would materially affect the evaluations.
- 5.4.2 Site visits, surveys and investigations have been carried out at or in the vicinity of the Site to provide more information for the assessments and to fill data gaps. This has resulted in a more complete and up to date set of baseline data to use as the basis for the EIA. Although the data have been collected over a period of time, the Applicant is of the opinion that the data is relevant and valid at the time of reporting. It should be noted that the surveys and investigations are conducted on a sampling basis and this places a limit on the certainty of the data set.
- 5.4.3 Assumptions adopted in the evaluation of impacts are reported in each of the relevant sections. However, these assumptions are often implicit and rely on expert judgement. Any assumptions and known technical deficiencies have been documented.
- 5.4.4 The EIA has been undertaken during the initial design phase of the Proposed Development and therefore some of the technical aspects of the construction and operation have yet to be determined. The EIA has taken a precautionary approach to adopt conservatism in the assumptions made and any scenarios assumed, so that a reasonable 'worst-case' scenario has been assessed. Therefore, inherent uncertainties are accounted for and subsequent modifications to the Proposed Development during



the detailed design phase are considered unlikely to fall outside of the assumed envelope of the assessment parameters.

6 BIODIVERSITY

3.1 Introduction

6.1.1 This chapter reports the approach and outcome of the assessment of likely significant effects arising from the proposed re-development of the Medmerry Holiday Park (described in **Chapter 3: Proposed Development**) upon ecology and biodiversity.

6.1.2 Current UK legislation and policy requires Proposed Developments to consider the aspects of the environment that are likely to be significantly affected by the Proposed Development, including on flora and fauna. Ecological features are also covered by a variety of legislation and policy documents (both international and domestic) and these have been reviewed in preparation of this chapter.

6.1.3 The key objectives of the assessment presented in this chapter are to:

Assess the current ecological baseline characteristics of the Site, including the determination of the importance of ecological features present.

Evaluate the potential significance of impacts from the Proposed Development on ecological features, including potential impacts during the construction and operational stages, and potential impacts in isolation (i.e., from the project alone) and in combination with other development proposals.

Identify mitigation and enhancement measures to minimise the potential for impacts from the Proposed Development on ecological features and deliver biodiversity enhancements where possible, to provide an overall net gain for biodiversity.

6.1.4 This chapter is intended to be read as part of the wider ES, as well as with the following appendices and their accompanying figures:

Technical Appendix 6.1: Medmerry Park Camp Site Ecology Survey Report

Technical Appendix 6.2: Medmerry Holiday Park Updated Ecological Survey Report

Technical Appendix 6.3: Medmerry Park Brent Goose Surveys: Winter coastal bird surveys 2018/19

Technical Appendix 6.4: Medmerry Park Brent Goose Surveys: Winter coastal bird surveys 2020/21

Technical Appendix 6.5: Medmerry Park Brent Goose Surveys: Winter coastal bird surveys 2021/22

Technical Appendix 6.6: Habitat Regulations Assessment

Technical Appendix 6.7: Biodiversity Net Gain (BNG) Assessment Report

Technical Appendix 6.8: Medmerry Holiday Park Breeding Bird Survey Report

Technical Appendix 6.9: Medmerry Holiday Park Bat Report

6.1.5 This chapter has been produced by RSK Biocensus.

3.2 Relevant legislation, planning policy and guidance

6.2.1 The ecological assessments presented within this chapter have been governed by national and international legislation along with national and local planning policies and best practice guidance documents. Such legislation, planning policy and guidance have been summarised in **Table 6.1**.

Table 6.1: Legislation, policies, and guidance relevant to biodiversity

Document	Summary
Legislation	
The Conservation of Habitats and Species Regulations 2017 (as amended)	Post-“Brexit”, the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives) were transposed into domestic legislation.
The Wildlife and Countryside Act (WCA) 1981 (as amended)	The WCA provides protection for species listed in Schedules 1 (birds), 5 (other animals) and 8 (plants) of the Act. It provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs) in England and Wales. It also sets out, in other schedules, important and invasive species which are legally protected or require management
The Environment Act 2021	The Environment Act sets out plans and targets for environmental welfare across a number of criteria, including biodiversity and species abundance. The Act will enforce Biodiversity Net Gain across England.
The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979)	The Bern Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species, with the aim to conserve these species and their habitats.
Marine and Coastal Access Act 2009	This Act designates and protects Marine Conservation Zones (MCZs), protecting these zones and their flora and fauna from access, disturbance, or damage.
Ramsar Convention 1971	Intergovernmental environmental treaty for the conservation of wetlands and international cooperation on their sustainable use.
The Natural Environment and Rural Communities (NERC) Act 2006	Section 40 requires that any public body or statutory undertaker in England must have regard to the purpose of conservation of biological diversity in a manner that is consistent with the exercise of their normal functions.
The Hedgerows Regulations 1997	The Hedgerows Regulations 1997 provide protection for ‘important’ hedgerows for which replanting is not a substitute. The regulations deem it an offence to remove an ‘important hedgerow’ without prior notification to the relevant local planning authority.
The Countryside and Rights of Way Act 2000	The Countryside and Rights of Way (CRoW) Act 2000 provides for public access on foot to certain land types, amends the law for public rights of way, increases protection for SSSIs, and strengthens wildlife enforcement legislation.
The Protection of Badgers Act 1992	This act protects badgers (<i>Meles meles</i>) and their setts from damage and disturbance. Derogation licences may be obtained from Natural England under Section 10 of the Act for the purpose of

Document	Summary
	development, to permit activities which would otherwise be unlawful.
The Invasive Alien Species (Enforcement and Permitting) Order 2019	This legislation lists species of concern which cannot be imported, kept, bred/grown, transported, sold, used, allowed to reproduce, or released into the environment. This Order replaces some elements relating to invasive species in the Wildlife and Countryside Act 1981 (as amended).
Planning Policy	
National Planning Policy Framework (NPPF)	The National Planning Policy Framework (NPPF) sets out the Government's planning policy in England at the national level. Section 15 (paragraphs 174-188) of the NPPF specifies the requirements for conserving and enhancing the natural environment through the planning and development process to minimise impacts on habitats and biodiversity.
Chichester Local Plan (CLP)	The CLP identifies policies to protect and safeguard local wildlife and designated conservation sites as well as mandating a minimum 10% 'biodiversity net gain'. Policy 50 and 51 of the CLP identifies policy and mitigation measures in relation to new residential developments and their recreational impacts on the Chichester and Langstone Harbour SPA and Ramsar, and the Pagham Harbour SPA and Ramsar. Additionally, Policy 40 (Sustainable Construction and Design) includes measures on how sites should protect and enhance the environment and make improvements to biodiversity and green infrastructure.
Biodiversity policy as set out in the England Biodiversity Strategy (Biodiversity 2020)	This identifies the approach to delivering targets for priority habitat and species that were formerly in the UK Biodiversity Action Plan (UKBAP).
Guidance	
Chartered Institute of Ecology and Environmental Management (CIEEM) Guidance for Ecological Impact Assessment in the UK and Ireland	This document was created with the intention of standardising approaches towards Environmental Impact Assessments, as well as promoting good practice across the industry.
BS 8683:2021 British Standard Institution: Process for designing and implementing Biodiversity Net Gain Specification	This new British Standard builds on and adds to the UK's good practice principles of BNG. This document translates those principles and actions into a specification, providing a consistent and structured process for designing and implementing BNG based on good practice.
BS 42020:2013 British Standard Institution: Biodiversity Code of Practice for Planning and Development	BS 42020 gives recommendations and guidance primarily for ensuring that actions and decisions taken at each stage of the planning process are informed by sufficient and appropriate ecological information.

Document	Summary
Waterbird Disturbance Mitigation Toolkit: Informing Estuarine Planning & Construction Projects, 2013.	Toolkit produced by the Institute of Estuarine & Coastal Studies (IECS) at the University of Hull. It is designed for use by works planners and site managers to initially assess whether impacts to migrating and wintering waterbirds are likely to arise from a proposed project, and to identify additional information requirements to meet consenting needs.

3.2 Consultation

- 6.3.1 Formal consultation on matters concerning ecology and biodiversity have been carried directly as part of the pre-application process with the Chichester District Council (CDC). Additionally, it should be noted that consultation and advice was given as part of the application process of the 2019 planning application (No: E/19/02840/FULEIA) but is not included within this chapter.
- 6.3.2 Further consultation has been undertaken with the local RSPB Medmerry Reserve to seek advice on ecological impacts and to explore biodiversity offsetting opportunities on a landscape scale. All consultation for the Site has been summarised in **Table 6.2** below.

Table 6.2: Summary of consultation undertaken concerning ecology and biodiversity.

Consultee	Key issues raised	Actions in response to consultee comments
CDC Environmental Strategy Officer (13 th September 2022)	Consultee comments for planning application 22/00285/PRELM. The environmental strategy officer raised issues relating to the HRA concerning the loss of the existing buffer between the holiday lets and the stilt pools, the loss of brent geese feeding habitat and the insufficient consideration of the recreational disturbance issues. Request for full survey data for protected species upon submission of the planning application including for bats, badgers, nesting birds, water voles, reptiles, invasive species, and hedgerows.	The masterplan for the Proposed Development has been evolved to incorporate issues presented by the CDC Environmental Strategy Officer as well as the issues presented in the E/19/02840/FULEIA application. Under the new revised masterplan, the buffer between the holiday lets and the stilt pools has been reinstated, the loss of potential brent geese feeding habitat has been minimised as much as possible with other areas being improved in the interest of this species and mitigation measures are to be put in place to minimise the potential for recreational disturbance. Additionally, all ecology survey data has been, or is being, updated to comply with Natural England's survey data validity requirements and to inform appropriate mitigation strategies wherever necessary.

Consultee	Key issues raised	Actions in response to consultee comments
Heather Richards (RSPB Medmerry Reserve) (20 th April 2023)	Issues raised on brent geese and protected species (including water voles) but there was overall agreement on the improvement of the scheme for biodiversity. Opportunities explored for BNG offsetting strategies within the RSPB Medmerry reserve.	Ongoing consultation with the RSPB Medmerry reserve to agree a landscape strategy for offsetting potential impacts on ecology and an off-site BNG offsetting strategy.

2.3 Approach

6.4.1 The methods adopted to inform and undertake the assessment presented in this ES chapter are described in this section; specifically, the methods for determining the ‘ecological baseline’ (i.e., the species populations present within and in close proximity to the Site prior to development), and the methods for identifying and assessing potential impacts from the Proposed Development. These methods were informed by the best practice guidance described in **Section 6.2**.

6.4.2 Full details of methods for the desk study and field surveys to inform the determination of the ecological baseline of the Site can be found in the relevant technical appendices described in **Appendices 6.1 - 6.5**.

The approach of this assessment has been established through an ongoing ecology scoping process. This section provides an update to the scope of the assessment and re-iterates the evidence base for scoping in or out elements following further iterative assessment.

6.4.3 The assessment approach prescribed by CIEEM’s EclA guidelines (CIEEM, 2018), including an explanation of the key terminology, is described below. In summary, the guidelines advocate the following approach:

Prediction of the activities associated with a Proposed Development that are likely to generate biophysical changes which may lead to significant effects (either positive or negative) upon ecological features and resources of importance.

Identification of the likely Zone of Influence (ZoI) of the Proposed Development.

Scoping to select the ecological features and resources (ecological receptors) that are likely to fall within the potential ZoI of the Proposed Development, to be considered within the assessment.

Evaluation of ecological features likely to be affected.

An assessment of the significance of effects on important ecological features.

Refinement of the Proposed Development to incorporate enhancements, and mitigation for significant negative effects of important ecological features.

An assessment of the significance of residual effects and the need for compensation.

Advice on the consequence of residual significant effects for decision-making.

Determining the Zone of Influence

6.4.4 The appraisal of ecological baseline information contained within this chapter is focused on the ‘study area’, which is based on the Site (**Figure 1.1**). The study area additionally

encompasses the Zol. The Zol is defined as ‘the area over which ecological features may be affected by biophysical changes as a result of the Proposed Development and associated activities’(CIEEM, 2018). The Zol may likely extend beyond the Site due to ecological and hydrological links. Additionally, it will encompass different areas in respect of each ecological feature depending on its location and sensitivity, and the spatial extent of the relevant biophysical change. These biophysical changes will also differ depending on the stage of the Proposed Development (construction and operation), their associated activities and subsequent impacts.

6.4.5 In order to predict the Zol, the spatial and temporal extent of biophysical changes likely to be generated by the different phases of the Proposed Development with the potential to impact ecological features were predicted and are shown in **Table 6.3**. However, the majority of the activities and resultant biophysical changes listed in **Table 6.3** are unlikely to have an effect beyond the Site and the immediate surrounding area. The exceptions to this include activities such as uncontrolled discharges of pollutants, changes to surface water drainage, and recreational disturbance, which might extend beyond the immediate surroundings as far as 2 km from the Site. In addition, due to Medmerry Holiday Park’s proximity to designated sites of nature conservation importance, the Zol is further extended, on a precautionary basis, to encompass any internationally designated sites within 10 km, and nationally designated sites within 2 km. This sufficiently covers the 5.6 km Zol for Chichester and Langstone Special Protection Area (SPA) and Ramsar site and the 3.5 km Zol for the Pagham Harbour SPA and Ramsar site related to assessing impacts on recreational disturbance as laid out within the Chichester Local Plan 2021-2029. Additionally, any non-linear Zol (such as hydrological catchment areas) have also been considered.

Table 6.3: Activities associated with the Proposed Development likely to generate ecological effects.

Activity	Potential effect
Construction phase	
Access and travel on/off site	1) Noise / lighting disturbance to vulnerable species. 2) Individual mortality / injury to species.
Assembly and storage of machines and materials	3) Loss and fragmentation of habitats. 4) Noise / lighting disturbance to vulnerable species. 5) Water-borne pollution including the risk of chemical and fuel spills.
Demolition	6) Possible loss of roost sites for bats. 7) Noise / lighting disturbance to vulnerable species. 8) Individual mortality / injury to species. 9) Dust and other pollutants.
Ground excavation and structural works	10) Loss and fragmentation of habitats. 11) Noise / lighting disturbance to vulnerable species. 12) Individual mortality/injury to species.
Lighting of work area	13) Disturbance to vulnerable species.
Drainage	14) Change of groundwater flows. 15) Change of water quality in groundwater. 16) Change in habitats fed by groundwater flows.

Activity	Potential effect
Operational phase	
Drainage	17) Change of flows and water quality in watercourses and the ground. 18) Changes in habitats fed by watercourses and groundwater. 19) Changes in fauna dependent on affected habitats.
Occupation of holiday lets: urban effects	20) Noise / lighting disturbance to vulnerable species. 21) Loss and fragmentation of habitats by trampling. 22) Potential for increased traffic resulting in increased levels of air pollution. 23) Potential for increased traffic resulting in increased levels of individual mortality/injury to species.
Recreation	23) Loss and fragmentation of habitats by trampling. 24) Noise / visual disturbance to vulnerable species by people and dogs. 25) Nutrient enrichment through dog fouling.

Method of baseline data collation

Desk study

- 6.4.6 An updated desktop study was undertaken by RSK Biocensus in March 2023 (**Appendix 6.2**) for reference materials relating to the ecology of the Site. A list of sources is given in **Table 6.4**.

Table 6.4: Data sources used in the background data search.

Information Obtained	Available From
Protected and noteworthy species-records	Sussex Biodiversity Record Centre (SxBRC)
Designated site locations and citations	Natural England website
Designated site locations and citations	Joint Nature Conservation Committee (JNCC) website
Designated site locations and citations	Sussex Biodiversity Record Centre
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) website
Ornithological data	Sussex Ornithological Society: Sussex Bird Report
Areas / Habitats of Strategic Significance	Sussex Wildlife Trust Biodiversity and planning in Sussex https://dnu7gk7p9afoo.cloudfront.net/Files/swt-planning-guidance-2014.pdf
Areas / Habitats of Strategic Significance	National Habitat Networks https://www.data.gov.uk/dataset/0ef2ed26-2f04-4e0f-9493-ffbdbfaeb159/habitat-networks-england

Information Obtained	Available From
Areas / Habitats of Strategic Significance	National Priority Focus Areas https://www.data.gov.uk/dataset/c20a40c5-c975-43e1-9abd-d1257aa58432/natural-england-national-priority-focus-areas
Areas / Habitats of Strategic Significance	Nature Improvement Areas https://www.data.gov.uk/dataset/a19c95e3-9657-457d-825e-3d2f3993b653/nature-improvement-areas

6.4.7 A search was made for information relating to statutory (often internationally and nationally important sites for ecology) and non-statutory designated sites (often important in a local context) within 2 km of the Site. The search was extended to 10 km for internationally designated sites. A search was also made for priority habitats and records of protected and/or noteworthy species within 1 km of the Site. Species in the search parameters were:

European protected species (listed on Schedule 2 and 5 of The Conservation of Habitats and Species Regulations 2017 (as amended)).

Nationally protected species under Schedule 1, 5, and 8 of The Wildlife and Countryside Act 1981 (as amended) and The Protection of Badgers Act 1992.

Species listed as critically endangered, endangered, or vulnerable based on the IUCN Red List Categories and Criteria 2001.

All species listed on the RSPB Birds of Conservation Concern 5 (Stanbury *et al.* 2021) as red or amber.

Nationally rare or nationally scarce species.

Notable invertebrates.

Species of principal importance listed under Schedule 41 of The Natural Environment and Rural Communities (NERC) Act (2006) or priority species listed under the Local Biodiversity Action Plan (LBAP) for West Sussex.

Field study

6.4.8 Baseline information for the Site has been collected following a suite of surveys spanning four years from 2019 – 2023. Based on best practice guidance, assessments from these surveys and their associated reports are appended to this chapter (**Appendices 6.1 – 6.5 and Appendices 6.8 – 6.9**). The ecological surveys conducted within the Application Boundaries and in the immediate surroundings are listed in **Table 6.5**.

Table 6.5: Field survey undertaken across the Site.

Ecological feature	Methodologies employed	Best practice guidance	Date completed
Badgers	Systematic surveys for badgers involve searching for setts, foraging signs, paths (runs), and latrines.	<p>Harris, S., Cresswell, P. & Jefferies, D. (1989) Surveying Badgers. Mammal Society, Occasional Publications 9, London.</p> <p>Harris, S., Jefferies, D., Cheeseman, C. & Booty, C. (1994) Problems with Badgers? 3rd Edition. RSPCA, Horsham.</p>	2019, 2023
Bats	<p>Preliminary Roost Assessment (PRA): The external aspects and spaces of the building structures on-site were surveyed for features and characteristics that may be used by roosting bats. No internal inspections were undertaken.</p>	<p>Collins, J. (2016), Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition. The Bat Conservation Trust, London.</p> <p>Bat Conservation Trust (2022), Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys. The Bat Conservation Trust, London.</p> <p>Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. [published at the end of the field season of 2023, but relevant to future work]</p>	2022
	<p>Activity surveys: Surveyors walked transects within the survey area recording bat activity. Each dusk transect survey commenced at sunset, lasted two hours and covered all suitable habitats within the site for foraging and/or commuting bats, with a focus on boundary features but also included open areas of the site.</p>		2023
	<p>Emergence surveys: Surveyors recorded all bat activity while positioned in locations with a good view of likely roost-access points that had been identified during preliminary roost assessment. Emergence surveys commenced 15 minutes prior to sunset and finished 1.5 hours after sunset.</p>		
	<p>Ground Level Tree Assessment (GLTA): Inspection of tree from ground level to identify any potential roosting features (PRFs), which bats could use for roosting and for any evidence of bats such as scratch marks, oil stains, and droppings around or below the PRFs.</p>		
	<p>Static detector surveys: Static detectors were set up in thirteen locations to continuously record from 30 minutes before</p>		

Ecological feature	Methodologies employed	Best practice guidance	Date completed
	sunset until 30 minutes after sunrise between April – October 2023 for at least five consecutive nights every month.		
Breeding birds	Suitably experienced RSK Biocensus ornithologists walked a pre-determined transect route throughout the site, recording all bird species encountered (either visually or through their vocalisations) onto GIS Field Maps software using standard British Trust for Ornithology (BTO) species codes and behaviour notation (Marchant, 1983).	Gilbert, G., Gibbons, D. W., & Evans, J. (1998) Bird Monitoring Methods: a manual of techniques for key UK species. RSPB. Marchant, J.H. (1983) BTO Common Birds Census instructions. BTO, Tring. Bird Survey and Assessment Steering Group. (2022) Bird Survey Guidelines for assessing ecological impacts, v.0.1.6.	2023
Great crested newts (GCN) (<i>Triturus cristatus</i>)	Presence/absence and population surveys: five suitable waterbodies on-site underwent standard presence/absence and population surveys using bottle trapping, egg searching and torching to search for great crested newts.	Froglife (2001) Great Crested Newt Conservation Handbook. Natural England. Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000), Evaluating the suitability of habitat for the Great Crested Newt (<i>Triturus cristatus</i>). Herpetological Journal 10 (4): 143-155.	2022
	Habitat Suitability Index (HSI) assessment and environmental DNA analysis (eDNA): HSI assessments and eDNA analysis were undertaken on all waterbodies and watercourses across the Application Boundaries and within 500 m (where access was possible). This identifies the suitability of those water features for GCN and the eDNA will show their presence of likely absence.		2023
Habitats and botany	The field survey was based on the UK Habitats (UKHab) survey approach (Version 1.1) for input into ecological impact assessments. This methodology assesses the condition of habitats to input into Biodiversity Net Gain (BNG) assessments.	Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020), UK Habitat Classification – Habitat Definitions V1.1 at http://ukhab.org	2023
Non-breeding birds	Surveys were based upon the Wetland Bird Survey methodology. All waterbirds observed at each vantage point were counted and recorded in order to obtain peak counts for all species, and to locate any significant feeding and/or	Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. & Austin, G.E. (2020) Waterbirds in the UK	2018/19, 2020/21, 2021/22.

Ecological feature	Methodologies employed	Best practice guidance	Date completed
	roosting assemblages. Particular survey effort was focused on the population of brent geese within the survey area and immediate surroundings.	2018/19: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford. Gilbert, G., Gibbons, D. W., & Evans, J. (1998) Bird Monitoring Methods: a manual of techniques for key UK species. RSPB.	
Reptiles	The standard method for establishing reptile presence is to survey using artificial refuges (roofing felt tiles and squares of corrugated metal, c.0.5 m ²), which were placed in suitable reptile habitat across the Site.	Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.	2022
Water voles	An initial habitat appraisal was undertaken to evaluate the habitat quality for water vole. Further survey for evidence of water vole activity followed standard methods adapted from Strachan (1998) and Strachan and Moorhouse (2011). All of the suitable habitats were systematically and thoroughly searched for signs of the species.	Dean, M., Strachan, R., God, D. & Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London. Morris, P. A., Morris, M. J., MacPherson, D., Jefferies, D. J., Strachan, R. & Woodroffe, G. L. (1998) Estimating numbers of water vole <i>Arvicola terrestris</i> : a correction to the published method. <i>Journal of Zoology</i> , 246, 61-62. Strachan, R. (1998) Water Vole Conservation Handbook. English Nature, Peterborough. Strachan, R. & Moorhouse, T. (2011) Water Vole Conservation Handbook 3rd Edition. Wildlife Conservation Research Unit, Tubney.	2023

Valuing features

6.4.9 The importance of the ecological features recorded within the Site were assessed at a geographical scaled based on CIEEM’s EclA guidance (CIEEM, 2018). The guidelines provide a basis for determination of whether any particular site is of importance on the following scales:

- International importance
- National importance
- County
- District
- Local importance.

6.4.10 The terminology used within this ES chapter will deviate in terminology from the recommended guidance for consistency across the chapters. For example, a feature valued at the international and national level under the CIEEM guidelines would equate to a ‘high’ value feature within this chapter. Details of definitions for feature value and sensitivity with regard to CIEEM guidance are shown in **Table 6.6**.

Table 6.6: Feature value and sensitivity

Value	Description
High (International/National)	<p>An internationally or nationally designated site or candidate/proposed site including Special Protection Area (SPA), potential SPA, Special Area of Conservation (SAC), candidate SAC and/or Ramsar site, Site of Specific Scientific Interest (SSSI) or National Nature Reserve (NNR).</p> <p>A sustainable area of a habitat listed in Annex I of the Habitats Directive or UK BAP, or smaller areas of such habitat which are essential to maintain the viability of the larger whole.</p> <p>Sustainable population of an internationally and/or nationally important species or site supporting such a species (or supplying a critical element of their habitat requirement) i.e.:</p> <ul style="list-style-type: none"> ○ IUCN Red List species that is listed as critically endangered, endangered and/or vulnerable. ○ Species listed in Annex IV of the Habitats Directive. ○ Sites that support 1% or more of a biogeographic or national population of a species. ○ Species listed on Schedule 5 and 8 of the WCA (1981). ○ UK Red Data Book species. ○ Other species listed as occurring in 15 or fewer 10 km squares in the UK.

Value	Description
Medium (County/District)	<p>Sites/populations which exceed the County or District level designations but fall short of SSSI selection guidelines, including the following:</p> <ul style="list-style-type: none"> ○ Sustainable areas of key habitat identified in the Regional BAP or smaller areas of such habitat, which are essential to maintain the viability of the whole. ○ Population of a species listed as being nationally scarce which occurs in 16-100 10 km squares in the UK. ○ Population of a species listed in UK BAP or relevant Natural Area on account of its regional rarity or localisation. ○ Or sites supporting 1% or more of a regional population.
Low (Local)	<p>Very low importance and rarity, local scale:</p> <ul style="list-style-type: none"> ○ Areas of habitat considered to appreciably enrich the habitat resource within the ecological study area itself. ○ A small population of a species of conservation concern i.e., listed in the Local BAP.
Negligible	<p>Features assessed of being of lower than Local importance.</p>

6.4.11 The methodology for assessment followed a precautionary approach with regard to the identification of ecological features which will be carried forward for impact assessment. Therefore, any feature which is assessed as being of Low (Local) importance or higher will be brought forward for assessment of effects from the Proposed Development, unless it can be proven without any reasonable scientific doubt that impacts would be negligible.

6.4.12 Features assessed as being of less than Low (Local) importance were considered to be of Negligible importance. Other features of Negligible importance may also be carried forward, particularly where there may be legislative requirements pertaining to these features that are not necessarily associated with their ecological importance (for example, invasive non-native species).

6.4.13 Assessment of feature value will also consider the conservation status of the feature. The conservation status of a species, or species assemblage, is defined as “*the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest*”. Conservation status is considered to be favourable under the following circumstances:

Population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats.

The natural range of the species is not being reduced, nor is it likely to be reduced for the foreseeable future.

There is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis.

Determination of significance

6.4.14 The assessment of potential effects from the Proposed Development on ecological features has taken consideration of the following factors:

The value of the feature: i.e., the conservation value and likelihood of the feature being significantly affected by a potential effect source, considered on a scale of negligible, low, medium, or high.

The nature of the effect: assessing the effect’s influence and extent of the baseline conditions, effects can be defined as: adverse, beneficial, short-term, medium-term, long-term, temporary, frequent, direct, indirect, cumulative, and residual.

The magnitude of change: i.e., the extent of change in the baseline conditions of the feature as a result of the project, considered on a scale of negligible, low, medium, or large.

The significance of effect: i.e., the size of the effect’s impact to the baseline conditions as a result of the project, considered on a scale of negligible, low, moderate, or high.

6.4.15 Following the classification of the identified features and effects based on the factors described above, a clear statement is made as to whether the effect is “significant” or “not significant”. In accordance with CIEEM (2018) guidelines, the significance of an effect on an ecological feature has been determined based on analysis of the factors that characterise the effect.

6.4.16 A significant effect is defined as “an effect that either supports or undermines biodiversity conservation objectives for the ecological feature or for biodiversity in general”. The assessment considers whether an effect has the potential to affect the conservation status of a species or species assemblage.

Magnitude of impact (change)

6.4.17 The magnitude of impact from the Proposed Development’s effects refers to the size, amount, intensity, and volume. Such impacts have been defined into categories as detailed in **Table 6.7**.

Table 6.7: Definition of impact magnitude

Magnitude	Summary
Large	<p>Any impact which significantly undermines or improves the favourable conservation status of the qualifying interests of any internationally or nationally designated conservation site.</p> <p>An impact which obliterates sensitive characteristics.</p> <p>Total/near loss or change of feature extents or populations.</p> <p>Guide: >80% of feature extent or population change.</p>
Medium	<p>An impact which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment.</p> <p>Major change in the status or productivity of a feature extent or population.</p> <p>Guide: 21-80% of feature extent or population change.</p>

Magnitude	Summary
Small	<p>An impact that alters the character of the environment or causes noticeable changes without affecting its sensitivities or is consistent with existing and emerging trends.</p> <p>Partial but discernible change in the status or productivity of a feature extent or population.</p> <p>Guide: 1-20% of feature extent or population change.</p>
Negligible	<p>An impact that can cause noticeable changes in the character of the environment without significant consequences.</p> <p>No or very slight change in the status or productivity of a feature extent or population. Change barely discernible, approximating to a 'no-change' situation.</p> <p>Guide: <1% of feature extent or population change.</p>

Nature of effect

- 6.4.18 The assessment process also includes a description regarding the nature of the effect. Nature of effect is defined as “*The influence an effect has on a feature and across which temporal scale*” (CIEEM, 2019). This term provides additional information about how features would be influenced by an impact from an effect within assessment descriptors. Details of assessment descriptors are included in **Table 6.8**.

Table 6.8: Assessment descriptors.

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease feature value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase feature value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g., during the construction phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases, a lower level of impact may occur with sufficient frequency to reduce the ability of a feature to recover effectively.
Direct	An effect directly attributable to a defined action of the Proposed Development such as the physical loss of a habitat or the immediate mortality of an individual of a particular species.
Indirect	An effect attributable to an action which affects ecological resources through effects on an intermediary ecosystem, process or feature, e.g.

Term	Nature of effect descriptors
	a loss of food resources for an ornithological species downstream of a site due to fish-kill by polluted runoff entering a river.
Cumulative	Collective effects of changes that may be insignificant individually but in combination, often over time, have the potential to be significant (especially with other projects in the vicinity).
Residual	After assessing the impacts of the proposal all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised residual effects are identified.

Value of effects

- 6.4.19 The assessment aims to address significant adverse environmental effects using the time period in which it will be impacting features throughout the Proposed Development to address the effect by mitigation measures. Significance defined as **major** and where justified, **moderate** effects, which are likely to be factors in deciding whether a development is acceptable, are significant effects. Effects classified as below **moderate** are considered to be **not significant**. The nature of the effects will not determine the significance of the effects but will make a clear statement regarding the influence the effect will have. Therefore, significance and magnitude of effects will be used to determine the value of an effect. Details regarding the classification of effects relative to the significance and magnitude are included in **Table 6.9** below.

Table 6.9: Effect matrix.

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Mitigation hierarchy

- 6.4.20 In accordance with CIEEM's guidelines (2018), a sequential process has been adopted to avoid, mitigate, and compensate negative ecological impacts and effects, otherwise known as the 'mitigation hierarchy'. As part of the Proposed Development, avoidance, mitigation, compensation, and enhancement measures have been identified as part of the impact assessment process. These principles underpin any EclA and are adapted from CIEEM as follows:

Avoidance: seek options that avoid harm to ecological features (for example, by locating on an alternative site).

Mitigation: negative effects should be avoided or minimised through mitigation measures, either through the design of the Proposed Development or subsequent measures that can be guaranteed – for example, through a condition of planning obligation.

Offsetting: where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.

Enhancement: seek to provide benefits for biodiversity over and above requirements for avoidance, mitigation, or offsetting.

- 6.4.21 Wherever possible, strategies of avoidance have been implemented to minimise any impacts on ecological features. If avoidance is not possible, mitigation and offsetting measures will be required, as described in **Section 6.8** of this chapter.

Difficulties and uncertainties

- 6.4.22 The information provided in this chapter of the ES accurately and comprehensively describe the baseline ecological information and provide a prediction of the likely ecological effects of the project, along with prescriptions for mitigation as necessary. The specialist studies, analysis, reporting, and assessment methodologies have all been undertaken in accordance with appropriate guidelines. No significant limitations in relation to the scope, scale, or context of the impact assessment have been identified.
- 6.4.23 It should be noted that some ecological surveys are being undertaken in 2023 to fully characterise and update the ecological baseline of the Site. With that in mind, the data from these surveys is not included within this submission of the ES but will be provided within an addendum once the surveys have been completed. The identification of the baseline conditions for some ecological features has therefore been partly based on assumption and/or historic data, using professional ecological knowledge and judgement and applying a precautionary principle throughout. This is not considered to be a significant constraint as conditions are unlikely to have changed substantially since previous surveys, and the conditions are considered to be known in sufficient detail to make accurate assessments. Additionally, a precautionary approach to the embedded mitigation and impact assessment has been undertaken to sufficiently avoid the majority of development related impacts.
- 6.4.24 Designated and protected sites are described and reviewed from existing information. This information, although accurate at the time of publishing, is often several years old and may not reflect the current status or condition of sites.
- 6.4.25 The habitat and walkover survey conducted by RSK Biocensus was completed in February 2023. Given the seasonality of biodiversity, some components may have been under-represented in the assessment (e.g., certain flora / reptile activity). However, the data gathered is considered sufficient for identifying the important ecological features that are relevant to the Proposed Development, particularly in view of the availability of previous survey information for the site.
- 6.4.26 Further limitations associated with the collection of the ecological baseline data are discussed within the relevant technical appendices (**Appendices 6.1 – 6.5** and **Appendices 6.8 – 6.9**).
- 6.4.27 It should be noted that ecological features can be transient, and the distributions of habitats and species may be subject to change. As such, in line with CIEEM guidance, the ecological survey data presented in this report are considered sufficiently valid for at least two years (CIEEM, 2019).

2.3 Existing environment

- 6.5.1 This section describes the baseline ecological conditions and identifies those ecological features considered to be ecologically important at a Local level and above and within the ZoI of the Proposed Development, whilst also being vulnerable to its effects during construction and/or operational phases.
- 6.5.2 Full details of the methods and results of the ecological surveys and assessments to inform determination of the ecological baseline of the Site are provided in **Appendices 6.1 - 6.5** and **Appendices 6.8 – 6.9**.

Designated sites

Internationally designated sites

- 6.5.3 There are no internationally designated sites present within the Site. The desk study did however identify seven internationally designated sites within 10 km. The sites comprise of three SPAs, two of which are also designated as Ramsar sites, and one Special Area of Conservation (SAC).
- 6.5.4 **Table 6.10** provides information on the internationally designated sites including a summary of the reasons for designation and their distances from the Site, the locations of which are shown in **Figure 6.1**.

Table 6.10: Internationally designated statutory sites within 10 km of the Application Boundary.

Site Name	Designation	Distance (m) and orientation
Medmerry Reserve (Compensatory Habitat)	Internationally protected site (under paragraph 118 of the NPPF)	Adjacent – E
<p>Qualifying Features / Reason for Designation</p> <p>The Medmerry Reserve is protected under the Conservation of Habitat and Species Regulations 2017 (as amended), and acts as compensation for predicted losses of SAC and SPA intertidal habitat elsewhere in the Solent over the next 20 years due to rising sea levels causing coastal squeeze effects. Compensatory habitat is given the same protection as European Sites by paragraph 118 of the National Planning Policy Framework (NPPF). Medmerry Reserve does not have any designated features yet but has been designed to create saltmarsh, mudflats, and coastal lagoons to replace the losses in the Solent and is being managed to support the assemblage of wintering and breeding birds for which the Solent sites are currently designated. Therefore, the qualifying features of the Solent internationally designated sites being compensated for will be listed under the Medmerry Reserve accordingly.</p>		
Solent and Dorset Coast	SPA	10 – S
<p>Qualifying Features / Reason for Designation</p> <p>The Solent and Dorset Coast SPA was classified in January 2020 to protect important foraging areas at sea used by the below designated species that are qualifying features of adjacent SPAs. The site is located along the coasts of Dorset, Hampshire, Isle of Wight, and West Sussex, and adjacent areas offshore. It overlaps, abuts, and is close to many areas designated for nature conservation importance. The site qualifies under Article 4 of the Birds Directive (2009/147/EC) for regularly supporting more than 1% of the Great Britain breeding</p>		

Site Name	Designation	Distance (m) and orientation
<p>populations of three species listed in Annex I of the Birds Directive. Therefore, the site qualifies for SPA classification in accordance with the UK SPA selection guidelines (stage 1.1).</p> <p>Article 4.1 qualifying species (79/409/EEC)</p> <p>Breeding season: Sandwich tern (<i>Sterna sandvicensis</i>) (4.01% of GB breeding population); common tern (<i>Sterna hirundo</i>) (4.77% of GB breeding population); little tern (<i>Sternula albifrons</i>) (3.31% of GB breeding population).</p>		
Pagham Harbour	RAMSAR	2719 – E
<p>Qualifying Features / Reason for Designation</p> <p>The Pagham Harbour Ramsar site and SPA – see below) is located between Bognor Regis and Chichester. The estuarine basin is made up of an extensive central area of saltmarsh and intertidal mud-flats, surrounded by lagoons, shingle, open water, reed swamp, and wet permanent grassland. The mud-flats are rich in invertebrates and algae and provide important feeding areas for the many bird species that use the site.</p> <p>Criterion 6 species/populations occurring at levels of international importance.</p> <p>Species with peak counts in winter: dark-bellied brent goose (<i>Branta bernicla bernicla</i>).</p> <p>Possible future designated under Criterion 6</p> <p>Species with peak counts in winter: black-tailed godwit (<i>Limosa limosa islandica</i>).</p>		
Pagham Harbour	SPA	2719 – E
<p>Qualifying Features / Reason for Designation</p> <p>Article 4.1 qualifying species (79/409/EEC)</p> <p>Breeding season: little tern, common tern</p> <p>Wintering season: ruff (<i>Philomachus pugnax</i>)</p> <p>Article 4.2 qualifying species (migratory) (79/409/EEC)</p> <p>Wintering season: dark-bellied brent goose</p>		
Solent Maritime	SAC	3762 – W
<p>Qualifying Features / Reason for Designation</p> <p>The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries and four bar-built estuaries. Sediment habitats within the estuaries include extensive estuarine flats, intertidal areas, mudflats, sandflats, and coastal lagoons. Annex I habitats that are primary reason for selection of site.</p> <p>1130 Estuaries</p> <p>1320 <i>Spartina</i> swards (<i>Spartinion maritimae</i>)</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection.</p> <p>1110 Sandbanks which are slightly covered by sea water all the time</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1150 Coastal lagoons *Priority feature</p> <p>1210 Annual vegetation of drift lines</p> <p>1220 Perennial vegetation of stony banks</p>		

Site Name	Designation	Distance (m) and orientation
1310 Salicornia and other annuals colonizing mud and sand 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") Annex II species present as a qualifying feature, but not a primary reason for selection. 1016 Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>)		
Chichester and Langstone Harbours	RAMSAR	4481 – NW
<p>Qualifying Features / Reason for Designation</p> <p>Chichester and Langstone Harbours covers two large, estuarine basins and forms one of the most sheltered intertidal areas on the South Coast of England. The area has a complex arrangement of tidal channels, which create areas of saltmarsh, grazing marsh, and mud-flats rich in invertebrates. The mix of different coastal habitats support important numbers of waterbirds. In summer, the estuary supports breeding terns, whilst in winter it supports important numbers of geese, ducks, and waders.</p> <p>Criterion 6 species/populations occurring at levels of international importance.</p> <p style="padding-left: 40px;">Species with peak counts in winter: dark-bellied brent goose</p> <p>Possible future designated under Criterion 6</p> <p style="padding-left: 40px;">Species with peak counts in winter: black-tailed godwit</p>		
Chichester and Langstone Harbours	SPA	4481 – NW
<p>Qualifying Features / Reason for Designation</p> <p>Article 4.1 qualifying species (79/409/EEC)</p> <p style="padding-left: 40px;">Breeding season: little tern, common tern, Sandwich tern.</p> <p>Article 4.2 qualifying species (migratory) (79/409/EEC)</p> <p style="padding-left: 40px;">Wintering season: northern pintail (<i>Anas acuta</i>), northern shoveler (<i>Spatula clypeata</i>), teal (<i>Anas crecca</i>), wigeon (<i>Anas tilize</i>), ruddy turnstone (<i>Arenaria interpres</i>), dark-bellied brent goose, sanderling (<i>Calidris alba</i>), dunlin (<i>Calidris alpina alpina</i>), ringed plover (<i>Charadrius hiaticula</i>), red-breasted merganser (<i>Mergus serrator</i>), curlew (<i>Numenius arquata</i>), grey plover (<i>Pluvialis squatarola</i>), shelduck (<i>Tadorna tadorna</i>) and redshank (<i>Tringa tilize</i>).</p> <p>Article 4.2 assemblage qualification (79/409/EEC)</p> <p style="padding-left: 40px;">Over winter, the area regularly supports 93,230 individual waterfowl (5-yr peak mean 1991/92 – 1995/96).</p>		

6.5.5 Due to the proximity and potential connectivity of the Site to sensitive internationally designated sites protected by the Conservation of Habitat and Species Regulations 2017 (as amended), a Habitat Regulations Assessment (HRA) has been deemed necessary in order to ensure significant impacts are not imposed from the Proposed Development that undermine the conservation objectives of such designated sites. Further detail and in-depth assessment of likely significant effects in regard to internationally designated sites is included in the HRA report for the Medmerry Holiday Park, assessed as a standalone project as well as in-combination with other development projects in the region (**Appendix 6.6**).

Nationally designated sites

- 6.5.6 There is one nationally designated site within the proposed enhancement area of the Site (i.e., within the blue line boundary) namely the Bracklesham Bay Site of Special Scientific Interest (SSSI). The other site included within the 2 km search parameters was the Selsey Bill and the Hounds Marine Conservation Zone (MCZ). Such designated sites are of national importance for nature conservation.
- 6.5.7 **Table 6.11** provides information on the nationally designated sites present within the Zol including a summary of the qualifying features and their distances from the Site. The locations of these sites are shown in **Figure 6.1**.

Table 6.11: Nationally designated statutory sites within 2 km of the Site.

Site Name	Designation	Distance (m) and orientation
Bracklesham Bay	SSSI	Within blue-line boundary
<p>Qualifying Features / Reason for Designation</p> <p>Site consists of coastline with rough unimproved grazing pastures that are important for bird populations. Coastal habitats include a small area of saltmarsh, shingle bank, the rifes (wide flowing ditches) and associated reed beds (as well as intertidal exposures of geological interest).</p> <p>Seasonal flooding of the pasture forms a community with species such as red fescue (<i>Festuca rubra</i>), sea couch (<i>Elymus pycnanthus</i>) and creeping bent (<i>Agrostis stolonifera</i>). On the banks of the rifes, rough grassland is dominated by sea couch, sheep's fescue (<i>Festuca ovina</i>), with local abundances of saltmarsh plants such as common saltmarsh grass (<i>Puccinellia maritima</i>), sea aster (<i>Aster tripolium</i>) and sea purslane (<i>Halimione portulacoides</i>). Breeding birds include redshank, ringed plover, snipe (<i>Gallinago gallinago</i>) and lapwing. Wintering birds include dark-bellied brent goose, ruff and golden plover. Many of these species are qualifying for the nearby SPAs.</p>		
Selsey Bill and the Hounds	MCZ	1125 – SE
<p>Qualifying Features / Reason for Designation</p> <p>This site supports examples of peat and clay exposures (e.g., the Mixon Hole) and rock outcrops of clay and limestone (The Hounds) supporting a rich diversity of habitats and species. The site would also protect short-snouted seahorse (<i>Hippocampus sp.</i>) found in seagrass and seaweeds.</p> <p>Species include crabs, bivalves, such as native oyster (<i>Ostrea edulis</i>), and fish species such as tompot blenny (<i>Parablennius gattorugine</i>). A variety of algae, anemones, sponges, hydroids, and ascidians are also supported.</p>		

Habitats

- 6.5.8 A habitat survey was conducted in February 2023, the methodology of which was based on the UK Habitats (UKHab) approach (Version 1.1; Butcher *et al.*, 2020), as extended for use in environmental impact assessments. The field survey was undertaken in line with best practice guidance set out by CIEEM (2017) and acted as an update to the previous Phase 1 Habitat survey conducted in 2019. The UKHab approach also provides data to be inputted into the Biodiversity Net Gain (BNG) metric, to produce a biodiversity baseline and post-development calculation for the Proposed Development. The footprint

of the Proposed Development is comprised predominantly of human modified habitat associated with amenity usage including amenity grassland, buildings, and hard standing. To a lesser extent the site provides habitat of potential ecological value including dense scrub, hedgerow, neutral grassland, ponds, and wet ditches. The habitats recorded during the updated habitat survey are shown in **Figure 6.2** and summarised below, in **Table 6.12**. Further details of the survey are provided in **Appendix 6.2**.

Table 6.12: Habitat types within the Site and their ecological valuation.

Broad habitat	UK Habitat type	Habitat codes	Extent	Ecological valuation
Grassland	Other neutral grassland	g3c	15.45 ha	Low
	Lolium – Cynosurus neutral grassland	g3c6	3.77 ha	Low
	<i>Holcus-juncus</i> neutral grassland	g3c8	0.15 ha	Low
	Modified grassland	g4	1.47 ha	Low
Woodland and tree lines	Other broadleaved woodland	w1g7	0.24 ha	Low
	Line of trees	w1g6	0.34 km	Low
Scrub	Blackthorn scrub	h3a	0.07 ha	Low
	Bramble scrub	h3d	1.27 ha	Low
	Gorse scrub	h3e	1.42 ha	Low
Hedgerows	Hedgerow Priority Habitat	h2a	0.07 km	Medium
	Other hedgerows	h2b	0.57 km	
Coastal habitat	Coastal vegetated shingle	s3b	0.03 ha	Medium
	Beach (littoral sediment)	t2h	0.11 ha	Negligible
Ditches and ponds	Canals (ditches)	r1e	3.98 km	Low
	Eutrophic standing waters	r1a	0.06 ha	Low
Urban	Built-up areas and gardens	u1	8.41 ha	Negligible
	Developed land, sealed surface	u1b	0.21 ha	Negligible
	Buildings	u1b5	0.03 ha	Negligible

Coastal floodplain grazing marsh

- 6.5.9 This habitat was identified from desk-based sources, on the priority habitat inventory included within the online Multi-Agency Geographic Information for the Countryside

(MAGIC)¹ mapping system, as being present extensively across the local area, including within Medmerry Holiday Park (**Figure 6.3**). However, the field-based habitat assessments that have been undertaken within the Site identified no areas of coastal floodplain grazing marsh. It was noted that the water table is likely too low to be able to achieve functioning coastal floodplain grazing marsh, with none of the fields being extensively flooded in shallow water less than 50 cm in accordance with the definition of this habitat under the UK Biodiversity Action Plan Priority Habitat Descriptions (JNCC, 2008). Additionally, in order to achieve coastal floodplain grazing marsh status, ditches need to be feeding high quality water through to areas of pasture and have to be assessed as being in good condition.

- 6.5.10 No ditches within the Site were assessed as being of good condition due to poor water quality, and in some areas due to dense scrub encroachment on the banks. Furthermore, the areas of grassland have not been subjected to management, which is appropriate to achieve functioning coastal floodplain grazing marsh, with swards of grass becoming too rank and tussocky with scrub encroachment increasing in its extent. Nevertheless, coastal floodplain grazing marsh has been identified in the surrounding area and is commonly associated with the Medmerry Reserve, and as such is brought forward for assessment within this chapter.

Lowland meadows

- 6.5.11 Lowland meadows were also identified on the priority habitat inventory within the wider Site (**Figure 6.3**), in a small area within the enhancement blue-line boundary. Similarly, to coastal floodplain grazing marsh, habitat assessments on-site have not identified this area as achieving criteria for categorisation as lowland meadow. The lack of appropriate management, poor botanical diversity, and scrub encroachment means that no areas within the Site have been identified as functional areas of lowland meadow in accordance with the definition of this habitat under the UK Biodiversity Action Plan Priority Habitat Descriptions (JNCC, 2008). Nevertheless, lowland meadows have been identified in the surrounding area and are associated with the Bracklesham Bay SSSI, and as such are brought forward for assessment within this chapter.

Maritime cliffs and slopes

- 6.5.12 A small area of maritime cliffs and slopes was additionally identified on the priority habitat inventory 50 m south of the Site on the coastline (**Figure 6.3**). The uncommon environmental conditions present in this habitat type give rise to uncommon plant and invertebrate assemblages, often with a combination of marine and terrestrial species. It is for this reason that the habitat is of priority conservation importance. Although unlikely to be impacted by the Proposed Development, this habitat type is being brought forward for assessment of impacts on a precautionary basis.

Grassland

- 6.5.13 The majority of the grassland within the Site is comprised of other neutral grassland (g3c). This habitat is widely distributed across the Site and is varied in structural diversity with

¹ Available at: <https://magic.defra.gov.uk/MagicMap.aspx>

low, dominant species diversity at the time of survey. Dominant species include Perennial Rye-grass (*Lolium perenne*), Cock's-foot (*Dactylis glomerata*), False Oat-grass (*Arrhenatherum elatius*), Red Fescue (*Festuca rubra*), Yorkshire-fog (*Holcus lanatus*), Common Couch (*Elytrigia repens*) and Common Reed (*Phragmites australis*). Structural diversity ranges from tall single-species stands of Common Reed, through tussocky fields with Cock's-foot and False Oat-grass to stock-fenced pastures with a low, level, mixed sward.

- 6.5.14 Grasslands located to the south and south west often form a complex mosaic with scrub, frequent bushes or sprawling plants of Gorse (*Ulex europaeus*), Dewberry (*Rubus caesius*), Blackthorn (*Prunus spinosa*) and Bramble (*Rubus fruticosus agg.*). Within these areas the topography is also more varied, with bunds, sea defences and ditches creating a rolling landscape. Some wetter areas with features such as ditch margins have scattered patches of Soft-rush (*Juncus effusus*).
- 6.5.15 To the north and west the grasslands are typically stock-fenced fields managed for grazing or as leys. There is evidence of recent grazing in places, although in some fields the margins are mown to allow easy access for dog-walkers. In such places the vegetation communities looked intermediate between g3c5 *Arrhenatherum elatius* grassland and g3c6 *Lolium – Cynosurus* grassland.
- 6.5.16 A small section of *Holcus-Juncus* neutral grassland (g3c8) was also found during the surveys surrounded by stands of gorse. The habitat is of moderate condition but recorded a notable species record of divided sedge (*Carex divisa*) listed by the Botanical Society of the British Isles as 'scarce' to the UK and is an IUCN Red List GB Vulnerable species largely restricted in distribution across the southern and eastern coastline of England.
- 6.5.17 Herbs are present in swards in frequencies below 25% and communities are comprised of fewer than nine species per square metre in all grasslands examined. Typical and ubiquitous herbaceous species included Cut-leaved Crane's-bill (*Geranium dissectum*), Dove's-foot Crane's-bill (*Geranium molle*), Creeping Thistle (*Cirsium arvense*), Broad-leaved Dock (*Rumex obtusifolius*) and Mugwort (*Artemisia vulgaris*). The current paucity of herbaceous species should not be taken as a reliable indicator of their ecological value due to the seasonality of growth of different plant species.
- 6.5.18 Within Medmerry Holiday Park are extensive areas of modified grassland (g4) used for amenity purposes. The uniform sward is dominated by Perennial Rye-grass, with patches of Early Meadow-grass (*Poa infirma*), Annual Meadow-grass (*Poa annua*), occasional Blinks (*Montia fontana*) and Common Mouse-ear (*Cerastium fontanum*) and areas of bare ground colonized by the Lesser Bird's-claw Beard-moss (*Streblotrichum convolutum*) and various small species of Bryum moss.
- 6.5.19 The grassland habitats throughout the Site provide suitable habitat for many protected species, including suitable foraging habitat for wintering dark-bellied brent geese. However, much of the grassland habitat is considered of moderate condition and presented with limited botanical species diversity. Additionally, its ubiquitous presence across Medmerry Holiday Park and in the surrounding area is significant in determining its value as no more than of **Low (Local) importance**, especially considering that higher quality grassland habitat is likely to be present in the neighbouring Medmerry Reserve.

Woodland and tree lines

- 6.5.20 A 0.25 ha area of secondary woodland on the northwest edge of the Site is largely comprised of old pollards of hybrid crack willow (*Salix x rubens forma basfordiana*) with extensive suckers of Grey Poplar (*Populus x canescens*). Woodland, whilst an important habitat for biodiversity, is limited in its extent across the Site and was assessed as being of moderate condition. Therefore, woodland habitat on the Site was deemed to be no more than **Low (Local) importance**.
- 6.5.21 A line of mature non-native Tamarisks (*Tamarix gallica*) forms a windbreak near the western edge of the Site. A line of planted trees including Monterrey Cypress (*Cupressus macrocarpa*), Holm Oak (*Quercus ilex*) and Cabbage-palm (*Cordyline australis*) form the northern boundary of the urban area of Medmerry Holiday Park. Limited extent of the habitat and its variable condition for wildlife meant that the line of tree habitat was considered to be of no more than **Low (Local) importance**.

Scrub

- 6.5.22 Almost all scrub is distributed to the east and the west of the Site adjacent to grassland and urban habitat. Scrub is formed in dense single species blocks of Gorse, Blackthorn, Dewberry, and Bramble. These typically lack either variety in age, structure or diversity of marginal species, grading suddenly into grassland. The widespread distribution of the habitat across the Site and ecological value of scrub habitat for wildlife means scrub habitat was considered of no more than **Low (Local) importance**, especially given how ubiquitous scrub habitat is in the neighbouring Medmerry Reserve.

Hedgerow

- 6.5.23 Field boundary features within and around the site were mostly unmanaged belts of scrub which comprised of the species listed above, with the inclusion of Grey Willow (*Salix cinerea*), Hybrid Willow (*Salix x reichardtii*) and planted Cherry Laurel (*Prunus laurocerasus*) in hedges surrounding the northernmost field, some Red-osier Dogwood (*Cornus sericea*) to the west of the holiday park and a few bushes of Broad-leaved Oleaster (*Eleagnus macrophylla*) to the east of the park. Hedges were generally in good condition with few gaps, or damage, although many lacked marginal strips of undisturbed vegetation. Despite the limited extent of suitable hedgerow, the recognition of good condition hedgerow means hedgerow habitat is considered of **Medium (County/District) importance**.

Coastal habitat

- 6.5.24 The Site includes (within its off-site blue-line boundary) an area of shingle bank on the southern margin which contains a community of plants including Sea Kale (*Crambe maritima*), Yellow Horned-poppy and Sea Beet (*Beta vulgaris*), while the landward base of the bank has a few plants of Bird's-foot Clover (*Trifolium ornithopodioides*). Coastal vegetated shingle is classified as priority habitat under UK BAP and listed as an Annex 1 habitat in the Habitats Directive (as 1220 perennial vegetation of stony banks) and as such is of material consideration to the Proposed Development. This area of priority habitat is part of a larger area present just south of the Site, stretching east along the

coast towards the Medmerry Reserve. The limited extent of this habitat within the Site suggests that Medmerry Holiday Park is not a significant area for this habitat. However, taking into account its Annex 1 Habitat status, the coastal vegetated shingle is considered to be of **Medium (County/District) importance**.

- 6.5.25 A small area of littoral sediment on the southern margin is mostly comprised of bare sand, with some patches of Sea Beet and Curled Dock (*Rumex crispus*). The limited species diversity and value of this habitat for wildlife therefore means this beach habitat is considered of **Negligible importance**.

Ditches and ponds

- 6.5.26 Ditches are common throughout the Site and were generally of poor diversity and quality owing to likely run-off and pollution from the surrounding area. A single, large rife traverses the southern portion of Medmerry Holiday Park. This has been dredged regularly, with vegetation and silt deposited on the landward side. Common Reed is dominant on the margins for long stretches of this ditch with few other plants noted. Narrower ditches elsewhere are unmanaged, and the vegetation diversity is consequently higher, with Sea Club-rush (*Bolboschoenus maritimus*) and Sea Rush (*Juncus maritimus*) found in brackish areas near the sea, and Bulrush (*Typha latifolia*), Lesser Bulrush (*Typha angustifolia*), Common Water-starwort (*Callitriche stagnalis*), Creeping Bent (*Agrostis stolonifera*) and Hairy Willowherb (*Epilobium hirsutum*) seen elsewhere. The distribution of this habitat, its ubiquity in the local area and connectivity to the Medmerry Reserve, and its importance for water vole, birds, and reptile species indicates a habitat of **Low (Local) importance** despite the generally low condition recorded.
- 6.5.27 A single pond was recorded during the survey to the west of the site surrounded by gorse scrub, grassland, and ditches. At the time of survey this pond was eutrophicated with duckweed (*Lemna minor*) growth but provided suitable reedbed habitat composed of common reed and bulrush (*Typha latifolia*) with soft and harsh rush (*Juncus inflexus*). Despite its poor condition, ponds are considered priority habitats under UK BAP and thus is of **Low (Local) importance**.

Urban

- 6.5.28 Urban habitat ranged across the Site including built-up areas and gardens (u1), developed land; sealed surface (u1b) and buildings (u1b5). Primarily parcellated in the centre of the survey area, urban habitat generally lies adjacent to other habitat types including grassland, scrub, hedgerow, ditches, and treelines. Much of the habitat identified has not changed since the previous baseline assessment from 2019. Urban habitat is generally of little conservation interest and can therefore be considered of **Negligible importance**.

Amphibians

- 6.5.29 The background data search returned records of great crested newt (GCN), common frog (*Rana temporaria*), common toad (*Bufo bufo*), palmate newt (*Lissotriton helveticus*), and smooth newt (*Lissotriton vulgaris*). Surveys for GCN conducted in 2022 identified a single adult in a ditch along the Public Right of Way (ProW) (Ditch 5 in **Appendix 6.1**) along

with GCN efts, marsh frogs and a large number of smooth newts. The presence of efts within that ditch indicate the breeding of GCN on the Site.

- 6.5.30 Habitat Suitability Index (HSI) assessments and environmental DNA (eDNA) analysis conducted in April 2023 identified a number of water features across the Site, and within 500 m, with good and excellent HSI scores (**Figure 6.4**). However, subsequent eDNA analysis of all water features (where access was permitted) recorded all negative results (**Figure 6.4**) (including in the ditch where GCN had previously been confirmed in 2022), inferring likely absence of GCN in 2023. The lack of a positive eDNA result in ponds within 500 m of Site (i.e., within the Medmerry Reserve) indicates the likely absence or very low and infrequent use of the area by this species.
- 6.5.31 Suitable habitat pertaining to GCN, and other amphibian species is present within the Site and further into the Medmerry Reserve, in the form of ditches, ponds, rough and rank grassland, scrub, hedgerows, and small pockets of woodland. The network of ditches is likely to be of use for amphibian species with respect to both breeding and commuting into the surrounding fields and the wider landscape, including the network of ditches across the Selsey peninsula. It is therefore likely that any population assemblage of amphibians within the Site are part of a wider population and, as such, a precautionary approach is taken in terms of assessing potential impacts, in order to safeguard their populations. Therefore, for the purpose of this assessment, the amphibian assemblage is considered to be of **Low (Local) importance**.

Badgers

- 6.5.32 No records of badger were recorded in the desk study data provided by Sussex Biological Record Centre (SxBRC). Evidence of a small amount of activity, including snuffles holes, latrines, and paths, was noted close to scrub habitat and woodland to the southwest and east of the Site in surveys conducted in 2019 and 2023. It was noted that grassland and hedgerow habitat within the Site provided suitable foraging and commuting habitat for badgers. While a low level of activity was recorded, no setts or evidence of sett building was noted in 2019 or 2023. The badger assemblage is therefore considered to be of **Negligible importance**.

Bats

- 6.5.33 Records provided by the SxBRC as part of the desk study identified common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), noctule (*Nyctalus noctule*), serotine (*Eptesicus serotinus*), a long-eared bat species (*Plecotus sp.*), Daubenton's bat (*Myotis daubentonii*) and an undetermined *Myotis* species within a 2 km search radius of the Proposed Development.
- 6.5.34 Linear features on the Site, including hedgerows, treelines, ditches/canals, and woodland edges provide suitable habitat for foraging and commuting bat species. As such, the Site was assessed as having moderate potential for commuting and foraging bat species according to best practice guidance (Collins, 2016), though much of the habitat was of lower value. Five species of bat were recorded in small numbers throughout the 2022 activity surveys: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule and a *Myotis* species. In order to supplement this data, bat static detector surveys were undertaken in 2023 (as described within **Appendix 6.9**) to identify any other important bat species and/or commuting and foraging routes that were not identified in the 2022 activity surveys. In general, little bat activity was recorded within the central

areas of the Site, with the periphery boundary features being of the most importance to bat species. At least nine species of bat were recorded during the 2023 static detector surveys comprising; *Myotis* species (likely one), noctule, Leisler's bat, serotine, common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, barbastelle and long-eared bat (species undetermined, but very likely to be brown long-eared bat). Common pipistrelle dominated the recordings overall (64.60%) and across all static locations. This was followed by soprano pipistrelle (26.51%), barbastelle (5.27%) and serotine (1.72%).

- 6.5.35 Static detector results identified the importance of the treelines, hedgerows, and ditches for a range of commuting and foraging bat species. Of particular significance was a barbastelle commuting and foraging route identified along the western boundary. Although all species of bats are legally protected, barbastelle is afforded additional protection as an Annex II bat species (under the Habitats Directive) for which Special Areas of Conservation (SAC) may be designated. It is one of our rarer species, though probably under-recorded. Barbastelle was the third most commonly recorded species; overall; however, it would seem unlikely that breeding colonies are present within a few km of the Site as registrations were limited during the maternity season of this species. This hypothesis is supported by the fact that barbastelles are a woodland specialist and no suitable roosting habitats for this species appear to be present within several km of the Site. In fact, a review of aerial imagery and ordnance survey mapping indicated that the closest suitable woodland which could provide barbastelle roosting opportunities may be over 10 km away. The timing of registrations also supports this hypothesis; barbastelle were generally recorded between 23:00 and 03:00, matching the expected pattern for a foraging site some distance away from the woodland(s) used for breeding. Breeding barbastelle are known from studies for the A27 Arundel Bypass (available online); about 20km away and within known flight distances for barbastelle. The western boundary commuting line followed the locations of Statics 8, 2, 12 and 11 (see **Appendix 6.9**) down to the (off-site) beach which may be being used as a foraging resource. Barbastelle studied in Norfolk are known to make use of coastal habitats (Harris, 2020).
- 6.5.36 Other areas of particular significance included the treeline to the north of the Site on the boundary of the road (Static Location 1). This area recorded the highest level of bat activity which could largely be attributed to common and soprano pipistrelle foraging activity. It is therefore likely that the habitats around Static Location 1 had a greater abundance and diversity of invertebrate prey thus providing better quality foraging habitat and explaining the increased number of registrations.
- 6.5.37 The buildings on the Site were assessed externally (Preliminary Roost Assessment (PRA)) for their potential to support roosting bats, as described within **Appendix 6.1**. Generally, the buildings were single-storey residential holiday lets with a combination of wood and brick/breeze block construction. Some had pitched roofs while others were flat. Of the 86 buildings, 18 were found to have high roosting potential, 23 had moderate potential, 18 had low potential with the remaining 27 being of negligible potential. In order to fully characterise the usage of the Site by roosting bats, roost characterisation surveys are being conducted in accordance with the phasing plan of the Proposed Development (**Figures 3.3 to 3.7**).
- 6.5.38 Buildings proposed for demolition in 2024, as part of the first phase of the Proposed Development, were subject to emergence surveys in 2023 using a proportionate approach to survey effort. Results showed no evidence of bats emerging or re-entering any of the buildings surveyed. In general, little activity was

recorded within the central areas of the Site where the buildings are situated, with only sporadic recordings of common and soprano pipistrelle, and overhead commuting Leisler's bat activity. Whilst no evidence of roosts have been found within the buildings surveyed it is possible that small numbers/individual bats could use buildings for day or transitional roosts on occasion. However, the buildings in Phase 1 are deemed unlikely to have hibernation potential due to their construction.

- 6.5.39 Emergence surveys on the remaining buildings will be undertaken in subsequent years according to the phasing plan, to provide accurate and up-to-date information for the purpose of refining any mitigation requirements and licensing.
- 6.5.40 Trees within the Site were thinly distributed and offered limited size and structure for roosting by bats. A GLTA conducted in 2023 (**Appendix 6.9**) assessed all trees within the Site for their potential to support roosting bats, the results of which identified no trees with high potential, six trees with moderate potential and 35 trees with low potential, according to guidance set out in Collins (2016). The majority of these trees were located along the periphery.
- 6.5.41 Based on the levels of activity recorded and the species assemblage present, much of the area surveyed appears to be of limited importance to bats, with the exceptions being the hedgerows, ditches and scrub. However, the locations of these habitats are limited to the western section of the site particularly the commuting route on the way to the beach which forms a network of ecologically linked habitats.
- 6.5.42 Taking into consideration the levels of bat activity recorded within the Site and across the peripheries as well as the importance of the barbastelle commuting and foraging route, the bat assemblage has been assessed as being of **Medium (County/District) importance**.

Birds

- 6.5.43 Data obtained from SxBRC in the desk study returned records of 67 bird species listed under Schedule 1 of the Wildlife and Countryside Act 1981 within 2 km of the Proposed Development. Records include species such as avocet (*Recurvirostra avosetta*), little ringed plover (*Chalardrius dubius*), Dartford warbler (*Curruca undata*), Mediterranean gull (*Ichthyaetus melanocephalus*), peregrine (*Falco peregrinus*), Temminck's stint (*Calidris temminckii*), whooper swan (*Cygnus cygnus*), bittern (*Botaurus stellaris*), black-tailed godwit (*Limosa limosa*), Cetti's warbler (*Cettia cetti*), garganey (*Spatula querquedula*), green sandpiper (*Tringa ochropus*) and black redstart (*Phoenicurus ochruros*). Furthermore, of the records collected, 57 species were on the red list and 94 on the amber list under the Bird of Conservation Concern 5 (Stanbury *et al.* 2021).
- 6.5.44 The natural and man-made environment of the Solent makes it one of the most important coastal zones in the UK and in Europe for birds. The diversity of habitats and species comprise an internationally important wildlife resource for birds, evident by the abundance of conservation sites with international designation (see **Section 6.5.4**). The Medmerry Reserve, adjacent to the Site to the east, comprises of compensatory habitat provided under the Conservation of Habitat and Species Regulations 2017 (as amended) to offset predicted losses of SAC and SPA intertidal habitat elsewhere in the Solent over the next 20 years, due to rising sea levels and coastal squeeze effects. The reserve has been designed to create mudflats, coastal lagoons, and saltmarshes, all of which are establishing and providing valuable habitat for breeding and non-breeding bird species.
- 6.5.45 The Solent Waders and Brent Goose Strategy (SWBGS) aims to identify the network of sites that are of regular use and are of functional importance to over-wintering waterbirds

across the Solent. Using a metric-based analysis technique, the strategy collates bird data from around the Solent area, classifying sites based on their usage. The Stilt Pools, directly adjacent to the Site, and within the Medmerry Reserve, are identified within the SWBGS as 'Low Use' (C136), meaning the site has a record of birds of qualifying interests (including dark-bellied brent geese) but in low numbers (Whitfield, 2017).

Non-breeding birds

6.5.46 The Non-Estuarine Waterbird Survey (NEWS), conducted by the British Trust for Ornithology (BTO), provides evidence of the numbers of birds using the non-estuarine coast. The most recent iteration comes from the third NEWS, undertaken in 2015/16 (Austin *et al.*, 2017), which shows relatively few numbers of bird species recorded along the foreshore fronting the Proposed Development. The following species were recorded along with their frequency:

Dark-bellied brent geese: between 1 and 200

Wigeon: between 21 and 40

Cormorant (*Phalacrocorax carbo*): between 1 and 4

Oystercatcher (*Haematopus ostralegus*): between 1 and 30

Great black-backed gull (*Larus marinus*): between 1 and 10

Herring gull (*Larus argentatus*): between 1 and 30.

6.5.47 Wetland Bird Survey (WeBS) data² from the BTO has been used to obtain annual peak counts of birds for the Medmerry Reserve, in particular for dark-bellied brent geese. The most numerous species recorded was teal with a 5-year moving average of 836 between 2017/18 – 2021/22. The current 5-year moving average for all birds on the reserve is 4,959, which represents a valuable location for wetland bird species with the most recent 5-year moving average for dark-bellied brent geese amounting to 245. This figure has omitted the 2020/21 season which recorded no brent geese, most likely due to little survey effort as a result of restrictions imposed by the Covid-19 pandemic. However, the moving 5-year average up to the season 2016/17 at the Medmerry Reserve for dark-bellied brent geese was 1,240 which shows considerably higher usage than in recent years. This decline could be due to natural fluctuations or a decrease in the availability of suitable foraging habitat in this locality. Nonetheless, suitable foraging and roosting grassland habitat was identified within the Site and within the Medmerry Reserve for dark-bellied brent geese and other wintering bird species, and thus was subjected to baseline coastal bird surveys.

6.5.48 Baseline coastal bird surveys of the surrounding fields of the Site, as well as the adjacent Stilt Pools (part of the adjacent Medmerry Reserve), were undertaken in three survey seasons in 2018/19, 2020/21, and 2021/22. Specific emphasis was placed on understanding field usage by dark-bellied brent geese in response to consultation with Natural England and the RSPB and in recognition of the importance of the Solent for this species. The surveys included vantage point surveys, geese dropping surveys, and the use of static wildlife surveillance cameras. Full details of the results and methodologies used are located within **Appendices 6.3 to 6.5**.

6.5.49 Over the course of the surveys (21 visits total), a total of 14 species were observed using

² Available at: <https://app.bto.org/webs-reporting/numbers.jsp?locid=LOC1045696>. Data released under the Open Government license contains Wetland Bird Survey (WeBS) data from waterbirds in the UK. WeBS is a partnership jointly funded by the BTO, RSPB, and JNCC, in association with WWT
Cove Communities

the fields across the Site, with an additional 21 species recorded within the Stilt Pools only. **Table 6.13** details a summary of the results.

Table 6.13: Peak counts for coastal bird surveys undertaken between 2018/19 – 2021/22*.

Species	Medmerry holiday park site		Stilt pools		0.5% of GB population**
	No. of visits observed	Peak count	No. of visits observed	Peak count	
Avocet			4	54	44
Black-headed gull	4	54	20	139	11000
Black-tailed godwit			2	5	195
Canada goose			14	427	N/A
Cattle egret	1	2			1
Common gull			4	3	3500
Coot	2		19	22	1000
Cormorant			18	8	310
Dark-bellied brent goose	1	53	6	132	490
Dunlin			6	26	1700
Egyptian goose			1	9	N/A
Gadwall			8	19	155
Great black-backed gull			9	4	380
Greenshank			4	1	4
Grey heron	6	1	11	1	700
Greylag goose			2	2	700
Herring gull	2	1	19	192	3650
Lapwing	1	33	15	55	3100
Lesser black-backed gull			3	7	600
Little egret	1	1	13	2	55
Little grebe			2	1	75
Little ringed plover			1	1	N/A
Mallard	1	2	20	41	3350
Mediterranean gull			4	22	20
Mew gull	1	5	3	7	N/A

Species	Medmerry holiday park site		Stilt pools		0.5% of GB population**
	No. of visits observed	Peak count	No. of visits observed	Peak count	
Moorhen	1	2	8	2	1500
Mute swan			7	2	250
Oystercatcher			5	2	1450
Ringed plover			5	16	210
Shelduck			8	4	235
Shoveler			13	18	95
Snipe	2	1	1	2	5000
Teal	1	11	18	78	2150
Tufted duck			16	11	650
Wigeon	1	2	18	91	2250

*Schedule 1 bird species on the Wildlife and Countryside Act shown in **bold**, red listed and amber listed species listed under the BoCC5 shown as red and amber respectively.**GB population data taken from (Frost *et al*, 2020).

- 6.5.50 Field E (from **Appendices 6.3 to 6.5**) had the largest usage by birds of the fields surrounding the Site in terms of both the abundance and diversity of species, although this remained relatively low. A total of 53 dark-bellied brent geese were recorded foraging on this field (in 2018/19), being the only occasion that they were recorded across all survey areas and survey seasons. Notwithstanding this however, approximately 100 birds were recorded foraging on Field E on one of the static cameras between the 6th to 26th January 2019. Of the fields surrounding the Site, Field E had the largest usage by dark-bellied brent geese, as well as by other species, but still did not show a regularly high number or diversity of species. It is likely that the higher number of dark-bellied brent geese in Field E, compared with other fields, is due to cattle grazing and the resultant shorter grass sward height.
- 6.5.51 The shallow water lagoons (with islands) of the Stilt Pools within the Medmerry Reserve comprise a freshwater flood accommodation area that was designed specifically with the intention of providing appropriate habitat for waterbirds. Survey results show the value of this habitat, as there is a higher number and diversity of birds utilising the Stilt Pools in comparison to the Site.
- 6.5.52 The ongoing monitoring of the bird populations within the Site has shown that it is not habitually used by a significant number of waterbirds and other wintering birds. The availability of a well-managed nature reserve and arable fields in the wider landscape represent more suitable habitat than those found within the Site. Following the 2018/19 surveys, a notable reduction of the species diversity using the Site was observed, whilst the diversity of species recorded on the Stilt Pools remained at similar levels across all seasons. This is potentially due to the grassland fields becoming less suitable due to their ongoing succession into longer rank grassland with scrub encroachment.
- 6.5.53 In accordance with the Conservation of Habitats and Species Regulations 2017 (as amended), areas ‘functionally linked’ to SPAs, SACs and Ramsar sites within the Zol

need to be identified and recognised for their importance to such internationally designated sites. Functionally Linked Land (FLL) has been defined as 'areas of land occurring within 20 km of an internationally designated site, that are regularly used by significant numbers of qualifying bird species' (Bowland Ecology, 2021)³. In this instance, a significant number of birds is a population that exceeds 0.5% of the national population of the species with regular usage being defined as the number of birds exceeding the significance threshold in two thirds of the survey seasons.

- 6.5.54 Whilst grassland within the Site shows some suitability for dark-bellied brent geese, they were only recorded in Field E within one season in numbers that do not exceed the national threshold. A peak count of approximately 100 dark-bellied brent geese does not account for 0.5% of the national population, and therefore is not considered significant in the context of the Conservation of Habitats and Species Regulations 2017 (as amended). In addition, the usage of the site recorded as 1 in 16 survey visits does not meet the criteria for regular use.
- 6.5.55 Based on the Whitfield SWBGS criteria (2017), the Site would not be categorised as low use, or a candidate site, having only one maximum count of 100 or more individuals, but not achieving any other criteria.
- 6.5.56 Additionally, the Site is subject to somewhat high levels of disturbance from human activity and limited in its extent of suitable habitat (of which is decreasing in its suitability due to the succession of grassland) that would be able to support a significant population of dark-bellied brent geese and other non-breeding birds. Therefore, using an evidence-based approach it can be concluded that the Site does not qualify for, or comprise of, FLL due to the lack of significant numbers of dark-bellied brent geese and other non-breeding birds regularly utilising the fields within the Site.
- 6.5.57 Despite a low number and diversity of bird species being recorded within the Site itself, the diversity of the Stilt Pools enhances the importance of the area for non-breeding bird species to numbers that exceed the county importance threshold. Therefore, the non-breeding bird assemblage is considered to be of **Medium (County/District) importance**.

Breeding birds

- 6.5.58 To inform the assessment of breeding birds, ornithological records for the Medmerry Reserve were requested from the Sussex Ornithological Society (SOS). SOS returned records from the last ten years for grid squares SZ8195/6 and SZ8295/6 with 12,773 observations and evidence of breeding for 19 species, the most significant being:

Avocet: 343 observations between 2012-2023. Sussex bird report confirmed 21 breeding pairs on the Medmerry Reserve in 2021, a breeding population of county importance (90 pairs recorded in the county overall).

Shelduck (*Tadorna tadorna*): 271 observations between 2012-2023 with evidence of fledged young.

Corn bunting (*Emberiza calandra*): 79 observations recorded between 2012-2023 with evidence of fledged young.

Dartford warbler: 64 observations recorded between 2012-2023 with evidence of fledged young.

Gadwall (*Anas strepera*): 257 observations recorded between 2012-2023 with evidence of fledged young.

³ Bowland Ecology (2021) Identification of Functionally Linked Land supporting SPA waterbirds in the Northwest of England. NERC361. Natural England.
Cove Communities

Linnet (*Linaria cannabina*): 204 observations recorded between 2012-2023 with evidence of fledged young.

Little ringed plover: 289 observations recorded between 2012-2023 with evidence of fledged young.

Ringed plover (*Charadrius hiaticula*): 173 observations recorded between 2012-2023 with evidence of birds occupying nests and fledged young.

6.5.59 The breeding bird surveys undertaken between April and July 2023 inclusive recorded a total of 83 bird species, 52 of which were breeding or potentially breeding within the study area (inclusive of the Stilt Pools within the Medmerry Reserve) and 42 breeding or potentially breeding within the Site or directly adjacent (excluding the Stilt Pools), as described within **Appendix 6.8**. These included the following specially protected and notable species:

Four species included under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended): avocet, Cetti's warbler, Dartford warbler, and little ringed plover

Two species included under Annex 1 of the EC Birds Directive: avocet and Dartford warbler

Nine NERC S41 Species of Principal Importance

Ten BoCC5 Red list species

17 BoCC5 Amber list species.

6.5.60 The Stilt Pools within the Medmerry Reserve have shown to be an important resource for breeding waterbirds including notable species such as avocet (peak count of 29, with nine-ten nests recorded), oystercatcher (peak count of 12, with two nests recorded), ringed plover (peak count of 5, with two pairs recorded), lapwing (peak count of 2, with one occupied nest), and little ringed plover (peak count of two, with one pair recorded). These shallow water lagoons with islands comprise a freshwater flood accommodation area that was designed specifically with the intention of providing appropriate habitat for breeding waterbirds. The Stilt Pools additionally have restricted public access, ensuring that disturbance to breeding waterbirds is as limited as possible. In addition to the wetland habitats associated with the Stilt Pools, the ditches/rifes running through and around the Site proved valuable for breeding sedge warbler (*Acrocephalus schoenobaenus*) and reed warbler (*Acrocephalus scirpaceus*) as well as moorhens (*Gallinula chloropus*) and mallards (*Anas platyrhynchos*).

6.5.61 Scrub within and adjacent to the Site was of particular value to breeding birds in 2023. This was predominantly located along the Site boundaries, with areas exhibiting especially high levels of bird activity located in the south-western area of gorse scrub. Specially protected and notable species breeding or potentially breeding within the scrub habitats included linnet, Dartford warbler, Cetti's warbler, greenfinch (*Chloris chloris*), cuckoo (*Cuculus canorus*), dunnock (*Prunella modularis*), and house sparrow (*Passer domesticus*).

6.5.62 The majority of the Site and the immediate surroundings are made up of grassland and arable fields. A large number of skylark breeding territories (18-22 territories) were recorded within these areas with meadow pipits also potentially breeding within the grasslands. These fields also proved an important foraging resource for kestrels (*Falco tinnunculus*), which were recorded hunting over the fields over multiple visits. Buildings associated with the holiday park were used by nesting swallows (*Hirundo rustica*),

starlings (*Sturnus vulgaris*), and house sparrow with a swallow colony observed utilizing open roof spaces of a building used as offices and a warehouse.

- 6.5.63 Species listed as breeding qualifying interests of the internationally designated sites within the ZOI included Sandwich tern, common tern, and little tern. Background data shows no evidence of these species breeding within the Site, with habitats within the Site proving to be unsuitable for such breeding species. WeBS online data showed 5-year moving averages for common tern (13), Sandwich tern (11), and little tern (0) within the Medmerry Reserve. This data shows low activity within the reserve. Data from the SOS recorded 43 observations of common tern, 35 observations of little tern, and 85 observations of Sandwich tern between 2012-2023. Such data confirmed no records of breeding between 2012-2023 within the reserve, with this area most likely used for foraging only on an infrequent basis. Breeding bird surveys in 2023 identified no evidence of breeding by either of these species within the Site or within the Medmerry Reserve and as such the Site and the directly adjacent area are therefore not considered to be integral to the internationally designated sites or the avian species they support.
- 6.5.64 The Bracklesham Bay SSSI falls partially within the Site within the enhancement area. Of the breeding species contributing to the SSSI's designation, one was recorded breeding within the Stilt Pools in the Medmerry Reserve: namely lapwing. None, however, were recorded breeding within the Site boundaries, with limited suitable breeding habitat available. The Site is therefore not considered to be integral to the Bracklesham Bay SSSI or the avian species it supports.
- 6.5.65 The breeding populations of Cetti's warbler, common whitethroat (*Sylvia communis*), cuckoo, greenfinch, linnets, and sedge warbler are all considered to be of potential district level importance, with the breeding populations of avocet, oystercatcher, and ringed plover also considered to be of county importance. Breeding populations of other species recorded are considered to be of no more than local level importance. In line with guidance set out by Fuller (1980), the breeding bird assemblage of the Site and surrounding study area (including the Stilt Pools) is considered to be of **Medium (County/District) importance**.

Dormice

- 6.5.66 No records of dormouse (*Muscardinus avellanarius*) were returned in the SxBRC data request. Suitable habitat within the Site was restricted to hedgerow and scrub but is significantly isolated from areas of more suitable habitat. Due to the limited suitable habitat, and lack of records and evidence present within the Site and surrounding area the dormouse assemblage is considered of **Negligible importance**.

Invertebrates

- 6.5.67 The desk study returned 99 records of protected and/or priority invertebrate species including the Norfolk hawk (*Anaciaeschna isoceles*), small heath (*Coenonympha pamphilus*), stag beetle (*Lucanus cervus*), brown-banded carder-bee (*Bombus humilis*) and white admiral (*Limenitis camilla*) moth. However, these records are most likely associated with the nearby designated conservation sites. Suitable habitat for terrestrial invertebrates include hedgerow, scrub and rank grassland for foraging and sheltering opportunities. Suitable habitat for aquatic and semi-aquatic invertebrates include an extensive ditch network which connect to freshwater habitats present within the Medmerry Reserve (e.g., Stilt Pools), and ponds. Such suitable habitat for terrestrial and

aquatic invertebrates is largely restricted to the areas that are to be retained to the south of the existing holiday park, where the habitats form a more mosaic structure that is less disturbed. Taking into consideration the suitable habitat within the Site and beyond along with an abundance of notable records, the invertebrate assemblage is considered to be of **Low (Local) importance**.

Reptiles

6.5.68 Records of slow-worm (*Anguilla fragilis*), grass snake (*Natrix helvetica*), adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and leathery turtle (*Demochelys coriacea*) were identified within 2 km of the Proposed Development. Suitable habitat pertaining to reptiles within the Site includes rough grassland, scrub, hedgerows, ditches, and woodland edges. Reptile surveys conducted in 2022 identified four reptile species within the Site: adder, slow-worm, grass snake, and common lizard. The majority of the sightings were recorded within the areas that are to be retained to the south of the existing holiday park within the Site along hedgerows, scrub, and field boundaries.

6.5.69 **Table 6.14** below details the peak count and population sizes of each species in accordance with best practice guidance (Froglife, 1999).

Table 6.14: Reptile population assessment within Site.

Species	Peak count	Population size
Adder	2 (juvenile)	Low
Slow-worm	9	Good
Common lizard	3	Low
Grass snake	1	Low

6.5.70 The Medmerry Holiday Park therefore qualifies as a Key Reptile Site (Froglife, 1999) due to reaching the following criteria:

- Supports three or more reptile species;
- Supports two snake species; and
- Supports an assemblage scoring at least four (total for the Site is five).

6.5.71 Taking this into consideration, the reptile assemblage is considered to be of **Medium (County/District) importance**.

Water voles and otters

6.5.72 Records from the SxBRC of water vole were obtained within 2 km of the Site, with no records of otter (*Lutra lutra*) identified.

6.5.73 Habitat suitability assessments of the watercourses within the Site identified four ditches as optimal habitat for water voles, three as good, nine as suitable but poor and two as negligible (**Figure 6.5a**). Activity surveys in 2023 recorded water vole evidence in high numbers across eight watercourses within the Site. This included large numbers of burrows, feeding signs, latrines, and footprints. A number of incidental recordings were additionally noted along the main rife running through the developed area of the holiday park. Latrine and burrow density was greater in the watercourses towards the south-east where reeds were higher in abundance and establishment, providing better foraging opportunities and cover for water voles. The rife running through the central developed area of the Site showed areas of medium population density interspersed with areas of

low density (**Figure 6.5b**).

- 6.5.74 Using predictive equations describing the relationship between water voles and latrine numbers in the breeding season (Morris *et al.* 1998), the metapopulation across the site can be assessed as a whole as being of a high density.
- 6.5.75 Water voles are a species of high conservation importance in the UK, where populations have undergone a rapid decline during the past century due to habitat loss and predation by feral American mink (*Neovison vison*) (Barreto *et al.*, 1998; Strachan *et al.*, 2000). In Sussex, the decline in water voles has been particularly pronounced, with populations being lost from 99% of historical sites (Smith, 2009). The current distribution of water voles within Sussex show three large viable populations, including one population within the Chichester Coastal Plain (Baker *et al.*, 2015). With connectivity along watercourses to areas outside of the Site, it is likely that the water vole population within the Site forms a larger metapopulation associated with the Chichester Coastal Plain. Taking this into consideration, the water vole assemblage has been assessed of being of **Medium (County/District) importance**.
- 6.5.76 Riparian activity surveys identified no evidence of otters to suggest presence. Furthermore, whilst otters may potentially be infrequent visitors along watercourses within the Site, it is noted that those habitats are highly unlikely to be able to support a viable population of otters, owing to the lack of prey source, poor watercourse structure and susceptibility of desiccation. Therefore, the otter population within the ZOI is considered to be of **Negligible importance**.

Other mammals

- 6.5.77 SxBRC data returned records of European hedgehog (*Erinaceus europaeus*), brown hare (*Lepus europaeus*), and harvest mouse (*Micromys minutus*) within a 2 km buffer of the Proposed Development. Hedgerow, scrub and grassland provides suitable foraging and sheltering habitat for hedgehogs. No evidence of these priority species were recorded during field surveys and so are considered to be of **Negligible importance**.

Invasive non-native species

- 6.5.78 SxBRC data identified seven records of invasive non-native species (INNS) within a 2 km buffer of the Site. Botanical species recorded included Japanese knotweed (*Fallopia japonica*), Spanish bluebell (*Hyacinthoides hispanica*) and parrot's-feather (*Myriophyllum aquaticum*). Animal species also include ring-necked parakeet (*Psittacula kramera*) and bar-headed goose (*Anseer indicus*). Surveys in 2019 and 2023 identified an extensive stand of Japanese knotweed within bramble scrub on building rubble on the southern margin of the Site, adjacent to the existing tennis courts. Japanese knotweed is a listed under Schedule 9 of The Wildlife and Countryside Act 1981 (as amended) and is additionally listed under The Invasive Alien Species (Enforcement and Permitting) Order 2019. It is therefore in breach of this legislation to cause Japanese knotweed to spread or grow in the wild, with risks and mitigation needing to be considered as part of the Proposed Development.

Future baseline

- 6.5.79 The future baseline describes the ecological features as they would be in the opening year/year of operation, in the absence of the project. They are influenced by future developments and factors that have a high degree of uncertainty, such as future land

management and climate change. Where information exists on planned future developments, this has been taken into consideration during the assessment.

- 6.5.80 Long-term climatic predictions suggest that warmer, wetter winters and drier summers will become more frequent, with more extreme weather events likely. Combined with changes in land management, increased urbanisation and increased biotic pressures, climate change may lead to an increase in the population and distribution of some species in the UK, but a decrease in other species, such as water voles and brent geese. However, such changes are unlikely to be material during the intervening period between the time when the field surveys were undertaken to inform this assessment and the opening year of operation of the Proposed Development.
- 6.5.81 There are no committed or forecasted changes in land management proposals within the Site that will likely materially alter the baseline conditions in the absence of the project. It is therefore assumed that the future baseline will, in general, be relatively similar to the current baseline, and the value of the ecological features that are relevant to the Proposed Development would be consistent with that of the existing baseline conditions described above.

Evaluation of ecological features

- 6.5.82 **Table 6.15** below outlines the importance of each of the ecological features identified within the Zol of the Proposed Development. Features of Negligible importance and those to which impacts can be categorically ruled out, are scoped out for further assessment, and are therefore not considered further. It should be noted that a precautionary approach has been taken in determining which features are taken forward for further assessment as described in **Section 6.4: Value of features**. Some features were taken forward for assessment based upon their conservation status, population trends and likely importance to designated sites. Others of negligible importance may have been taken forward for assessment to either comply with specific legislation or to ensure protection against harm to individual animals.

Table 6.15: Assessment of ecological importance

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Internationally designated sites				
Medmerry Reserve (Compensatory Habitat)	National Planning Policy Framework (NPPF) Paragraphs 118 and 176 dictate that this site is to be treated as an internationally designated site, protected under the Conservation of Habitats and Species Regulations 2017 (as amended).	The Medmerry Reserve is within the Zol of the Proposed Development being directly adjacent to the east. Potential impact pathways through construction and operational related disturbance to qualifying interest species cannot be ruled out at this stage. Additionally, an assessment on any construction and operational related habitat degradation, pollution and hydrology impacts are necessary owing to the hydrological connectivity between the Site and the reserve.	High (International)	In
Solent and Dorset Coast SPA	Designated as an SPA under the Conservation of Habitats and Species Regulations 2017 (as amended).	The Solent and Dorset Coast SPA falls with the Zol of the Proposed Development being directly adjacent to the south. Potential impact pathways through construction and operational disturbance and pollution effects.	High (International)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Pagham Harbour SPA and Ramsar site	Designated as an SPA and under the Conservation of Habitats and Species Regulations 2017 (as amended). Designated under the Ramsar Convention 1971.	The Proposed Development falls within the 3.5 km Zone of Influence set under Policy 51 of the Chichester Local Plan for assessment of effects on recreational disturbance from developments. Potential impact pathways through construction and operational related disturbance to qualifying interest species (dark-bellied brent geese).	High (International)	In
Solent Maritime SAC	Designated as an SAC under the Conservation of Habitats and Species Regulations 2017 (as amended)	The Solent Maritime SAC falls within the Zol of the Proposed Development. Potential impact pathways through construction and operational pollution and disturbance effects on qualifying features (sensitive habitats).	High (International)	In
Chichester and Langstone Harbours SPA and Ramsar site	Designated as an SPA under the Conservation of Habitats and Species Regulations 2017 (as amended). Designated under the Ramsar Convention 1971.	The Proposed Development falls within the 5.6 km Zone of Influence set under Policy 50 of the Chichester Local Plan for assessment of effects on recreational disturbance from developments. Potential impact pathways through construction and operational related disturbance to qualifying interest species (dark-bellied brent geese).	High (International)	In
Nationally designated sites				

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Bracklesham Bay SSSI	Protected by the Wildlife and Countryside Act (WCA) 1981 (as amended)	Bracklesham Bay SSSI falls within the Site. Potential impact pathways through construction and operational related habitat degradation, disturbance, pollution, and hydrological effects.	High (National)	In
Selsey Bill and the Hounds MCZ	Protected by the Marine and Coastal Access Act 2009	Selsey Bill and the Hounds MCZ falls within the Zol of the Proposed Development. Potential impact pathway through construction related pollution and hydrological effects.	High (National)	In
Habitats				
Coastal floodplain grazing marsh	UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006	Coastal floodplain grazing marsh is a UK BAP priority habitat which forms a large part of the habitats surrounding the Site. Potential impact pathways through construction and operational related habitat degradation, disturbance, and pollution.	Medium (County/District)	In
Lowland meadows	UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006	Lowland meadow is a UK BAP priority habitat which has been identified in some of the surrounding habitats surrounding the Site. Potential impact pathways through construction and operational related habitat degradation, disturbance, and pollution.	Medium (County/District)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Coastal vegetated shingle	Annex 1 under the Habitats Directive. UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006	Coastal vegetated shingle is a UK BAP priority habitat which has been identified in a small area fronting the Site on the coast. Potential impact pathways through construction and operational related habitat degradation, disturbance, and pollution.	Medium (County/District)	In
Maritime cliffs and slopes	UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006	Maritime cliffs and slopes are a UK BAP priority habitat which has been identified in a small area fronting the Site on the coast. Potential impact pathways through construction and operational related habitat degradation, disturbance, and pollution.	Medium (County/District)	In
Grassland	N/A	All habitats are relatively widespread and common with relatively poor species diversity. Potential impact pathways through construction and operational related habitat loss and degradation, recreational disturbance, and pollution, identified.	Low (Local)	In
Woodland treelines	N/A		Low (Local)	In
Scrub	N/A		Low (Local)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Hedgerow	The Hedgerows Regulations 1997 UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006		Medium (County/District)	In
Coastal habitat	UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006		Medium (County/District)	In
Ditches, canals, and ponds	Ponds: UK BAP Priority Habitat listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006		Low (Local)	In
Urban	N/A	Widespread, highly modified, disturbed habitat that provides little value to biodiversity.	Negligible	Out
Fauna				

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Amphibians	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p> <p>The Conservation of Habitats and Species Regulations 2017 (as amended).</p>	<p>Suitable habitat for amphibians is present throughout the Site as ponds, ditches, rough grassland, and hedgerows. The majority of suitable habitat is being retained as part of the Proposed Development but potential impact pathways through construction and operational mortality, terrestrial habitat loss and degradation, and disturbance have been identified. Whilst great crested newts were considered absent as a result of the 2023 surveys, their presence in 2022 shows infrequent use of the Site.</p>	Low (Local)	In
Badgers	Protection of Badgers Act 1992	<p>Only a small amount of badger activity recorded within the Site with no setts. However, to comply with The Protection of Badgers Act 1992, an assessment of construction related mortality, habitat loss, and disturbance has been deemed necessary.</p>	Negligible	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Bats	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p> <p>The Conservation of Habitats and Species Regulations 2017 (as amended).</p>	<p>Only low levels of bat activity were recorded within the Site. However, potential impact pathways have been identified through minor loss of roosting habitat (demolition of buildings), and construction and operational related disturbance and displacement (including lighting).</p>	Medium (County/District)	In
Birds (breeding and non-breeding)	<p>Protected by the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p> <p>The Birds Directive (Directive 2009/147/EC)</p>	<p>Breeding and non-breeding assemblages assessed of regional importance due to the presence of a number of protected/priority species and species associated with internationally designated sites. Potential impact pathways identified through construction and operational related habitat loss and degradation, recreational disturbance and displacement, and mortality/injury.</p>	Medium (County/District)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Dormice	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p> <p>The Conservation of Habitats and Species Regulations 2017 (as amended)</p>	<p>With no records within 2 km of the Proposed Development and limited suitable habitat on-site that is isolated from areas beyond with more suitable habitat, dormice can be considered likely absent from the Site and are thus not brought forward for assessment of effects.</p>	Negligible	Out
Invertebrates	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p>	<p>With an abundance of data records of protected/priority invertebrates and suitable habitat within the off-site enhancement area of the Site, potential impact pathways of habitat loss and degradation, construction and operational related disturbance and displacement.</p>	Low (Local)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Otters	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p> <p>The Conservation of Habitats and Species Regulations 2017 (as amended).</p>	<p>The poor suitability of habitats present within the Site means that otters are unlikely to be regularly present. No evidence identified to suggest otter presence recorded during baseline surveys.</p>	Negligible	Out
Reptiles	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p>	<p>The Site has been identified as a Key Reptile Site and so potential impact pathways through construction related mortality/injury, disturbance and displacement, and habitat loss and degradation have been identified.</p>	Medium (County/District)	In
Water voles	<p>Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended).</p> <p>Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006</p>	<p>The water vole metapopulation within the Site has been assessed as being of a high density. Even though the watercourses are being retained as part of the Proposed Development, potential impact pathways through construction and operational related mortality/injury, recreation disturbance, and habitat degradation have been identified.</p>	Medium (County/District)	In

Ecological feature	Legislative context	Evaluation rationale	Importance / sensitivity	Scoped in/out of assessment
Other mammals	Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006	While no evidence of other priority mammal species was recorded during surveys, background data search records and suitable habitat means likely absence cannot be ruled out. Therefore, potential impact pathways through construction related mortality/injury, disturbance and displacements, and habitat loss and degradation have been identified.	Negligible	In
Invasive Non-Native Species (INNS)	Listed on Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 (as amended). The Invasive Alien Species (Enforcement and Permitting) Order 2019	A strand of Japanese knotweed has been identified within the Site. Construction related activities have the potential to cause its spread which would be an offence under The Wildlife and Countryside Act 1981.	N/A	In

3.2 Embedded mitigation

6.6.1 From the early stages of the project design development, an iterative process of a constraints-led design was employed, whereby ecological information was utilised to avoid impacting potentially important ecological features where possible (see **Section 2.4** and the **Design and Access Statement** for further information). This section describes details on any 'embedded' mitigation measures that have been identified and adopted as part of the evolution of the project design.

Project design

6.6.2 Avoiding likely impacts on ecological features was a contributing factor to the selection of areas within the Site that have been assigned for the Proposed Development, with the selected areas generally comprising relatively low suitability for protected habitats and species populations. Areas of greater importance to ecological features are, for the most part, to be retained within the design of the Proposed Development, including waterbodies, woodland, scrub, and hedgerows. The project design has been subject to change, evolving in line with ecological assessments and the identification of sensitive ecological features.

6.6.3 The identification of the water vole population within the Site has led to the retainment of all watercourses and has enacted developmental changes in order to avoid construction related impacts and safeguard the population. A construction buffer zone of 7 m around all important ditches will ensure that no new construction will take place in sensitive areas for this species.

6.6.4 The proximity of the Medmerry Reserve and more specifically the Stilt Pools, makes them sensitive to construction and operational related developmental changes. As a result, the field to the east of the Site bordering the Stilt Pools is to be retained in order to maintain a buffer between the park and the Medmerry Reserve, to prevent and avoid construction and recreational related disturbance.

6.6.5 The identification of a barbastelle commuting and foraging route along the western boundary of the Site has led to a larger buffer being developed between the construction of the new development and treelines and hedgerows on this boundary with additional buffer planting being incorporated. This will reduce and limit disturbance to the barbastelles (e.g., from noise and lighting) and will ensure that their commuting and foraging route remains intact and undamaged from construction and operational activities.

6.6.6 Access to all areas within the retained enhancement area (including the field east of the Site bordering the Stilt Pools ('Field D')) will be prohibited during the operation phase of the Proposed Development. This does not include Field E which will have a mown path running through to maintain the Public Right of Way (PRoW). However, this path through the field will be gated with no access allowed during the winter months when dark-bellied brent geese and other species associated with the designated sites could potentially be present. Park rules will ensure that resident keeps dogs on leads in all areas apart from a small designated fenced 'off-lead' area within the centre of the Site within the picnic area. Additionally, signage boards will be deployed in sensitive ecological areas in order to educate visitors on ecology and its sensitivities (e.g., for dark-bellied brent geese, the internationally designated sites, water voles, etc.). This will help in ensuring that recreational disturbance is prevented.

- 6.6.7 In order to further prevent and avoid an increase in recreational disturbance associated with the Proposed Development, the project design has incorporated an increase in amenity facilities within the Proposed Development. The intention of this is to increase the number of activities that can exclusively take place within the Site, thus reducing the need for holiday makers to explore neighbouring designated sites.
- 6.6.8 The Proposed Development has been designed to minimise the extent of habitat loss required. As such, new areas for development have been minimised as much as possible, with the main aspect of the Proposed Development focusing on re-developing and utilising urban areas of the existing Site, to minimise disturbance to semi-natural habitats.
- 6.6.9 A large focus of the project design was to incorporate the creation of valued ecological features which would in turn provide positive impacts for not just ecology but for visual amenity as well. This includes the creation of wetland habitats and priority habitat ponds within the centre of the Site, a wooded area around accommodation to the southwest, and hedgerow and mound planting to act as screening and to additionally provide habitat for ecological features.
- 6.6.10 The construction phase of the Proposed Development has been designed as such to limit the disturbance to habitats and species as much as possible. The designs of the holiday let accommodation have been chosen so that they are mostly pre-fabricated with only a small amount of assembly on the Site required. Not only does this negate the requirement for loud, high-powered machinery, but it also reduces the space required for materials and reduces construction time. The phased approach to the Proposed Development (**Figures 3.3 to 3.7**) additionally reduces the likelihood of significant disturbance effects and intra-cumulative effects (effects of multiple construction activities combining to create a bigger effect within the Proposed Development) from construction related activities.

Construction methods

- 6.6.11 Best practice construction measures will be adopted to minimise potential construction impacts on ecological features. These will be detailed within a Construction Environmental Management Plan (CEMP) to be produced under a condition of planning and based upon standards set out within the BSI Standards Publication on Biodiversity – code of practice for planning and development (BS 42020:2013). The CEMP will include measures to minimise working areas to avoid unnecessary habitat removal / alteration and disturbance, and measures to avoid / minimise the generation of additional noise, dust, light spill, vibration, and pollution. In general, the CEMP would be proportionate and tailored to the ecology of a site, identified through the biodiversity assessments, and based on the following considerations:

Identification of ‘biodiversity protection zones’ and areas where invasive species have been identified.

Inclusion of details for the implementation of method statements to achieve biodiversity outcomes and mitigation measures.

Identification of practical measures and sensitive working practices to avoid construction related impacts.

The location and timing of sensitive works to avoid harm to biodiversity features.

The times during construction when particular specialists are required to be present to oversee works.

Responsible persons and lines of communication.

Defining the role and responsibilities of an Ecological Clerk of Works (ECoW).

Use of protective barriers and warning signs to avoid and prevent harm to ecology and biodiversity.

- 6.6.12 Aspects of the CEMP discussed within this section (as embedded mitigation) are those that form basic best practice measures that should be applied to all Proposed Developments in sensitive ecological areas, like this Site. This section does not include any specific measures that mitigate *likely significant effects* resulting from the impact assessment, but instead addresses standard construction methodologies in order to avoid and minimise construction related effects. Any additional mitigation measures required to offset *likely significant effects* over and above the embedded mitigation are addressed in **Section 6.8**.

Ecological Clerk of Works

- 6.6.13 An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to ecological features during construction, as described within the CEMP. Their responsibilities will include:

Undertake a pre-construction survey / check to ensure that significant effects to and newly colonised ecological features will be avoided.

Inform and educate site personnel of sensitive ecological features within the project site and how effects on these features could occur.

Oversee management of ecological issues during the construction period and advise on ecological issues as they arise.

Monitoring and reporting on complaints with legal, planning contract requirements.

Provide guidance to contractors to ensure legal compliance with respect to protected habitats and species on-site and off-site.

Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction progress.

Monitoring post-construction/implementation success of mitigation methods and aftercare of sensitive habitats and features.

Lighting strategy

- 6.6.14 In general, artificial light creates a barrier to bats, and other crepuscular species, so the use of artificial lighting during construction shall be avoided wherever possible. As would be described within a CEMP, construction activities within the Site would take place during daylight hours where possible to minimise disturbances to crepuscular species. Some works may occur at night due to necessity; however, the project ECoW would limit night-time works to sections of the Site that avoid sensitive features (i.e., mature treelines, hedgerows, designated sites such as Bracklesham Bay SSSI, and the Medmerry Reserve (specifically the Stilt Pools)). Where lighting would be required, directional lighting (i.e., lighting which only illuminates work areas and not nearby habitat features) would be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers, and shields to direct the light to the intended areas only.

- 6.6.15 The lighting strategy developed will be in accordance with best practice guidance set out by the Bat Conservation Trust; Bats and artificial lighting in the UK (BCT, 2018) and could include:

Physical lighting screening options

Avoidance of illuminating sensitive features

Setting appropriate luminaire specifications
Applying dark buffer zones.

Noise prevention

- 6.6.16 Noise will be controlled to reduce the impact of disturbance to nesting and wintering birds, bats, badgers and other animals in the local area for the duration of the construction.
- 6.6.17 All plant and machinery will comply with specific noise legislation (The Noise Emission in the Environment for use Outdoors Regulations 2001 (as amended)) and will be turned off when not in use.
- 6.6.18 The contractors shall control noise on the working areas in accordance with BS 5228, Noise Control on Construction and Open Sites. Site inspections by the appointed contractor shall include checks to ensure that plant is being operated with any specified acoustic covers in place. Excessively noisy plant shall be removed from the Site for repair or maintenance. Quieter construction methods will be used, where required and considered reasonable and feasible.
- 6.6.19 Equipment will be switched off when not in use (including during breaks and down times of more than 30 minutes).
- 6.6.20 If required, acoustic barriers or screens will be erected around construction works in sensitive areas or for works that are likely to create a significant amount of noise (usually above 55 dBA).

Habitat clearance

- 6.6.21 Removal of trees and dense vegetation such as hedgerows and scrub will be limited wherever possible. Additionally, no removal of habitats will occur outside of the development works area.
- 6.6.22 There is potential for retained trees and hedgerows to become damaged by construction activity whereby damage to roots would occur if they remained unprotected during construction activities. Measures to protect trees include the installation of tree protection barriers around the root protection zones of retained trees and hedgerows. Where essential works are required within the root protection zones, ground protection (such as cellweb membrane) will be installed following consultation with a qualified arborist, to minimise risks of damage to root.
- 6.6.23 Existing hedgerows and trees being retained within and in the vicinity of the site will be protected in line with current guidance and on the advice of an appointed arborist.
- 6.6.24 Removal of suitable bird nesting habitat would ideally be conducted over the winter months between October and February to avoid the breeding bird season (March to August inclusive), where possible. If vegetation suitable for nesting birds is to be cut during the nesting season (March to August inclusive), it will first be checked for nests by the site ECoW immediately prior to clearance. If nests are found, they will be retained (with a suitable, species-specific buffer from works established) and protected from damage or abandonment until the young have fledged.
- 6.6.25 Any required vegetation clearance within suitable reptile habitat will follow a cautious approach to avoid killing or injuring individuals. A cautious approach includes clearance

of vegetation in two stages to allow any reptiles present to move away: careful removal of scrub to 10 cm in order to make it unattractive to reptiles, and a second cut at the latest a couple of days prior to any ground works commencing. Likewise, heaps of stored materials and waste may provide refugia and will be removed by hand.

Additional measures

- 6.6.26 Additional measures to be implemented during the construction phase of the Proposed Development described within the CEMP will include:

No removal of habitats or movement of construction machinery will occur outside of the development works area during the construction phase, clearly marking out the works footprint for site staff.

Production of an Invasive Species Management Plan to be included within the CEMP. This will include measures to eradicate and control invasive species, such as Japanese knotweed which is present on the Site.

All edible and putrescible waste will be stored and disposed of in an appropriate and timely manner. Construction materials will be stored and stockpiled according to strategies set out within the CEMP.

Excavations will be covered at night to prevent mammals becoming trapped. If this isn't possible then a method of egress will be provided (wooden planks).

Standard good practice pollution prevention guidance including managing the input of dust, cement, stilt, hydrocarbons, and other chemicals to watercourses and other habitats. Measures such as stilt traps, plant inspection, best practice re-fuelling of machinery, and drainage monitoring will be implemented as part of the CEMP. Crucially, the site drainage system will not outflow to the existing drainage network directly but will discharge via silting ponds, preventing hydrological impacts. An emergency plan for the construction phase to deal with accidental spillages would be contained within the CEMP.

Delineation of buffer zones of sensitive habitats (i.e., Bracklesham Bay SSSI, and the Medmerry Reserve) in order to safeguard these habitats from construction related disturbance.

Measures to control pests (such as rats) if they are identified as present. Suitably qualified pest control experts will survey the development areas prior to construction works and implement any measures if necessary.

Production of a Construction Drainage Design Plan as part of the CEMP to manage drainage and flooding risks during the construction phase.

Pre-construction surveys

- 6.6.27 Prior to the commencement of construction works, a pre-construction walkover survey of the Site will be undertaken by suitably experienced ecologists to update the ecological baseline and check for the presence of any new ecological constraints, such as badger setts, which could have been created during the intervening period since the baseline surveys were undertaken to inform this assessment. Should any additional constraints be identified then further mitigation will be designed and agreed with the relevant authorities as necessary.
- 6.6.28 Any necessary ecological surveys to inform licence applications, or to prevent ecological impacts will be undertaken prior to construction. Most notably, this will include bat roost characterisation surveys to inform the demolition of the existing buildings within the

Application Boundaries, which will be phased in line with the phased approach to the construction of the Proposed Development (**Figures 3.3 to 3.7**).

Operational methods

- 6.6.29 Best practice measures described in relation to construction methods will also be adopted during any operational maintenance, as will be described within a CEMP. This will include minimising the potential for disturbance (e.g., to minimise generation of additional noise, light, and vibration), with a particular focus on avoiding activity within nocturnal periods, when notable species are active.
- 6.6.30 Operational methods will additionally act to prevent pollution from litter, dog excrement, fuels, silty water etc. This will be mitigated for by enacting a sufficient waste management plan (which includes elements of recycling), implementation of litter and dog waste bins, waste education signage boarding, litter picking, and pollution prevention, described within a CEMP. Any environmental incidents will be followed by appropriate remedial measures in consultation with relevant external agencies as well as an emergency plan to deal with any accidental spillages (included within a CEMP).

Lighting strategy

- 6.6.31 An operational lighting strategy will be implemented in order to avoid and reduce impacts associated with crepuscular species (e.g., bats) and the Medmerry Reserve (in particular the Stilt Pools). Any lighting that is unnecessary will be switched off at night and directional lighting will be used to prevent overspill to the Medmerry Reserve. This can be done by using accessories such as hoods, cowls, louvers, and shields to direct the light to the intended areas only.
- 6.6.32 The lighting strategy developed will be in accordance with best practice guidance set out by the Bat Conservation Trust; Bats and artificial lighting in the UK (BCT, 2018) and will include:

- Internal building lighting mitigation options
- Physical lighting screening (e.g., screen planting which is already included within the Proposed Development design)
- Avoidance of lighting sensitive features
- Setting appropriate luminaire specifications
- Dimming and part-night lighting
- Glazing treatments
- Creation of 'dark corridors' for important commuting and foraging routes for bat species.

3.2 Predicted effects

- 6.7.1 Potential effects on ecological features from the Proposed Development during its construction and operation phases are described in this section. The potential for impacts to affect ecological features adversely or positively is assessed in accordance with the process described in **Section 6.4**. This assessment takes into consideration embedded mitigation within the project design. Where embedded mitigation measures are insufficient to avoid potential significant adverse effects on features, further mitigation measures will be required (as described within **Section 6.8**).

Assessment of effects from construction

6.7.2 The assessment of effects upon ecological features during the construction of the project is described in this section. A summary of the assessment detailing the categorisation of the impacts is found within **Table 6.16**. Potential effects identified through the construction phase are as follows:

Direct habitat loss, deterioration and fragmentation: permanent and temporary reductions to the extent, quality, and connectivity of the habitats present within the Site.

Disturbance and displacement: disturbance of protected and/or priority species from additional noise, dust, light, vibration, and human activity, with the possibility of causing displacement.

Direct mortality of individuals of a species.

Changes in water flow and/or quality as a result of construction activities.

Pollution of habitats through construction related activities such as pollutant sedimentation and the use, assembly and storage of machines and materials (risks of chemical and fuel spills).

Internationally designated sites

6.7.3 In accordance with best practice guidance a Habitats Regulations Assessment (HRA) has been carried out on the internationally designated sites within the Zol of the Proposed Development. A screening assessment and statement to provide the planning authority with the information necessary to complete an Appropriate Assessment has been undertaken in compliance Article 6(3) of the Habitats Directive. As per standard guidance, an ES chapter should not repeat the detailed assessment of potential effects on internationally designated sites for conservation contained within a HRA but should incorporate the key assessment findings regarding the relevant conservation sites with ecological interests within the Zone of Influence. The detailed assessment can be found within **Appendix 6.6**.

6.7.4 An initial screening assessment outlined the potential effects to internationally designated sites within influencing distance of the Proposed Development. Potential impact sources were identified as follows:

Damage to non-designated habitats functionally linked to designated sites

Disturbance of designated features (birds) during construction

Potential spread or introduction of invasive species

Air pollution/nitrogen deposition

Water pollution during construction.

6.7.5 The screening assessment deemed significant effects likely in the absence of mitigation on the following internationally designated sites: Medmerry Reserve (Compensatory Habitat), Chichester and Langstone Harbours SPA and Ramsar site, Pagham Harbour SPA and Ramsar site, Solent Maritime SAC, and Solent and Dorset Coast SPA.

6.7.6 The HRA further determined that provided mitigation is implemented as part of the Proposed Development in accordance with a CEMP and project design embedded mitigation, then significant adverse effects on the integrity of any internationally designated sites would not occur. Measures included within the CEMP are those stated

as best practice standard construction and operation guidance mentioned in **Section 6.6** and are more than likely to avoid and prevent significant effects to the integrity of the designated sites. This is especially significant considering that areas within the Site were not identified as FLL to any of the internationally designated sites within the Zol.

Nationally designated sites

- 6.7.7 The desk study and subsequent evaluation of ecological features identified two nationally designated sites of conservation importance as requiring a detailed assessment of potential effects, namely, Bracklesham Bay SSSI and Selsey Bill and the Hounds MCZ.
- 6.7.8 The Proposed Development involves no land take within either of the designated sites. Due to the proximity of the Bracklesham Bay SSSI to the construction footprint, it is possible that construction related activities may adversely impact its designated habitats and species through trampling from personnel and works traffic. However, the provision of a CEMP, as described within embedded mitigation, will include measure to delineate a buffer zone around this SSSI to ensure that no construction activities take place within these sensitive habitats and that personnel do not have access. This will be enforced through the provision of an ECoW, who will run 'tool-box talks' to educate site staff on the sensitivities and measures of safeguarding the SSSI. As such **No Significant effects** are envisaged in relation to habitat loss and fragmentation.
- 6.7.9 Construction related activities have the potential to introduce pollutants (e.g., stilt, fuels, chemicals, dust etc.) into designated sites. The Bracklesham Bay SSSI is located within the proposed off-site enhancement area and is therefore sensitive to any construction related pollutants. Due to the proximity of the construction area to the coast, it is possible that pollutants may enter the water and be carried towards the Selsey Bill and the Hounds MCZ. However, the toxicity threshold for soluble and sediment bounded pollutants is unlikely to be exceeded as a result of the construction works, due to the nature of the Proposed Development. Additionally, any potential pollutants from construction activities would naturally dilute due to the natural flow of water. Additionally, standard construction pollution prevention measures set out within a CEMP as part of the embedded mitigation will avoid these impacts on either designated site. As such **No Significant effects** are envisaged in relation to pollution.

Habitats

- 6.7.10 The desk study identified four priority habitats within 250 m of the Site, namely, coastal vegetated shingle, coastal floodplain grazing marsh, lowland meadows, and maritime cliffs and slopes. While the priority habitats inventory, as presented on the MAGIC mapping system, identified the first three of those habitats within the Application Boundaries, it was apparent during the site-based habitat assessments that the management on site was not appropriate for areas to be identified as lowland meadow or coastal floodplain grazing marsh (as described within **Section 6.5**). Therefore, the Proposed Development involves no land take within any such habitats. Additionally, no construction works will take place outside of the defined works areas within the Site and as such **Negligible (Not Significant) effects** are envisaged in relation to habitat loss, damage, and fragmentation.

- 6.7.11 Construction related activities have the potential to introduce pollutants (e.g., stilt, fuels, chemicals, dust etc.) into priority habitats. Connectivity through watercourses has the potential to allow passage of soluble and sediment bound pollutants to move off-site to areas of priority habitats. However, standard construction pollution prevention measures set out within a CEMP as part of the embedded mitigation will avoid these impacts. As such **Negligible (Not Significant) effects** are envisaged in relation to pollution.
- 6.7.12 The majority of the habitats associated with the Site are considered common and widespread within the local area and are generally considered of low ecological importance due to their relatively poor botanical diversity. There will be a moderate long-term increase in modified habitats from the construction of the Proposed Development, which will lead to a slight negative effect on semi-natural habitats and flora species within the Site and its footprint, as described below. However, overall permanent land take has been limited wherever possible and is restricted to areas of lower ecological value.
- 6.7.13 Direct habitat loss or change is inevitable in the development of tourist holiday parks which has the potential to result in reduced habitat heterogeneity and connectivity as well as reduced feeding, nesting, roosting, and commuting opportunities for protected and priority species. **Table 6.16** below details the permanent habitat losses for the Proposed Development (before mitigation and offsetting).

Table 6.16: Habitat changes for the Proposed Development (before mitigation and offsetting).

Broad habitat	UK Habitat type	Habitat codes	Extent	Habitat loss	Habitat loss (%)
Grassland	Other neutral grassland	g3c	15.45ha	7.90ha	52.4%
	Lolium – Cynosurus neutral grassland	g3c6	3.77ha	2.08ha	
	<i>Holcus-juncus</i> neutral grassland	g3c8	0.15ha	0.00ha	
	Modified grassland	g4	1.47ha	0.95ha	
Woodland and tree lines	Other broadleaved woodland	w1g7	0.24ha	0.00ha	0%
	Line of trees	w1g6	340.00m	0.00km	0%
Scrub	Blackthorn scrub	h3a	0.07ha	0.00ha	0%
	Bramble scrub	h3d	1.27ha	0.64ha	50.4%
	Gorse scrub	h3e	1.42ha	0.04ha	2.8%
Hedgerows	Hedgerow Priority Habitat	h2a	70.00m	0.00m	26.9%

Broad habitat	UK Habitat type	Habitat codes	Extent	Habitat loss	Habitat loss (%)
	Other hedgerows	h2b	570.00m	172.00m	
Coastal habitat	Coastal vegetated shingle	s3b	0.03ha	0.00ha	0%
Ditches and ponds	Canals	r1e	3980.00m	0.00m	0%
	Eutrophic standing waters	r1a	0.06ha	0.00ha	0%

- 6.7.14 Habitat loss is largely restricted to the grassland areas of the Site with some bramble scrub and hedgerow loss also. The Proposed Development will result in an overall 52.4% reduction in grassland, 50.4% reduction in bramble scrub. Habitats are ubiquitous within the local area and beyond and so such loss is considered to be of no more than a **Minor (Not Significant) effect**. For losses exceeding between 21% and 80% the impact magnitude would be **Medium**, which would result in a **Minor** effect on features of low sensitivity as per the matrix presented in **Section 6.4**.
- 6.7.15 The Proposed Development will, however, result in a 26.9% reduction in hedgerows habitat, resulting in a **Moderate (Significant) effect** owing to a **Medium** impact magnitude on a feature of **Medium** sensitivity.
- 6.7.16 Construction related activities have the potential to introduce pollutants (e.g., silt, fuels, chemicals, dust etc.) into habitats. In particular, habitats sensitive to such pollutants are watercourses (ditches) in which soluble and sediment bound pollutants have the potential to build-up and cause toxic impacts to the species inhabiting them. However, standard construction pollution prevention measures set out within a CEMP as part of the embedded mitigation will avoid these impacts. As such **Negligible (Not Significant) effects** are envisaged in relation to pollution.

Amphibians

- 6.7.17 Potential construction phase impacts on amphibians include habitat loss and fragmentation, disturbance / displacement, and direct mortality of individuals. As most recent eDNA analysis shows the likely absence of GCN in the Site and within 500 m, they are highly unlikely to be impacted by any construction related activities. As part of the embedded mitigation, an updated pre-construction eDNA analysis will be conducted in the appropriate time period to confirm their presence or continued likely absence. This will ensure that, if present, the Proposed Development complies with wildlife legislature and that any requirement for licensing is satisfied with Natural England. Nevertheless, all construction related activities associated with GCN are considered **Not Significant**, as a result of their likely absence from within the Site.
- 6.7.18 With respect to other species that make up the amphibian assemblage within the Zol, although they are not usually a material consideration to planning, assessing their impacts, and applying any necessary mitigation is important in safeguarding their populations. Additionally, conducting the assessment in this way will also ensure any

GCN populations are safeguarded should they be present in the future before the beginning of any of the construction phases.

- 6.7.19 Habitats present that are suitable for breeding amphibians (including smooth newt and marsh frogs which were confirmed present) include a pond and the ditch network. As part of the Proposed Development, all of these suitable breeding habitats are to be retained. There is potential for construction related activities to introduce pollutants into the watercourses, but standard construction pollution prevention measures set out within a CEMP as part of the embedded mitigation will avoid these impacts. There is likely to be a loss of some terrestrial habitat as part of the Proposed Development, but this is mostly restricted to the northern areas which are of lower quality to amphibians compared to those in the off-site enhancement areas towards the south of the Site. Taking this into consideration, the magnitude of such effects is considered **Small**. Furthermore, the creation of wetland and pond habitats as part of the project design is likely to increase the available breeding habitat for these species. This would lead to a **Negligible (Not Significant) effect** from habitat loss and fragmentation.
- 6.7.20 During the construction of the project, there is likely to be a certain amount of disturbance to amphibians occurring on/near the Site. However, this will be temporary in duration, with much of the construction activity taking place in areas where amphibian activity has not been recorded. Given the habitats present in the wider environment, affected amphibians will be able to move to other locations that are to be retained and return when disturbance has lessened.
- 6.7.21 It is possible that the increase in site traffic and construction related activities (such as excavating, vegetation clearance etc.) may lead to an increased risk of amphibian casualties. However, given the bulk of construction traffic and movement of machinery and personnel will occur during daylight hours and the relatively low site speed limits that will be imposed, the risk of casualty from traffic is very low. Additionally, any construction related activities within suitable terrestrial habitat for amphibians will be managed by an on-site ECoW, as described within the embedded mitigation, in order to safeguard individuals. This would include fingertip searches of vegetation before clearance, excavations, or machinery movement.
- 6.7.22 Considering the low abundance of amphibians, their distribution within the Site, the availability of similar more suitable habitat in the wider area, and the temporary nature of the proposed construction works, potential construction phase disturbance, displacement and mortality effects are considered to be **Negligible (Not Significant)**.

Badgers and other mammals

- 6.7.23 Potential construction phase impacts on non-volant mammal species include habitat loss and fragmentation, disturbance / displacement, and direct mortality of individuals. The terrestrial biodiversity within the Site was found to have a relatively low mammal abundance (not inclusive of water voles), with only a small number of badger field signs recorded and no setts.
- 6.7.24 Habitats present that are suitable for badgers and hedgehogs include other neutral grassland, hedgerows, scrub, and woodland. While there is likely to be some loss of *in-situ* grassland, hedgerows, and scrub, this is limited to the northern areas, where no badger activity was recorded. Habitats to the south within the off-site enhancement areas

provide more suitable habitat for badgers and hedgehogs are being retained as part of the Proposed Development. Additionally, more suitable habitat can be found within the vicinity of the Site and construction related habitat loss is not likely to cause fragmentation to these habitats. Therefore, the Proposed Development is likely to impose a **Negligible (Not Significant) effect** of habitat loss and fragmentation.

- 6.7.25 During the construction of the Proposed Development, there is likely to be a certain amount of disturbance to badgers and other mammals occurring on/near Site. However, this will be temporary in duration, with much of the construction activity taking place in areas where badger activity has not been recorded. Given the habitats present in the wider environment, affected mammals will be able to move to other retained locations and return when disturbance has lessened. No badger setts or breeding sites for other mammals (including hedgehogs) were noted within the Site and so the disturbance, displacement, and mortality of breeding or sheltering individuals is not likely to occur during the construction of the Proposed Development (where a pre-construction survey will be carried out immediately prior to construction to confirm the absence of such).
- 6.7.26 It is possible that the increase in site traffic and construction activities might lead to an increased risk of casualties of badgers, hedgehogs, and other mammals occurring in the areas. However, given the bulk of construction traffic and movement of machinery and personnel will occur during daylight hours and the relatively low site speed limits that are imposed, the risk of any significant increase in fatalities of such species is insignificant.
- 6.7.27 Considering the low abundance of mammal species within the Site, the widespread availability of similar habitat in the wider area and the temporary nature of the proposed construction works, potential construction phase disturbance, displacement and mortality impacts are considered to be **Negligible (Not Significant)**. Furthermore, the provision of a CEMP will include best practice construction guidance on how to avoid such effects. This would include pre-construction checks by an ECoW, covering excavations to prevent trapping species (or providing egress routes), and temporal considerations to work; avoiding nocturnal periods when these species are most active.

Bats

- 6.7.28 Potential construction phase impacts on bat species include habitat loss and fragmentation, disturbance and displacement, and direct mortality of individuals. As the Proposed Development involves the demolition of almost all built structures within the existing Site, this would lead to the loss of 18 high, 23 moderate, and 18 low potential roost buildings. However, emergence surveys collected no evidence of roosts present within the buildings surveyed in 2023 and, whilst surveys have not been undertaken on all buildings, activity and static detector surveys have shown that the central areas around the buildings have used by a low number of the more common bat species. A significant roost (i.e., a large maternity roost) is unlikely to be present and that the buildings are likely only used for day/transitional roosting on an infrequent basis. Nevertheless, the almost complete loss of the current built structures within the Site has the potential to remove infrequently used roosting habitats of bat species within the Site. Owing to their inclusion within the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended), any destruction of bat roosts would require licensing and mitigation (if any are present). Therefore, a **Medium** magnitude, direct, long-term adverse impact is predicted resulting in a **Minor (Not significant) effect**, in the absence of mitigation.

- 6.7.29 Whilst trees were generally assessed as being of poor quality for roosting bats, a detailed GLTA identified six trees with moderate potential and 35 trees with low potential for supporting roost bats. The majority of the trees within the Site are to be retained as part of the proposals. However, there are some within the northern area in amongst the existing holiday lets and within the south-eastern area which are required for removal in order to construct the proposed wetland and amenity lake areas and associated new holiday accommodation. This will include the loss of 11 low potential trees and one moderate potential tree. Even though bat activity recorded during the activity and static detector surveys was limited in these areas, the removal of these trees still has the potential to destroy a bat roost resulting a **Medium** magnitude, direct, adverse impact over the long-term, resulting in a **Minor (Not Significant) effect**, in the absence of mitigation.
- 6.7.30 The Proposed Development involves some minor loss of bat commuting habitat (hedgerows) in the north-eastern field and on the eastern boundary of the most northern field. However, activity and static detector surveys recorded minimal bats utilising these hedgerows for foraging or commuting, with most activity recorded along the periphery areas of the Site. The removal of these hedgerows is also unlikely to cause fragmentation of foraging habitat within the Site and to the wider area, due to connection from other linear features. Therefore, the Proposed Development is likely to have a **Moderate (Significant) effect** on the loss of commuting and foraging habitat for bat species, owing to a **Medium** magnitude, long-term adverse effect on a **Medium** sensitive feature.
- 6.7.31 During the construction of the Proposed Development, there is likely to be a certain amount of disturbance to bat species occurring on/near the Site. Increased noise and lighting are likely to cause some minor temporary displacement of bat species in the absence of mitigation. Construction phase lighting has the potential to attract certain bat species and displace other and floodlighting can be a significant source of disturbance. However, this impact will be temporary in nature and as part of the embedded mitigation described in **Section 6.6**, the provision of a CEMP will include temporal consideration to any construction related activities. This would include guidance on avoiding any construction related activities during nocturnal periods when bats are most active. Night-time lighting will be managed through a lighting strategy, and be limited in extent (both static lighting, and vehicle headlights) as standard construction works will be carried out mostly during daylight hours. In particular, lighting will be avoided amongst key commuting and foraging areas for bats including the barbastelle commuting route on the western boundary. In the presence of embedded mitigation, effects from construction related disturbance and displacement are likely to be short-term, direct, and adverse but of a **Negligible** magnitude thus creating a **Negligible (Not Significant) effect**.

Birds

- 6.7.32 The Proposed Development involves the loss of suitable grassland, scrub, and hedgerow breeding habitat for bird species. The majority of this habitat loss would be in northern areas of the Site where habitats are less suitable for birds and where breeding species have been recorded in lower frequencies to date. Of concern, however, would be the potential loss of up to four skylark territories within the two northern fields, out of a total of 22 territories recorded across the Site and in the surrounding areas (potential for an 18% loss of skylark breeding territories), as well as the potential loss of low numbers of common whitethroat, and dunnock territories. This would only be considered a **Small** magnitude effect as described within **Table 6.7**, with skylarks and other species likely

utilizing other areas of suitable habitat that is ubiquitous in the surrounding areas, particularly the Medmerry Reserve. As such, in the absence of mitigation, only **Minor (Not Significant) effects** are anticipated.

- 6.7.33 A colony of swallows, six breeding colonies of house sparrows and starlings have been recorded utilising buildings and associated shrubs for breeding in 2023, the demolition of these urban areas has the potential to impact these species. Such species are habitual breeders within built areas and as the majority of buildings are being demolished and replaced, this has the potential for temporary **Moderate (Significant) effects** in the absence of mitigation.
- 6.7.34 Whilst the Proposed Development does involve the loss of some suitable wintering habitat, such as grassland, coastal bird surveys suggest that most fields have limited use by birds in terms of frequency, abundance, and diversity. Additionally, more suitable habitat for over wintering species is abundant in the wider landscape, such as the Medmerry Reserve. As such, habitat loss for non-breeding species is considered to be a **Negligible (Not Significant) effect**.
- 6.7.35 The baseline assessment identified low irregular usage of the Site by dark-bellied brent geese. Having only been identified within one survey season in numbers that do not exceed the national threshold or regularly exceed the SPA / Ramsar thresholds, areas within the Site are not considered functionally linked to the Pagham Harbour SPA / Ramsar site or the Chichester and Langstone Harbours SPA / Ramsar site and cannot be classified as a site under the SWBGS. Significant populations of dark-bellied brent geese are therefore not regularly habituated within the Site and the small loss of 'Field E' is at most only likely to cause a **Low** magnitude effect. Therefore, the loss of grassland habitats used by dark-bellied brent geese would be a **Minor (Not Significant) effect**.
- 6.7.36 Construction activities have the potential to cause disturbance and displacement to bird species within the Site itself and within the Stilt Pools in the Medmerry Reserve. Noise, vibration, and visual disturbance may occur as a result of construction machinery, vehicles, demolition, and site personnel throughout the construction phase. Different types of disturbance stimuli are characterised by different avifaunal reactions, which can additionally vary based on the level of reaction. The results of the coastal bird surveys and breeding bird surveys suggest that most of the fields within the Site have limited use by birds. The Stilt Pools, adjacent to the Site to the east, have a larger abundance and diversity of species. At its closest, the construction footprint is approximately 100 m from the Stilt Pools with most construction activity being more than 200 m away. Additionally, the Proposed Development includes retainment of a buffer between the construction footprint and the Stilt Pools ('Field D'). Generally, waterbirds show a flight response to construction activities and a presence of people on the foreshore at distances between 20 m and 100m. However, distances between 200m – 300m have been recorded for some sensitive species (IECS, 2009: 2013). During construction, the level of disturbance is dependent on the type of activity being undertaken, with evidence suggesting that noise levels associated with general construction activities below 55 dBA have been shown to have little to no effect on birds (Cutts, Phelps & Burdon, 2009; IECS, 2013), and that in general, birds appear to habituate to continual noises (such as engine noise) as long as there is no large amplitude 'startling' component (Hockin *et al.*, 1992; IECS, 2009; 2013). Additionally, evidence has shown that human presence causes greater disturbance than vehicles and that waterbirds are more easily disturbed by irregular movements rather than the regular and defined presence of machinery and other vehicles (IECS, 1997; Mcleod *et al.*, 2013; Guay *et al.*, 2014; Glover *et al.*, 2015).

6.7.37 The production of the Waterbird Disturbance Mitigation Toolkit (Informing Estuarine Planning & Construction Projects) (IECS, 2013) has been developed to assist developers in relation to waterbird disturbance within or adjacent to Natura 2000 sites (i.e., SPAs, SACs, and Ramsar sites), however the principals can be applied to circumstances for development in sensitive areas for bird species. Different species of birds have different tolerance thresholds to noise and visual disturbance and therefore construction works and other operations impact upon different species in differing ways. The mitigation toolkit has been developed to provide guidance on the disturbance of a waterbird assemblage as a whole but also gives information of disturbance thresholds for specific species. As mentioned above the general threshold for no effects are an approach distance of 300m and a low noise threshold figure of 55dBA (Cutts, 2009; IECS, 2013). A 70dBA noise threshold has however been developed over a period of years, based on published data as well as findings from primary observations (Cutts & Allen, 1999; Cutts, Phelps & Burdon, 2009; Cutts & Hemingway, 2010).

6.7.38 The toolkit has made it possible to derive a table of noise levels, standard decay rates for noise and distance of the receptor from the source (**Image 6.1**). Acceptable 'dose' levels (e.g., to 70dBA) are shaded green with dark green (<55dBA) unlikely to have any affect whilst the pale green might occasionally induce a low behavioural response that would not lead to significant impacts on the populations. Anything above these thresholds and then mitigation will likely be required. Additionally, the toolkit has been able to prescribe low, moderate, and high-level disturbances to visual impacts and have concluded that for most waterbird species, the threshold for visual disturbance lies within c.100-150m. It also describes that birds can become particularly habituated to visual and noise impacts, such that their impacts are lessened.

Metres from Source	dB(A)										
	120	110	100	95	90	85	80	75	70	65	60
0.67	120	110	100	95	90	85	80	75	70	65	60
1.33	114	104	94	89	84	79	74	69	64	59	54
2.67	108	98	88	83	78	73	68	63	58	53	48
5.33	102	92	82	77	72	67	62	57	52	47	42
10.67	96	86	76	71	66	61	56	51	46	41	36
20.67	90	80	70	65	60	55	50	45	40	35	30
42.67	84	74	64	59	54	49	44	39	34	29	24
85.33	78	68	58	53	48	43	38	33	28	23	
170.67	72	62	52	47	42	37	32	27	22		
341.33	66	56	46	41	36	31	26	21			
682.66	60	50	40	35	30	25	20				
1365.32	54	44	34	29	24						

Image 6.1. Noise disturbance thresholds including distance from source and standard decay rates (taken from IECS, 2013).

6.7.39 Whilst construction related activities have the potential to cause infrequent, mild behavioural responses from noise and visual stimuli, this is most likely to occur in heavily

localised areas of the construction works (i.e., within 100 m). As all of the works will take place further than 100 m from the Stilt Pools, with a significant buffer maintained from the construction footprint (Field D), behavioural responses are likely to be rare and infrequent and would more likely be associated with larger disturbance events which would cause birds to temporarily flush. According to the table described in Image 6.1, almost all sources of noise would be at an acceptable dose (70 dBA) at 100m (the closest distance from the development to the Stilt Pools), apart from those which exceed 120 dBA, which would give a dose of between 72 dBA to 78 dBA (yellow-orange threshold) at the Stilt Pools. However, large noise source events above 120 dBA would be atypical of a development such as this, where the built structures are prefabricated and there is minimal piling involved. During most activities from construction there would be no or minimal behavioural responses from bird species, but even in unlikely and infrequent high disturbance events, birds would be expected to temporarily redistribute to another nearby adjacent foreshore and return when disturbance has lessened. That being said, there is an argument for the relative habituation of waterbirds to anthropogenic activities in the local area due to the existing noise ambient levels and recreational pressure, with birds expected to become further habituated to construction activities. The provision of noise and visual disturbance mitigation measures outlined within a CEMP, such as machinery restrictions and the erection of noise and visual barriers, will help to decrease any disturbance related impacts from construction activities and thus make any high disturbance events negligible. Furthermore, the setup of species-specific exclusion zones for breeding waterbirds (such as avocet, oystercatcher, ringed plover, etc.) will additionally avoid and lessen disturbance on breeding waterbirds. Therefore, in conclusion, waterbirds are likely to experience a **Negligible (Not Significant) effect** from construction related disturbance and displacement, in the absence of mitigation.

- 6.7.40 Whilst the area of suitable habitat subject to disturbing activities for passerine bird species will be relatively small, particularly in the context of retained areas of suitable habitat present within the wider landscape, there is potential for disturbance and displacement during the construction of the Proposed Development. This includes potential disturbance of birds when nesting and may cause birds to vacate territories close to works. Additional impacts may occur from the clearance of vegetation causing nest destruction and mortality of young. However, these impacts are likely to only be temporary and as identified within the embedded mitigation, the provision of a CEMP will ensure that all suitable nesting habitat is checked prior to clearance by the project ECoW and that appropriate disturbance buffers are applied should a nest be found. Additionally, works will be avoided, wherever possible around suitable breeding habitat during the nesting season. Therefore, in the presence of embedded mitigation, passerine species are likely to experience a **Minor (Not Significant) effect** from disturbance and displacement.

Invertebrates

- 6.7.41 Potential construction phase impacts on invertebrate species include habitat loss and fragmentation, and disturbance / displacement. Despite there being 99 records of priority invertebrate species identified by the desk study within 2 km, these records are most likely associated with the nearby designated sites. Additionally, suitable habitat for terrestrial and aquatic invertebrates is largely restricted to the southern retained areas where the habitats form a more mosaic structure that is less disturbed. As the land take involved as part of the Proposed Development is mostly restricted to the northern areas of the Site, with more suitable habitat for invertebrates being retained, likely significant effects of habitat loss and fragmentation are not anticipated (**Negligible (Not Significant)**)

effect). Additionally, any risks of pollution of suitable invertebrate habitat will be prevented and controlled using standard construction pollution prevention measures outlined within a CEMP.

- 6.7.42 While there is likely to be some level of disturbance to invertebrates from construction activities, this will be temporary in duration, with much of the construction activity taking place in areas less suitable for invertebrates. Given the habitats present in the wider environment, affected invertebrates will be able to move to other locations and return when disturbance has lessened. Considering the construction footprint, the distribution of suitable habitat within the Site, and the availability of similar more suitable habitat in the wider area, potential construction phase disturbance, displacement and mortality effects are considered to be **Negligible (Not Significant)**.

Reptiles

- 6.7.43 The reptile assemblage within the Site was assessed as being of County/District importance owing to its Key Reptile Site status. The majority of reptiles were recorded within areas to be retained as part of the Proposed Development with some recorded on the boundaries of the north-eastern field that is to be developed. The Proposed Development is therefore likely to lead to a slight decrease in the available habitat for reptiles due to the reduction of grassland, hedgerows, and scrub in the absence of mitigation and offsetting. However, reptiles are transient in nature and will be able to move to other areas on-site and off-site, especially considering they were predominantly recorded on field boundaries. The abundance of suitable habitat in the wider area and the fairly small populations recorded within the Site mean that developing on the north-eastern field is unlikely to be significantly damaging. Therefore, the Proposed Development is likely to cause a **Minor (Not Significant) effect** of habitat loss and fragmentation in the absence of mitigation.

- 6.7.44 Construction activities such as site clearance with machinery and trampling from traffic and personnel present a risk of disturbance and casualty / mortality to reptile species. However, this will be temporary in duration, with much of the construction activity taking place in areas less suitable for reptiles. Given the habitats present in the wider environment, affected reptiles will be able to move to other locations in the wider areas and return when disturbance has lessened. Additionally, the implementation of low impact construction methods included within a CEMP (as part of embedded mitigation) within sensitive areas for reptiles will reduce the likelihood of construction related casualties. Such methods would include hand clearance of vegetation instead of machinery, the presence of an ECoW and two-stage vegetation clearance with fingertip searching for reptiles. As such, the Proposed Development is likely to cause a **Negligible (Not Significant) effect** from disturbance/displacement and casualty in the presence of embedded mitigation.

Water voles

- 6.7.45 The water vole assemblage within the Site was assessed as being of County/District importance owing to the dense population and its importance within one of the few strongholds for water voles in Sussex. Potential construction phase impacts include:

- Habitat loss and deterioration
- Habitat and population fragmentation
- Incidental mortality

Damage to burrows
Disturbance and displacement
Pollution of the watercourses
Changes to water levels of the watercourses.

- 6.7.46 The Proposed Development does not involve any land take within watercourses and so no loss of water vole habitat is anticipated. Additionally, the project design has incorporated existing bridges with no planned culverting, or bridge construction of any kind within watercourses with evidence of presence of water voles. While a boardwalk is planned for construction over the central rife (over Watercourse 3, **Figure 6.5**) just south of the existing 'pink flamingo' building, the design of this will incorporate a buffer for construction of 3-5 m from the bank with raised foundations additionally being placed using that same buffer. As such, habitat loss, deterioration, and fragmentation within the Site is highly unlikely. Additionally, standard pollution prevention and control measures that will be included within a CEMP will avoid any pollution to watercourses. Therefore, effects from habitat loss, habitat and population fragmentation, and pollution of the watercourses are considered **Negligible (Not Significant)**.
- 6.7.47 Noise and visual disturbances are, in most cases, unlikely to have a significant effect on water vole populations (Dean *et al.*, 2016). However, the disturbance of water voles occupying a place of shelter or protection is an offence under the Wildlife and Countryside Act 1981 (as amended). Therefore, operations with the potential to disturb a water vole to the point where it abandons its burrow, are considered. This would include demolition and construction activities adjacent to watercourses. It should be noted that the highest density of water voles has been recorded in areas outside of the construction footprint of the Proposed Development. The rife running through the centre of the Site (represented as Watercourse 1, 3, and 4 on **Figure 6.5b**), falls directly within the construction footprint and recorded areas of medium density interspersed with areas of low density. The density of this population is thought to be at its capacity due to the limited amount of food resource and management of the banks to short vegetation and presence of less cover.
- 6.7.48 While a 7 m buffer zone is being implemented for any new construction features around watercourses with the confirmed presence of water voles, demolition activities close to the banks of the central rife are likely to disturb water voles with the possibility of damaging burrows, in the absence of mitigation. Furthermore, such activities have the potential to cause incidental mortality through the increase of site traffic and potential damage to inhabited burrows. As such, in the absence of mitigation, demolition and construction activities have the potential to cause a **Moderate (Significant) effect** of incidental mortality, damage to burrows, and disturbance and displacement.
- 6.7.49 During the construction of the Proposed Development, any increase in impermeable surfacing within the development area would result in increased rates of runoff which in turn could increase water levels in water features if a temporary drainage system is not put in place. This has the potential to flood burrows and cause water voles to abandon them. However, the production of a Construction Drainage Design Plan as part of a CEMP will identify and manage the required devices to prevent construction runoffs and increasing the water levels in the water courses. Therefore, in the presence of embedded mitigation effects from changes to water levels of the watercourses are considered **Negligible (Not Significant)**.

Invasive non-native species

6.7.50 The high-risk invasive species, Japanese knotweed, was recorded within the Site as stand within bramble scrub on building rubble on the southern margin. Construction works could therefore potentially disturb stands of this invasive species and/or soils contaminated with invasive plant material and cause them to spread on-site. Construction plant can also potentially carry seeds or viable plant material to/from other works sites if not adequately cleaned. In addition to lands within the proposed works areas, there is an identified risk of invasive plant species being spread onto neighbouring lands and onto public roads, and other locations. Construction works could therefore result in the spread of invasive plant species both *in-situ* and *ex-situ*. The most common ways that these species can be spread are:

Site and vegetation clearance, mowing, hedge-cutting or other landscaping activities.

Spread of seeds or plant fragments during the movement or transport of soil.

Spread of seeds or plant fragments through the local surface water and drainage network.

Contamination of vehicles or equipment with seeds or plant fragments which are then transported to other areas.

Importation of soil from off-site sources contaminated with invasive species plant material.

6.7.51 A watercourse can act as a potential impact-receptor pathway allowing the transit of invasive species resulting in the indirect habitat loss/damage to downstream habitats in the wider areas including designated sites that are present. In this case there are potential hydrological pathways that link the Site to the Medmerry Reserve. Run-off from traffic, deposition of spoil from the wheels of vehicles or accidental spillage of soil from trailers may result in the inadvertent spread of invasive plant species to nearby aquatic habitats downstream. Machinery, equipment, and material (including soil) which may be transported onto the Site for construction could lead to the introduction of further invasive species with potential to displace local natural biodiversity.

6.7.52 Given the location of the site with hydrological connection to adjacent areas, the potential impact from the spread of non-native invasive plant species in the absence of mitigation during the construction phase would be considered a significant long-term adverse effect and could impact habitats within the Site and in adjacent areas, including the Medmerry Reserve. However, as part of the embedded mitigation described in **Section 6.6**, the provision of a CEMP will include an Invasive Species Management Plan. This will ensure that all relevant staff are briefed and aware of the issues, the management plan, and their responsibilities. Management will comprise eradication through long term treatment with herbicides, excavation and disposal at a licensed landfill site and control through marking out contaminated areas (with a 7 m radius from any stands), ensuring vehicles do not work within contaminated areas, and treating contaminated soils carefully. In the presence of embedded mitigation effects from non-native invasive plant species during the construction phase would be **Not Significant**.

Table 6.17: Summary of assessment of effects from the construction phase.

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
Internationally designated sites					
Internationally designated sites (Medmerry Reserve, Pagham Harbour SPA/Ramsar site, Chichester and Langstone Harbours SPA/Ramsar site, Solent Maritime SAC, and Solent and Dorset Coast SPA).	Damage to non-designated habitats functionally linked to designated sites	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Disturbance of designated features (birds) during construction	Short-term adverse	High / Negligible	Negligible (not significant)	No
	Potential spread or introduction of invasive species.	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Air pollution/nitrogen deposition	Short-term adverse	High / Negligible	Negligible (not significant)	No
	Water pollution during construction	Short-term adverse	High / Negligible	Negligible (not significant)	No
Nationally designated sites					
Bracklesham Bay SSSI	Habitat loss and degradation	No effect	High / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	High / Negligible	Negligible (not significant)	No
Selsey Bill and the Hounds MCZ	Habitat loss and degradation	No effect	High / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through	Short-term adverse	High / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	various construction related activities				
Habitats					
Priority habitats (coastal floodplain grazing marsh, lowland meadow, coastal vegetated shingle, and maritime cliffs and slopes)	Habitat loss and degradation	No effect	Medium / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Medium / Negligible	Negligible (not significant)	No
Grassland	Habitat loss and degradation	Long-term adverse	Low / Medium	Minor (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Woodland and treelines	Habitat loss and degradation	No effect	Low / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Scrub	Habitat loss and degradation	Long-term adverse	Low / Medium	Minor (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through	Short-term adverse	Low / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	various construction related activities				
Hedgerow	Habitat loss and degradation	Long-term adverse	Medium / Medium	Moderate (significant)	Yes
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Medium / Negligible	Negligible (not significant)	No
Coastal habitat	Habitat loss and degradation	No effect	Low / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Ditches, canals, and ponds	Habitat loss and degradation	No effect	Low / Negligible	Negligible (not significant)	No
	Introduction of pollution (e.g., silt, hydrocarbons, fuel, chemicals, dust etc.) through various construction related activities	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Species					
Amphibians	Habitat loss and fragmentation	Long-term adverse	Low / Small	Negligible (not significant)	No
	Construction related disturbance and displacement	Short-term adverse	Low / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	Construction related mortality and casualty	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Badgers and other mammals	Habitat loss and fragmentation	Long-term adverse	Low / Small	Negligible (not significant)	No
	Construction related disturbance and displacement	Short-term adverse	Low / Negligible	Negligible (not significant)	No
	Construction related mortality and casualty	Short-term adverse	Low / Negligible	Negligible (not significant)	No
Bats	Loss of potential roost sites due to the demolition of existing buildings	Long-term adverse	Medium / Medium	Moderate (significant)	Yes
	Loss of potential roost sites due to the removal of trees	Long-term adverse	Medium / Medium	Moderate (significant)	Yes
	Mortality of roosting bats	Long-term adverse	Medium / Medium	Moderate (significant)	Yes
	Loss of commuting and foraging areas	Long-term adverse	Medium / Medium	Moderate (significant)	Yes
	Disturbance and displacement from constructed related noise and lighting	Short-term adverse	Medium / Negligible	Negligible (not significant)	No
Birds	Loss and fragmentation of breeding habitat for birds (non-urban)	Long-term adverse	Medium / Small	Minor (not significant)	No
	Loss and fragmentation of breeding habitat for birds (urban) due to the demolition of existing buildings	Short-term adverse	Medium / Moderate	Moderate (significant)	Yes

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	Loss and fragmentation of wintering habitat for birds	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
	Loss of grassland habitat for dark-bellied brent geese	Long-term adverse	Medium / Small	Minor (not significant)	No
	Construction related noise and visual disturbance to breeding and non-breeding waterbirds	Short-term adverse	Medium / Small	Negligible (not significant)	No
	Construction related disturbance and mortality to breeding passerine species	Short-term adverse	Medium / Small	Minor (not significant)	No
Invertebrates	Habitat loss and fragmentation	Long-term adverse	Low / Small	Negligible (not significant)	No
	Construction related disturbance, displacement, and mortality	Short-term adverse	Low / Negligible	Negligible (Not significant)	No
Reptiles	Habitat loss and fragmentation	Long-term adverse	Medium / Small	Minor (not significant)	No
	Construction related disturbance, displacement, and mortality	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
Water voles	Habitat loss and deterioration	Long-term adverse	Medium / negligible	Negligible (not significant)	No
	Habitat and population fragmentation	Long-term adverse	Medium / negligible	Negligible (not significant)	No
	Incidental mortality	Short-term adverse	Medium / Medium	Moderate (significant)	Yes
	Damage to burrows	Short-term adverse	Medium / Medium	Moderate (significant)	Yes

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	Disturbance and displacement	Short-term adverse	Medium / Medium	Moderate (significant)	Yes
	Pollution of the watercourses	Short-term adverse	Medium / negligible	Negligible (not significant)	No
	Changes to water levels	Short-term adverse	Medium / negligible	Negligible (not significant)	No
Invasive Non-Native Species	Construction related spread of Japanese knotweed to other areas within the Site	Long-term adverse	N/A / Negligible	Negligible (not significant)	No
	Construction related spread of Japanese knotweed to and from other sites and areas	Long-term adverse	N/A / Negligible	Negligible (not significant)	No

Assessment of effects from operation

6.7.53 The assessment of effects upon ecological features during the operation of the Proposed Development is described in this section. A summary of the assessment detailing the categorisation of the effects is found within **Table 6.19**. Potential effects identified through the operational phase are as follows:

Recreational noise/lighting disturbance to vulnerable species

Loss, degradation and fragmentation of habitat by trampling

Potential for increased traffic resulting in increased levels of air pollution, individual mortality/injury to species and disturbance

Nutrient enrichment through dog fouling

Changes in water flow and quality of watercourses and any potential impacts to habitats and species that are related.

6.7.54 The majority of the potential operational related impacts centre around the possible increase in recreational disturbance. The Proposed Development does not include an increase in the number of holiday units within the Site; however, it should be noted that the new schedule of accommodation can provide an increased number of bedspaces. **Table 6.18** below details the existing and proposed number of bedspaces as a reference from **Chapter 3: Proposed Development**.

Table 6.18: Existing number and proposed number of holiday accommodation and associated bedspaces.

Chalets/Lodges	Numbers of units	Number of bedspaces
Existing Chalets		
1 bed chalets	37	74
2 bed chalets	239	1,018
3 bed Riverside Bungalow	1	6
1 bed Bricks	8	16
2 bed Bricks	16	64
1 bed Riverside House	2	4
2 bed Riverside House	1	4
2 bed Westward House	4	16
Dimensions House/Earnley Beach Centre including three staff bedrooms	N/A	3
On site staff accommodation	N/A	3
Total	308	1,208
Proposed lodges		
Orchard: 10 x 2 bed (single storey) 12 x 3 bed (single storey)	40	204

Chalets/Lodges	Numbers of units	Number of bedspaces
8 x 2 bed semi detached (single storey) 10 x 3 bed semi detached (single storey)		
Woodland: 17 x 2 bed (single storey) 46 x 2 bed semi detached (single storey) 50 x 2 bed terrace (two storey)	113	452
Lakeside: 14 x 3 bed (single storey) 7 x 2 bed (single storey) 54 x 2 bed semi detached (single storey) 25 x 2 bed terrace (two storey)	100	428
Secret Garden: 24 x 2 bed semi-detached (single storey)	24	96
Wetland and Rife: 31 x 3 bed (single storey)	31	186
Total	308	1,366

- 6.7.55 Whilst this does show a 158 increase in bedspaces, this is not considered a significant increase. Theoretically, the Proposed Development will be able to accommodate more people, but in reality, the likelihood of that occurring is relatively low. Even in peak season, the existing Medmerry Holiday Park does not ever reach full capacity, with the same predicted for the Proposed Development. The fact that the number of units will not increase, is likely to mean that the number of people staying in each lodge is unlikely to change significantly compared to existing levels. It is therefore not predicted that a significant increase in people and traffic during the operational phase of the Proposed Development would result.
- 6.7.56 Embedded mitigation will be applied within the operation phase and as part of the project design, which will ensure that any disturbance related impacts are avoided or lessened (as described within **Section 6.6** of this chapter), so that no significant impacts are imposed on sensitive ecological features. Restricting access to the majority of the habitats within the proposed enhancements areas prevents degradation (e.g., trampling and dog fouling) from recreational activities, and allows these areas to develop in the interest of biodiversity. Furthermore, increasing the number of amenity facilities within the Site is likely to minimise the number of people venturing off-site to neighbouring designated sites, lessening disturbance related impacts on sensitive features associated with these sites.
- 6.7.57 Taking into consideration the predicted insignificant increase in the number of people and associated traffic occupying the Site, and the site access restrictions and increased

amenity facilities, effects of habitat loss, degradation, and fragmentation as well as nutrient enrichment through dog fouling are considered **Negligible (Not Significant)** in relation to the Bracklesham Bay SSSI, the Selsey Bill and the Hounds MCZ, priority habitats within 250 m and habitats within the Site. Effects would additionally be negligible on all of the internationally designated sites within the Zone of Influence as described within the HRA (**Appendix 6.6**).

Bats

- 6.7.58 Disturbance effects are possible to roosting, commuting, and foraging bat species from a potential increase in lighting and noise as a result of the operation of the Proposed Development. Bats currently occupying the Site are likely to already be habituated to certain levels of recreational and lighting disturbance that is associated with holiday parks, especially considering that the majority of the bat species recorded within the Site are light tolerant and are often associated with urban areas. Additionally, as the number of holiday units is not increasing, a significant increase in noise and lighting is not anticipated and while the number of amenity facilities are increasing, these are highly unlikely to be operational during nocturnal periods when these species are most active. At most, a small increase in lighting and noise is likely to lead to no more than a **Small** magnitude effect, especially considering the small amounts of bat activity recorded within the central areas of the Site. Lastly, the provision of an operational lighting strategy as described within the embedded mitigation is likely to reduce the amount of lighting on sensitive features for these species. For example, creating dark corridors for important commuting and foraging routes (i.e., for the barbastelle commuting/foraging route and the pipistrelle foraging area within the northern treeline (static location 1)), internal accommodation lighting strategies, part-night lighting, screening, and appropriate luminaire specifications can all be used to decrease illuminating sensitive features for bat species. Additionally, the creation of a buffer and associated buffer planting in between the Proposed Development and the barbastelle commuting route will act to limit any noise and lighting effect and further implement the creation of a dark corridor (as mentioned above). Taking this into consideration, a long-term adverse **Minor (Not Significant) effect** of noise/lighting disturbance to bat species is predicted.
- 6.7.59 It can be argued that the habitat creation proposals within the Site (e.g., lake and wetland creation, tree, and hedgerow planting etc.) would increase prey source and available foraging habitat for bat species. Such beneficial effects can be described as being of a **Small** magnitude and thus leading to a **Minor (Not Significant) effect** owing to the **Low** sensitivity of bat species.

Birds

- 6.7.60 Impacts on birds during the operational phase predominantly stem from the potential increase in recreational pressure and activities. Research has shown that birds (including waterbirds) often respond to the presence of recreational activities in their environment by deviations from their predominant behaviour (Tuite, 1982; Tuite *et al.*, 1983) which can result in impacts to their populations and the area's carrying capacity for bird species (Platteeuw & Henkens, 1997). Furthermore, 29% of European sites classified as important bird areas are threatened by such effects of disturbance (Heath & Evans, 2000). While such pressures have been identified in the surrounding area of the Solent, made evident by the Solent Recreation Mitigation Strategy (Bird Aware, 2017), the insignificant

increase in the predicted number of people (and therefore traffic) occupying the Site is unlikely to significantly contribute towards these pressures. Embedded mitigation measures laid out within the design of the Proposed Development will also act to reduce any disturbance pressures on important bird populations. Increasing the amenity facilities within the Site will act to reduce the number of people venturing off-site to neighbouring sites of conservation designation and restricting access to the proposed enhancement areas in the Site will reduce disturbance to breeding and non-breeding birds within those fields and within the Stilt Pools in the Medmerry Reserve. Education signage on recreational areas will additionally aim to further reduce recreational pressure, especially on the foreshore where birds have been shown to be sensitive to such pressures (Glover *et al.* 2015).

- 6.7.61 There are arguments to suggest that birds using the areas surrounding the Site are already likely to be accustomed or habituated to a certain level of recreational pressure, due to the proximity to established paths surrounding the Medmerry Reserve. Additionally, recent evidence has suggested that disturbance from recreational activity has trivial impacts on birds and does not lower their body condition or winter survival (Goss-Custard *et al.*, 2019). Nevertheless, the insignificant increase in the number of people occupying the Site and the embedded mitigation measures applied within the project design are likely to either cause a slight reduction in disturbance to bird species from recreational activities or maintain the existing levels and thus inducing a change that would be barely discernible, approximating to a 'no-change' scenario. Therefore, the effects of recreational disturbance on bird species are considered to be **Negligible (Not Significant)** due to an imperceptible **Negligible** magnitude impact on a **Medium** sensitivity species assemblage.
- 6.7.62 While it is noted that there will not be an increased number of units, the increase in space taken within the Site and the increase in amenity facilities has the potential to lead to a small increase in the amount of noise, visual, and light disturbance. However, such amenity facilities proposed, do not involve activities that are likely to produce large amounts of noise, over and above the 55 dBA threshold of significant disturbance (IECS, 2013). An open amenity area is proposed as part of the project design and could include the irregular installation of a projector to show films or sporting events. The noise output for this area has been measured as part of the noise impact assessment (see **Chapter 15: Noise and Vibration**). This concluded that the calculated level of noise from the open amenity area would be between 43-44 dBA which falls below the 55 dBA no impact threshold as described within the Waterbird Disturbance Mitigation Toolkit (IECS, 2013) and **Image 6.1**. Additionally, such activities would be restricted to the daytime, reducing impacts on crepuscular bird species (such as waders).
- 6.7.63 It is also noted that an operational lighting strategy outlined within the embedded mitigation will help to limit potential disturbance to sensitive areas for bird species, and the incorporation of screen planting around the periphery edges of the Proposed Development will help to create a visual screen and noise barrier. Therefore, the effects of noise, visual, and lighting disturbance are considered to be of no more than **Minor (Not Significant)** owing to a long-term **Small** magnitude effect on a **Medium** sensitivity species assemblage.
- 6.7.64 As a significant population of dark-bellied brent geese has not been identified and the Site is not classed as either FLL to the neighbouring SPAs / Ramsar sites or an important site under the SWBGS, significant impacts of disturbance to this species is not envisaged.

Nevertheless, the insignificant increase in the number of people occupying the Site and the embedded mitigation measures for controlling recreation, noise, and light (as described above), means that disturbance effects to dark-bellied brent geese are limited. Additionally, the closure of the Site in January and February, the reduced occupancy in the other winter months, and the restriction of PRow access in Field E in winter significantly reduces disturbance to dark-bellied brent geese and other overwintering bird species. Therefore, disturbance effects to dark-bellied brent geese are considered no more than **Minor (Not Significant)**.

Water voles

- 6.7.65 The insignificant rise in the number of people and traffic utilising the Site makes it unlikely for any disturbance related impacts to be imposed on water voles. Additionally, noise and visual disturbances are, in most cases, unlikely to have a significant effect on water vole populations (Dean *et al.*, 2016). This is especially the case for the water vole population within the Site, which are likely to already be accustomed and habituated to a certain level of anthropogenic disturbance.
- 6.7.66 Furthermore, the implementation of the 7 m buffer for any new construction around ditches with water vole presence as part of the project design, is likely to reduce disturbance to the central rife that runs through the centre of the Site. This strategy will also likely reduce the likelihood of traffic mortality incidents as the entrance road will be moved further from the watercourse. The same applies for all watercourses within the enhancement areas where the majority of access will be prohibited. Therefore, the operation phase of the project is likely to create a **Negligible (Not Significant) effect** in regard to disturbance.
- 6.7.67 It can be argued that the habitat creation proposals as part of the Proposed Development (e.g., lake and wetland creation) would increase available burrow and foraging habitat for water voles, expanding their range within the Site. Such beneficial effects can be described as being of a **Small** magnitude and thus leading to a **Minor (Not Significant) effect** owing to the **Medium** sensitivity of water voles within the Site.
- 6.7.68 By increasing the impermeable areas of the Site, the rate of discharge of surface water runoff to the watercourses (particularly the Park Rife) will increase if not suitably managed. However, a Surface Water Management Strategy (SWMS) (see Section 9 of **Appendix 7.1**) has been produced as part of the Proposed Development that will aim to manage surface water drainage. It is proposed that surface water is attenuated on-site within a series of wetland lakes, with other SuDS including swales, permeable surface, bioretention systems and gravel paths. The system will be designed to capture rain falling onsite before discharging surface water to the Park Rife crossing the Site at a restricted rate. As a result of the sustainable drainage systems, the risk of increased surface water runoff is considered to be managed and therefore the effects of changes in water levels to watercourses on water voles is **Negligible (Not Significant)**.

Other species

- 6.7.69 Reptiles, amphibians, invertebrates, badgers, and other non-volant mammal species are highly unlikely to experience operational related disturbance / displacement effects from the Proposed Development. As an already operational holiday park, these species are likely to already be habituated to some levels of anthropogenic disturbance. As the Proposed Development is not likely to lead to a significant increase in people and traffic,

disturbance and mortality levels are not likely to increase over and above existing levels. That being said, the restricted access of the proposed enhancement areas of the Site, where these species are predominantly present, is likely to be beneficial for all of these species through the reduction of recreational related habitat degradation, noise disturbance and domestic pet related impacts. Therefore, operational related effects in regard to these species are considered **Negligible (Not Significant)**.

- 6.7.70 The habitat creation proposals within the Site (e.g., lake and wetland creation, scrub; and tree planting etc.) would increase available habitat for amphibians, expanding their range within the Site. Such beneficial effects can be described as being of a **Small** magnitude and thus leading to a **Negligible (Not Significant) effect** owing to the **Low** sensitivity of amphibians within the Site.

Invasive Non-Native Species (INNS)

- 6.7.71 Operational stage maintenance work is highly unlikely to disturb or displace any stands of Japanese knotweed, especially considering that strands of such species are planned to be effectively removed during the construction phase. The implementation of a CEMP during the construction phase will also be utilised during any operational maintenance works. This will ensure that all relevant staff are briefed and aware of relevant constraints, the Invasive Species Management Plan, and their responsibilities. In the presence of embedded mitigation effects from non-native invasive species during the operation phase are considered **Negligible (Not Significant)**.

Table 6.19: Summary of effects from operational phase.

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
Internationally designated sites					
Internationally designated sites (Medmerry Reserve, Pagham Harbour SPA/Ramsar site, Chichester and Langstone Harbours SPA/Ramsar site, Solent Maritime SAC, and Solent and Dorset Coast SPA).	Damage to non-designated habitats functionally linked to designated sites	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Disturbance of designated features (birds) during operation	Short-term adverse	High / Negligible	Negligible (not significant)	No
	Potential spread or introduction of invasive species.	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Air pollution/nitrogen deposition	Short-term adverse	High / Negligible	Negligible (not significant)	No
Nationally designated sites					
Bracklesham Bay SSSI	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	High / Negligible	Negligible (not significant)	No
Selsey Bill and the Hounds MCZ	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	High / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	High / Negligible	Negligible (not significant)	No
Habitats					

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
Priority habitats (coastal floodplain grazing marsh, lowland meadow, coastal vegetated shingle, and maritime cliffs and slopes)	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
Grassland	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Woodland and treelines	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Scrub	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Hedgerow	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Low / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
Coastal habitat	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Nutrient enrichment through dog fouling.	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Ditches, canals, and ponds	Habitat loss, degradation, and fragmentation of habitat by recreation	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Changes in water flow and quality of watercourses	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Species					
Amphibians	Recreational noise/lighting disturbance	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Loss, degradations, and fragmentation of habitat by trampling	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Increased risk of operational related individual mortality/injury	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Habitat creation	Long-term beneficial	Low / minor	Negligible (not significant)	No
Badgers and other mammals	Operational noise/lighting disturbance	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Loss, degradations, and fragmentation of habitat by trampling	Long-term adverse	Low / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
	Increased risk of operational related individual mortality/injury	Long-term adverse	Low / Negligible	Negligible (not significant)	No
Bats	Operational noise/lighting disturbance	Long-term adverse	Medium / Small	Minor (not significant)	No
	Increased risk of operational related individual mortality/injury	Long-term adverse	Medium / Negligible	Minor (not significant)	No
	Habitat creation	Long-term beneficial	Medium / minor	Minor (not significant)	No
Birds	Recreational disturbance to breeding and non-breeding birds	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
	Noise/visual/lighting disturbance to breeding and non-breeding bird species.	Long-term adverse	Medium / Small	Minor (not significant)	No
	Operational related disturbance on dark-bellied brent geese	Long-term adverse	Medium / Small	Minor (not significant)	No
Invertebrates	Recreational noise/lighting disturbance	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Loss, degradations, and fragmentation of habitat by trampling	Long-term adverse	Low / Negligible	Negligible (not significant)	No
	Increased risk of operational related individual mortality/injury	Long-term adverse	Low / Negligible	Negligible (not significant)	No

Ecological feature	Potential effect	Effect description	Sensitivity / Magnitude	Effect value	Additional mitigation required?
Reptiles	Recreational noise/lighting disturbance	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
	Loss, degradations, and fragmentation of habitat by trampling	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
	Increased risk of operational related individual mortality/injury	Long-term adverse	Medium / Negligible	Negligible (not significant)	No
Water voles	Operational related disturbance (noise/lighting/recreation)	Long-term adverse	Medium / negligible	Negligible (not significant)	No
	Changes in water levels and quality	Long-term adverse	Medium / negligible	Negligible (not significant)	No
	Habitat creation	Long-term beneficial	Medium / Minor	Minor (not significant)	No
Invasive Non-Native Species	Operational related spread of Japanese knotweed to other areas within the Site	Long-term adverse	N/A / Negligible	Negligible (not significant)	No
	Operational related spread of Japanese knotweed to and from other sites and areas	Long-term adverse	N/A / Negligible	Negligible (not significant)	No

3.2 Mitigation

Scope

- 6.8.1 This section describes the measures that are in place to mitigate significant adverse effects associated with the Proposed Development on ecological features. These measures are recommended in addition to the embedded mitigation described in **Section 6.6** which was taken into consideration during the assessment of effects.
- 6.8.2 Effects on features have been addressed in two ways:
- Design of the project in terms of embedded mitigation (see **Section 6.6**).
 - Management and enhancement of development phases (described in this section).
- 6.8.3 The mitigation measures described below are designed to address and minimise the risk of impacts arising from each phase of the Proposed Development. The production of a Biodiversity Net Gain (BNG) assessment has been carried out and is appended to this chapter (see **Appendix 6.7**). This forms part of the strategy put forward to ensure that the Proposed Development leaves a positive legacy for biodiversity. An associated Landscape and Ecological Management Plan (LEMP) will be produced as a condition of planning to ensure that ongoing management is successful in achieving a biodiversity net gain.

Mitigation of likely significant effects

- 6.8.4 Assessment of effects undertaken in **Section 6.7** identified the following potentially significant effects on ecological features during the construction of the Proposed Development:
- Loss of commuting habitat due to the removal of hedgerows.
 - Loss of potential roost sites for bats due to the demolition of existing buildings.
 - Loss of potential roost sites for bats due to the removal of trees.
 - Mortality of bats roosting in buildings and trees.
 - Loss and fragmentation of breeding habitat for birds due to the demolition of existing buildings.
 - Incidental mortality of water voles during construction.
 - Damage to water vole burrows during construction.
 - Disturbance and displacement of water voles during construction.
- 6.8.5 No potentially significant effects were identified for the operational phase of the Proposed Development in the presence of embedded mitigation.
- 6.8.6 As stated within **Section 6.6**, the development design includes the following measures, as embedded mitigation, which will serve to minimise these effects:
- Retention of areas of more important habitat within the landscape design.
 - Minimisation of the extent of habitat loss during construction as much as is possible within the development design.
 - Provision of a Construction Environmental Management Plan (CEMP) to ensure best practice construction methodologies are used to limit, control, and avoid environmental impacts.

Presence of an Ecological Clerk of Works (ECoW) to oversee and manage ecological issues.

Adapting the development design to minimise disturbance to sensitive ecological features e.g., restricting access to the proposed enhancement areas, selection of a low-impact accommodation design.

Mitigation of likely significant effects on hedgerows and commuting bats

- 6.8.7 The 26.9% loss of hedgerows to facilitate the construction of the project will be offset through the provision of 1.88 km of hedgerow planting and 0.37 km of hedgerow enhancement. This includes 1.32 km of hedgerow planting along Drove Lane. This is likely to sufficiently offset the hedgerow loss habitat within the Site and additionally lead to a 185.46% net gain in hedgerow habitat as part of the Proposed Development. Furthermore, this will offset the losses of on-site commuting habitat for bat species, and the hedgerow planting along Drove Lane will lead to significant benefits for barbastelles, providing further connectivity for their commuting and foraging route.

Mitigation of likely significant effects on roosting bats

- 6.8.8 The loss of the existing built structures within the Site, and the loss of some existing trees with bat roosting potential has the potential to lead to a loss of limited roosting habitat for bat species. It should be noted that bat activity within the central areas of the Site was low; activity was largely restricted to the boundary linear features rather than the areas around the buildings. Nevertheless, further pre- construction roost characterisation surveys on the trees and remaining un-surveyed buildings will be undertaken to ascertain the presence of any roosts and their character (i.e., species, size, maternity roost, day roost etc.), based upon best practice guidance (Collin, 2023). If roosts are found to be present, then detailed and appropriate mitigation and compensation would need to be designed. This would include consultation with Natural England and were roosts to be lost, due to the legislative protections for bats, would require a European Protected Species Mitigation License (EPSML). The nature of such mitigation and compensation measures would be dependent on the character of the roost(s) present and would be assessed on a case-by-case basis.

- 6.8.9 Such measures would reflect the character of the roost with temporal considerations to construction. For example, if a maternity roost is identified from pre-construction surveys, then the demolition of the buildings/felling of the trees would take place outside of the maternity season to avoid direct impacts. Alternatively, if a hibernation roost is discovered then demolition and/or felling would take place outside of the hibernation season for bats. In order to compensate for any loss of roosts, measures such as the erection of specifically designed bat mitigation buildings (or the incorporation of bat 'lofts' into buildings) would be considered in suitable locations within the Site. However, the likelihood of undetermined roosts of significance being present is low.

Mitigation of likely significant effects on birds

- 6.8.10 The loss of the existing built structures within the Site has the potential to significantly impact nesting bird species which habitually use built structures such as these. Barn swallows, house sparrows, and starlings have all been recorded nesting within the built areas of the Site. While it could be argued that this would only be a temporary impact as the majority of the buildings will be replaced, new buildings are likely to be built with totally sealed surfaces in comparison to the 'nooks, crannies and voids' present in older

dilapidated buildings present within the Site.

- 6.8.11 It should initially be noted that the demolition of buildings with known nesting evidence will be undertaken outside of the nesting season for birds, as would be described within a CEMP. If this is not possible, then demolition will be delayed until young have fledged with a species-specific disturbance buffer zone put in place; in compliance with the Wildlife and Countryside Act (1981) (as amended). In order to compensate for the loss of nesting habitat within the new buildings, integral nest boxes will be erected according to best practice guidance set out within The British Standards Institution (BSI) Standards Publication B2 42021:2022 (2022). Siting bird boxes for cavity-nesting bird species within the built environment helps to compliment mitigation and biodiversity net gain strategies and helps to support the bird populations using these boxes. There are a range of integral nest boxes recommended by the BSI that:
- Are suitable for most construction methods
 - Conform to building regulations
 - Are typically maintenance-free and remain usable for the lifetime of the building
 - Are less prone to predation
 - Are more thermally stable
 - Are manufactured from sustainable materials
 - Are easily and unobtrusively built into the fabric of buildings without compromising either the structure or the overall aesthetics.
- 6.8.12 The design and location of the integral nest boxes will conform to guidance set out by the BSI standards, ensuring appropriate positioning on buildings, locations around the Site, and appropriate materials and dimensions used. To provide a general-purpose integral nest box that serves a number of species, the dimension and shape of entrance holes will be a minimum of 30 x 65 mm. Such boxes will accommodate the following urban dwelling species: swift (*Apus apus*), starling, great tit (*Parus major*), blue tit (*Cyanistes caeruleus*), and house sparrow. Swallows can be accommodated for by using commercially available man-made swallow cups which will be positioned in open access structures, such as pergolas, verandas, open entrance lobbies, open-side car ports, or in suitable open-sided structures.
- 6.8.13 To provide new and enhanced opportunities for nesting, the number of integral nest boxes to be installed within the Site will equal the number of dwellings (i.e., holiday lets/buildings) (BSI B2 42021:2022, 2022) with the ratio of integral nest boxes to buildings equalling 1:1. In practice this means that some buildings could receive more than one box reflecting the suitability of locations within the Proposed Development. In addition to the integral nest boxes, external nest boxes will also be incorporated; however, these will not be included within the 1:1 nest box to building ratio. External nest boxes could target species such as barn owl (*Tyto alba*), kestrel (*Falco tinnunculus*), stock dove (*Columba oenas*), Jackdaw (*Corvus monedula*), black redstart (*Phoenicurus ochruros*) etc.
- 6.8.14 A bird box installation plan will be produced under a condition of planning and will cover the installation of the integral nest boxes and the external nest boxes (conforming to BS 42020). The installation plan will also include details for the selection, siting, positioning and installation of the boxes, specifically including:
- The total number to be installed within the Site.
 - Design specifications of the boxes, referencing the manufacturer and model.
 - Site plan figure detailing the locations of the boxes on the specific buildings.

Building elevations showing the positions on each building where boxes are to be installed.

Figure detailing the relationship between green infrastructure and the locations where integral next boxes are to be installed, illustrating access to suitable natural resources (including food, water, and nesting material).

Mitigation of likely significant effects on water voles

- 6.8.15 Construction activities (primarily demolition) taking place in close proximity to ditches inhabited by water voles have the potential to cause damage to burrows, incidental mortality, and disturbance/displacement. In order to not cause an offence under the Wildlife and Countryside Act (1981) (as amended), measures are to be implemented to mitigate these potential impacts.
- 6.8.16 The avoidance of such potential impacts has been prioritised in the first instance through the implementation of embedded mitigation at the design phase, as mentioned in **Section 6.6**. Taking this into consideration, it is likely that only demolition activities have the potential to give rise to significant effects. In order to mitigate such potential impacts, sensitive working practices will be implemented as described within a CEMP, to avoid damage to burrows, incidental mortality, and disturbance/displacement. Such practices would include demolition of buildings and removal of hardstanding areas by hand or with handheld machinery within 7 m of the watercourse. The provision of an ECoW will help to enforce such practices through a watching brief and delivery of toolbox talks as well marking out burrows and delineating sensitive areas of the watercourses. The aim of this mitigation strategy is to avoid the use of displacement and trapping and translocation strategies, since such would be disproportionate to the scale of impact. Such strategies are likely to cause more impacts to the water vole population than the demolition activities themselves. Nevertheless, in order to avoid a potential offence under the Wildlife and Countryside Act (1981) (as amended), if it becomes apparent that damage to water vole burrows cannot be avoided, then a displacement strategy will be employed, obtaining a displacement license from Natural England. In order to facilitate this strategy, watercourses with no presence of water voles would be modified and improved in the interest of the species. This is because areas further downstream already contain high population densities of water voles and owing to the species being territorial in nature, would likely not be successful. Improving watercourses with no recorded presence of water vole will allow the temporary displacement from affected areas into these improved watercourses in the period during construction. Watercourses that could undergo habitat enhancement need to be linked to the affected watercourses and as such could include Watercourse 2, 7, 9, 14, and the northern aspect of 5 (**Figure 6.5a**) which recorded no water voles. Such enhancements would include scrub and shade control, appropriate planting, and bank management.
- 6.8.17 A large focus of the project design was to increase and safeguard the available habitat for water voles within the Site, owing to the species' declining conservation status and its stronghold within the local area. With that in mind, it is proposed that the rife running through the centre of the Site will be improved for water voles. This current watercourse has exposed banks and is managed to keep the grass short with little food availability for water voles (reeds and rushes). The planting of reeds and rushes will not only increase food availability but also create cover and act as a filtration system to clean the water.

The 7 m buffer implemented during construction will be used to create better terrestrial habitat for the water vole population and act to limit recreational disturbance on the banks. Additionally, signage boards will be erected to educate visitors on the conservation of water voles and what they can do to limit disturbance. These enhancement measures will ensure that the Proposed Development leaves a positive legacy for water voles and wider biodiversity.

Enhancement measures

Biodiversity Net Gain (BNG Assessment)

- 6.8.18 In accordance with ecological best practice and the requirement to achieve a Biodiversity Net Gain (BNG), enhancements will be delivered to ensure the Proposed Development has an overall positive effect on ecological features. This is further detailed within the BNG assessment report (**Appendix 6.7**) which outlines the specific measures and calculations used to achieve a net gain for biodiversity as part of the Proposed Development. This assessment is accompanied with an enhancement figure (**Figure 6.6**) which applies a location plan for the management measures prescribed.
- 6.8.19 An assessment of the pre- and post-development condition of the Site was undertaken as detailed in the BNG assessment. Post-development enhancement measures would aim to improve the condition of the existing habitats present and create new, higher ecologically valued habitats. The majority of biodiversity net gain from the Proposed Development will be achieved by off-site enhancements of habitats, most notably the modification of 8.8 ha of other neutral grassland, and planting of 1.32 km of hedgerow along Drove Lane and 0.56km of hedgerow planting within the Site. Further descriptions of the proposed habitat enhancements and creation are provided below.
- 6.8.20 The BNG report identified the Proposed Development would yield a post-development gain of 6.06%, taking into account the proposed enhancement measures. A 185.46% gain in hedgerows and 37.85% gain in linear aquatic features would also result from the Proposed Development. This would not reach the 10% minimum threshold dictated by the Environment Act (2021) and the Chichester Local Plan. Further enhancement measures would therefore be required off-site to help achieve this threshold, with ongoing discussions with local stakeholders, including the nearby RSPB Medmerry Reserve, to consult on a landscape approach to achieving a 10% biodiversity net gain for the Proposed Development.

Landscape and Ecological Management Plan

- 6.8.21 To prescribe further the proposed enhancement measures, a Landscape and Ecological Management Plan (LEMP) will be produced to outline the long-term objectives and targets for the enhancement measures, along with prescriptions for management and monitoring methods and responsibilities to achieve such aims. The plan will incorporate the enhancement of retained habitats and the creation of new habitats of ecological value, as detailed in the BNG assessment.
- 6.8.22 The LEMP will be guided by the various ecological surveys referenced in this chapter and its accompanying appendices and is intended to build on the information contained within

the Environmental Impact Assessment. The measures that will be contained within the LEMP uphold the principle of providing a biodiversity net gain and will include:

Details of the current condition and status of the Site and an outline of features that are of ecological interest.

Identification of specific objectives and measurable targets relating to the management of the Site and enhancement of its wildlife interest.

Activities which will be undertaken to manage the land to achieve the objectives and targets.

The mechanisms to monitor progress and plan review to ensure the management plan remains up-to-date and relevant throughout its duration.

- 6.8.23 It is proposed that the LEMP would be a working document which will evolve following discussions between the developers, the landowners, the ECoW, and organisations with responsibility for, and an interest in, key wildlife species including Chichester Council, Natural England, and RSPB Medmerry.

Habitat enhancement and creation

- 6.8.24 Habitat enhancement and creation would target the ecological features assessed for impacts, as identified in this chapter, as well as other species of conservation concern. The following measures as briefly mentioned in the BNG assessment have been proposed to offset any habitat loss or alteration resulting from the Proposed Development, and to further enhance the Site and/or adjacent land for ecological features. The LEMP will ensure that they establish successfully and deliver long-term benefits to biodiversity to achieve a biodiversity net gain.
- 6.8.25 **Lowland meadow creation:** proposals include the creation of 4.2 ha of lowland meadow in two fields within the off-site enhancement area (**Figure 6.6**). A realistic approach has been taken in regard to the creation of lowland meadow within the Site, taking into account the local conditions. It has therefore been concluded that with appropriate management strategies, these two areas are the only fields which can feasibly be converted into lowland meadow, in particular because of the prevalence of scrub in other areas providing a valuable existing resource. Due to the low botanical diversity in all areas of grassland, it is unlikely that the natural generation of lowland meadow through management alone would be successful. Therefore, it is proposed that the existing fields to be enhanced be scarified, followed by over-sowing of an appropriate seed mix. Appropriate management such as an annual hay cut at the end of summer and aftermath grazing will allow for the development of lowland meadow habitat. Not only does this establish a priority habitat that is decreasing in its extent nationally, but it also provides suitable habitat for a range of species such as insects, ground nesting birds, overwintering birds such as geese and waders, reptiles, and amphibians. In particular, establishing lowland meadows will provide further suitable habitat for dark-bellied brent geese, where grass would be kept at shorter swards in the winter, which would better facilitate grazing by geese. This is likely to offset any loss of dark-bellied brent geese habitat resulting from the Proposed Development.
- 6.8.26 **Grassland creation and enhancement:** proposals include the creation of 0.98 ha and enhancement of 4.6 ha of other neutral grassland in good condition. Management will include improving botanical diversity and controlling scrub encroachment through

rotational cutting. This ensures areas of grassland remain suitable for species such as ground nesting birds, overwintering birds, reptiles, insects, amphibians, badgers and hedgehogs etc.

- 6.8.27 **Hedgerow planting and enhancement:** proposals include 1.88 km of hedgerow planting and 0.37 km of hedgerow enhancement. Planting will use native plant species of known value to wildlife, whilst rotational management regimes will be adopted to newly planted and existing hedgerows to create varying age structures, which would be favoured by different species and at different times of the year. Increasing the extent and quality of hedgerows provides additional nesting, foraging, and commuting habitats for a range of species, namely hedgehogs, birds, insects, and badgers. In particular, the hedgerow planting along Drove lane will help to further connect and establish the commuting line for barbastelle and the bat assemblage, resulting in significant beneficial effects.
- 6.8.28 **Scrub enhancement:** proposals include 2.13 ha of scrub enhancement through more appropriate management to provide higher quality nesting, foraging, and commuting habitats for a range of species. A varying mosaic of different species and age structures, using native species of known value to the local ecology will be incorporated into existing low condition stands of scrub. Management will include coppicing, natural regeneration and planting where necessary.
- 6.8.29 **Pond creation and enhancement of existing ponds:** proposals include the creation of 2.22 ha of 'priority pond habitat' and 0.78 ha of 'non-priority pond habitat'. This includes the creation of a wetland area within the centre of the Site, designed in the interest of biodiversity. This area will be made to be as natural as possible with the intention of providing suitable habitat for bird species, water voles, amphibians, reptiles, foraging bats and invertebrates. Two other priority habitat ponds proposed for creation in the centre of the Site will be more visual in nature but with natural aspects incorporated such as pond edge planting and wetland islands. Enhancement and management of the existing and newly created waterbodies within the Site will include eutrophication management and botanical planting. Open canopy grassland ponds dominated by aquatic macrophytes are known to be positively associated with many species, such as invertebrates, birds, and mammal species.
- 6.8.30 **Woodland planting:** proposals include the planting of 4.71 ha of broadleaved woodland in an area designed to provide 'woodland style' accommodation. Species planted will be native and of local provenance with a grassland understorey for amenity facilities. Small areas of woodland in more urban areas have been known to provide benefits to bird and bat species.
- 6.8.31 **Bee pole provision:** to provide additional habitat for solitary insects such as the painted nomad bee (*Nomada fucata*) or brown-banded carder bee, which will utilise the lowland meadow habitat in the south-eastern corner. Bee poles will be erected in a number of locations adjacent to suitable habitat for invertebrates such as lowland meadows, other grasslands, scrub, and ponds.
- 6.8.32 **Bat box provision:** proposed throughout the Site to provide additional roosting opportunities for bats. Such boxes will be incorporated into appropriate locations to provide suitable roosting potential for woodland species (e.g., barbastelle) and along water edges for low-flying aquatic foraging species (e.g., Daubenton's bat).
- 6.8.33 **Habitat piles:** Habitat piles will comprise a collection of logs and dead wood and will be incorporated into quiet and varied habitats within the grasslands along the southern

border of the Site to offer refuge for hedgehogs, reptiles, and amphibians, as well as deadwood specialist insects including stag beetle. Wherever possible, they will be created using any logs generated from vegetation clearance from the Proposed Development.

- 6.8.34 **Education signage boards:** will be placed within the on-site and off-site areas in aspects of ecological importance or for habitat features including dark-bellied brent geese, lowland meadows, water voles, birds associated with the Medmerry Reserve etc. Signage will provide visitors with information about the habitat and species and their conservation.

Monitoring

- 6.8.35 A monitoring strategy will be developed and detailed in the LEMP to maintain the viability of the ongoing management of habitat creation and enhancement and uphold the BNG strategy. Commencing in the first year of operation of the project, the status of habitats created, enhanced, and controlled would be surveyed following a monitoring regime. For most management prescriptions, monitoring would take place within the first three years of operation and then subsequently in years 5, 7, 10, 15, 20, 25 and 30. This will follow implementation of the plan to confirm whether habitats have successfully established and to ascertain if any remedial measures need to take place as identified within a feedback loop. A short report would be produced following these visits, to ensure documentation of the ongoing success of the LEMP, and to identify any actions.

3.2 Summary of effects

- 6.9.1 The following features were identified as sensitive and were subject to detailed assessment of effects:

- Internationally and nationally designated sites for conservation
- Habitats and flora
- Amphibians
- Badgers and other mammals
- Bats
- Birds
- Invertebrates
- Reptiles
- Water voles
- Invasive non-native species (Japanese knotweed).

- 6.9.2 As described in the assessment of effects presented in **Section 6.7**, taking into consideration embedded mitigation within the project design, effects on birds, water voles and bats were assessed as being potentially significant. Effects on all other ecological features were assessed as being non-significant.

- 6.9.3 Additional mitigation measures to avoid significant effects on these features are specified in **Section 6.8**. Considering the scope for effects from the Proposed Development, and the importance and sensitivities of the ecological features, it is deemed that these measures will be sufficient to avoid significant effects with no more than **Minor adverse residual effects** anticipated as a result of construction. Additionally, further

enhancements laid out within **Section 6.8** and the BNG assessment (**Appendix 6.7**) would ensure that the project has an overall positive effect on those sensitive ecological features identified within this assessment as well as biodiversity as a whole, leading to overall **Minor beneficial residual effects** during operation.

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2 GROUND CONDITIONS

7.1 Introduction

7.1.1 This chapter addresses the likely significant effects of the demolition, construction and operational phases of the Proposed Development on the environment in terms of Ground Conditions.

7.1.2 The chapter describes the planning policy context, the assessment methodology; the baseline conditions at the application site and surroundings; the likely significant effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects. In summary, the objectives of the chapter are to assess a range of potential effects associated with the design, construction and operation of the Proposed Development in relation to ground conditions and contamination, including:

Existing contamination in soil or groundwater.

Health effects to people (construction workers, site occupiers and neighbours) from construction activities.

Health effects to people (site occupiers and visitors) from any contamination during occupation.

Health effects to flora and fauna both on and off site from construction activities and during occupation of the Proposed Development.

7.1.3 This chapter has been produced by RSK Environment.

2.3 Relevant legislation, planning policy and guidance

7.2.1 The legislative, planning policy and guidance context relevant to this Chapter is presented in **Table 7.1**. Error! Reference source not found.

Table 7.1: Legislation, policies and guidance relevant to Land and Soil.

Document	Summary
Legislation	
Environmental Protection Act 2012.	Defra (2012), Part IIA of the Environmental Protection Act 1990, Contaminated Land Statutory Guidance, April 2012. This defines contaminated land as 'any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused'. Controlled waters are considered to include all groundwater, inland waters, and estuaries.
Contaminated Land (England) Regulations 2006 (SI 2006/1380) &	In August 2006, the Contaminated Land (England) Regulations 2006 (SI 2006/1380) were implemented, which extended the statutory regime to include Part IIA of

Document	Summary
Contaminated Land (England) (Amendment) Regulations 2012.	the EPA as originally introduced on 1 April 2000, together with changes intended chiefly to address land that is contaminated by virtue of radioactivity. These have been replaced subsequently by the Contaminated Land (England) (Amendment) Regulations 2012, which now exclude land that is contaminated by virtue of radioactivity.
Planning Policy	
Planning Policy Statement: Planning and Pollution Control PPS23, and NPPF.	<p>Land contamination is often addressed via the planning process during redevelopment of sites. This approach was documented in Planning Policy Statement: Planning and Pollution Control PPS23, which states that it remains the responsibility of the landowner and developer to identify land affected by contamination and carry out sufficient remediation to render the land suitable for use.</p> <p>PPS23 was withdrawn early in 2012 and has been replaced by much reduced guidance within the National Planning Policy Framework (NPPF), reference ISBN: 978-1-5286-1033-9, July 2021.</p> <p>The framework has limited guidance on contaminated land, as follows:</p> <p>Chapter 11. Making effective use of land</p> <p>117. Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously developed or 'brownfield' land.</p> <p>118. Planning policies and decisions should:</p> <p style="padding-left: 20px;">c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land.</p> <p>Chapter 15. Conserving and enhancing the natural environment</p> <p>170. Planning policies and decisions should contribute to and enhance the natural and local environment by:</p> <p style="padding-left: 20px;">e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and</p>

Document	Summary
	<p>f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.</p> <p>In particular: Ground Conditions and Pollution</p> <p>183 Planning policies and decisions should ensure that:</p> <p>(a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);</p> <p>(b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and</p> <p>(c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.</p> <p>184 Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rest with the developer and/or landowner.</p>
Planning Policy	
Town and Country Planning Act 1990	Planning consent is required for the project under the Town & Country Planning Act (as amended). To inform the Proposed Development, pre-application advice has been sought from Chichester District Council (CDC) as the planning authority. CDC has confirmed that the planning application for this development requires accompaniment an Environmental Statement (ES).
The Adopted Development Plan	The adopted Development Plan for the Chichester area is the Chichester Local Plan (CLP): Key Policies (2014 – 2029), The CDC Site Allocation Development Plan Document and all made neighbourhood plans (There is currently no made Neighbourhood Plan for Earnley).
	<p>The CLP identifies the following designations on or near to the application site:</p> <ul style="list-style-type: none"> Open Countryside (Countryside Policies) Flood Zone 3 Adjacent to Integrated Coastal Zone Management designation (Coastal Management policies) Adjacent to Bracklesham Bay Site of Special Scientific Interest (SSSI) <p>These do not identify any specific policies relating to land contamination.</p>
Guidance	

Document	Summary
Environment Agency (2021), Land contamination risk management.	Land Contamination Risk Management. April 2021. Guidance that the EA requires to be followed when managing risks from land contamination.

7.3 Consultation

7.3.1 Chichester District Council’s (CDC) Environmental Department were consulted as part of the data review process for preparation of the Phase 1 Desk Study/Preliminary Risk Assessment (PRA) report (**Appendix 7.1**). No consultee comments have been received; therefore, no follow-up actions have been undertaken in response.

7.4 Approach

7.4.1 The assessment of ground conditions has involved the review and collation of information pertaining to the current condition of the land and soils (*and shallow groundwater*) at the site and the potential risks they could pose to the environment and future site users. This information has been used to characterise baseline conditions for the site and to assess the need for mitigation to protect future users and the environment from any significant contaminant source identified. The information has been reviewed in the context of the Proposed Development to create a conceptual site model and assess the magnitude and significance of potential impacts.

7.4.2 The baseline assessment of the site has been established from a review of relevant environmental database information and the preparation of Phase 1 desk study report (undertaken as part of a site-specific preliminary risk assessment). All of this data is presented in **Appendix 7.1** which provides historical maps and a review of water abstractions, discharge consents, hazardous substances, sensitive land uses, ground subsidence hazards and potentially polluting activities within a 250 m search radius of the Site. In addition, a walkover survey was undertaken in February 2023, to determine the current / recent site conditions. A variety of data sources were consulted and reviewed with respect to the existing ground conditions, geology and hydrogeology of the site and surrounding area.

7.4.3 Current UK guidance promotes the use of a conceptual site model for risk assessment. The three elements (source, pathway and receptor) are the basis of this approach in that, without each of the three elements being present, there can be no contamination risk. Therefore, the presence of measurable concentrations of contaminants within the ground and subsurface environment does not automatically imply that a contamination problem exists since the contamination must be defined in terms of contaminant linkages and unacceptable risk of harm.

7.4.4 The magnitude and impact of pathways and receptors will vary according to the proposed use of the site, including its surroundings and setting. The potential for harm to occur requires three conditions to be present:

Sources: potential or known contaminant sources e.g., historic site land uses.

Pathways: mechanisms/systems through which exposure to a contaminant could occur e.g., direct contact or migration through air, over land or via permeable ground etc.

Receptors: sensitive environmental receptors that could be adversely affected by a contaminant e.g., site occupiers, groundwater resources, ecological resources.

7.4.5 Where a source, relevant pathway and receptor are present a 'contaminant linkage' is created whereby there is a circumstance through which some level of environmental harm could occur which has to be assessed and mitigation identified as appropriate.

7.4.6 The receptors that are potentially sensitive to changes related to ground conditions, including demolition and/or remediation activities, have been identified following assessment of the baseline conditions and identification of potential sources of contamination.

Assessment of effects

7.4.7 The methodology for impact prediction is based on assessing both the magnitude of the changes expected and the sensitivity of the receptors. Criteria for assessing the significance of potential human and environmental impacts have been based on a qualitative assessment of the magnitude of the impact, or how far the impact deviates from the baseline condition, and the receptor sensitivity.

7.4.8 The approach taken for assessing the potential land contamination impacts of the Proposed Development may be summarised as follows:

Study area and review of sensitive receptors.

Baseline characterisation considering land contamination.

Qualitative assessment of the construction phase impacts of the development.

Quantitative assessment of the operational impacts of the Proposed Development.

Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on land contamination are minimised.

Study Area

7.4.9 The study area is represented by the red line application boundary (**Figure 1.1**) which covers an area of approximately 33.3 ha.

Sensitive Receptors

7.4.10 Sensitive environmental and other receptors identified within the PRA study include:

Current and future site users – residents, site users, workers, visitors, holiday residents etc.

Current and future site users - public open space users, commercial/industrial workers.

Current adjacent site users – residential, commercial, public open space users.

Current and future buildings, utilities, infrastructure, and services.

Groundwater within the underlying Earnley Sand Formation bedrock classed as a Secondary A aquifer, and secondary undifferentiated aquifer within the superficial deposits.

Surface water features located on-site, which flow towards Stilts Pond immediately southeast of the site boundary and RSPB Medmerry Nature Reserve, which comprises the marshlands beyond and to the east of the site.

Value of receptors

7.4.11 The identified receptor value is defined in **Table 7.2** Table 7.2 provided below.

Table 7.2: Receptor value and sensitivity.

Value	Description
High	Human Health: Residents, site users, workers, visitors, holiday residents etc. On site, in close proximity/immediately adjacent to any of the five proposed construction phase operations.
Medium	Controlled Waters: Groundwater in Secondary A Aquifer (Earnley Sand Formation). Controlled Waters: Surface Water: Surface water features located on-site, which flow towards Stilts Pond immediately southeast of the site boundary and RSPB Medmerry Nature Reserve, which comprises the marshlands beyond and to the east of the site. Current and future buildings, utilities, infrastructure, and services.
Low	Human Health: Current adjacent site users, residential, commercial, public open space users >100 m from site boundary. Controlled Waters: Perched Groundwater – within made ground/Raised Beach deposits, above The Earnley Sand Formation.

Magnitude of impact (change)

7.4.12 The criteria used to assess the significance potential human and environmental impacts have been based on a qualitative assessment of the magnitude of the impact, or how far the impact deviates from the baseline condition and the receptor sensitivity as defined in **Table 7.3**.

Table 7.3: Definition of impact magnitude.

Magnitude	Summary
Large	Short term (acute) or long term (chronic) adverse effects on human health, broadly equivalent to “significant harm” as defined by the Environmental Protection Act 1990. Persistent and extensive pollution of water resource or ecosystem equivalent to Category 1 pollution incident (major pollution release). Catastrophic damage to crops/building/infrastructure.
Medium	Short term (acute) or long term (chronic) adverse effects on human health but not equivalent to “significant harm” as defined by the Environmental Protection Act 1990.

Magnitude	Summary
	<p>Non-persistent pollution of water resource or ecosystem equivalent to Category 2 pollution incident (moderate pollution release).</p> <p>Significant damage to crops/buildings/infrastructure (on or off site).</p> <p>Contamination of off-site soils.</p>
Small	<p>Easily preventable, non-permanent health effects on humans.</p> <p>Minor, low-level, localised, temporary pollution of water resources or ecosystem.</p> <p>Easily repairable damage to crops/buildings/infrastructure.</p> <p>Easily preventable, permanent health effects on humans.</p> <p>Localised damage to buildings/infrastructure (on or off site).</p>
Negligible	No discernible impacts

Determination of significance

- 7.4.13 The assessment of impact magnitude and sensitivity of the receptor have been used to qualitatively assess the impact significance of the proposed development. Impacts have the potential to be either adverse or beneficial. For example, the development may remove a source of contamination, or it may break a pathway that currently links a source to a receptor; ground contamination relies on a source, pathway and receptor to be present.
- 7.4.14 The approach to determine the significance of effects has been as follows:
- Identify the relevant receptors.
 - Derive their value (importance) based on the criteria set out in **Table 7.2**Table 7.1.
 - Identify and consider the likely impacts from each activity.
 - Determine the magnitude of change likely as a result of the impacts. **Table 7.3**
 - Present the environmentally and ecologically significant effects and then consider how additional mitigation may reduce negative effects.
- 7.4.15 An effect is considered to be significant if it meets any of the following criteria:
- It could lead to an exceedance of defined guidelines or widely recognised levels of acceptable change.
 - It is likely that the consenting authority will reasonably consider applying a planning condition, requirement or legal agreement to the consent to require specific additional mitigation to reduce or overcome the effect.
 - It threatens or enhances the viability or integrity of a receptor or receptor group of concern.
 - It is likely to be material to the ultimate decision about whether the planning application should be approved.
- 7.4.16 The significance of the impact depends on the sensitivity of the receptor and the ways in which the proposed development can provide a pathway to the receptor. The significance of an impact partly depends on the timescales involved, i.e. short-term

(less than three years duration), medium-term (between three and 10 years duration) or long term (in excess of 10 years duration) and the extent of the area affected. The assessment of potential and residual impacts has therefore used the scale of significance, as demonstrated in **Table 7.4**.

Table 7.4: : Significance matrix

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible / minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible / minor	Negligible	Negligible	Negligible

Nature of effect

- 7.4.17 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect. These terms add additional information about how the effect would affect receptors (**Table 7.5**).

Table 7.5: Assessment descriptors

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g., during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible), or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases, a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

- 7.4.18 Environmental mitigation measures are necessary to address likely **Significant adverse** environmental effects. The environmental effects of impacts can be referred to as either being before, or following establishment of, environmental mitigation. Significance criteria is detailed in **Table 7.6** below.

Table 7.6: Generic significance criteria

Level of effect	Description
Major	Very large or large change in environmental or socio-economic conditions. These effects, both adverse and beneficial, are likely to be important considerations at a national to regional level because they contribute to achieving national / regional objectives or are likely to result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in environmental or socio-economic conditions. These effects are likely to be important considerations at a regional and local level.
Minor	Small change in environmental or socio-economic conditions. These effects may be raised as local issues but are unlikely to be of importance in the decision-making process.
Negligible	No discernible change in environmental or socio-economic conditions (i.e., variation within normal bounds or below measurable levels). An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

7.4.19 Only **Major** and where justified, **Moderate** effects, are likely to be factors in deciding whether a development is acceptable, and are considered **Significant**.

7.4 Existing environment

7.5.1 The existing Medmerry Holiday Park and its residences largely populate the central area of the site. Surrounding this area are a series of fields, old barn structures, marshlands and Medmerry beach. The marshlands are located in the far south east of the site, and extend further east from the site’s boundary. Fields used for livestock are found to the north of the site, whilst empty fields / undeveloped land occupies the south and north easterly areas of the site. There is also a series of derelict barn structures located in the far northeast. Immediately west of the site lies the Bracklesham caravan and boat club, with Medmerry beach located immediately south.

7.5.2 Previously, in March 2023, RSK undertook a PRA (**Appendix 7.1**) to provide an assessment of potential land contamination sources and the environmental risks and liabilities associated with site ownership.

Site History

7.5.3 The site was formerly occupied by farmland and open pastures before being repurposed as a holiday camp in 1932.

Geology

7.5.4 According to BGS published geological data the Site is underlain by Raised Beach superficial deposits (Sand and Gravel) over bedrock comprising the Marsh Farm Formation and the underlying Earnley Sand Formation (Sand, Silt and Clay). There is also likely to be made ground associated with the development of the former holiday park structures.

- 7.5.5 After publication of RSK's 2023 PRA report, a Groundwater Level Assessment report, prepared by Enzygo Environmental Consultants (**Appendix 7.2**) was made available for review. The report corroborates the site geology outlined above, and states that the south and west of the site is indicated to be underlain by River Terrace deposits (Sand, Silt and Clay) and Raised Beach deposits, with Raised Marine deposits (Clay, Silt, Sand and Gravel) present in the northwest/southwest with the Wittering Formation (Sand, Silt and Clay).
- 7.5.6 The investigation undertaken by Enzygo (**Appendix 7.2**) comprised of six drive-in sampler boreholes installed to a maximum depth of 4.45 m bgl across the site. A data logger was installed in the central borehole to measure groundwater levels over a 3-month period. Made Ground was encountered typically to a depth of 0.30 m bgl, comprising topsoil underlain by reworked clayey deposits from 0.30 to 0.60 m bgl. Natural deposits were consistent with the published BGS information and varied in thickness across the site and comprised of interbedded cohesive and granular strata proven to a maximum depth of 4.45 m bgl. Bedrock was not encountered. Groundwater seepage was recorded at a depth of 3.30 m bgl.
- 7.5.7 Groundwater monitoring was undertaken between March and June 2019 and recorded an approximately 0.35 m change in level over the 3 months, ranging from 1.2 m bgl (March) to 0.85 m bgl (June). The report concluded that groundwater levels were too shallow for viable soakaway drainage, and alternative methods of drainage should be utilized.
- 7.5.8 With regards to the reuse of excavated material onsite referenced in **Section 13.3.7** of the Material Asset and Waste chapter, the potential to reuse excavation materials on-site has been proposed. Details on the areas for excavation including the potential quantities of site derived materials are provided in **Appendix 7.3** and supported by the marked-up mounding shown on the **Proposed Masterplan**. Five areas of mounding areas are proposed, including:
- Adjacent to the proposed Orchard Accommodation.
 - Adjacent to the Lakeside Accommodation (2 no.).
 - Adjacent to the Woodland Accommodation (2 no.).
- 7.5.9 A total cut volume (between the formation level and site-wide strip surface) of approximately 56,500 m³ is estimated. A total fill volume (between the site-wide strip surface and formation level) of approximately 56,700 m³ is estimated.
- 7.5.10 A fill balance of approximately 206 m³ is estimated to be required. However, as the calculations do not take into account arising from services and drainage etc., this deficit may be accounted for. If not, this material will need to be imported from a certified off-site source and verified for compliance with relevant assessment criteria, after placement. Verification of the existing soil material used in the cut and fill earthworks will also be required. The earthworks quantities assume that the existing levels will be lowered by an average of 0.3 m as part of a site clearance/topsoil stripping.

Hydrogeology

- 7.5.11 Shallow groundwater in the site area is anticipated to flow in a south easterly direction, i.e., towards and in the direction the Marshlands located south east of the site. It is also likely that shallow water may be present in any made ground deposits present on-site.

The regional direction of groundwater flow is to the south and southeast, in line with the local topography/towards the Solent.

Due to the site's proximity with the sea, groundwater levels may be impacted by tidal effects.

The environmental database report indicates that there have been no recent licenced groundwater abstractions within a 1 km radius of the site.

The site does not lie within a currently designated groundwater Source Protection Zone (SPZ).

Hydrology

- 7.5.12 There are several ponds, streams, and drainage ditches on and adjacent to the site. The identified watercourses flowing through the holiday park have been channelled and, in some cases, culverted. These watercourses are connected to the streams located in the south eastern, soft landscaped areas which feed into the marshlands located to the east.
- 7.5.13 The Stilt Pools and Medmerry Nature Reserve surface water bodies located to the east of the site are impacted by tidal waters.
- 7.5.14 Further information on the hydrology of the site can be found in **Chapter 8**.

Landfills

- 7.5.15 There are no active or historic/closed landfill records for the site or the surrounding area. There are no records of no potentially in-filled land (pit, quarry, pond, marsh, river, stream, dock etc.)

Mining and Quarrying

- 7.5.16 The site lies outside the Coal Authority's Coal Mining Reporting Area and therefore no further assessment of coal mining issues is required.

Soil and Agriculture

- 7.5.17 The previous 2019 ABPMer ES report assessed soil and agricultural land quality and noted that whilst the footprint of the Proposed Development includes areas that are classed as Grade 3a (good to moderate quality) and Grade 3b (moderate quality) agricultural land, the existing site is not being used for arable farming and a large proportion is not suitable given the risks of fluvial and tidal flooding.
- 7.5.18 Furthermore, the 2019 ES noted that the economic and environmental benefits of the Proposed Development at the time were considered to outweigh the resultant loss of potential agricultural land within the Proposed Development site.

7.3 Predicted effects

- 7.6.1 This section defines the likely significant environmental effects of the Proposed Development and identifies the receptors and environmental resources that may be affected. Construction and operational effects are considered separately.
- 7.6.2 The potential effects are categorised according to whether they are:
- Short term/temporary (construction phase), medium term or long term/permanent (operational phase).
 - Indirect or direct.
 - Adverse or beneficial.
 - Localised or widespread (i.e., their spatial scope).
 - Reversible or irreversible.
 - Unavoidable or uncertain.
- 7.6.3 The potential impacts and the significance of the effects are characterised in the absence of mitigation measures, beyond those identified, described and embedded within the Development (see mitigation). The proposed mitigation measures are then set out prior to the determination of the residual effects.

Potential Land Contamination Linkages

- 7.6.4 The construction period is anticipated to take approximately six years and has been designed so each phase can be self-contained with minimal impact on the existing operation of the park.
- 7.6.5 The PRA report found that there were no potential complete contaminant linkages with a risk classified as Moderate or higher that would normally drive recommendations for further intrusive investigation across the site.
- 7.6.6 However, potentially localised significant land contamination may be present in the northeast of the site. This area comprises a set of derelict structures (the 'New Barn' area noted on the historical OS maps), storage containers, mounds of building waste/debris, fly-tipping, chemical/fuel storage containers, electrical/electronic household products, roof structures comprised of potential asbestos containing materials (ACM), an electrical substation and an electrical transformer. No obvious surface staining or spillages were visible during walkover inspection of this area, but due to the conditions observed, potential contamination in this area cannot be ruled out.

Proposed Future Back-of-House-Facilities

- 7.6.7 The proposal aims to relocate all 'Back-of-House-Facilities' to the former New Barn area (described in **Section 7.6.3** above). The existing back-of-house facilities are currently distributed throughout the resort, whilst being housed within buildings which are not currently suitable for the activities which function within them. The Proposed Development seeks to consolidate all 'back of house' functions within a self-contained compound positioned adjoining the existing storage development (beyond the site boundary and applicant's ownership) in order to cluster the new structures and remove the necessity for unnecessary journeys between buildings.

- 7.6.8 The following main recommendation was made in the PRA report for further assessment to address the risks identified above and remaining uncertainties:

Phase 2 Geo-environmental intrusive Investigation of the fly-tipped area in the northeast portion of the site to assess the potential presence of ground contamination, assess the degree of any contaminative impact and if any unacceptable risks are present. It is considered that this recommendation can be secured via appropriate Conditions included as part of any permission granted.

Potential Impacts during Construction

Construction Workers

- 7.6.9 Construction workers may come into direct contact with potentially contaminated soils (e.g., contaminated with asbestos, metals and PAHs amongst others) during any remedial works, earthworks and construction works. Potential exposure pathways include ingestion, dermal contact and inhalation of contaminated soil or asbestos fibres. However, contamination has generally not been identified across the wider proposed development area. Contamination is potentially present within made ground and localised within the “fly-tipped” area therefore, the potential for exposure is likely to be limited and of short duration. Exposure to asbestos would increase the potential for longer-term health impacts for construction workers, but only if any fragments of cement sheeting existed and were to be broken, leading to the release of fibres during the construction/remedial works.
- 7.6.10 Construction workers are considered to be of a high sensitivity, however, since possible contamination is potentially localised and exposure is likely to be limited, the effect is considered to be **Moderate adverse**. The wearing of appropriate PPE by construction workers is considered to further mitigate this effect.

Neighbouring properties

- 7.6.11 Due to the likely localised nature, and potentially negligible concentrations of asbestos materials in the made ground of the fly-tipped area, it is considered that construction or remedial works would not lead to a significant release of soil dust (containing asbestos) that would impact neighbouring land/properties located to the west of the site. Mitigation measures would also be implemented during the works (to be detailed in the CEMP) to further reduce any potential risk. It is therefore considered that the magnitude of the effect is **Negligible**.

Groundwater and surface waters

- 7.6.12 There is potential for groundwater in the underlying Secondary A aquifer and the surface water within the drainage ditches surrounding the Site to become impacted by the construction works due to possible spillage of fuel oils stored on-site. Any storage of fuels on site will be carried out in line with current best practice (to be detailed within the CEMP). It is therefore considered that the magnitude of the effect is **Minor adverse**.
- 7.6.13 The construction works may increase the ability for contaminants to leach into the underlying groundwater or enter nearby drainage ditches by removing hard standing / disturbing soils. However, this is considered to be unlikely, given the absence of identified

contamination. Asbestos is immobile and will not impact groundwater or surface waters. The impact is considered to be **Negligible**.

Potential Impacts during Operation

Future site users

- 7.6.14 Future site users, including the general public and holiday residents accessing the park, may potentially come into direct contact with potentially contaminated soils. Further testing will be carried out to fully characterise the risk from within the development area where residential accommodation is to be constructed. Whilst future site users are considered to be a high sensitivity receptor, the potential for exposure is low, giving rise to a **Moderate adverse** effect.

Building Services

- 7.6.15 It is considered unlikely that building structures, utilities and services would be laid in areas of contaminated soil. As a consequence, the effect is considered to be **Negligible**

2.2 Mitigation

- 7.7.1 No further additional mitigation is required at this point in time however, further mitigation may be recommended as a result of any Phase 2 Geo-environmental Site Investigations that might be required under Conditions secured under any permissions granted for the development.

7.3 Summary of effects

- 7.8.1 The impact pathway identified for soil and agricultural land quality is not expected to give rise to a significant adverse effect and therefore no mitigation measures are proposed. Overall, the impact of the change in land use is assessed as **Insignificant to Minor adverse** and considered **Not Significant**.
- 7.8.2 There are no significant effects predicted at this time therefore impacts for the contaminated land and the geology beneath the site will be **Insignificant or Low** and considered **Not Significant**.

7.3 References

Chichester District Council. Chichester Local Plan 2014-2029.

British Standards Institution. (2011). 'BS 10175:2011 + A2:2017 (BSI, 2017). Investigation of potentially contaminated sites.

Environment Agency. (2021). Environment Agency Land Contamination Risk Management (LCRM).

The Contaminated Land (England) Regulations 2006. [Online]. Available at: <https://www.legislation.gov.uk/>

The Contaminated Land (England) (Amendment) Regulations 2012. [Online]. Available at: <https://www.legislation.gov.uk/>



DEFRA. (2012). Part IIA of the Environmental Protection Act 1990, Contaminated Land Statutory Guidance, April 2012.

8 WATER

8.1 Introduction

- 8.1.1 This chapter considers the potential risk of flooding to the Proposed Development and discusses the findings of the Flood Risk Assessment and proposed drainage strategy.
- 8.1.2 It follows relevant guidelines and legislation (as listed in **Section 8.2**) to provide an assessment of the effects of the Proposed Development in relation to flood risk and drainage and includes mitigation measures where appropriate. It considers the impact on the users of the Site and the surrounding area, to ensure that the risk of flooding is not increased and is acceptable over the lifetime of the Proposed Development. This chapter should be read in conjunction with the supporting documentation presented in **Appendices 8.1 to 8.4**:
 - Appendix 8.1:** Flood Risk Assessment (FRA), Surface Water Management Strategy (SMWS) and Foul Water Management Strategy (FWMS).
 - Appendix 8.2:** Tidal Flood Modelling Technical Note.
 - Appendix 8.3:** Pluvial Flood Modelling Technical Note.
 - Appendix 8.4:** Flood Evacuation Plan (FEP).
- 8.1.3 The effects of the Proposed Development are considered over both the demolition, construction and operational phases.
- 8.1.4 This chapter focusses on Flood Risk and Drainage matters with Water Quality and Consumption, and the details of lake construction and management all to be subject to detail design to meet ongoing statutory requirements. This applies to both the proposed amenity lake (swimming) and the two decorative lakes.
- 8.1.5 This chapter has been prepared by Herrington Consulting Ltd (HCL).

8.2 Statutory and planning context

- 8.2.1 The following national, regional and local planning policy and guidance is of relevance to the assessment of the effects of the Proposed Development in relation to flood risk and drainage.

Table 8.1: Legislation and guidance relevant to Water.

Document	Summary
National Legislation and Policy	
Flood and Water Management Act (FWMA) 2010 ¹ .	The act outlines the responsibilities for managing flood risk and drought, with an increased focus on the risk of flooding from local sources.

¹ Flood and Water Management Act 2010 - <https://www.legislation.gov.uk/ukpga/2010/29/contents>

Document	Summary
National Planning Policy Framework (NPPF) 2021 ² .	<p>This chapter has been written in accordance with chapter 14 ('Meeting the challenge of climate change, flooding and coastal change') of the NPPF, which comprises paragraphs 152 through 173.</p> <p>In particular, Footnote 55 of the NPPF states that a site-specific FRA is required for: "A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."</p> <p>Paragraph 169 states that: "Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:</p> <ul style="list-style-type: none"> a) take account of advice from the lead local flood authority; b) have appropriate proposed minimum operational standards; c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and d) Where possible, provide multifunctional benefits."
National Planning Policy Guidance (NPPG) 2022 ³ .	This chapter has also been written in accordance with the 'Flood Risk and Coastal Change' section of the NPPG, which was updated in August 2022 to align with the latest revisions to the NPPF.
Sustainable Drainage Systems: Non-statutory Technical Standards for Sustainable Drainage Systems (NTSS) ⁴ .	The NTSS and Building Regulations Part H have been referred to and considered whilst developing the Surface Water Drainage Strategy and Foul Water Drainage Strategy for the proposed development.
Building Regulations Part H Drainage and Waste Disposal ⁵ .	
Local Planning Policy	

² Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

³ Ministry of Housing, Communities and Local Government (2022). *National Planning Policy Guidance - Flood risk and coastal change*.

⁴ Department for Environment, Food and Rural Affairs (2015). *Sustainable Drainage Systems: Non-statutory Technical Standards for Sustainable Drainage Systems*.

⁵ HM Government (2015). *Building Regulations Part H Drainage and Waste Disposal*

Document	Summary
<p>Chichester District Council (CDC) Adopted Local Plan 2014-2029⁶</p>	<p>Relevant local plan policies have been considered as part of the appraisal. In particular, Policy 42 Flood Risk and Water Management states:</p> <p>“Flood and erosion risk will be taken into account at all stages in the planning process to avoid inappropriate development in areas at current or future risk, and to direct development away from areas of highest risk.</p> <p>Development in areas at risk of flooding as identified by the Environment Agency flood risk maps will be granted where all the following criteria are met:</p> <ol style="list-style-type: none"> 1. The proposal meets the sequential and exception test (where required) in relation to the National Planning Policy Framework; 2. A site-specific flood risk assessment demonstrates that the development will be safe, including the access and egress, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall; 3. The proposal incorporates specific requirements of the site, and protection, resilience and resistance measures appropriate to the character and biodiversity of the area; 4. Development would not result/exacerbate coastal squeeze of any European sites or prevent managed realignment that may be required to ensure no adverse effect on European sites as a result of coastal squeeze; 5. The scheme identifies adaptation and mitigation measures; 6. Appropriate flood warning and evacuation plans are in place; and 7. New site drainage systems are designed taking account of events which exceed the normal design standard i.e. consideration of flood flow routing and utilising temporary storage areas. <p>All development will be required to ensure that, as a minimum, there is no net increase in surface water run-off. Priority should be given to incorporating Sustainable Drainage Systems (SuDS) to manage surface water drainage, unless it is proven that SuDS are not appropriate. Where SuDS are provided arrangements must be put in place for their whole life management and maintenance.</p> <p>In locations where strategic flood defence or adaptation measures are necessary within the site itself, proposals will be required to demonstrate how measures have been incorporated as an intrinsic part of the scheme in a manner which meets the requirements to manage flood risk.</p> <p>All development proposals must take account of relevant Surface Water Management Plans, South East River Basin Management Plan and Catchment Flood Management Plans and related flood defence plans and strategies. Financial contributions may be 19. The Environment Chichester District Council Adopted Chichester Local Plan: Key Policies</p>

⁶ Chichester District Council Adopted Local Plan 2014-2029 - <https://www.chichester.gov.uk/article/24677/Adopted-Chichester-Local-Plan-Key-Policies-2014-2029>

Document	Summary
	<p>2014-2029 183 required from development on sites where measures to address flood risk or to improve the environmental quality of watercourses have been identified by these plans and strategies and in accordance with the overall objective of the Water Framework Directive.</p> <p>The reports prepared as part of the criteria above must demonstrate that the development is safe and will not increase flood risk elsewhere; will reduce overall flood risk and take into account contingency allowances, addressing climate change as set out in the NPPF Technical Guidance and the relevant Shoreline Management Plans and Coastal Defence Strategy.”</p>
Chichester District Council Interim Strategic Flood Risk Assessment (SFRA) 2022 ⁷ .	The information and recommendations contained within the interim SFRA report have been referenced and applied when developing the flood risk mitigation strategy, surface water drainage strategy and foul water drainage strategy for the Proposed Development.
Guidance	
CIRIA Report C624 ‘Development and flood risk - guidance for the construction industry’. ⁸	This report sets out practical guidance in assessing flood risk as part of the development process. The recommendations of the report have been considered as part of this appraisal.
CIRIA Report C573 ‘The SuDS Manual’. ⁹	This publication covers the planning, design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments. The recommendations of the report have been considered as part of this appraisal.

8.3 Consultation

Scope of Assessment

- 8.3.1 The assessment includes an appraisal of potential effects during the construction and operational stages of the Proposed Development on flood risk and drainage both on-site and off-site as a result of the Proposed Development. The approach used to undertake the assessment is detailed in **Section 8.4** onwards.

Spatial Scope

- 8.3.2 The study area is represented by the red line application boundary which covers an area of approximately 21.7 ha. The study also considers the upstream and downstream areas

⁷ Chichester District Council Interim SFRA (2022). https://www.chichester.gov.uk/media/37621/Level-1-SFRA-Report-Final-Dec-22/pdf/JBA-CDC_Level_1_SFRA_Report_-_Final_-_Dec_22.pdf?m=638095629984900000

⁸ JW Lancaster, M Preene, CT Marshall (2004). *CIRIA Report C624 ‘Development and flood risk - guidance for the construction industry’*.

⁹ Woods Ballard, B, Wilson, S, Udale-Clarke, H, Illman, S, Scott, T, Ashley, R, Kellagher, R (2015). *CIRIA Report C573 ‘The SuDS Manual’*.

of the hydrological catchment when assessing offsite impacts and when considering inputs to the flood modelling undertaken.

Temporal Scope

- 8.3.3 This chapter considers flood risk in terms of ‘return periods’ which translate to the annual probability of flooding from (main) rivers and the sea, as well as extreme rainfall events. For example, a return period of 100 years equates to a 1 in 100 year flood event and an annual probability of 1%.
- 8.3.4 The lifetime of a development providing residential accommodation is considered to be 100 years. In accordance with the NPPF, this chapter therefore considers the potential impacts of climate change on the proposed development for the lifetime of the development which for the detailed flood modelling is taken as up to the year 2125.

Consultations

Chichester District Council (CDC)

- 8.3.5 Pre-application advice was sought from CDC in relation to the re-development of the Medmerry holiday park site in January 2022 and a response received in September 2022. The response includes comments on all topics, however, the relevant comments in relation to flood risk and drainage are quoted below:

“The pre-application submission states that the proposals would involve moving development into areas of lowest flood, in line with sequential test. This would be partially achieved by raising the land, which has the potential to make some of the new chalets passively resistant to significant flood risk. The principle of moving chalets into areas of lower flood risk was supported under the 2019 application and could be seen as a betterment. Under this pre-application enquiry, the Council’s Drainage Engineer states that as per the NPPF the Council must allocate new development sequentially (areas at lowest risk). The proposal to replace the existing number of accommodation units in areas at lower risk is something they have no objection to in principle and would in fact support. Based on Environment Agency (EA) Flood Risk Mapping for Planning at the time of writing this report, the proposed would only result in the units proposed for Field B and the north-eastern strip of Field C into Flood Zone 1 amounting to approximately 45 units. This means that approximately 268 units would remain within Flood Zones 2 and 3. In accordance with the NPPF and policy 42 of the CLP, a sequential test is required as part of the Flood Risk Assessment to clearly set out what work has been undertaken in selecting the parts of the site that have been chosen for redevelopment and what alternatives have been considered. Please be aware that as of 25 August, the National Planning Practice Guidance was updated, requiring all types of flooding to be taken into account and for a sequential test to be undertaken if there is a high risk of flooding of any type. This may include areas within Flood Zone 1.

As the site is immediately adjacent to the coast, the southern area of the site is predominantly at risk from flooding, but it is also under significant pressure from erosion. Notwithstanding the proposal to remove existing units from the southern end of field A and relocate them further from the coastline, the Drainage Engineer states that they

would still expect the applicant to model any flood risk in the absence of the beach (undefended) when determining appropriate levels for the site.

Please note that as significant areas of the site fall within flood zones 2 and 3 (significant risk) the EA would be consulted as part of any future planning application to provide a detailed response with respect to the acceptability of the proposal based on the risk. CDC drainage officer also raises matters for consideration in terms of fluvial flood water storage and advised that this would also be a matter for the EA to comment on under any future planning application. The applicant is advised to seek advice from EA at the earliest opportunity.

In terms of surface water, there is limited detail at this stage. However, the Drainage Engineer states that the surface water drainage scheme design should follow the hierarchy of preference as set out in Approved Document H of the Building Regulations and the SuDS Manual produced by CIRIA. Therefore, the potential for on-site infiltration should be investigated and backed up by winter groundwater monitoring and winter percolation testing. The results of such investigations will be needed to inform the design of any infiltration structures, or alternatively be presented as evidence as to why on-site infiltration has not been deemed viable for this development.

If following site investigations, it is concluded that on-site infiltration is viable, infiltration should then be utilised to the maximum extent that is practical (where it is safe and acceptable to do so). Any soakage structures should not be constructed lower than the peak groundwater level. Wherever possible, roads, driveways, parking spaces, paths and patios should be of permeable construction.

If on-site infiltration is not possible, drainage via a restricted discharge to a suitable local watercourse may be acceptable. (Any discharge should be restricted to greenfield run-off rates, with a minimum rate of 2 l/s)."

- 8.3.6 Since the receipt of the pre-application advice, significant changes have been made to the Proposed Development in regard to flood risk and drainage in accordance with the requirements stated above. Detailed flood modelling has been undertaken as required by the council, with this modelling guiding the proposed mitigation measures, as discussed in the latter sections of this Chapter.

Environment Agency (EA)

- 8.3.7 The EA were also contacted to obtain pre-application advice in April 2022 with a flood risk and drainage technical note submitted for the EA to comment on. The EA response received in May 2022 is repeated below:

"We are pleased to see that the new proposal shows a betterment in terms of flood risk with the number of units not changing and sections of them moving to higher ground. We are also pleased to see no proposed change to the operating dates and use of the park. Ahead of the submission of this application we would expect modelling to be carried out showing the likely impact of the post development site. This should include any changes to flood risk both on and off the site as well as providing evidence for any proposed mitigation. We would expect to see both flood modelling and design calculations for any land raising or reprofiling of the floodplain and watercourses. This information will be required when considering if any proposed floodplain compensation is sufficient. We

would expect any floodplain compensation to be level for level as per the following guidance; *Technical Note 1-Level for Level Flood Compensation.pdf* (hart.gov.uk)

Any flood modelling work will need to be signed off by the Environment Agency to check it is suitable for use as part of a site specific Flood Risk Assessment. This can either be done ahead of the application submission but this would typically take 6 weeks and there would be a charge for the review but any potential issues could be flagged up and resolved ahead of the application consultation. Alternatively the model can be reviewed as part of our statutory consultation response to the planning application at no additional cost.

Any works within 8m of a Main River will require a Flood Risk Activity Permit through the Environment Agency. Any works within 8m of an 'Ordinary Watercourse' is likely to require a permit through West Sussex County Council.

Environmental Permit

The Environmental Permitting (England and Wales) Regulations 2016 require a permit or exemption to be obtained for any activities which will take place:

on or within 8 metres of a main river (16 metres if tidal)

on or within 8 metres of a flood defence structure or culverted main river (16 metres if tidal)

on or within 16 metres of a sea defence

involving quarrying or excavation within 16 metres of any main river, flood defence (including a remote defence) or culvert

in a floodplain more than 8 metres from the river bank, culvert or flood defence structure (16 metres if it's a tidal main river) and you don't already have planning permission

For further guidance please visit <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits> or contact our National Customer Contact Centre on 03708 506 506 (Monday to Friday, 8am to 6pm) or by emailing enquiries@environment-agency.gov.uk.

The applicant should not assume that a permit will automatically be forthcoming once planning permission has been granted, and we advise them to consult with us at the earliest opportunity.

I hope the above advice is helpful. If there is any further work you anticipate needing our detailed advice on in relation to this project please contact me on the details below."

- 8.3.8 Since the EA response, the detailed flood modelling requested has been undertaken to inform the assessment and suitable mitigation included to manage the risk of flooding to the Proposed Development.

Consultations as part of the 2019 submission

- 8.3.9 In addition to the pre-application advice sought from consultees in advance of this submission, there were numerous consultee comments on the previous application on site submitted in 2019. The comments made within these previous consultations have been reviewed and considered within the current submission proposals.

8.4 Approach

Assessment Methodology

- 8.4.1 The FRA appraises the risk of flooding from the sea, rivers, surface water, groundwater, sewers and artificial sources, and seeks opportunities to reduce flood risk on-site and within the surrounding area. Where appropriate, mitigation is recommended to reduce the risk of flooding to both the Proposed Development and to the surrounding area.
- 8.4.2 The FRA is supported by detailed tidal and pluvial modelling studies also undertaken by HCL to appraise the risk of flooding to the Site from the sea and from the Park Rife and Earnley Rife. The modelling follows best practice guidance and the EA standard requirements for flood risk modelling.
- 8.4.3 The FRA has been carried out in accordance with the requirements of the NPPF (2021) and the NPPG Suite (partially updated in August 2022) that has been published by the Ministry of Housing, Communities and Local Government. Reference is also made to local policy as contained within the CDC Local Plan. In addition, the FRA has been carried out in line with the CIRIA Report C624 'Development and flood risk - guidance for the construction industry' and CIRIA Report C573 'The SuDS Manual'.
- 8.4.4 A Surface Water Management Strategy (SMWS) has been produced, based upon the fixed plans of the Proposed Development. The SWMS follows the drainage hierarchy to explore the most sustainable method of discharge from the Site. The analysis assesses the suitability of a range of sustainable drainage systems (SuDS) to be included on-site, designed to manage surface water runoff from the Proposed Development.
- 8.4.5 The SWMS also considers the impacts of pollutants generated on-site and proposed pollution control and water treatment measures to be included within the Proposed Development.
- 8.4.6 The Non-statutory Technical Standards for Sustainable Drainage Systems (NTSS) specify criteria to ensure sustainable drainage is included within development classified as 'major development' as set out in Article 2(1) of the Town and Country Planning (Development Management Procedure) (England) Order 2015.
- 8.4.7 A Foul Water Management Strategy (FWMS) has also been prepared to establish how the foul waste water generated by the Proposed Development will be managed appropriately. National Planning Practice Guidance for water supply, wastewater and water quality and the Building Regulations Part H, sets out a hierarchy of foul drainage options, which should be considered when discharging foul water.
- 8.4.8 The appraisals are guided by local and national policy (refer to **Table 8.1**) and based on a desktop assessment (referencing both freely available and previously provided information). The assessments are supplemented by survey data where applicable, for example a topographic survey, site investigations and photographs. The impacts of climate change is considered within the FRA and SWMS.

Data Sources

- 8.4.9 The following data sources have been referenced to aid the preparation of the FRA, flood modelling, SWMS and FWMS.

- OS OpenMap Local.
- British Geological Society (BGS) Geology of Britain Viewer.
- EA's 'Flood Map for Planning', 'Risk of Flooding from Surface Water', 'Recorded Flood Outlines' and 'Spatial Flood Defence' datasets.
- CDC SFRA 2022.
- Southern Water Asset Location Mapping.
- Flood Estimation Handbook (FEH) point data.
- Site investigations undertaken by Enzygo Environmental Consultants in 2019.
- Topographic Survey undertaken by Meridian Survey in 2019.
- DEFRA National Lidar Programme data.
- EA Emsworth to Littlehampton 2014 Coastal Model files.

Value of receptors

- 8.4.10 The assessment of the potential impacts resulting from the Proposed Development has taken into account both the demolition and construction phases and operational phases. The significance level attributed to each impact has been assessed based on the magnitude of change due to the Proposed Development and the sensitivity of the affected receptor / receiving environmental to change.
- 8.4.11 The assessment uses standard criteria to describe the sensitivity of the existing environment/receptor that may be impacted, defined in terms of vulnerability, value, rarity, or importance to other elements (**Table 8.2**). This can be considered 'High', 'Moderate or 'Low' for each of the potential impacts.

Table 8.2: Receptor value and sensitivity.

Value	Description
High	EA designated Main Rivers. Highly Vulnerable Land Use as defined in the NPPF (e.g., basement dwellings, installation requiring hazardous substances consent). Local population, including future occupants of the development and surrounding residents.
Medium	More Vulnerable land use as defined in NPPF (e.g., hospitals, dwellings, residential institutions, hotels, health services, nurseries and educational establishments). Site buildings and surrounding structures. Off-site abstractions from groundwater or surface water. Non-main rivers or ordinary watercourses. Spring/pond/lake/standing water with outfall to a watercourse. Infrastructure of importance at district scale.
Low	Less Vulnerable land use as defined in the NPPF (e.g., commercial buildings and offices). Spring/pond/lake/standing water with no outfall to a watercourse. Infrastructure of local level importance, public sewer network in the vicinity of the Site.

Value	Description
Negligible	Water compatible land use as defined in the NPPF (e.g., open spaces, outdoor sport facilities). Infrastructure of importance to a street.

Magnitude of impact (change)

- 8.4.12 This assessment uses standard criteria to define the magnitude of potential impacts. Defined in terms of volume, lateral extent, area and pathways. This can be considered 'Large', 'Medium', 'Small' or 'Negligible' for each potential impact, as defined in **Table 8.3** below.

Table 8.3: Definition of impact magnitude.

Magnitude	Summary
Large	Where the Proposed Development would cause a significant improvement or deterioration to the existing environment.
Medium	Where the Proposed Development would cause a noticeable improvement or deterioration to the existing environment.
Small	Where the Proposed Development would cause a barely perceptible improvement or deterioration to the existing environment.
Negligible	Where the Proposed Development would result in no discernible improvement or deterioration to the existing environment.

Determination of significance

- 8.4.13 The approach to determine the significance of effects has been as follows:
- Identify the relevant receptors.
 - Derive their value (importance) based on the criteria set out in **Table 8.2**.
 - Identify and consider the likely impacts from each activity.
 - Determine the magnitude of change likely as a result of the impacts (**Table 8.3**).
 - Present the environmentally and ecologically significant effects and then consider how additional mitigation may reduce negative effects.
- 8.4.14 An effect is considered to be significant if it meets any of the following criteria:
- It could lead to an exceedance of defined guidelines or widely recognised levels of acceptable change.
 - It is likely that the consenting authority will reasonably consider applying a planning condition, requirement or legal agreement to the consent to require specific additional mitigation to reduce or overcome the effect.
 - It threatens or enhances the viability or integrity of a receptor or receptor group of concern.
 - It is likely to be material to the ultimate decision about whether the planning application should be approved.

Nature of effect

8.4.15 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect. These terms add additional information about how the effect would affect receptors (**Table 8.4**).

Table 8.4: Assessment descriptors.

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g., during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases, a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

8.4.16 Environmental mitigation measures are necessary to address likely **Significant adverse** environmental effects. The environmental effects of impacts can be referred to as either being before, or following establishment of, environmental mitigation.

Significance of Effects

8.4.17 The significance of any identified effect is assessed as major, moderate, minor or negligible. These categories are based on the consideration of sensitivity with the predicted magnitude of change. Where the effect in **Table 8.5** below is classified as **Major**, this is considered to be equivalent to likely **Significant** effects.

Table 8.5: Significance matrix.

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible/minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible/minor	Negligible	Negligible	Negligible

Design basis and assumptions

Embedded Mitigation

- 8.4.18 The FRA, flood modelling and drainage strategies (surface and foul water) have all been produced in accordance with national and local planning policy requirements. In order for the assessment to be in accordance with such guidance and to be granted planning consent, a number of mitigation measures are required to be included within the design of the Proposed Development and are therefore considered to be embedded into the Proposed Development. The mitigation that is embedded into the Proposed Development is listed below:

Land levels on-site have been raised to allow the proposed lodges to have floor levels raised above the flood level.

Alongside the land raising, internal floor levels have been raised above the raised land levels to ensure the lodges have internal floor levels elevated above the worst-case flood level on-site.

Flood resistance and resilience measures will be included within all residential units as a precautionary measure.

Occupants of the Site are recommended to sign up to Flood Warnings and a Flood Evacuation Plan (FEP) has been prepared for the Proposed Development.

A SWMS has been prepared which details how rain falling on-site will be captured, attenuated and discharged at a controlled rate from the Site. The strategy includes the provision of SuDS and pollution control measures which are embedded into the design.

A FWMS has been prepared to show how foul water generated from the Site will be managed. Again, these measures are considered within the design and considered to be embedded into the Proposed Development.

Assumptions

- 8.4.19 The primary assumption that has been made during the assessment process is that the FRA assumes that the current flood defences, consisting of a shingle ridge, will not be maintained for the duration of the development's lifetime. As a result, all mitigation proposed within the FRA is based on a scenario whereby the shingle ridge is no longer present. The impact of this assumption is that the embedded mitigation is based upon a worst-case scenario and therefore, it is considered an acceptable assumption to have made.

8.3 Existing environment

- 8.5.1 This section outlines the existing baseline conditions of the Site based on the current day (2023) conditions. The baseline conditions have been derived from the data sources and information listed in **Section 8.4.12**.
- 8.5.2 The Site is located adjacent to the coastline to the east of the residential area of Bracklesham and to the southeast of Earnley. The Site covers an area of 21.7 ha and currently comprises of 308 holiday units along with communal commercial facilities.

- 8.5.3 The land levels across the Medmerry holiday park site vary between 1.6 m and 4.2 m Above Ordnance Datum Newlyn (AODN). Land levels fall across the Site towards the Park Rife (watercourse), which flows through the centre of the park.
- 8.5.4 Reference to the BGS map shows that the underlying solid geology in the location of the subject site comprises 'Earnley Sand Formation' (sand, clay and silt) with 'Wittering Formation' (sand, silt and clay) underlying the northern part of the Medmerry holiday park site.
- 8.5.5 Overlying the bedrock geology are superficial deposits of 'River Terrace deposits' (sand, silt and clay), 'raised beach deposits' (sand and gravel) and 'raised marine deposits' (clay, silt, sand and gravel).
- 8.5.6 The EA 'Flood Map for Planning' shows that the majority of the Medmerry holiday park site is located within Flood Zone 2 and 3, with small areas of the site currently located within Flood Zone 1. The areas shown to be located within Flood Zones 2 or 3 are located within an area at risk of flooding from either the sea, or the Park Rife and/or Earnley Rife during an extreme rainfall event or a combination of these sources.
- 8.5.7 Detailed numerical flood modelling has been undertaken by HCL to appraise the risk of flooding from the sea, using tidal modelling, and from the Park Rife and Earnley Rife during extreme rainfall events, using a pluvial model. The modelling shows that the Site at present could be subject to flooding from both sources, with the tidal modelling showing a greater impact on the existing development.
- 8.5.8 The Site currently contains 308 holiday units which drain at an unrestricted rate into the Park Rife. Undeveloped areas of the site at present are assumed to drain informally to the series of ditches across the site which subsequently drain into the Park Rife and Earnley Rife.
- 8.5.9 The Site currently drains foul water generated on-site into a pumping station within the Site that pumps the effluent into the public sewer approximately 200 m west of the site.

8.3 Predicted effects

Demolition and Construction Phase

Risk of Pollutants

- 8.6.1 Construction activities and the presence at the construction site of fuels, chemicals and construction materials (e.g., cement) could lead to release of pollutants flowing overland to the Park Rife.
- 8.6.2 The significance of any incident would depend on the nature of the pollutant, the time taken to report the incident and the sensitivity of the receiving watercourse. The sensitivity of surface water features near to the Site are considered to be high (Earnley Rife) to medium (Park Rife) and the magnitude medium. Therefore, the effect in the absence of mitigation is considered to be **Moderate to Major adverse**. The impact is considered to be temporary and short term and **Significant**.

Risk of Construction Surface Water Runoff

- 8.6.3 During the construction phase, any increase in impermeable surfacing onsite would result in increased rates of runoff. This in turn could increase the surface water flood risk on-site and within the surrounding area if a temporary drainage system is not put in place. Sensitive receptors include on-site users, surrounding residential, commercial and industrial premises occupants, and nearby hydrological features.
- 8.6.4 The sensitivity of receptors to flooding is considered to be **High**, and any effect will be of temporary, short term impact. The effect is concluded to be **Moderate** adverse and considered **Not Significant**.

Operational Phase

Risk of Flooding during an Extreme Rainfall Event

- 8.6.5 The occupants, visitors and staff of the Site have the potential to experience pluvial flooding in the area of the site adjacent to the Park Rife during an extreme rainfall event. All users of Medmerry Holiday Park are the sensitive receptor and are adjudged to be at high sensitivity. The effect is considered to be **Major adverse**, with a temporary and short term impact.
- 8.6.6 However, the FRA proposes a number of mitigation measures which are to be embedded into the Proposed Development (refer to **Section 8.4.25**). All residential lodges will have internal floor levels raised about the worst-case flood level on-site, the commercial buildings include upper floors above the flood level and a flood warning and evacuation plan has been prepared for the site. With these measures embedded into the Proposed Development, it is considered that the effect is **Negligible** and considered **Not Significant**.

Risk of Flooding during an Extreme Tidal Flood Event

- 8.6.7 The occupants, visitors and staff of the Site have the potential to experience tidal flooding across the majority of the site during an extreme storm event. All users of the Medmerry Holiday Park are the sensitive receptor and are adjudged to be at high sensitivity. The effect is considered to be **Major adverse**, with a temporary and short term impact.
- 8.6.8 However, the FRA proposed a number of mitigation measures which are to be embedded into the Proposed Development (refer to **Section 8.4.25**). All residential lodges will have internal floor levels raised about the worst-case flood level on-site, the commercial buildings include upper floors above the flood level and a flood warning and evacuation plan has been prepared for the site. With these measures embedded into the Proposed Development, it is considered that the effect is **Negligible** and considered **Not Significant**.

Potential for Pluvial Floodwater Displacement

- 8.6.9 The earthworks and proposed land raising within the flood extent have the potential to displace pluvial floodwater offsite, thereby increasing the flood risk.
- 8.6.10 If floodwater was to be displaced off-site, the risk of flooding to the upstream and downstream sensitive receptors could be increased. Whilst the impact would be

temporary and likely contained, the sensitive receptors are considered to be highly sensitive to increased flood risk. The magnitude of impact is considered to be small, therefore the effect could be **Moderate adverse**.

- 8.6.11 However, detailed pluvial numerical flood modelling has been undertaken by HCL to quantify the impact of the Proposed Development scenario (Section 7 of **Appendix 8.1**). The model results identify that during the Proposed Development scenario, with the inclusion of interception ditches along the north east and northern site boundary, no additional floodwater is directed offsite and therefore the Proposed Development is not considered to increase the offsite pluvial flood risk. As a result, the impact is concluded to be **Negligible** and considered **Not Significant**.

Risk of Increased Surface Water Runoff Rates

- 8.6.12 By increasing the impermeable area of the Site, the rate of discharge of surface water runoff to the Park Rife will increase if not suitably managed.
- 8.6.13 HCL have prepared a SWMS (Section 9 of **Appendix 8.1**) to support the Proposed Development. In summary, it is proposed that surface water is attenuated on-site within a series of wetland lakes, with other SuDS including swales, permeable surfacing, bioretention systems and gravel paths. The system will be designed to capture rain falling onsite up to, and including, a 1 in 100 year return period event incorporating an allowance for climate change, before discharging surface water to the Park Rife crossing the Site at restricted rate.
- 8.6.14 As a result of the SuDS and traditional drainage methods to be included in the scheme, the risk of increased surface water runoff is considered to be managed and therefore the effect of the Proposed Development **Negligible** and considered **Not Significant**.

Risk of Pollutants

- 8.6.15 The Proposed Development will introduce new circulation roads, parking and infrastructure to the Site. This will increase the risk of pollutants arising from roads and trafficked areas which could be directed towards the Park Rife, Earnley Rife or the ground, if not suitably managed. The significance of any incident would depend on the nature of the pollutant, the time taken to report the incident and the sensitivity of the receiving watercourse. The surface water features near to the Site are considered to be **Medium to High** sensitivity.
- 8.6.16 However, the SWMS, which is to be embedded in the Proposed Development, includes the use of SuDS which provide additional water quality benefits and act to provide a level of treatment to surface water runoff generated on-site. Pollution control measures (e.g., petrol/oil interceptors) are proposed to be included as part of the SWMS to separate pollutants before surface water is discharged offsite. As a result, the magnitude is considered to be **Negligible**, and therefore, the effect is also **Negligible** and considered **Not Significant**.

8.2 Mitigation

Demolition and Construction Phase

Risk of pollutants

- 8.7.1 A Construction and Environmental Management Plan (CEMP) will be developed under planning condition and will include a Construction Drainage Design Plan to identify the required devices to prevent construction run off. The CEMP would also include details of the type and location of wheel washing facilities for example.
- 8.7.2 The CEMP will be developed following best practice guidance of pollution control from construction sites and will include:
- Designated areas for washing down equipment or vehicles.
 - Appropriate storage areas for materials and potential hazards.
 - Temporary pollution control interceptors such as spill kits and plant nappies.
 - An emergency response plan in the event of a pollution incident.

Risk of Construction Surface Water Runoff

- 8.7.3 The CEMP will include a Construction Drainage Design Plan that will identify the required devices to prevent construction run off such as silt barriers, storage features or flow control devices.

Operational Phase

Risk of Flooding during an Extreme Rainfall Event

- 8.7.4 The Proposed Development includes a number of embedded mitigation measures as described in Section 6 of **Appendix 8.1**. As these measures are included, the effect is considered to be **Negligible (Not Significant)** and no mitigation measures are needed.

Risk of Flooding during an Extreme Tidal Flood Event

- 8.7.5 The Proposed Development includes a number of embedded mitigation measures as described in Section 6 of **Appendix 8.1**. As these measures are included, the effect is considered to be **Negligible (Not Significant)** and no mitigation measures are needed.

Potential for Pluvial Floodwater Displacement

- 8.7.6 The Proposed Development includes mitigation to prevent an off-site increase in flood risk. As these measures are embedded into the Proposed Development, no further mitigation will be required.

Risk of Increased Surface Water Runoff Rates

- 8.7.7 The scheme includes a Surface Water Drainage Strategy which is designed to capture rain falling on site up to and during the design rainfall event, before discharging at a restricted rate to the Park Rife. As a result, mitigation is not necessary.

Risk of Pollutants

- 8.7.8 Measures are embedded within the scheme as part of the drainage strategy to manage pollutants generated on site. With these measures in place the effect is considered to be **Negligible (Not Significant)** and therefore mitigation is not necessary.

8.2 Summary of effects

Demolition and Construction Phase

Risk of pollutants

- 8.8.1 The development and implementation of the CEMP will significantly reduce the likelihood of any pollution caused by construction activities. The residual effect is considered to be **Negligible** and therefore **Not Significant**.

Risk of Construction Surface Water Runoff

- 8.8.2 A temporary surface water drainage system will be provided until a permanent system comes into operation. Pollution from the construction Site (sediments, fuels, chemicals and construction materials) or accidental spillage could enter the watercourses on-site and remedial action should be taken immediately. If a temporary system is unable to capture all rain falling onsite during an extreme event, the effect will be temporary and of **Negligible** magnitude. Any effect is likely to be **Negligible** and considered **Not Significant**.

Operational Phase

Risk of Flooding during an Extreme Rainfall Event

- 8.8.3 As a result of the embedded flood risk mitigation the effect is considered to be **Negligible**, and mitigation is not necessary. The residual effect therefore remains **Negligible** and considered **Not Significant**.

Risk of Flooding during an Extreme Tidal Flood Event

- 8.8.4 As a result of the embedded flood risk mitigation the effect is considered to be **Negligible**, and mitigation is not necessary. The residual effect therefore remains **Negligible** and considered **Not Significant**.

Potential for Pluvial Floodwater Displacement

- 8.8.5 As a result of the embedded mitigation the effect is considered to be **Negligible**, and mitigation is not necessary. The residual effect therefore remains **Negligible** and considered **Not Significant**.

Risk of Increased Surface Water Runoff Rates

- 8.8.6 As a result of the embedded mitigation in the form of the SMWS the effect is considered to be **Negligible**, and mitigation is not necessary. The residual effect therefore remains **Negligible** and considered **Not Significant**.

Risk of Pollutants

- 8.8.7 As a result of the proposed pollution control measures embedded into the scheme, the effect is considered to be **Negligible**, and mitigation is not necessary. The residual effect therefore remains **Negligible** and considered **Not Significant**.

8.2 References

Chichester District Council. Chichester Local Plan 2014-2029.

Department for Environment, Food and Rural Affairs. (2015). Sustainable Drainage Systems: Non-statutory Technical Standards for Sustainable Drainage Systems.

HM Government. (2015). Building Regulations Part H Drainage and Waste Disposal.

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J.W. Lancaster, M. Preene, C.T. Marshall. (2004). CIRIA Report C624 'Development and flood risk - guidance for the construction industry'.

Ministry of Housing, Communities and Local Government. (2021). National Planning Policy Framework.

Ministry of Housing, Communities and Local Government. (2022). National Planning Policy Guidance - Flood risk and coastal change.

B. Woods Ballard, S. Wilson, H. Udale-Clarke, S. Illman, T. Scott, R. Ashley, R. Kellagher. (2015). CIRIA Report C573 'The SuDS Manual'.

9 CULTURAL HERITAGE

9.1 Introduction

- 9.1.1 This chapter describes the baseline conditions and the potential effects of the Proposed Development with respect to archaeology (both structures and below ground deposits of the known and the predicted potential) and built heritage (categories including designated and non-designated built assets) within the Site and consideration of assets within the immediate area beyond the Site boundary.
- 9.1.2 A more detailed and comprehensive set of data / information is presented in **Appendix 9.1** (Desk Based Assessment (DBA)) that will be submitted in support of the planning application.
- 9.1.3 This chapter has been produced by Development Archaeological Services (DAS) Ltd.

9.2 Relevant legislation, planning policy and guidance

- 9.2.1 The legislative and planning context with regards to cultural heritage is listed in **Table 9.1** alongside best practice guidance which has been adopted for this assessment.

Table 9.1: Relevant legislation, policy and guidance.

Document	Summary
National Legislation	
The Ancient Monuments and Archaeological Areas Act, 1979.	It is a criminal offence to carry out any works on or adjacent to a Scheduled Monument without Scheduled Monument Consent. The Act makes no reference to the setting of Scheduled Monuments.
Planning (Listed Buildings and Conservation Areas) Act 1990.	In considering whether to grant planning permission for development which affects a listed building or its setting, the decision maker shall have special regard to the desirability of preserving the building or its setting (section 66). Special attention shall be paid to the desirability of preserving or enhancing the character or appearance of a conservation area (section 72).
National Planning Policy	
The National Planning Policy Framework (NPPF, revised 2021).	The National Planning Policy Framework (NPPF revised 2021) includes as a planning principle (Paragraph 8) an environmental objective which is “ <i>to contribute to protecting and enhancing our natural, built and historic environment...</i> ” Section 16 of the NPPF then goes on to describe provisions specifically relating to conserving the historic environment. Paragraph 189 advises local planning authorities to require an applicant to describe the significance of heritage assets affected by their proposal, including any contribution made to their setting. It states that “ <i>the level of detail should be proportionate to the assets’ importance and no more than is</i>

Document	Summary
	<p><i>sufficient to understand the potential impact of the proposal on their significance”.</i></p> <p>The glossary to the NPPF describes significance in relation to heritage policy as <i>“The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence but also from its setting”.</i></p> <p>The setting of a heritage asset is defined as <i>“the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surrounding evolve. Elements of a setting may make a positive or negative contribution to the significance of the asset, may affect the ability to appreciate that significance or may be neutral”.</i></p>
Local Planning Policy	
Chichester Local Plan (2014 – 2019).	<p>The Development Plan comprises the Chichester Local Plan (2014 – 2019) adopted on 14 July 2015 and the following heritage related policies are considered relevant to the current proposal:</p> <p>DH5 Policy 47 states that the local planning authority will continue to conserve and enhance the historic environment through the preparation of conservation area character appraisals and management plans and other strategies, and new development which recognises, respects and enhances the local distinctiveness and character of the area, landscape and heritage assets will be supported.</p> <p>Planning permission will be granted where it can be demonstrated that all the following criteria have been met and supporting guidance followed:</p> <p style="padding-left: 40px;">The proposal conserves and enhances the special interest and settings of designated and non-designated heritage assets including:</p> <ul style="list-style-type: none"> ○ Monuments, sites and areas of archaeological potential or importance. ○ Listed buildings including buildings or structures forming part of the curtilage of the listed building. ○ Buildings of local importance, including locally listed and positive buildings. ○ Historic buildings or structures / features of local distinctiveness and character. ○ Conservation areas. ○ Historic parks or gardens, both registered or of local importance and historic landscapes. <p>Development respects distinctive local character and sensitively contributes to creating places of a high architectural and built quality.</p> <p>Development respects existing designed or natural landscapes and: The individual identity of settlements is maintained and the integrity of predominantly open and</p>

Document	Summary
	<p>undeveloped character of the area, including the openness of the views in and around Chichester and Pagham harbours, towards the city, the cathedral, local landmarks, and the South Downs National Park, is not undermined.</p> <p>POLICY 47 – Heritage & Design</p> <p>This policy, in summary, seeks to conserve and enhance the special interest and settings of designated and non-designated heritage assets, including historic buildings or structures as is the case with this assessment.</p> <p>The supporting text advises that:</p> <p><i>“Proposals affecting designated and undesignated heritage assets and their settings should demonstrate that they meet the following guidance:</i></p> <ol style="list-style-type: none"> <i>a. The use of traditional, local materials and adherence to local building techniques and details, where appropriate;</i> <i>b. The conservation of features and elements that contribute to the special interest of a heritage asset, including structures forming part of the curtilage, in particular the structural integrity and historic plan-form of listed buildings and historic building groups;</i> <i>c. Appropriate use of the heritage asset that is compatible with the conservation of its significance;</i> <i>d. The location, form, scale, massing, density, height, layout, roofscape, landscaping, use and external appearance of developments within conservation areas should conserve and enhance the special historic and architectural interest of the conservation area;</i> <i>e. Development involving substantial harm to or loss of designated heritage assets will only be granted in exceptional circumstances (wholly exceptional circumstances for designated assets of the highest significance);</i> <i>f. Proposals for development involving ground disturbance in areas of known archaeological potential will need a desk based archaeological assessment and may also require field evaluation. The recording and publication of results will be required and in appropriate cases, the Council may also require preservation in situ, or excavation;</i> <i>g. Proposals affecting a non-designated heritage asset (including where identified through the planning process) should not harm its special interest and development involving substantial harm will be resisted unless significant public benefit has been clearly and convincingly demonstrated in accordance with the requirements of the NPPF; and</i> <i>h. The condition of an historic building resulting from deliberate damage and neglect will not be taken into account in any decision”.</i>

Document	Summary
Guidance	
Chartered Institute for Archaeologists Code of Conduct and Standard Guidance documents.	ClfA (Chartered Institute for Archaeologists) has developed a range of Regulations, standards and guidance that are binding on all members and Registered Organisations to ensure that ClfA members work to high ethical and professional standards.
National Planning Practice Guidance (2019 and updated veers. 2021).	<p>The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how these are expected to be applied.</p> <p>The NPPF advises conservation is an active process of maintenance and managing change. It requires a flexible and thoughtful approach to get the best out of assets as diverse as listed buildings in everyday use and as yet undiscovered, undesignated buried remains of archaeological interest.</p> <p>In line with the NPPF (paragraph 185), plans should set out a positive strategy for the conservation and enjoyment of the historic environment.</p> <p>Key sections are:</p> <ul style="list-style-type: none"> Overview: historic environment Plan-making: historic environment Decision-making: historic environment Designated heritage assets Non-designated heritage assets Heritage consent processes Consultation and notification requirements for heritage related applications Further information on heritage and planning issues
Historic England (2015) Historic Environment Advice Note 2 Making changes to Heritage assets.	<p>One of three related Good Practice Advice (GPA) Notes, along with GPA1 The Historic Environment in Local Plans and GPA3 The Setting of Heritage Assets. Published by English Heritage March 2015.</p> <p>Historic England Guidance Notes provide supporting information on good practice, particularly looking at the principles of how national policy and guidance can be applied. Historic England Advice Notes (HEANs) - include detailed, practical advice on how to implement national planning policy and guidance.</p>
Historic England (2017), Historic Environment Advice Note 3, 2nd Edition, The setting of Heritage Assets.	<p>Historic Environment Advice Note 3, 2nd edition, The Setting of Heritage Assets recommends a staged approach to assessing effects on setting comprising the following stages:</p> <ol style="list-style-type: none"> 1. Identify which heritage assets and their settings are affected. 2. Assess the degree to which these settings make a contribution to the significance of the heritage assets(s) or allow significance to be appreciated. 3. Assess the effects of the proposed development, whether beneficial or harmful, on that significance or the ability to appreciate it.

Document	Summary
	<p>4. Explore ways to maximise enhancement and avoid or minimise harm.</p> <p>5. Make and document decision and monitor outcomes.</p>
Historic England (2008), Conservation Principles; Policy Guidance for Sustainable Management of the Historic Environment.	<p>Conservation Principles sets out Historic England’s approach to understanding heritage significance, and describes four groups of heritage ‘values’ which are referred to below:</p> <p>Evidential value: the potential of a place to yield evidence about past human activity.</p> <p>Historical value: the ways in which past people, events and aspects of life can be connected through a place to the present-it tends to be illustrative or associative.</p> <p>Aesthetic value: the ways in which people draw sensory and intellectual stimulation from a place.</p> <p>Communal value: the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.</p>
West Sussex County Council, East Sussex County Council, Chichester District Council 2017, (updated 2019) Sussex Archaeological Standards.	<p>Sussex Guidelines recommend practice and procedures for undertaking archaeological investigations in connection with the planning and development management process in East and West Sussex.</p> <p>Guidance presented is to be used as the basis for preparing archaeological specifications or written schemes of investigation (WSIs) where fieldwork is undertaken to inform the planning process or required as a condition of planning consent. These ‘Standards’ are principally intended to cover archaeological fieldwork and recording generated by the National Planning Policy Framework (NPPF) and Local Plan policy but may be applicable to all archaeological fieldwork projects carried out in East and West Sussex</p>

9.2 Consultation

9.3.1 A summary of consultations from February 2023 with Chichester District Council’s Archaeology Officer are set out in **Table 9.2** below.

Table 9.2: Consultation undertaken.

Consultee	Key issues raised	Actions in response to consultee comments
Chichester District Council Planning Archaeology Officer (ongoing consultations from February 2023 to present).	Assessment of archaeological potential within the site area.	A ‘draft’ DBA relating to current application was supplied to CDC’s Archaeological Planning officer. This included review of data generated during 2019 site evaluation.
	Undertake review of extant data for both archaeological and built heritage within site area and immediate environs (all in accordance with West Sussex	Review of: A pre-determination Archaeological Evaluation of Land at Medmerry Park Holiday Village (Sub-site AREA C). Grey literature client report produced for The Latham Trust.

Consultee	Key issues raised	Actions in response to consultee comments
	County Council guidelines) for DBA production / submission.	
	Specifically, consideration / discussion regarding the results of recent (last c. 5 years) investigation/s on adjacent Medmerry Manage Re-alignment Scheme	Review of: Stephenson P. and Kraweic K. 2019. A View From the Edge: Archaeological Investigation on the Manhood Peninsula, Selsey for the Medmerry Managed Realignment Scheme.
	Prediction regarding mitigation measures likely to be required after determination of application	Confirmation that, subject to review of final DBA and submitted ES, it is probable that on archaeological and heritage grounds there should be no reason for refusal. The permission (if forthcoming) will attract a 'standard condition ARC 1. That no development should take place until the applicant has secured and presented a detailed program of archaeological investigation for the site.

9.4 Approach

9.4.1 This assessment builds upon the DBA report (**Appendix 9.1**) which is based on information derived from the following data sources:

The vertical and oblique aerial photographic collections of the National Monuments Record Centre of English Heritage at Swindon.

The National Heritage List for current data on designated heritage assets.

The National Monuments Record (Historic England).

The West Sussex Historic Environment Record (HER) (West Sussex County Council).

The Chichester Local Studies Library.

The West Sussex Record Office, (including local studies published reference sources and maps held in their collections).

Chichester District Council HER

British Geological Survey mapping.

A series of site walkover surveys (photographic surveys) of the Site area and proximal Conservation Area.

9.4.2 A search of the West Sussex HER and Chichester District HER was undertaken for listed buildings and other designated sites such as scheduled monuments, archaeological sites and findspots and previous archaeological investigations within a 1km radius of the Site, centred on National Grid Reference SZ 8201 9574.

9.4.3 Copies of selected published Ordnance Survey maps of the area of the Site were obtained from the West Sussex Record Office and are presented within **Appendix 9.1**. The results of the historical map regression are similarly presented within **Appendix 9.1**.

Published reference sources were also consulted at the Record Office and the Chichester Local Studies Library.

- 9.4.4 A number of digital photographs of the Site were taken during the site walkover survey, which are reproduced in **Appendix 9.1**. The results of the site walkover survey are presented in Section 6.2 of **Appendix 9.1**. In addition, a more detailed and thorough description of built heritage assets within the proximity [c. 1km distant] of Earnley Conservation Area is presented in **Appendix 9.1**.

Heritage Significance

- 9.4.5 The significance of a heritage asset is described in terms of the value of the asset because of its heritage interest (architectural, archaeological, artistic or historic) and is also described in relation to the asset’s heritage values (evidential, historical, communal, and aesthetic (**Table 9.3**).
- 9.4.6 For designated assets (Listed buildings, Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields, World Heritage Sites and Conservation Areas), the importance is high or very high as these assets meet the national criteria for designation under the relevant legislation. Listed Buildings and Registered Parks and Gardens are graded (I* II* and II) according to relative significance.
- 9.4.7 The relative significance of each non-designated heritage asset within the historic environment baseline has also been determined to provide a framework for comparison. These categories, are DAS Ltd definitions derived from a combination of NPPF, Historic England and ClfA (Chartered Institute for Archaeologists) definitions, do not reflect a definitive level of significance or value of a heritage asset, but a provisional one based on the asset’s heritage values to provide an analytical tool that can inform later stages of assessment and the development of appropriate mitigation, where needed. Some non-designated heritage assets can be of equivalent importance to designated heritage assets. In these cases, their relative importance means they must be treated as if they were designated assets.

Table 9.3: Criteria for determining heritage significance.

Significance	Description
Very High	Internationally and nationally important resources: World Heritage Sites, Grade I and Grade II* listed buildings and Registered Parks and Gardens. Some Scheduled Monuments, especially those associated with a World Heritage Site.
High	Nationally important resources: Grade II listed buildings, Conservation Areas, Scheduled Monuments, Grade II Registered Parks and Gardens, Registered Battlefields
Moderate	Regionally important resources: Non designated heritage assets and landscape features with high or moderate evidential, historical, aesthetic and / or communal values.

Significance	Description
Low	Locally important resources: Non designated heritage assets and landscape features with low evidential, historical, aesthetic and / or communal value
Negligible	Assets with low to very low or no evidential, historical, aesthetic and / or communal values, ore where remains are known to have been significantly altered or destroyed.
Unknown	Assets and structures of uncertain character, extent and / or date where importance cannot be readily predicted.

Magnitude of impact (change)

9.4.8 The description of magnitude of impact (change), provided in **Table 9.4**, are DAS Ltd definitions, that are derived from a combination of NPPF, Historic England and IoA definitions, and relate to harm or loss of significance of the asset (and not, where development only affects its setting, the degree of change within that setting). This includes the assessment of the effects on the setting of heritage assets to determine whether, and to what degree, the heritage significance of an asset may be harmed by a development within its setting.

Table 9.4: Criteria for determining the magnitude of impact (change) upon heritage assets.

Magnitude of impact (change)	Definition
High	Total loss or substantial harm to key elements or features or characteristics of the baseline (pre-development) conditions such that the post development character or composition or attributes of baseline will be fundamentally lost or changed.
Moderate	Partial loss or harm to one, or more, important elements or features or characteristics of the base lien (pre-development) conditions such that post development character or composition or attributed of base line will be partially changed
Low	Minor loss. Change arising from the loss or alteration will be discernible but underlying character or composition or attributes of the baseline condition will be similar to pre-development circumstances or patterns.
Negligible/None	No loss or harm to heritage significance. Change barely distinguishable.

Significance of Effect

9.4.9 The effects of the Proposed Development have been determined by comparing the significance of the know heritage assets (or potential for heritage assets with archaeological interest) against the magnitude of impact (change). The significance of a heritage asset can be harmed or lost by alteration or destruction of the asset or development within its setting. Definitions are DAS Ltd definitions derived from a

synthesis of NPPF, Historic England and ClfA (Chartered Institute for Archaeologists) definitions,

Table 9.5: Significance of effect.

Significance	Definition
High	Significant and irreversible changes to the assets considered to be of national to regional significance.
Moderate	Intermediate change / modification to assets considered to have moderate to possibly high local or regional significance or low to moderate regional to national significance
Low	Small / negligible changes. Some effect to locally significant assets

9.4.10 In policy terms (NPPF paragraph 195 and 196), harm to the significance of a heritage asset can be substantial or less than substantial. Planning practice guidance identifies harm as a high test. This is normally associated with total loss of a heritage asset's significance. **High adverse** effects on heritage assets of **Moderate** or **High** heritage significance are equivalent to substantial harm (**Significant**).

9.4.11 Less than substantial harm is a broader bandwidth and the degree of less than substantial harm is a professional judgement encompassing minor changes through to more significant effects. This assessment identifies the overall significant effects of the Proposed Development on heritage assets in accordance with the following scale:

None: no discernible change to any heritage asset, of any significance.

Minor: minor changes to the significance of a heritage asset of moderate or high heritage significance, or significant adverse changes or total loss of significance to a heritage asset of low or negligible heritage significance.

Moderate: moderate changes to the significance of a heritage asset of low or moderate heritage significance.

High: Significant and irreversible changes to the assets considered to be of national to regional significance

9.4.12 For the purpose of this assessment, **High** effects are equivalent to substantial harm and therefore considered **Significant**. **Moderate** and **Minor** effects are equivalent to less than substantial harm and effects that are **Negligible** are less than substantial. These are considered **Not Significant**.

9.2 Existing environment

9.5.1 The baseline conditions are those which describe the state of the environment and here, specifically, the archaeological and built heritage resource within the study area prior to the onset of any Proposed Development.

9.5.2 In this case, baseline conditions have been assessed through searches and assessment of conditions presented **Appendix 9.1**, a summary only is presented below in **Table 9.6** and **Table 9.7** below.

9.5.3 In addition, a consideration of the built heritage assets within the Earnley Conservation Area situated c. 1km from the northern Site boundary is presented in **Table 9.8**. A fuller description of these assets is presented within Appendix 3 of **Appendix 9.1**.

Table 9.6: Archaeological finds / investigations within the study area.

HER No. Site name	NGR location	Description / comment	Period	Significance
CD 766 Stone mace	481800 95500	Greenstone mace-head in Earnley Parish. Recovered from beach area. Possibly residual.	Prehistoric	Low/possibly moderate
DAS 2019 [no HER reference]	8201 9574	Evaluation survey (trail trenching investigation). Recorded post med/modern drainage ducts.	Post-Medieval	Low
E1300 Medmerry [managed retreat scheme]	483260 95349	Geoarchaeological survey. Monitoring of 24 test pits during preliminary survey works associated with Medmerry Flood Relief managed retreat scheme.	Non-specific No archaeological remains recorded.	Low

Table 9.7: Built heritage assets within the study area.

HER No. Site name	NGR location	Description / comment	Period	Significance
CD 9827 Marsh Farm	482047 96060	19 th century Farmstead. Loose courtyard formed by agricultural buildings. Significant loss of original structure (>50%). Grouping includes a 5-bay aisled barn that has been much altered. (Refer to 'event' E1314).	Post - Medieval	Low/possibly moderate
CD 9829 New Barn	482250 95847	Outfarm. U plan regular courtyard. > 50% loss of original structures with modern additions.	Post-Medieval	Low/possibly moderate
E1314 Marsh Barn	482050 96064	Building survey of Marsh Barn. Survey concluded barn was an excellent sample of its type. Potential to convert with retention of key timbers considered possible.	Post-Medieval	Moderate

Table 9.8: Built Heritage assets within Earnley Conservation Area (c. 1km north of site boundary).

Listed Building Description and reference	NGR location As HE data set for the asset	Description	Significance
<p>Earnley Parish Church The Parish Church 5.6.58-II*</p>	<p>SZ 89 NW 20/727</p>	<p>Built of Mixon stone and Lavant stone rubble. Chancel and nave without division between the western bell-turret, tile hung with shingle roof and northern porch. Dedication unknown. Nave 13th century, chancel 14th century, north porch dated 1873.</p> <p>Arguably the most important listed building within the conservation area.</p> <p>The main focal building of the village of Earnley is the Parish Church which is Grade II* listed. The church building and church grounds / cemetery are clearly visible as it is positioned at the intersection of three roads.</p> <p>The heritage significance of the Parish Church is primarily derived from its architectural and historic interest. The setting contributes to the significance of the asset as it may be appreciated 'in the round' from the surrounding approach access routes within the conservation area.</p>	<p>High</p>
<p>Earnley Place Grade II</p>	<p>SZ 89 NW 20/729</p>	<p>Two parallel ranges. Two storeys and attic. Three windows. Two dormers, red brick and grey headers. Modillion eaves cornices. Tiled roof. Glazing bars intact.</p> <p>Listing NG: SZ8154696872.</p> <p>The building is considered to date to the 18th century. Its setting has undergone some alteration since the 1930's with the construction of Earnley concourse. Earnley Place has recently been used for commercial activity / purpose.</p> <p>The heritage significance of Earnley Place is derived from a combination of its architectural and historic significance of its</p>	<p>High</p>

Listed Building Description and reference	NGR location As HE data set for the asset	Description	Significance
		physical fabric. The building is largely screened from external view therefore its setting is best appreciated from immediately within its grounds.	
Earnley Manor Grade II	SZ 89 NW 20/728	<p>An 18th century, early 19th century refronting of an earlier building. Two storeys. Four windows. Stuccoed. Parapet. Tiled roof. Glazing bars intact.</p> <p>Earnley Manor is located to the northeast of the conservation area. The existing 19th century fronting is a modification, re-fronting, to an earlier 18th century building. The build plan is approximately 'T' shape and is two storeys in height. The building is set in substantial 'isolating' grounds with associated agricultural barns to the south. The setting of the building has undergone some modification with a development (Earnley Manor Close).</p> <p>The heritage significance of Earnley manor is derived primarily from its architectural and historic interest of its fabric as an example of a historic country manor house. The setting also contributes to the overall significance of this asset. The fabric and setting have undergone some earlier modification. The asset may best be appreciated from views from within the grounds of the asset.</p>	High to moderate
K6 Telephone Kiosk 1080//051		<p>Telephone kiosk. Type K6. Designed 1935 by Sir Giles Gilbert Scott. Manufactured by various contractors. Cast Iron construction. Square kiosk with domed roof. Unperforated crowns to top panels and margin glazing to windows and door.</p> <p>The kiosk [Plate AP2/9] is located marginally to the green area in front of / to the southwest, of Church Cottages.</p>	Moderate

Listed Building Description and reference	NGR location As HE data set for the asset	Description	Significance
		Its heritage significance is derived from historic interest as a British design 'icon' representing innovation in the mid-20 th century.	

Difficulties and uncertainties

- 9.5.4 Previous archaeological investigations undertaken by DAS Ltd, and others, on the Lower Sussex Coastal Plain have yielded unexpected discoveries of archaeological activity from the later prehistoric periods (from the Bronze Age and Iron Age periods) through to the Romano-British period. Although there is no direct evidence to suggest this, it is possible that similar such unexpected archaeological activity and finds may be encountered on this assessment site, despite the low archaeological potential identified from these periods by this assessment.
- 9.5.5 It is considered, after a review of all available data sets, (as detailed in **Section 9.4.1** above and in **Appendix 9.1**) that the assessment is sufficiently robust to allow an accurate presentation and assessment of the current baseline environment.

9.2 Predicted Effects

- 9.6.1 **Table 9.9, Table 9.10** and **Table 9.11** below present an assessment of significance, predicted magnitude of impact (change), nature of effect, predicted effects and proposed mitigation measures for all assets within the study area.

Table 9.9: Predicted effects on archaeological finds / investigations.

HER No. Site name	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
CD 766 Stone mace	481800 95500	Greenstone mace-head in Earnley Parish. Recovered from beach area. Possibly residual.	Prehistoric	Low/possibly moderate	Negligible / none	Beneficial (potentially dependent on results of conditioned investigation – see Section 9.7)/ Significance Low	Archaeological context of find more clearly defined / contextualized.
DAS 2019 [no HER reference]	8201 9574	Evaluation survey (trail trenching investigation). Recorded post med/modern drainage ducts.	Post-Medieval	Low/possibly moderate	Negligible / none	Beneficial (potentially dependent on results of conditioned investigation – see Section 9.7) Significance Low	Archaeological context of find more clearly defined / contextualized
E1300 Medmerry (managed retreat scheme)	483260 95349	Geoarchaeological survey. Monitoring of 24 test pits during preliminary survey works associated with Medmerry Flood Relief managed retreat scheme.	Non specific No archaeological remains recorded.	Low/possibly moderate	Negligible / none	Beneficial (potentially dependent on results of conditioned investigation – see Section 9.7) Significance Low	Archaeological context of find more clearly defined / contextualized

HER No. Site name	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
						9.7) Significance Low	

Table 9.10: Predicted effects on built heritage assets.

HER No. Site name	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
CD 9827 Marsh Farm	482047 96060	19 th century Farmstead. Loose courtyard formed by agricultural buildings. Significant loss of original structure (>50%). Grouping includes a 5-bay aisled barn that has been much altered. (Refer to 'event' E1314).	Post - Medieval	Low/possibly moderate	Negligible	Short term/Significance low/none	None
CD 9829 New Barn	482250 95847	Outfarm. U plan regular courtyard. > 50% loss of original structures with modern additions.	Post-Medieval	Low/possibly moderate	Negligible	Short term/Significance low/none	None
E1314 Marsh Barn	482050 96064	Building survey of Marsh Barn. Survey concluded barn was an excellent sample of its type. Potential to convert with retention of key timbers considered possible.	Post-Medieval	Moderate	Negligible	Short term / Significance low/none	None

Table 9.11: Predicted effects on built heritage assets within Earnley Conservation Area.

Listed Building status	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
Earnley Parish Church The Parish Church 5.6.58-II*	SZ 89 NW 20/727	Grade II* listed. The church building and church grounds / cemetery are clearly visible as it is positioned at the intersection of three roads. The heritage significance of the Parish Church is primarily derived from its architectural and historic interest. The setting contributes to the significance of the asset.	Nave 13 th century, chancel 14 th century, north porch dated 1873.	High	Negligible / Low	Short term / Low none	None
Earnley Place Grade II	SZ 89 NW 20/729	18 th century. Two parallel ranges. Two storeys and attic. Three windows. Two dormers, red brick and grey headers. Modillion eaves cornices. Tiled roof. Glazing bars intact. Listing NG: SZ8154696872. Its setting has undergone with the construction of Earnley concourse. Earnley Place has recently been used for commercial activity / purpose. The heritage significance of Earnley Place is derived from a combination of its architectural and historic significance of its	The building is considered to date to the 18 th century with some alteration since the 1930's.	High	Negligible / Low	Short term / Low none	None

Listed Building status	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
		physical fabric. The building is largely screened from external view therefore its setting is best appreciated from immediately within its grounds.					
Earnley Manor Grade II	SZ 89 NW 20/728	Two storeys. Four windows. Stuccoed. Parapet. Tiled roof. Glazing bars intact. Located to the north east of the Conservation area. The building is set in substantial 'isolating' grounds with associated agricultural barns to the south. The setting of the building has undergone some modification with a development (Earnley Manor Close).	18 th century early 19 th century refronting of an earlier building	High	Negligible / Low	Short term / Low none	None
K6 Telephone Kiosk 1080//051		Telephone kiosk. Type K6. Designed 1935 by Sir Giles Gilbert Scott. Manufactured by various contractors. Cast Iron construction. Square kiosk with domed roof. Unperforated crowns to top panels and margin glazing to windows and door. The kiosk (Plate AP2/9) is located marginal to the green area in front of / to the south west, of Church Cottages. Its heritage significance	Mid-20 th century	Moderate	Negligible / Low	Short term / Low none	None

Listed Building status	NGR location	Description / comment	Period	Asset significance	Magnitude of impact (change)	Nature of effect / significance of effect	Predicted effects
		is derived from historic interest as a British design 'icon' representing innovation in the mid-20 th century.					

9.2 Additional Mitigation

- 9.7.1 It is considered highly probable that given the assessment of archaeological potential (as detailed in **Appendix 9.1** and referred to above) that archaeological site investigation will be stipulated 'by Condition' within all areas where ground impact (estimated at deeper than c. 15 cms bgl) associated with the Proposed Development is predicted to occur. This will include foundation runs, service installations, landscaped areas and roadways. It is advised that investigation is likely to be required post-determination, though in advance of construction, and interdigitated within the phased construction programme as it occurs. The precise details of investigation methodology will be detailed in a 'Written Scheme of Investigation' (WSI) that will be prepared in response to, and address any, imposed Condition. The WSI will be agreed with Chichester District Council's Archaeology Officer.
- 9.7.2 Should recommendations for investigation scope and schedules be followed, then no potential effects during operation are anticipated. However, should 'separation' of archaeological investigation and construction works not be possible, then early consultation between the appointed archaeological contractor and appointed construction contractor should take place to ensure mutually satisfactory operational arrangements are put in place.
- 9.7.3 The only circumstance where archaeological presence may be required during any construction works is if an 'Archaeological Watching Brief' is required. Again, consultation between the appointed archaeological contractor and appointed construction contractor should take place to ensure mutually satisfactory operational arrangements are put in place.
- 9.7.4 To mitigate the predicted effects on built heritage assets within Earnley Conservation Area, the implementation of a traffic management plan during construction is recommended.

9.2 Summary of effects

- 9.8.1 Based on reviewed data sets available within the study site area, the Proposed Development is assessed as having **Low** potential to impact on known archaeology within the site area. The absence of known heritage assets within the application site area is, in part, due to very low levels of previous site-specific investigations within the site area.
- 9.8.2 It is therefore considered that the Proposed Development should be considered to have the potential of **Moderate** to possibly **High** potential to impact on archaeology of presently unknown, though of potentially **High** significance.
- 9.8.3 Additional site investigation, to be detailed in response to a predicted Condition, should be considered as adequate mitigation against any possible significant loss of any archaeology that may be present within the proposed development area.
- 9.8.4 Additional site investigation/s will further have the potential to enhance and contextualise known archaeological finds, of currently low to possibly moderate significance, that are recorded within the site area and the immediate environs.

9.2 References

- Sussex Archaeological Standards for Archaeological Investigations [Revised; 2019]
- CIfA. (2019). Code of Conduct, Reading: Chartered Institute for Archaeologists.
- CIfA. (2020). Standard and Guidance for Historic Environment Desk-Based Assessment, Reading: Chartered Institute for Archaeologists.
- Historic England. (2008). Conservation Principles; Policy and Guidance for the Sustainable Management of the Historic Environment.
- Historic England. (2015). Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2.
- Historic England. (2017). The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition).

10 LANDSCAPE

10.1 Introduction

- 10.1.1 This chapter assesses the landscape and visual effects of the construction and operation of the Proposed Development. The assessment methodology follows Guidelines for Landscape and Visual Impact Assessment, 3rd edition (GLVIA3), 2013.
- 10.1.2 This chapter will identify and assess the significance and the effects of change resulting from the masterplan proposals for the Proposed Development on both the landscape as an environmental resource in its own right and on the people’s views and visual amenity.
- 10.1.3 The Proposed Development is described within **Chapter 3: The Proposed Development**.
- 10.1.4 This chapter is supported by the following appendices:
 - Appendix 10.1: Landscape Viewpoint sheets 1-12
 - Appendix 10.2: Published Landscape Character Assessments Extracts
 - Appendix 10.3: Landscape Masterplan and Visualisations
 - Appendix 10.4: Detailed Landscape Masterplans
- 10.1.5 This chapter has been prepared by Clewsla - Clews Landscape Architecture Ltd.

10.2 Relevant legislation, planning policy and guidance

- 10.2.1 The relevant legislative and planning context with regards to landscape and visual impact is listed in **Table 10.1** alongside best practice guidance which has been adopted for this assessment.

Table 10.1: Relevant legislation, policy and guidance.

Document	Summary
National Planning Policy	
National Planning Policy Framework 2021	15. Conserving and enhancing the natural environment 174. Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services –including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

Document	Summary
	<p>d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;</p> <p>e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and</p> <p>f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate</p>
Local Planning Policy	
<p>Adopted Chichester Local Plan: Key Policies 2014-2029</p>	<p>Policies relevant to this assessment are:</p> <ul style="list-style-type: none"> • Policy 30: Built Tourist and Leisure Development: • Policy 44: Development around the Coast • Policy 45: Development in the Countryside • Policy 47: Heritage and Design • Policy 48 Natural Environment
Guidance	
<p>GLVIA3 (Landscape Institute & Institute of Environmental Management, 2013)</p>	<p>A key guidance document used by landscape professionals when undertaking landscape and visual impact assessment.</p>
<p>Landscape Character Assessment, Guidance for England and Scotland (Countryside Agency & Scottish Natural Heritage, 2002)</p>	<p>Provides advice on Landscape Character Assessment, an important tool for all those involved in influencing the landscape.</p>
<p>Photography and photomontage in landscape and visual impact assessment (Landscape Institute Advice Note 01/11, 2011)</p>	<p>Provide advice to the landscape professional on photography and photomontage methods in landscape and visual impact assessment.</p>
<p>West Sussex County Council published landscape management guidelines</p>	<p>In 2003, an assessment of the landscape character of West Sussex was carried out. This resulted in the identification of 42 unique areas and the production of land management guidelines for each character area. These guidelines can be used by landowners, district and borough councils, parish councils, other organisations and the public in various aspects of their work.</p>

10.3 Consultation

- 10.3.1 Pre-application consultation was undertaken with Chichester District Council in early 2022 with a presentation of the original draft proposals for the Proposed Development and a site walk with the Chichester District Council planning case officer at the time.
- 10.3.2 Chichester District Council could not provide feedback on landscape proposals as they do not have a landscape officer. In previous applications, they have outsourced landscape matters to an external consultant.
- 10.3.3 Instead of commenting on the Proposed Development, Chichester District Council re-issued the reasons for refusal from the previous planning application (by others) which was for static caravans.
- 10.3.4 Although this response was not relevant to the Proposed Development, it did provide an insight into the perceived sensitivities, which were raised within the previous planning application and ultimately the reason for refusal.

10.4 Approach

- 10.4.1 This chapter has been produced in accordance with the following publications and guidelines:
- GLVIA3 (Landscape Institute & Institute of Environmental Management, 2013)
 - Landscape Character Assessment, Guidance for England and Scotland (Countryside Agency & Scottish Natural Heritage, 2002)
 - Photography and photomontage in landscape and visual impact assessment (Landscape Institute Advice Note 01/11, 2011)
- 10.4.2 The objectives of the landscape and visual assessment are to:
- Identify and assess the significance and the effects of change resulting from the masterplan proposals for the Proposed Development on both the landscape as an environmental resource in its own right and on the people's views and visual amenity.
 - Describe the existing Site and the surrounding area.
 - Identify the landscape receptors (physical characteristics).
 - Identify the visual receptors (various types of people potentially affected)
 - Determine the sensitivity of the landscape and its capacity to accept change.
 - Identify the visual envelope of the Site and of the Proposed Development.
 - Identify the elements of the Proposed Development that will interact with or alter the physical landscape.
 - Identify the landscape and visual effects posed by the Proposed Development.
 - Assess the significance of the effects.
 - Propose additional mitigation measures to avoid, prevent, reduce or, if possible, offset any significant adverse effects.

Process of assessing the significance of landscape effects

- 10.4.3 A baseline study was undertaken to first establish the inherent value of the Site area in terms of landscape and visual significance. This was a culmination of the following factors:
- Site specific characteristics and resources
 - Character of the setting
 - Quality / condition / value

- 10.4.4 The baseline study was undertaken by using a combination of both desktop and field assessment. The level of detail is considered proportionate to the anticipated extent of the impacts in order to create a concise and legible assessment.
- 10.4.5 The desktop assessment reviewed the following (not exclusively):
 - National/ regional designations
 - Planning policy
 - Ordinance survey data
 - Aerial photography
 - Cycle/ footpath networks
- 10.4.6 A site visit to appraise the character and condition of the Site and the landscape context and to identify key visual receptors was undertaken in January 2022. The visual assessment was undertaken in winter months as a “worst case” scenario and visibility was deemed good.
- 10.4.7 The site visit involved exploring the gathered data and developing the general information into a site specific analysis which is used to assess the value of the Site area and visual impacts.
- 10.4.8 The fieldwork established all the areas from where the Proposed Development could be seen and the area was mapped as a “zone of theoretical visibility”. This is assessed and refined onsite to a “zone of visual influence” within which a range of representative viewpoints were used to analyse the significance of the impact of the Proposed Development.
- 10.4.9 Photographs were taken using a pole mounted digital SLR camera with a fixed 50mm lens (1:1.8 STM) 1.6m above ground level. For the majority of the views, a panoramic has been used to show the full field of view with several photographs stitched together using Adobe Photoshop.
- 10.4.10 Each viewpoint is assessed in terms of the magnitude of change and the sensitivity of the effects, whether negative or positive, as perceived by the various users or “receptors”. The combination of these two elements are used to deduce the significance of the effect.
- 10.4.11 For clarity, tables explaining the terminology for the magnitude of change and the sensitivity of the receptors have been provided below.

Sensitivity of the landscape resource

- 10.4.12 Criteria for determining the sensitivity of the landscape resource, based on the professional judgement of the assessor, are set out in **Table 10.2**.

Table 10.2: Criteria for determining the sensitivity of the landscape resource.

Sensitivity	Description of landscape type	Examples
Low	<ul style="list-style-type: none"> • Undefined/ poor quality landscape setting. Requiring regeneration / enhancement. • Change would be without detrimental effect. • Extensive & prominent detracting features. 	Regeneration areas, areas of little landscape value in poor condition.
Medium	<ul style="list-style-type: none"> • Well defined and reasonably valued local characteristics in reasonable condition. • Tolerant to moderate change without significant adverse impact. 	Locally recognised character areas. Areas of good landscape value in

Sensitivity	Description of landscape type	Examples
	<ul style="list-style-type: none"> Occasional or noticeable detracting features. 	poor/ moderate condition.
High	<ul style="list-style-type: none"> Distinctive, valued and sensitive landscape character in good condition. Landscape character which is very sensitive but not completely intolerant to small changes. Isolated or recessive detracting features. 	World Heritage Sites, National Parks, AONB, AGLV, SSSI Bracklesham Bay, SACs, Conservation areas.
Very High	<ul style="list-style-type: none"> Exemplary part of a highly sensitive landscape character pristine / intact / in very good condition. Landscape character which is unique and highly valued. Minimal/ no detracting features. 	World Heritage Sites, National Parks, AONB, AGLV, SSSI Bracklesham Bay, SACs, Conservation areas.

Magnitude of change on the landscape character

10.4.13 The magnitude of the change to the landscape is determined by evaluating and considering the following factors. Considerations that may influence the perceived value of the broad landscape character include:

- Picturesque: How tranquil, special or the scenic is the setting?
- Quality: How pure are the special characteristics of the setting?
- Rarity: How unique is this character?
- Associations: Any special links to historical, human or natural features?

10.4.14 Beyond this, considerations for the value of the character of the Site are:

- Size and relationship to the character area
- Condition and contribution to the character area
- Rarity and maturity of any site features.

10.4.15 **Table 10.3** sets out the magnitude of change criteria, based on the professional judgement of the assessor.

Table 10.3: Criteria for determining the magnitude of change to landscape character.

Magnitude of change	Description
None	<ul style="list-style-type: none"> No change to the landscape character.
Negligible	<ul style="list-style-type: none"> Near unnoticeable changes to landscape character. Fractional/ minor appearance of uncharacteristic feature set within the largely unaltered baseline setting.
Minor	<ul style="list-style-type: none"> Small changes to landscape character. Noticeable but recessive intervention of uncharacteristic feature within the setting. Small loss/ alterations to unique characteristic features with foreign elements/ features or larger loss of more common features.
Moderate	<ul style="list-style-type: none"> Clear/ prominent change to landscape character.

Magnitude of change	Description
	<ul style="list-style-type: none"> • Obvious/ apparent intervention within the setting. • Partial clearance/ interruptions of characteristic features with foreign elements/ features.
Major	<ul style="list-style-type: none"> • Fundamental & large scale change to the landscape character. • Dominating/ monopolising the setting. • Total irreversible clearance/ replacement of characteristic features with wholly foreign elements/ features.

Sensitivity of visual receptors

10.4.16 The criteria applied to define the sensitivity of visual receptors (people within the area who will be affected by the changes in views to visual amenity), based on the professional judgement of the assessor, are presented in **Table 10.4**.

Table 10.4: Criteria for determining the sensitivity of visual receptors.

Sensitivity	Description	Examples
Low	<ul style="list-style-type: none"> • Views experienced momentarily or indirectly. • Views which are experienced without focus/ direct interest as they are only a consequence of an entirely separate focus/ motive. 	Commuting motorists/ train passengers. Commercial premises.
Medium	<ul style="list-style-type: none"> • Incidental views experienced through engaging in outdoor activities or journeys within the area. • Ranges from glimpsed views of high value to open views of moderate value. • Moderate susceptibility to change. 	Dog walking, sporting activities, local travel.
High	<ul style="list-style-type: none"> • Distant, broad or incidental views experienced in the specific valued environment. • Some susceptibility to change. 	Local communities/ residential properties. Footpaths/ cycle ways in valued landscapes. Referenced landscapes with cultural/ historic value.
Very High	<ul style="list-style-type: none"> • Open views experienced with an intended interest in the specific valued environment. • Highly susceptibility to change. 	Users of national trials, PRow footpaths/ cycle ways in valued landscapes. Referenced landscapes with cultural/ historic value.

Magnitude of visual change

10.4.17 The magnitude of the change to visual receptors is determined by evaluating and considering the following factors:

- Size or scale of the Proposed Development.
- Extent: size of the development area within the context of the setting.
- Duration or reversibility: short term, medium term, long term impact.
- Distance from the Proposed Development.
- Angle of view.
- Degree of contrast.
- Seasonality: leaf loss of deciduous vegetation.

10.4.18 **Table 10.5** sets out the magnitude of visual change criteria, based on the professional judgement of the assessor.

Table 10.5: Criteria for determining the magnitude of visual change.

Magnitude of visual change	Description
None	<ul style="list-style-type: none"> • No change to the visual baseline.
Negligible	<ul style="list-style-type: none"> • Near unnoticeable changes to the visual character. • Fractional appearance of uncharacteristic feature set within the largely unaltered characteristic features of the setting.
Minor	<ul style="list-style-type: none"> • Small changes to visual baseline. • Noticeable but recessive intervention of uncharacteristic feature within the setting. • Small loss / alterations to the view with incongruous elements / features which could be missed by a casual observer.
Moderate	<ul style="list-style-type: none"> • Noticeable change to landscape / visual character. • Obvious / apparent intervention within the setting. • Partial clearance / interruptions of characteristic features with foreign elements / features.
Major	<ul style="list-style-type: none"> • Fundamental change to the visual character. • Dominating / monopolising the view.

10.4.19 Types of View will affect the magnitude of the potential change; these are explained below:

- **None:** No parts of the Proposed Development are visible.
- **Glimpsed:** Fractional, distant or transient appearance of the Proposed Development that is largely hidden and only represents a small and indistinguishable fragment of the view (could cause Minor-Negligible change).
- **Partial:** Noticeable but slightly obstructed views to recognisable parts / features / elements within the Proposed Development (could cause Moderate-Minor change).
- **Open:** Clear and unobstructed views to the Proposed Development, which is a prominent feature in the view (could cause Major-Moderate change).

Significance of the landscape/ visual impact

10.4.20 As a basis for assessing the significance of the landscape and visual impact, the following matrix (**Table 10.6**) has been used, based on the professional judgement of the assessor. However, it is only a general guide and more detailed / specific judgements have been made when analysing the complex variations experienced from each viewpoint / effect.

10.4.21 This matrix can be read for both negative and positive impacts. The effects in **bold** are deemed to be **significant**.

Table 10.6: Matrix grading significance of the effect of the landscape and/or visual impact.

Magnitude of change	Sensitivity of Receptor / Resource			
	Low	Medium	High	Very High
None	No impact	No impact	No impact	No impact
Negligible	Negligible	Negligible	Minor	Minor
Minor	Negligible	Minor	Moderate	Moderate
Moderate	Minor	Moderate	Substantial	Major
Major	Moderate	Substantial	Major	Detrimental

10.4.22 Effect of **Detrimental** significance: The consequence would be of national or even international importance. This effect should be front and centre of any considerations over viability.

10.4.23 Effect of **Major** significance: The consequence would be of national or key regional importance. This effect should be a fundamental part of any considerations over viability.

10.4.24 Effect of **Substantial** significance: The consequence would be of regional or key local importance. This effect should be important to any considerations over viability.

10.4.25 Effect of **Moderate** significance: The consequence could be of local importance. This effect should be part of the overall consideration as it will represent noticeable change, but of a level that landscape may be able to accommodate.

10.4.26 Effect of **Minor** significance: The consequence is not deemed to be of a level that requires specific consideration, but should be a part of the broad consideration.

Difficulties and uncertainties

10.4.27 The landscape assessment offers a balanced view and attempts to provide a representative / comparable scale of the various impacts.

10.4.28 Where it can falter is in close proximity, when very small changes (such as a single tree or a bush) being added or omitted will fundamentally affect / change the scene. This can appear disproportionately significant if taken in isolation/ out of context and should be considered as part of the overall impact.

Design basis and assumptions

- 10.4.29 The entire design process has been heavily influenced by the coastal environment and potential for coastal flooding with global warming and sea levels rising. Due to the complex site situation, watercourses and current insufficient sea defences, the new lodges have to be elevated above the 1 in a 100 year flood level at 4.43 m FFL (finished floor level).
- 10.4.30 As the Site landform slopes north to south, the level difference between the existing landscape and the lodges increases so that access to the accommodation in these areas will be via ramped boardwalks and/or stepped.
- 10.4.31 The material excavated from the lakes / waterbodies will be used in places to raise the ground, but this is only possible where existing features, such as the rifes, vegetation and external roads/ paths are not present.
- 10.4.32 This is an evolving landscape, which may radically alter in the next 100 years. This assessment however considers the present landscape, whilst designing for the future and allowing for the potential risk of rising water levels. This disparity is not part of the assessment, but it must be considered that there is no alternative in re-developing this site.

10.5 Existing environment

Published landscape character assessments

- 10.5.1 A brief summary of the published landscape character assessments in the context of the Site is detailed below and these are mapped within the accompanying figures (**Figures 1-8**).

National Character Area

NCA 126 – South Coast Plain – NE525

- 10.5.2 The plain slopes gently southwards towards the coast. From the coastal plain edge, there are long views towards the sea and the Isle of Wight. The coastline provides feeding grounds for internationally protected populations of overwintering waders and wildfowl and is also extensively used for recreation. The long history of intervention to reduce the risk of flooding and erosion means that the shoreline is generally in a highly modified form and has realignment schemes protecting the coast, including the country's first managed realignment on the open coast at Medmerry.
- 10.5.3 There are stretches of farmed land between developed areas, often with large arable fields defined by low hedges or ditches.
- 10.5.4 The future management of this NCA requires balancing the needs of often competing interests. Protection against flooding remains a priority to encourage growth and allow internationally important habitats and species to flourish, while also maintaining the productive landscape and historic and geological features of the area.
- 10.5.5 The sensitivity of NCA 126 – South Coast Plain – NE525 is considered to be **Medium**.

Local Landscape Character

SC1 - South Coast Shore Line

- 10.5.6 This long narrow Character Area extends between West Wittering and Shoreham and comprises the majority of the West Sussex coastline. It is a distinctive low, open and exposed

landscape which has an overriding visual and physical association with the sea. Its wide and gently curved bays are further defined by the protruding shingle headland of Selsey Bill, and the chalk headland of Beachy Head in neighbouring East Sussex. This is a dynamic character area whose key characteristics are linked by coastal evolution, weather and tides.

10.5.7 Key characteristics relevant to the Site include:

- Dynamic seascape of constantly changing weather, light and tidal conditions.
- Relatively narrow undeveloped sections of coastline behind beaches. Bounded by low growing scant vegetation and small areas of wind-sculpted scrub and trees. Often providing separation of urban areas. Areas of both high ecological and landscape importance.
- Reed beds, streams and deep drainage ditches known as rifes.
- Caravan parks and other built holiday accommodation facilities.

10.5.8 In the future, change to the character of the landscape is expected in the following forms:

- Likely longer-term rise in sea level and increased storm frequency, threatening the stability and permanency of the coastline and leading to the loss of coastal habitats.
- Managed re-alignment of the coastline may be particularly influential in the future, providing opportunities for creation of new coastal habitats.
- Loss of distinctive coastal habitats through reclamation and dredging, development, coastal defences and recreation.

10.5.9 The main landscape and visual sensitivities of this landscape character area include:

- Erosion of coastal habitats due to visitor pressure and natural processes.
- Unsympathetic urban development.
- Loss of open views.
- Rise in sea level.
- Recreational development such as car parks and caravan sites.
- Car borne summer holiday traffic reducing tranquillity.
- Potential for dramatic landscape and ecological change.

10.5.10 *Land Management Guidelines:* Conserve the open, distinctive coastal character of the area and maintain tranquillity.

- Ensure any new development does not result in adverse impact on open character and characteristic views.
- Maintain the distinctive character and identity of the undeveloped coastal grazing marsh and other open green areas behind beaches.
- Conserve and enhance the natural landscape features of the coast including shingle beaches and banks, saline lagoons, dunes, coastal scrub and trees, rifes and ditches through sympathetic management.
- Encourage landscape enhancements of existing car parks and caravan sites especially with the use of small copses, hedgerows and coastal scrub planting.
- All new planting to be of coastal tolerant plants which are adapted to the maritime winds and seaside conditions. Particular care needs to be taken in species selection in sensitive coastal habitats.
- Establish new areas of dense scrub and tree groups through the creation of sheltered areas using sympathetic measures such as low stone walls and earth mounds and nurse species for wind protection.
- Protect the remaining open spaces behind beaches by implementation of strategic gap policies supported by landscape character assessment.

10.5.11 The sensitivity of SC1 - South Coast Shore Line is considered to be **Medium**.

SC2–Manhood Peninsular

10.5.12 This Character Area extends between West Wittering and Shoreham and comprises the majority of the West Sussex coastline. It is a distinctive low, open and exposed landscape which has an overriding visual and physical association with the sea. Its wide and gently curved bays are further defined by the protruding shingle headland of Selsey Bill, and the chalk headland of Beachy Head in neighbouring East Sussex. This is a dynamic character area whose key characteristics are linked by coastal evolution, weather and tides.

10.5.13 Key characteristics relevant to the Site include:

- Dynamic seascape of constantly changing weather, light and tidal conditions.
- Relatively narrow undeveloped sections of coastline behind beaches. Bounded by low growing scant vegetation and small areas of wind-sculpted scrub and trees. Often providing separation of urban areas. Areas of both high ecological and landscape importance.
- Reed beds, streams and deep drainage ditches known as rifes.
- Caravan parks and other built holiday accommodation facilities.

10.5.14 In the future, change to the character of the landscape is expected in the following forms:

- Likely longer term rise in sea level and increased storm frequency threatening the stability and permanency of the coastline and leading to the loss of coastal habitats.
- Managed re-alignment of the coastline may be particularly influential in the future, providing opportunities for creation of new coastal habitats.
- Loss of distinctive coastal habitats through reclamation and dredging, development, coastal defences and recreation.

10.5.15 The main landscape and visual sensitivities of this landscape character area include:

- Erosion of coastal habitats due to visitor pressure and natural processes.
- Unsympathetic urban development.
- Loss of open views.
- Rise in sea level.
- Recreational development such as car parks and caravan sites.
- Car borne summer holiday traffic reducing tranquillity.
- Potential for dramatic landscape and ecological change

10.5.16 *Land Management Guidelines:* Conserve the open, distinctive coastal character of the area and maintain tranquillity.

- Ensure any new development does not result in adverse impact on open character and characteristic views.
- Maintain the distinctive character and identity of the undeveloped coastal grazing marsh and other open green areas behind beaches.
- Conserve and enhance the natural landscape features of the coast including shingle beaches and banks, saline lagoons, dunes, coastal scrub and trees, rifes and ditches through sympathetic management.
- Encourage landscape enhancements of existing car parks and caravan sites especially with the use of small copses, hedgerows and coastal scrub planting.

- All new planting to be of coastal tolerant plants which are adapted to the maritime winds and seaside conditions. Particular care needs to be taken in species selection in sensitive coastal habitats.
- Establish new areas of dense scrub and tree groups through the creation of sheltered areas using sympathetic measures such as low stone walls and earth mounds and nurse species for wind protection.
- Protect the remaining open spaces behind beaches by implementation of strategic gap policies supported by landscape character assessment.

10.5.17 The sensitivity of SC2 –Manhood Peninsula is considered to be **Medium**.

Landscape baseline

10.5.18 The existing Site can be separated as follows, as illustrated on **Inspired Partnership drawing 1000.1 Site zoning plan** :

- Central park area: Field A
- Northern areas: Field B & C
- Southern areas: Field D and fields F –I (outside the redline boundary)
- Western areas: Field E

10.5.19 A brief description of each field is presented below and identifies the key characteristics, vegetation and boundary features, inter-visibility and quality / sensitivity.

10.5.20 The fields outside the redline boundary are included because they were part of the previous application, which has been referred to in the pre-application response. However, they are not affected by the Proposed Development.

Field A: Core development area (9 ha).

10.5.21 Field A falls broadly southwards from 3.25 m AOD to c. 2 m AOD. Central / core areas have been developed on the existing site.

10.5.22 The central hub has a large two storey building with associated out-building and containers with some relatively poor quality open space to the west and south providing play and outdoor activities. An outdoor pool with external deck is located to the west.

10.5.23 Both the northern and southern ends are densely developed with very low quality single story chalet buildings interconnected by paths. Communal parking is located of the central spine road and to the south around the perimeter of the zone.

10.5.24 The chalets are densely arranged in clusters around the parking areas, with shallow pitch roofs and small external decks. At the north west there has been a recent redevelopment of the existing chalets creating a more vibrant and modern look.

10.5.25 In the southern part of the Site, running parallel to the PRow, there is a 115 m long single line of terraced development, which is a very prominent and intrusive feature in the Site and surrounding context.

10.5.26 Vegetation is limited within Field A. There are mature, native, 3 m high, hedged boundaries to west, and a tree lined hedged boundary to the north and partially to the east. Mixed trees with a group of mature Cypress trees are located centrally, running along the rife, the spine road, and within the central public open space which create a visible feature. Planting within the Site is low level and of little merit.

10.5.27 The central area is generally low quality. The Site looks worn, buildings are outdated and the public realm is poor. The redevelopment at the north west shows the opportunity to enrich the Site, but the enhancement is restricted to the development itself and offer minimal wider benefits.

10.5.28 As a fully developed operational holiday park in relatively poor condition, Field A is deemed to be of **Low** sensitivity to change, which given the density, poor quality and locations of the development onsite, offers potential for improvement.

Field B: North Field (2.3 ha)

10.5.29 Field B falls broadly southwards from 4 m AOD to 3.75 m AOD. It comprises of open pasture field which are linked to the wider arable landscape to the north.

10.5.30 The field has open / exposed boundaries to the west and north. The large evergreen hedging and mixed tree planting up to Marsh Farm Cottages creates a strong vegetated boundary to the east. Along the south, a 2 m high native hedge defines the field. This, in conjunction with the vegetation across the road, creates a strong vegetated boundary from the core development area.

10.5.31 Whilst the pasture field is of good quality, it is a small cut off section of a wider, larger field pattern. The open boundaries and limited vegetation are not of any particular merit and are therefore, deemed to be of medium high quality.

10.5.32 Field B is relatively devoid of features and, when looked at in combination with the surrounding larger open pastoral fields, creates truncated parcel of land which are not particularly tranquil in nature. As a result, Field B is assessed as having **Medium** to **Low** sensitivity to change.

Field C: North Eastern Field (4.7 ha)

10.5.33 Field C falls broadly westwards from 3.75 m AOD to 2.5 m AOD. It is an open pasture field that is linked to the wider arable landscape to the north / east. Boundaries are defined by the road to the large warehouse facility east of the Site. The field is bisected by the access road to the storage/ maintenance yard.

10.5.34 The south-eastern boundary is a small section well vegetated rife corridor with bramble, gorse and scrub lining the banks of the ditch which then continues and wraps around the southern end to the field. The western boundary with Field A has a mature mixed hedgerow which runs northwards to fuse with the vegetation around Marsh Farm.

10.5.35 Whilst the pasture field is of good quality, the large warehouse offsite and central facility to the west create a sense of an urban fringe. Field C is therefore assessed as being of medium – poor quality.

10.5.36 Field C is and open rough grassland which is not particularly tranquil in nature due to the large warehouse off site and the other surrounding onsite development. As a result, Field C is assessed as having **Medium** to **Low** sensitivity to change.

Field D: Eastern Field (2.5 ha)

10.5.37 Field D falls broadly westwards from 4.0 m AOD to 1.75 m AOD. It is an open pasture field is linked to the RSPB Medmerry reserve to the east, with open views to the wild coastal landscape.

- 10.5.38 A wide and consistent low bramble, gorse and scrub creates a strong boundary to the west separating this field from the development onsite.
- 10.5.39 The pasture field is of good quality and the open boundary and visual / physical connectivity to the RSPB Medmerry reserve make Field D of **High** sensitivity to change.
- 10.5.40 Field D is within the Bracklesham Bay SSSI and relates directly to the RSPB Medmerry reserve. As such, Field D is assessed as having **High – Very High** sensitivity to change.

Field E: Western Field (5.2 ha)

- 10.5.41 Field E falls broadly southwards from 3.5 m AOD to 2.75 m AOD. It is a semi-improved grassland / pasture field with development at the west boundary and an access track cutting across from the gated access off the PRoW.
- 10.5.42 Field E is relatively well enclosed, with mature woodland to the north and a wild scrubland area to the north-west. The hedged boundaries to the east, south and west also prove low-level screening as well as creating a well-defined field.
- 10.5.43 Whilst the field is of good quality, it is detached from the wider landscape and with development already onsite - therefore it is assessed as medium quality. However, the southern parts of the field are a very important habitat for migrating geese which is assessed in the ecological reports (ES Volume 3 **Appendix 6.1 to Appendix 6.6**).
- 10.5.44 Field E differs somewhat from the wider landscape setting and is relatively well enclosed by the vegetation boundary. Field E does form part of the landscape buffer which separates the Site from the development to the west. However, the landscape here is more vegetated and semi-enclosed in character. With this in mind, Field E is assessed as having **Medium** sensitivity to change.

Fields F–I

- 10.5.45 Fields F to I are outside the red line boundary and have therefore the quality has not been assessed as part of this assessment.
- 10.5.46 These fields are within Bracklesham Bay SSSI or relate directly to the RSPB Medmerry reserve to the east, as such they will have **High – Very High** sensitivity to change.

Visual baseline

- 10.5.47 As is described in **Chapter 2: Evolution of the Proposed Development**, the LVIA process and potential visibility has been a key factor in influencing the layout of the Proposed Development (as primary (embedded) mitigation). Connections to the wider landscape, both physical and visual, have been analysed and the masterplan tailored to ensure the Proposed Development presents well and reinforces any potential links which would benefit the local area.
- 10.5.48 The assessment of the visual impact has been made through the analysis of the representative viewpoints taken from around the ZTV.
- 10.5.49 The visual impact is assessed firstly by reviewing the viewpoints identified by the photos (**Figures 1-8**) and then taking an overall assessment of how the Proposed Development affects the users of the landscape. The visual impact will change over time as the landscaping/planting proposed within the Proposed Development matures.

10.5.50 The zone of visual influence is restricted to 1000 m principally due to the flat nature of the landscape topography. Also, the area has large flood defence bunds to the south, along the beach and rifes, and to the east containing the RSPB Medmerry reserve which rises above the lowland landscape in between.

10.5.51 From within the Site, views outwards are truncated by the existing building / vegetation meaning long distance views to the seascape are not possible. Landscape views out from the Site are within a 500 m range so can be classified as short distance views only.

10.5.52 Views towards the Site can be experienced from the following locations, and have been assessed accordingly through representative viewpoints.

PRoW 55

10.5.53 This PRoW runs southwards from Earnley along Drovers Lane right through the centre of the Site. Currently, the path changes in character from the open rural landscape at the north of the Site, to a semi-enclosed hedged track beside the existing lodges which are visible above, and through, gaps in the hedge. The southern section opens up into the lowland marsh landscape, south of the existing holiday park, entering the Bracklesham Bay SSSI area.

PRoW 3750

10.5.54 This PRoW is a lowland path which runs from the RSPB Medmerry reserve car park to the Site entrance. The path cuts eastwards, around 500 m from the Site boundary, to the east where it runs parallel in close proximity to the Site boundary.

RSPB Medmerry reserve paths

10.5.55 These paths are elevated along the embankment running parallel to PRoW 3750, west of the site, providing rare, elevated, long-distance views across the landscape / seascape.

Bracklesham Beach

10.5.56 This viewpoint comprises the beach and elevated cobble embankment that forms the sea defence. This existing structure is quite loose and falling away in places. No real path is evident along the top of the structure and walking it is very tough to do. However, there is a well-worn track along the base of the embankment on the inwards side.

Visual Receptors

10.5.57 The following visual receptors and their sensitivity to change have been identified:

- PRoW users: **High** sensitivity
- RSPB Medmerry reserve visitors: **Very High** sensitivity
- Visitors to Bracklesham Bay: **High** sensitivity
- Local residents: **Medium** sensitivity

10.5.58 Road users of Drovers Lane, Stoney Lane and private roads (used for access to the existing holiday park), and residential dwellings and warehouse have not been deemed to require a separate categorisation as they are less sensitive than the assessed receptors set out above.

10.6 Predicted effects

- 10.6.1 This section identifies and assesses the impacts resulting from the Proposed Development. It considers both the construction phase and fully operational phase.
- 10.6.2 Whilst the new park is under construction the demolition and development processes will be phased, meaning parts of the existing holiday park will continue to be operational throughout the process. This has been managed to try and ensure numbers of available holiday units are maximised throughout the redevelopment.
- 10.6.3 This means at all points of the process there will be holiday makers onsite, and the use of the site will remain as a holiday park.

Primary Mitigation Measures

- 10.6.4 Potential landscape and visual impacts have been considered from the outset and mitigation to address them has been embedded into the design of the Proposed Development.
- 10.6.5 The primary mitigation within the Proposed Development as relevant to this assessment includes the following elements:
- Removing all development, including clearance of existing development from the southern areas of the Site and relocating to less sensitive areas within the Site as well as increasing the landscape buffering to the Bracklesham Bay SSSI and coast.
 - Creating planted bunds along the northern and southwestern boundaries to visually screen the Proposed Development.
 - Retaining and enhancing existing vegetation and natural features, such as the rife, in key areas and reinforcing where necessary.
 - Creating individual characters to each part of the Proposed Development which tie in with the Site context and reinforce / strengthen the desirable features found in the locality.
 - Ensuring the Site reuses all excavated material onsite to avoid large wagons taking surplus material offsite.

Effects on Landscape Character

NCA 126 – South Coast Plain – NE525

- 10.6.6 At this national level, given the presence of the existing site and that the overall number of units will remain the same and therefore will not change the character of this area. The important features of NCA 126 are unaffected by the Proposed Development.
- 10.6.7 Construction works will be limited to small phases of localised operations within the framework of the existing holiday park. The breaking up and relatively short duration of each phase will mitigate any wider impact.
- 10.6.8 NCA 126 character is deemed to be of **medium** sensitivity. With regards to the proposed redevelopment of the site the magnitude of change is **None**, which will culminate in a **no impact**, which is deemed to be **Not Significant**.
- 10.6.9

SC1 - South Coast Shore Line

- 10.6.10 This character area references holiday parks as part of the character of the area but also their potential to be a detracting feature. The Proposed Development also has both a potential positive and negative impact on the character of the landscape in relation to the management guidelines set out in **paragraph 10.5.10**.
- 10.6.11 The redevelopment of the main site area (Field A), which is currently a poor urban area with minimal planting, will have a minor positive impact but given this is not a valuable component of the character area.
- 10.6.12 Expansions to the developed area to the west and east of the Site have consciously left key southern areas, which address the beach and Bracklesham Bay SSSI. However, increasing the overall footprint of development will still have a minor (noticeable but recessive) negative impact.
- 10.6.13 SC1 - South Coast Shore Line is assessed as being **Medium** sensitivity and the magnitude of change is assessed as being **Minor Negative**, culminating in a **Minor Negative** effect. Overall, the effect on this character area is deemed to be **Not Significant**.

SC2 – Manhood Peninsular

- 10.6.14 This character area covers the northern parts of the Site and its relationship with the low lying arable land surrounding the area is key. The published landscape character assessment states to conserve and enhance the tranquil character by encouraging tree and shrub planting around holiday and caravan parks, to reduce their visual impact.
- 10.6.15 Expansion of developed areas to the north and east of the Site have potential to effect the tranquillity of the area however, primary mitigation through planted bunds and tree planting throughout these areas, which is in keeping with the landscape context, will reduce the effect to a minimal level.
- 10.6.16 SC2 - Manhood Peninsula is assessed as of **Medium** sensitivity and the magnitude of change is assessed as being **Minor Negative**, culminating in a **Minor Negative** effect. Overall, the effect on this character area is deemed to be **Not Significant**.

Bracklesham Bay – Local landscape

- 10.6.17 Zooming into the localised character of the landscape within the site. The holiday park comprises of three main character areas which form part of the local landscape.
- The core site: Field A
 - Rural fringe land: Fields B, C , E
 - Coastal back land: Fields D, F, G, H, I
- 10.6.18 The most sensitive and characterful parts of the site, the coastal back land fields are left undeveloped and in the main outside of the redline application boundary. However the changes to the neighbouring areas have potential to impact their tranquillity.
- 10.6.19 The redevelopment actually pulls development away from the fields, notably at the southern end of field A, where a large cluster of development is demolished and left as landscaped open space. This will enhance the tranquillity/ rural character of fields H & I which is a notable benefit to the local landscape character.

- 10.6.20 As the redevelopment is less dense and better landscaped than the existing site this will also create a positive impact, but given this area is of low sensitivity this area this is not a significant benefit to the local character. However the rife and landscape corridor, is a notable local asset which is recognised at a regional level as a valuable habitat.
- 10.6.21 The rural fringe areas are assessed as having **Medium** sensitivity. The development of these areas will change their character from open rough grassland fields to being redeveloped as part of the holiday park. However the lodges will be located within a varied and well planted ornamental landscape, which include a range of characterful features and such as lakes, woodland areas, wildflower mounds and landscape boundaries/ tree & shrub planting all of which have positive association with the local landscape character.
- 10.6.22 The approach to the redevelopment of the site has been to create a betterment to the entire area which will integrate the Park into the local landscape context. The decision to clear and improve the core site; to reduce the density, enhance and the rife corridor and add in significant landscaped areas and public realm will make a transformative change onsite, but also remove the stark transition/ hard urban edge to the current arrangements.
- 10.6.23 In order to maintain the numbers of units onsite the tradeoff for this betterment is to increase the footprint of the developed areas, and to extend into the neighbouring fields. This has been selectively done to occupy the least sensitive parts of these fields and ensure these areas are also well integrated into the landscape context.
- 10.6.24 The impact of the proposals in relation to the immediate site context should be assessed as a whole, as the visual impact addresses the various experiences/ views from the users within the local area.
- 10.6.25 The new development will have both positive and negative impacts to the character of the local area. The improvements by removing the southern parts of the development remove the hard urban edge to the existing holiday park and reducing the density of the development in the core area.
- 10.6.26 Bracklesham Bay is assessed as being of a range of sensitivities in and around the site areas. These are summarised below with the magnitude of change and significance of effect;
- 10.6.27 Field A – **Low** sensitivity - **Minor Positive** magnitude of change – **Negligible Positive** effect (**Not Significant**)
- 10.6.28 Fields B,, D, E – **Medium** sensitivity - **Moderate Negative** magnitude of change – **Moderate Negative** effect (**Not Significant**)
- 10.6.29 Fields D, F, G, H, I – **High/ Very High** Sensitivity - **Minor Positive** magnitude of change – **Moderate Positive** effect (**Not Significant**)
- 10.6.30 On balance given the positive and negative swings, the overall impact on Bracklesham Bay/ the local site character is perceived as being an **Negligible Positive** effect (**Not Significant**).

Effects on visual impact

- 10.6.31 The visual impact resulting from the Proposed Development has been assessed through the experience of the people that use this landscape (visual receptors) from the public areas using representative viewpoints as fully described in the methodology. The visual impact has been assessed in three stages, which reflect how the site will change over the first 15yrs:
- Short term: Construction of site
 - Medium term: Newly completed site with immature landscape (Year 1)

- Long term: Fully established site and with matured landscape (Year 15 maturity).

10.6.32 The sensitivity of the visual receptors access has been determined and the effect of the change calculated against this to determine the level of the effect.

Viewpoint 1: View from Bracklesham Beach / start of PRow 55

10.6.33 This is a northwards view from an elevated beach path with inland views across the Manhood Peninsula and the open fields and gorse lined mounds alongside the rifes in the foreground. The existing holiday park is largely screened from view at low level leaving only the roofs visible above the various layers of vegetation (gorse/ hedges) in the foreground. Large buildings are visible centrally, and the southern parts of the Site are visible in the context of the wilder coastal landscape buffer and Bracklesham Bay SSSI.

10.6.34 Coastal Path users and local residents, including dog walkers (**High sensitivity**) will experience this view.

Short term - Construction phase

10.6.35 As the areas of under construction will be screened from view at ground level, the visual clutter such as vehicles, groundworks and material storage required for construction would be hidden from view. Larger excavator and cranes may be visible, but this will be for a relatively short time during working hours only in each zone.

10.6.36 The receptors in this location are of **High** sensitivity. During construction, the magnitude of change is **Minor Negative** (due to the existing screening and phasing of the Proposed Development), which will culminate in a temporary **Moderate Negative** effect, which is deemed to be **Not Significant**.

Medium term - Operation phase

10.6.37 Removing the existing development to the south of the PRow will greatly reduce the visual area of development and open up views across the most sensitive part of the landscape.

10.6.38 Development ridge heights (currently visible and prominent) within the central areas in the foreground will be slightly higher but less dense and interspersed with landscaping trees. This will help break up the current solid / linear roofscape which extends around 115 m along the PRow and currently rises to 7.25 m AOD. The proposed units in this area will be gable end facing, with hip roofs and ridges at 8.25 m (1m higher). Despite the higher elevation, there will be much less visible roof due to the orientation of the units. All the proposed units onsite are similar architecturally and will have the same FFL (finished floor level) at 4.45 m threshold level. Therefore, when viewed upslope, the line of development in the foreground will largely hide the Proposed Development behind resulting in a reduced depth of visible roofscape.

10.6.39 In the western part of the view, the upper area of the field will be impacted by the Proposed Development. However, this is in the background, tucked in and around the existing site and set behind both existing and proposed layers of vegetation/ mounding.

10.6.40 As a result, there is a balance within this one view. There is the Moderate Positive magnitude of change of the development relocating away from the southern end against the Minor-Moderate Negative magnitude of change of the additional development to the north with change to the visual baseline. The removal of the dense and untidy roofscape with intermittent new lodges separated with new landscape features will also be of benefit.

10.6.41 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Long term –Mature landscape

10.6.42 The mature landscape will soften views of the Proposed Development. The landscape planting in the foreground combined with planting within the park will reduce the visual impact of the Proposed Development.

10.6.43 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Viewpoint 2: looking north on PRoW 55 at southern tip of field E

10.6.44 Viewpoint 2 has a northwards view from the PRoW looking across the open field. The Beach Centre is currently the only development within the field, with the roofs of the existing holiday park prominent in the foreground over the hedge.

Short term - Construction phase

10.6.45 This part of the Site will be the most visible area during its construction. The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Moderate Negative** which will culminate in a **Substantial Negative** effect, which is deemed to be **Significant**.

Medium Term - Operational phase

10.6.46 The frontage of the field remains open grassland with proposed strengthening to the hedge boundary, adding more consistent screening to the core areas of the existing holiday park behind the hedge. The new development in Field E will be in the upper part of the field behind a new vegetated mound, with trees circling around the south of the units.

10.6.47 The Proposed Development will be split into sections by the large wooded central landscape area, and well screened by the tree avenues, the fruit tree plantation beside the western scrub areas and boundary vegetation. Over time, the effectiveness of this landscape screening will increase, but the initial planting will still provide significant visual mitigation.

10.6.48 The frontage of the field remains open/ undeveloped and the Proposed Development is set behind a new vegetated mound and broken up by large wooded areas/ trees. This will reduce the potential visual impact from a **Moderate** to **Minor Negative** magnitude of change, which would generate a **Moderate Negative** effect.

10.6.49 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Long term –Mature landscape

10.6.50 The mature landscape will soften views of the Proposed Development. The landscape planting in the foreground combined with planting within the park will reduce the visual impact of the Proposed Development.

10.6.51 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Viewpoint 3: looking east along PRow 55 at southern tip of field E

10.6.52 Viewpoint 3 is in close proximity to the existing holiday park. The urban visual clutter created by the unattractive existing roofscape, which is not uniform, is highly apparent. This cannot be classified as a tranquil rural view. The areas of development to the right (ES Volume 3, **Appendix 10.1**, View Frame 3) will be removed as will the prominent long ridgeline, which truncates the view. Foreground vegetation does soften the view at ground level but the built form is still clearly the dominant part of the landscape.

Short term - Construction phase

10.6.53 The areas to the west of the PRow will be partially visible during the construction of the Proposed Development. The eastern section less visible as the boundary hedge vegetation is more consistent.

10.6.54 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** (due to the existing screening and phasing of the Proposed Development from this location) which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Medium term - Operational phase

10.6.55 The Proposed Development will improve this view, by reducing the area of development. Also the visible parts of the new chalets will be spaced out gable ends. The Proposed Development in the foreground will be raised by around 1 m, but the profile views of the roofs will be less intrusive and allow views through to the landscaping in and around the area.

10.6.56 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Beneficial** which will culminate in a **Moderate Beneficial** effect, which is deemed to be **Not Significant**.

Long term - Mature landscape

10.6.57 The mature landscape will soften views of the Proposed Development. The landscape planting in the foreground combined with planting within the park will reduce the visual impact of the Proposed Development which will be a beneficial change to the view.

10.6.58 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Moderate Beneficial** which will culminate in a **Substantial Beneficial** effect, which is deemed to be **Significant**.

Viewpoint 4: looking north on PRow 55 as it passes the core existing holiday park area.

10.6.59 The PRow in this location transitions from open rural landscape into semi-enclosed and urban fringe similar to the existing holiday park site that extends alongside the route to the east. The mixed vegetation within the hedgerows allows glimpsed views either side of the PRow to the existing holiday park on the east and the open field (Field E) to the west.

Short term - Construction phase

10.6.60 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **moderate negative** (due to the existing screening and phasing of the Proposed Development from this location) which will culminate in a **Substantial Negative** effect, which is deemed to be **Significant**.

Medium term - Operational phase

10.6.61 Changes to the glimpsed views to the east will be apparent but there will be positive and negatives aspects to the change which will overall represent a **Negligible Negative** impact. West of the PRoW, the Proposed Development will be well screened by the additional mounding and vegetation proposed along the route. Therefore, the magnitude of change will be reduced to **Minor Negative**.

10.6.62 PRoW users along this section of the route have reduced sensitivity but the Proposed Development to the west will enclose the route from either side with development and, despite the landscape mitigation, will create a **Moderate Negative** effect.

10.6.63 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Long term - Mature landscape

10.6.64 The woodland areas once mature, even in this coastal location will filter views of the Proposed Development in this field. The mounded plantation in the foreground, central band of woodland and street trees/ ornamental planting will all achieve foliage which rises over and above the onsite development. This will also filter views to the residential development in the background, which will have the added benefit of creating visual separation between the park and the wider development/ urban backdrop.

10.6.65 The added greening of the Proposed Development and additional screening will reduce the magnitude of visual change.

10.6.66 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Viewpoint 5: looking south on Drovers Lane/ PRoW 55 approaching site entrance

10.6.67 Approaching the Site, the lane has open views across the rural countryside north of the existing holiday park with the mixed boundary vegetation screening the Site. The boundary to Field B is a low bramble hedge next to the road, but open to the field on the north.

Short term - Construction phase

10.6.68 The approach to the construction of this part of the Site will be in two stages. Phase 1 will be the perimeter mounding only, which will be constructed at least a year in advance of the main development of this field. The construction of the lodges, access roads and all other accompanying features within the main area of the field will then follow on in Phase 2, which is the most visually intrusive work although it will be visually screened by the above-mentioned vegetated mounding.

10.6.69 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Medium term - Operational phase

10.6.70 The new perimeter bunding will enclose the Site inside the existing boundary, with the ditch and the bramble hedge left intact and enhanced by inter-planting with a native mix of Hawthorn, Buckthorn, Field Maple. The proximity and scale of the mounding will conceal the Proposed Development behind and will appear in keeping with the surrounding landscape due to the number of other mounds. The rough grass and wildflower surface will be established within weeks and the ornamental woodland planted in and around in the short term will strengthen the visual screen and soften the feature to a wooded thicket.

10.6.71 Currently the field is not in keeping with the surrounding large field pattern surrounding and its loss is not a significant change. The new boundary mound will visually contain the Proposed Development and will be installed and established before the field is under construction.

10.6.72 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term - Mature Landscape

10.6.73 Once fully established, the northern bund will create an attractive and contextual landscape feature which will visually enclose the Site from this location.

10.6.74 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Beneficial** (given the loss of the open field) which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

Viewpoint M: View looking south towards the existing holiday park along Drover Lane, medium range.

10.6.75 This is a low lying rural view towards the existing holiday park with the coastline beyond not visible. The existing scrub and woodland vegetation around the northern boundary of the existing holiday park and Marsh Cottages largely conceals the development onsite.

Short term - Construction phase

10.6.76 The construction of the perimeter bund will be very short term, and once formed the seeding will establish relatively quickly, resulting in the new feature being installed and vegetated within a matter of weeks. The woodland plantation, which is more seasonal, will take longer to establish.

10.6.77 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** (due to the screening and phasing of the Proposed Development from this location) which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Medium term - Operational phase

- 10.6.78 The new perimeter bunding will be prominent in the rural landscape but will screen the development behind. Once established it will fit well into the surrounding context. The other parts of the Site will be screened from view.
- 10.6.79 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term - Mature landscape

- 10.6.80 Once fully established, the northern bund will create an attractive and contextual landscape feature which will visually enclose the Site from this location.
- 10.6.81 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Beneficial** (given the loss of the open field) which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

Viewpoint L: View looking south westward towards the existing holiday park from PROW 3750

- 10.6.82 Viewpoint L has glimpsed views across Field B and towards Field C, which is more concealed from view. Marsh Farm Cottages, with their evergreen hedging, is central in the view with the storage warehouse visible as well. Various lines of scrub vegetation and clumps of thicket filter the views giving it a somewhat unkept rural fringe look.

Short Term - Construction phase

- 10.6.83 The construction of the perimeter bund will be very short term, as noted previously. In Field C construction traffic will be using the access road and, whilst the main site area will remain hidden, the boundary fencing and traffic may be more prominent.
- 10.6.84 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Moderate Negative** (even with the screening and phasing of the Proposed development from this location) which will culminate in a **Substantial Negative** effect, which is deemed to be **Significant**.

Medium term - Operational phase

- 10.6.85 The new perimeter bunding will conceal the Proposed Development in Field B, with the areas in Field C already largely filtered. However, fragments may appear as glimpses in the view.
- 10.6.86 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **minor negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Long term - Mature Landscape

- 10.6.87 Once fully established, the northern bund will create an attractive and contextual landscape feature which will visually enclose the Site from this location.
- 10.6.88 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Beneficial** (given the loss of the open field) which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

Viewpoint E: View looking south westward from PRow 3750/ 3751 junction

10.6.89 This viewpoint has glimpsed views towards Field C, which is relatively well concealed. Marsh Farm Cottages, with their evergreen hedging, screens views to Field B and the storage warehouse is visible as well. Various lines of scrub vegetation and clumps of thicket filter the views giving it a somewhat unkept rural fringe look.

Short Term - Construction phase

10.6.90 The construction operations will be hidden from view although fractional glimpses might be possible.

10.6.91 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Medium Term - Operational phase

10.6.92 The Proposed Development will be largely hidden from view meaning only fractional glimpses could be visible.

10.6.93 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term - Mature Landscape

10.6.94 Once mature, the landscape will screen views to the Site altogether from this location.

10.6.95 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **No Change** which will culminate in **No Effect**, which is deemed to be **Not Significant**.

Viewpoint F: View looking westward from PRow 3750

10.6.96 Viewpoint F has a low lying rural view towards the existing holiday park, with the Bracklesham houses in the backdrop. The view towards the existing holiday park is framed and limited to a gap in-between the warehouse facility and Marsh Farm meaning only views toward Field C are possible. There are very glimpsed views to the existing holiday park on the eastern boundary of Field A. There is a variety of hedges, mounding and scrub in the foreground of the view; therefore, the ground level of the Site is not visible. With the structures in the periphery and backdrop, there is a real sense of an urban fringe site with no clear definition on the nearest boundary.

Short Term - Construction phase

10.6.97 Some construction operations may be visible, but these would only be of large vehicles and cranes.

10.6.98 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Minor Negative** which will culminate in a **Moderate Negative** effect, which is deemed to be **Not Significant**.

Medium Term - Operational phase

- 10.6.99 This is a relatively narrow aperture into the Site so the vast majority of the view will remain unchanged. The line of sight will be towards the lakeside lodge on the eastern side of Lake 1. Along this edge, the upper parts of the new chalets will be visible but as they are gable end facing and screened by tree plantations, mounding and specimen trees, this view is likely to be well screened and very limited. The Proposed Development does step forward in the view, but the foreground features and proposed landscape greening will limit the change.
- 10.6.100 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **negligible negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term –Mature Landscape

- 10.6.101 Once fully established, the perimeter landscaping will create an attractive and contextual boundary which will visually enclose the Site from this location. Given the current views across Site are experienced with the town in the background, the new planting will also soften long distance views to the urban edge of the neighbouring town.
- 10.6.102 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Positive** which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

Viewpoint G: View looking westward from PRow 3750

- 10.6.103 The view is towards the Site along the footpath. This is not the natural line of sight from the path, which has attractive views towards the coast and RSPB Medmerry reserve which will be unaffected and so not assessed. The storage unit is a large unattractive prominent structure and the associated outbuilding extends northwards blocking views towards the Site. Parts of the existing chalets onsite are visible as the eastern and southern extents of Field A.

Short term - Construction phase

- 10.6.104 The construction of the perimeter bund and planting will be very short term, as noted previously. In Field A, the demolition, groundworks and construction traffic will be partially visible.
- 10.6.105 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Moderate Negative** which will culminate in a **Substantial Negative** effect, which is deemed to be **Significant**.

Medium term - Operational phase

- 10.6.106 The entire area of visible chalets will be removed from the view. A new planted mounded boundary will filter views into the nearest parts of the Site from this location.
- 10.6.107 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** (given the limited existing visibility and the planting/ visual mitigation in the foreground and throughout the Site) which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term –Mature Landscape

- 10.6.108 Once fully established, the perimeter landscaping will create an attractive and contextual boundary which will visually enclose the Site from this location. Given the current views across Site are experienced with the town in the background, the new planting will also soften long distance views to the urban edge of the neighbouring town.
- 10.6.109 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **negligible positive** which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

Viewpoint H: View looking north-westward from PRoW 3750/ RSPB Medmerry reserve

- 10.6.110 This viewpoint is from the most sensitive location on the PRoW and from where the existing holiday park park is the most visible in the surrounding landscape. In the foreground of the view, the RSPB Medmerry reserve is an active nature reserve site which is a highlight for visitors. In the background, the existing holiday park is openly visible with the chalets and central facility building in Field A. The eastern areas are less visible with the foreground mounding and surrounding buildings detracting from the view. Above the chalet roofs the settlement of Bracklesham is visible in the background, creating layers of urban development.
- 10.6.111 Development onsite is low level and has a relatively universal ridge height, with the exception of the central facilities and the two story domed top building onsite.

Short Term - Construction phase

- 10.6.112 In Field A, the demolition, groundworks and construction traffic will be partially visible. Overall this is assessed as a temporary **Moderate Negative** magnitude of change. This will result in a temporary **Substantial Negative** effect for the PRoW users and a **Major Negative** effect for RSPB Medmerry reserve visitors in key months for bird watching, for whom this view is a primary viewing location of the ponds. However this is a highly limited timeframe of only a few months, when the winter visiting birds are in season and the Site might be under construction.
- 10.6.113 The receptors in this location are of **High or Very High** sensitivity. During this phase, the magnitude of change is **Moderate Negative** which will culminate in a **Substantial or Major Negative** effect, which is deemed to be **Significant**.

Medium term - Operational phase

- 10.6.114 Development in the foreground will be removed altogether and replaced with the activity lake and surrounding landscape. Behind this, the rife corridor, which is vegetated throughout, will create an open landscape corridor central to the view. Either side of this central greenspace, the Proposed Development will be located behind mounded landscape installations which will filter views.
- 10.6.115 The Proposed Development will be pushed back 150 m from the current alignment, reducing the density and increasing the landscaped arrangement. The frontage areas of the new chalets and a revitalised central facilities area will be partially visible but more recessive than the current arrangements.
- 10.6.116 As the existing development is so openly visible and dominates the view, the Proposed Development will fundamentally change the view, potentially for the better.

10.6.117 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Negative** which will culminate in a **Minor Negative** effect, which is deemed to be **Not Significant**.

Long term –Mature Landscape

10.6.118 Once fully established, the perimeter landscaping and Rife corridor planting will create an attractive and contextual landscape view which will hide most parts of the Proposed Development within the Site from this location. Given the current views across Site are experienced with the town in the background, the new planting will also soften long distance views to the urban edge of the neighbouring town.

10.6.119 The receptors in this location are of **High** sensitivity. During this phase, the magnitude of change is **Negligible Positive** which will culminate in a **Minor Positive** effect, which is deemed to be **Not Significant**.

10.7 Additional mitigation

10.7.1 The primary (embedded) mitigation outlined in **paragraph 10.6.5** above has been factored into the assessment of effects. The use of planted/ mounded landscape buffers and strengthening of the developed boundaries are proposed throughout the Proposed Development.

10.7.2 The Proposed Development will not result in a significant effect on landscape character and therefore, no additional mitigation is required. However, significant adverse visual effects have been identified during the construction phase as landscape planting will likely only be undertaken towards the end of construction. Therefore, additional mitigation measures will need to be included to reduce the potential impact during construction.

10.7.3 In the following areas, the landscape bunding which encloses and visually screens the Proposed Development will be constructed and planted in advance of the main site works.

- Field B: Northern boundary bund
- Field E: Central encircling mounding and eastern boundary bund

10.7.4 It is also recommended that at the start of the construction phase, on the eastern boundaries to the Site and along the landscape bund which encloses the Proposed Development in Field Ea green privacy mesh is added to the compound fencing. The fencing is a 2 m high standard Heras fence, on which a green mesh / netting could be added to act as a visual barrier which will mitigate a large part of negative visual impact caused during construction. Due to the low lying nature of the Site, this will reduce the level of visual impact to noticeable but recessive, therefore it will result in a **Minor Negative** magnitude of change, which is a significant reduction to the visual impact.

10.7.5 In addition, having a defined edge to the site works will create a clear visual separation between the areas within the Site and external zones reducing visual sprawl. This mesh should be in a natural colour either a deep green or as a camouflage pattern to tie in with the grassland and mixed scrub planting around the Site

10.8 Summary of effects

10.8.1

10.8.2 **Table 10.8** summarises the effect of the Proposed Development on landscape character.

Table 10.7: Summary of impact on landscape character

Location	Scale of designation	Sensitivity of landscape	Magnitude of change	Effect on landscape character
NCA 126 -South Coast plain NE525	National	Medium	None	None
SC1 South Coast Shore Line	Regional	Medium	Minor negative	Minor negative
SC2 Manhood Peninsula	Regional	Medium	Minor negative	Minor negative
Bracklesham Bay	Local	Low Medium High/ Very High	Negligible positive Moderate Negative Minor Positive	Negligible positive

10.8.3

10.8.4 **Table 10.8 10.8** summarises the visual impact from the various viewpoints during construction, when operational (Year 1) and when the proposed planting matures (Year 15).

10.8.5 The effects take into account the additional mitigation measures, which have been included to reduce impact during the short term/ construction phase.

Table 10.8: Summary of visual impact after additional mitigation

Location	View Ref	Sensitivity of receptors	Magnitude of change during construction	Temporary construction Effect	Magnitude of change when Operational	Operational phase effect	Magnitude of change when mature	Matured phase effect
Beach/ PRoW 55	1	High	Minor negative	Moderate negative	Minor negative	Moderate negative	Negligible negative	Minor negative
PRoW 55	2	High	Minor negative	Moderate negative	Minor negative	Moderate negative	Negligible negative	Minor negative
	3	High	Negligible negative	Minor negative	Minor beneficial	Moderate beneficial	Moderate beneficial	Substantial beneficial
	4	High	Minor negative	Moderate negative	Minor negative	Moderate negative	Negligible negative	Minor negative
Drover Lane/ PRoW 55	5	High	Minor negative	Moderate negative	Negligible negative	Minor negative	Negligible positive	Minor positive
	M	High	Minor negative	Moderate negative	Negligible negative	Minor negative	Negligible positive	Minor positive
PRoW 3750	L	High	Minor negative	Moderate negative	Minor negative	Moderate negative	Negligible positive	Minor positive
	E	High	Negligible negative	Minor negative	Negligible negative	Minor negative	None	No Impact
	F	High	Minor negative	Moderate negative	Negligible negative	Minor negative	Negligible positive	Minor positive
	G	High	Minor negative	Moderate negative	Negligible negative	Minor negative	Negligible positive	Minor positive
	H	Very High	Minor negative	Moderate negative	Negligible negative	Minor negative	Negligible positive	Minor positive

10.9 References

National Planning Policy Framework 2021

Adopted Chichester Local Plan: Key Policies 2014-2029

The South Coast Plain National Character Area (NCA) guidance

West Sussex County Council published landscape management guidelines

GLVIA3 (Landscape Institute & Institute of Environmental Management, 2013)

Landscape Character Assessment, Guidance for England and Scotland (Countryside Agency & Scottish Natural Heritage, 2002)

Photography and photomontage in landscape and visual impact assessment (Landscape Institute Advice Note 01/11, 2011)

11 CLIMATE

11.1 Introduction

- 11.1.1 Climate change is the alteration of enduring weather conditions as a result of interactions between the Earth's atmosphere and its various physical, chemical and biological processes.
- 11.1.2 The latest climate science from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) shows that the last decade (2011–2020) was approximately 1°C warmer than in 1850–1900 and that sea level has risen by approximately 20 cm since 1901.
- 11.1.3 The AR6 Working Group 1 report on the physical science basis concludes that it is “unequivocal” that greenhouse gas (GHG) emissions associated with human activities are responsible for the “widespread and rapid” climate changes observed today. Many human activities emit GHGs which trap heat within the atmosphere; other activities, such as deforestation, limit the capacity of natural systems to sequester GHGs. The consequence is anthropogenic climate change: unprecedented overall warming leading to the rapid destabilisation of the prevailing climate. This has the potential to impact upon both natural and man-made receptors, including the Proposed Development.
- 11.1.4 With this in mind, this chapter of this Environmental Statement (ES), reports the findings of an assessment of the likely significant effects of the Proposed Development upon the climate and its vulnerability to climate change in accordance with EU Directive 2011/92/EU (as amended by EU Directive 2014/52/EU)¹, and the EIA Regulations (2017)². Specifically, such an assessment takes the form of:
- A GHG assessment; determining the climatic effects of the GHG emissions arising from the Proposed Development.
 - A climate change risk assessment; determining both the sensitivity of relevant receptors and the magnitude of climate-related effects.
- 11.1.5 This chapter has been produced by RSK Environment.

11.2 Relevant legislation, planning policy and guidance

- 11.2.1 The relevant legislation, planning policy and guidance with regards to climate change is listed in **Table 11.1** alongside best practice guidance which has been adopted for this assessment.

¹ Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

² Town and Country Planning (Environmental Impact Assessment) Regulations 2017, No. 571. Available at: http://www.legislation.gov.uk/uksi/2017/571/pdfs/ukxi_20170571_en.pdf

Table 11.1: Legislation, policy and guidance relevant to Climate.

Document	Summary
International Legislation	
The 2015 Paris Agreement	The Paris Agreement is a legally binding international treaty which commits Parties to the United Nations Framework Convention on Climate Change (UNFCCC) to objectives to reduce GHG emissions, with the view to limiting the global average temperature rise to well below 2°C above pre-industrial levels, whilst “pursuing efforts to limit the temperature increase to 1.5°C”. The Agreement is revisited five-yearly to allow Parties to the Convention to evaluate and enhance the level of ambition of their climate action plans, known as nationally determined contributions (NDCs).
European Legislation	
EIA Directive 2014/52/EU	The EIA Directive 2014/52/EU states that climate change must be assessed within an EIA, including the impact of a Proposed Development on climate change (i.e., GHG emissions) and its vulnerability to climate change, where relevant.
National Legislation	
The UK Town and Country Planning (Environmental Impact Assessment) Regulations 2017	The UK Town and Country Planning Regulations transposed the requirements of the 2014 amended EU EIA Directive into UK law and introduced climate change as a new topic within an EIA. The regulations state that the following must be included: “the impact of the project on climate (for example, the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change”.
The Climate Change Act 2008 (amended 2019)	<p>The Climate Change Act 2008 set a target of reducing GHG emissions by at least 80% by 2050, relative to the baseline year of 1990. The Act further established the Climate Change Committee (CCC) as an independent, statutory body, to advise the UK and devolved governments on emission reduction targets and report to Parliament on progress. The CCC is further tasked with the production of the UK Climate Change Risk Assessment, followed by a National Adaptation Programme to address those risks every five years.</p> <p>In 2019, the emission targets set out in the Climate Change Act 2008 were made more ambitious by the Climate Change Act 2008 (2050 Target Amendment) Order 2019 thereby making the UK the first major global economy to commit to a net zero target requiring a net reduction of emissions by 100% relative to 1990 levels by 2050.</p>
The Climate Change Committee (carbon budgets)	The CCC is an independent statutory body established under the Climate Change Act (2008) to advise the UK government and Devolved Administrations on reducing GHG emissions and preparing for climate change. The CCC undertakes an annual assessment of GHG emissions to determine whether the UK is on course to meet its target carbon budget.

Document	Summary
	<p>In its most recent budget report (released in December 2020), the CCC recommended that the UK set a Sixth Carbon Budget which requires a reduction of emissions of 78% by 2035, relative to 1990 levels (63% reduction from 2019). This represents a world-leading commitment which is consistent with the overarching objectives of the Paris Agreement. In addition to this, the CCC further recommended that the UK set a similarly ambitious pledge to reduce GHG emissions by at least 68% by 2030, relative to 1990 levels, noting that this should form part of the UK's NDC ahead of COP26 (November 2021).</p>
<p>The UK Climate Change Risk Assessment (CCRA) 2022</p>	<p>The Climate Change Act requires the Government to compile its assessment of the risks and opportunities arising for the UK from climate change every five years. It provides the evidence base to inform National Adaptation Programmes in England, Scotland, Wales and Northern Ireland and sets out six priority areas which require action over the next five years to 2027. These are:</p> <ul style="list-style-type: none"> • Flooding and coastal change risks to communities, businesses and infrastructure. • Risks to health, well-being and productivity from high temperatures. • Risk of shortages in the public water supply, and for agriculture, energy generation and industry. • Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity. • Risks to domestic and international food production and trade. <p>New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals.</p>
<p>The National Adaptation Programme (NAP)</p>	<p>The NAP addresses the priority risks identified in the most recent UK CCRA and sets out a mix of policies and appropriate actions for government and non-governmental actors to manage and, where possible, mitigate those risks.</p>
<p>England's NAP</p>	<p>Whilst the devolved administrations have their own adaptation programmes, England's NAP focusses on raising awareness of the need for climate change adaptation, improving the evidence base and taking timely action to increase resilience to the main groups of risks highlighted in the latest CCRA. It details the climate associated risks within the natural environment, critical infrastructure services, local government, communities and our buildings. It highlights the importance of adapting to these climate challenges and transitioning to a low carbon economy.</p>
<p>Local Policy</p>	
<p>West Sussex Climate Change Strategy 2020 – 2030</p>	<p>The West Sussex climate change strategy 2020 – 2030 defines the council's strategy for achieving their target to be carbon neutral by 2030. Five key commitments were identified for application in order to successfully achieve this target:</p> <ol style="list-style-type: none"> 1. We will mitigate the effects of climate change by reducing carbon emissions 2. We will adapt and be resilient to a changing climate

Document	Summary
	<p>3. We will source and use resources sustainably</p> <p>4. We will support and grow our local green economy</p> <p>5. We will support and grow our local green economy</p> <p>Each of these commitments are expanded upon within the strategy to include measures and steps to be implemented, including increasing the amount of renewable energy used and created in West Sussex, adapting and building resilience to extreme weather events, and increasing opportunities to achieve biodiversity net gain.</p>
Chichester Local Plan 2021 - 2039	<p>The Chichester Local Plan provides the policy framework and long-term strategy required in order to manage development, protect the environment, deliver infrastructure and to promote sustainable communities.</p> <p>In order to deliver the requirements of the Local Plan, several objectives have been developed. This includes an objective to mitigate and adapt to climate change. To achieve this, the Plan states that new development will be situated in accessible locations and resilient to climate change via sustainable design/construction and via the consideration of landform, layout, orientation, massing, landscaping and nature-based solutions.</p> <p>Chichester District Council also highlight the importance of embracing energy efficiency and use of renewable energy in all new development to reduce the emission of greenhouse gases, as well as to safeguard development areas for climate change adaptation and to protect the natural landscape.</p> <p>The Council identifies the need for coastal erosion and flood risk management, such as through the Medmerry Managed Realignment scheme. The Plan states the importance of avoiding inappropriate development in areas currently at risk from flooding, or likely to be at risk as a result of climate change.</p>
Guidance	
Greenhouse Gas Protocol	<p>This Protocol was developed in a partnership the World Business Council for Sustainable Development (WBCSD) and the World Resource Institute (WRI). It provides a step-by-step guide to quantifying and reporting GHG emissions. Specifically, it covers the accounting of six GHG groups (as identified in the Kyoto Protocol), these are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF₆) and perfluorocarbons (PFCs).</p>
Institute of Environmental Management & Assessment (IEMA) Guide: Climate Change Resilience and Adaptation, 2020	<p>This guide works as a reference point for professionals coordinating or supporting EIA-mediated climate change adaptations in the context of town and country planning. As a revision from the 2015 guide, the new guide reflects and build upon lessons learn from emerging practice. The aim of the guide is to identify appropriate mitigation and adaptation measures to short- and long-term weather conditions, and the stage of the project at which they should be incorporated. Flooding, freezing, storm surges, gales and heat waves are considered short-term weather events. Long-term climatic variations and norms would include changes in seasonal rainfall pattern and precipitation variation, variation in average</p>

Document	Summary
	temperatures, changes in prevailing wind direction or increases in freezing, thawing, droughts etc.
Institute of Environmental Management & Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2022	This IEMA guide serves to assist GHG practitioners in addressing GHG emissions assessment, mitigation, and reporting in statutory and non-statutory EIA. It complements the IEMA Guide on Climate Change Resilience and Adaptation 2020 and is a revision from the 2017 guidance. The revised guide sets out areas for consideration at all stages of the assessment and offers methodological options to be explored. It also presents a new scale for describing significant CO ₂ emissions and relates the significance to the rate of emission reduction needed to achieve an applicable net-zero trajectory at the sectoral or economy wide level.
PAS 2080 – Carbon Management in Infrastructure (2023)	PAS 2080:2030 sets out the carbon management process for the built environment, primarily to align new developments to the net zero transition by, or before, 2050, to reduce carbon, increase value and to ensure collaboration between all members of the value chain. The guidance also takes into account whole life carbon and circular economy principles, encourages wider adoption of carbon management within the built environment, outlines the role of value chain members in decision making and emphasises the importance of the carbon reduction hierarchy for reducing whole life carbon, for example. The carbon reduction hierarchy highlights the need to ‘avoid’, ‘switch’ and ‘improve’ in order to reduce whole carbon in projects and programmes of work.

11.3 Consultation

- 11.3.1 No scoping process has been undertaken for the Proposed Development. However, the responses from the previous 2019 planning application (Ref: 19/02840/FULEIA) have been considered here, alongside the response to the Pre-Application (Ref: 22/00285/PRELM) received in September 2022 (**Appendix 4.1**). Consultation feedback relates to flood risk, which is predicted to increase in response to climate change (**Table 11.2**). No feedback has been received regarding GHG emissions.

Table 11.2: Consultation responses and actions.

Consultee	Key issues raised	Actions in response to consultee comments
Chichester District Council (CDC), 2019 Planning Application	The previous application was refused by CDC with one reason cited as the “significant number of additional people occupying an area of high flood risk with risks predicted to increase due to climate change”.	The new application does not comprise additional units sited on areas of flood risk, rather it proposes to move the development into areas with lowest flood risk. It further provides an opportunity to reduce the risk of flooding through introducing mitigation measures. A full Flood Risk Assessment has been undertaken with regards to this application (see Chapter 8), which has incorporated the impacts of climate change on the flood risk of the Proposed Development.
CDC 2022 Pre-Application enquiry	The 2022 Pre-Application response stated that “the proposal to replace the existing number of accommodation units in areas at lower risk is something they [Council’s Drainage Engineer] have no objection to in principle and would in fact support.”	N/A
	<p>The 2022 Pre-Application stated the requirement for a sustainability statement to include how the site will:</p> <ul style="list-style-type: none"> Protect and enhance the environment. Achieve a maximum consumption of 110L of water per day per person. Complies with building for life standards or equivalent replacement. Sustainable design including the use of re-used or recycled materials. Minimise energy consumption through renewable resources. Adapt to climate change. Historic and built environment protected and enhanced. 	A Sustainability Statement is provided as part of this Application.

Consultee	Key issues raised	Actions in response to consultee comments
	<p>Improvements to biodiversity and green infrastructure.</p> <p>Maintain tranquillity and local character.</p> <p>Provision of electric vehicle charging points.</p>	

6.10 Approach to GHG Assessment

Study Area and Scope

- 11.4.1 The Site currently comprises 308 holiday chalets; most of these are on long-term leases, with the remaining being used for short-term holiday lets. Some of these chalets have been refurbished but many of the other existing chalets are outdated, weathered and tired-looking. Due to the age of these units, they are likely to have reduced energy efficiency and increased operational GHG emissions compared to more modern up-to-date units. The site also includes a pub / restaurant and children’s play area within the centralized facilities area, which has been refurbished.
- 11.4.2 The sensitive receptor for GHG emissions is the global climate, which is considered highly sensitive to GHG fluctuations. The scope of the GHG assessment includes the construction and operational activities undertaken within the footprint of the Site including any temporary land take and compounds. It will also extend to include the emissions associated with the extraction, manufacture, and transportation of materials to the construction site, and the management of any wastes arising from construction processes and earthworks within the spatial boundary of the project.
- 11.4.3 All GHG emissions (scope 1, 2, and 3) associated with the Proposed Development occurring within, and outside, of the site boundary during each phase of development will be assessed; meaning the study area has no set boundary.
- 11.4.4 The scope of the GHG assessment includes the addition of GHG emissions directly from construction and operational activities undertaken within the footprint of the proposed scheme, including:
- Fuel consumption for the site (construction and operation).
- 11.4.5 It will also extend to include emissions which will occur outside the Site, but related to the activities of the project, including those from:
- Electricity consumption from the National Grid (operation).
 - The extraction, manufacture, and transportation of materials to the site (construction).
 - Waste management and disposal (construction and operation).
 - Water consumption and wastewater treatment (operation).
 - Visitor travel and employee commuting (operation).

Construction worker commuting (construction).

Exclusions

- 11.4.6 In line with the GHG Protocol and IEMA guidance, a materiality threshold of 1% may be set whereby emissions that are expected to contribute to less than 1% of the overall emissions inventory may be excluded from the assessment. Those emission sources that are not considered to have sufficient magnitude and are therefore scoped out are:

Land use change (construction and operation) (see **Paragraph 11.4.11**)

Design basis and assumptions

- 11.4.7 Some aspects of the design have not been finalised at this stage, and so the main design basis and assumptions used for the GHG assessment are detailed here. More detailed assumptions relating to the GHG estimations can be found in the methodology section.

Construction

- 11.4.8 The Proposed Development includes the demolition of existing outdated 308 holiday chalets to be replaced with 308 more modern pre-fabricated lodges. In addition, new buildings to be constructed include a facilities building, a maintenance building and one boat house. The existing communal space and restaurant area will be refurbished into the village and spa, and the existing pool area will also be refurbished.
- 11.4.9 Whilst the construction is proposed to be phased over a period of approximately 6 years, 10 months, running concurrently with the habitation of some of the units, for the purposes of this GHG assessment it has been assumed that construction occurs in one year (2024) and occupation occurs from 2025 onwards. This is a conservative approach that will ensure that emissions are not underestimated; in reality a phased construction program may be subject to many alterations and revisions and it is therefore difficult to accurately predict the timing of a phased construction programme.
- 11.4.10 A CEMP will be developed and adopted to mitigate against excessive GHG emissions as part of the construction process.
- 11.4.11 Emissions from land clearance are not quantified as they are expected to be minimal in comparison to the overall construction emissions. The existing site consists of low carbon vegetation and landscaping design allows for replacement of carbon stock above and beyond current levels.

Operation

- 11.4.12 The Proposed Development is seeking consent without a limit to operational lifetime. However, in order to ensure a meaningful result is achieved from this assessment, an operational lifespan of 60 years has been assumed, as this is typical of modern buildings.
- 11.4.13 It is assumed that the site is operational for 10 months of the year (early March till the end of December).
- 11.4.14 As above (**Paragraph 11.4.9**), it is assumed that full habitation (i.e., operation) of the Site occurs from 2025 onwards. This is a conservative approach that will ensure that emissions are not underestimated.

Methodology

11.4.15 The assessment of the GHG emissions arising from the Proposed Development has been carried out in accordance with:

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (2004).

The Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022).

British Standards Institution (2023) PAS 2080 – Carbon management in infrastructure.

Royal Institute of Chartered Surveys (RICS) Whole life carbon assessment for the built environment (2017).

11.4.16 The assessment establishes present and future baseline GHG emissions quantifies applicable Kyoto Protocol GHGs as measured in tonnes of carbon dioxide equivalence (tCO₂e), where equivalence means having the same warming effect as CO₂ over 100 years. The six original Kyoto Protocol gas groups are CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF₆) and perfluorocarbons (PFCs); nitrogen trifluoride (NF₃), a chemical released in certain high-tech industries, was added in 2013. The global warming potential (GWP) of each is presented in Table 11.3: Kyoto Protocol GHGs and their global warming potential (GWP). **Table 11.3.**

Table 11.3: Kyoto Protocol GHGs and their global warming potential (GWP).

Greenhouse gas/group	Chemical formula	GWP (CO ₂ e)
Carbon dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous oxide	N ₂ O	298
Hydrofluorocarbons	HFCs	Depends on specific gas
Sulphur hexafluoride	SF ₆	22,800
Perfluorocarbons	PFCs	Depends on specific gas
Nitrogen Trifluoride	NF ₃	17,200

11.4.17 Data associated with the activities contributing to the construction and operation of the Proposed Development were provided by the Applicant. Where it was not possible to provide this data, since this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks, and proxy data such as distance travelled) have been used. Emissions have then been quantified by applying the most relevant and up-to date emission factors.

11.4.18 An emission factor is a representative value that relates the quantity of a pollutant released into the atmosphere with an activity associated with the release of that pollutant. Emission factors are typically available from government publications, independent agencies, and scientific research journals however, the quality and accuracy of such factors can vary significantly. Factors can differ depending on the research body and/or underlying methodologies applied. It is, therefore, good practice to apply emission factors only from reputable sources.

11.4.19 RSK’s approach to carbon accounting is to follow the GHG Protocol’s core principles:

Relevance: selecting an appropriate inventory boundary that reflects the GHG activities of the company and serves the decision-making needs of users.

Completeness: accounting for all emission sources within the chosen inventory boundary, with any specific exclusions disclosed and justified.

Consistency: aiming to collect meaningful and consistent data over time whilst transparently documenting any significant changes to data quality and/or format.

Transparency: addressing all relevant issues in a coherent and clear manner.

Accuracy: minimising uncertainty and avoiding systematic over- or under-quantification of emissions, and ensuring any necessary estimates or assumptions required are conservative and guided by industry standards.

11.4.20 In line with the GHG Protocol and IEMA guidance, a materiality threshold of 1% may be set whereby emissions that are expected to contribute to less than 1% of the overall emissions inventory may be excluded from the assessment.

Construction

11.4.21 The GHG assessment of construction emissions has calculated the life cycle emissions for the building materials and systems, accounting for their embodied emissions, construction, maintenance, repair and replacement emissions.

11.4.22 **Table 11.4** provides an indication of the key emissions sources which are anticipated during the construction phase of the Proposed Development.

Table 11.4: Anticipated key emissions sources during the before-use stage.

Life cycle boundary	Emissions source	Description
Product stage (A1-A3)	Raw material extraction	Embodied emissions associated with the production of material used for the construction of the Proposed Development.
	Precursor product processing	
	Product manufacture	
	Packaging	
	Transport to factory gate	
Construction process stage	Transport to site	Emissions associated with the transport of equipment, materials and members of staff to the site of the Proposed Development.

(A4-A5)	Construction activities	Emissions associated with the consumption of fuels onsite for the purposes of construction of the Proposed Development.
	Waste	Emissions associated with the disposal of waste generated onsite.
	Land use change	Emissions due to the loss of carbon from vegetation and soil carbon.

A1-A3: Product stage emissions

- 11.4.23 *Lodges* – typical lodge information was provided in the form of general arrangements (for the lakeside and secret garden lodges) and material build ups for the external shell. This data was used to calculate the embodied carbon emissions associated with the construction of the holiday lodges. Based on the data provided, it was assumed that the lodges would constitute timber cladding for the external walls and glass reinforced plastic for the roof coverings. The quantities and materials to estimate the embodied carbon for the foundations was based on a technical specification provided, as displayed in (**Appendix 13.1**), as it was likely that the design and specification would be very similar.
- 11.4.24 *Maintenance, Facilities and Boathouse buildings* – general arrangements were provided for each of the buildings. Data was used to estimate the embodied carbon emissions associated with each of the buildings using the One Click LCA 3D Carbon Designer tool, a tool which creates a carbon model based on building type, floor area and anticipated frame. It was assumed that all buildings would have a timber frame and timber cladding for the external walls.
- 11.4.25 *Village and Spa and Pool* – it is understood that these structures would undergo refurbishment only. In the absence of information, an uplift of 10% and 5% was applied to estimate the embodied carbon associated with the refurbishment of the village and spa and pool respectively. This uplift was applied to the total embodied carbon emissions associated with the maintenance, facilities and boathouse buildings only.
- 11.4.26 *Roads* – to calculate emissions from new roads, the total length of existing roads to be re-surfaced and the total length of new roads to be constructed were provided. It was assumed that all roads would have an average width of 4.8m. The road build up was based on the West Sussex County Council Flexible Carriageway Specification.
- 11.4.27 *Lakes* – to calculate emissions associated with lining the various lakes on site, the total area for re-lining was provided. This data was used to estimate the weight of the lining material required.
- 11.4.28 Emissions from materials were quantified by utilising One Click LCA, Environmental Product Declarations, Inventory of Carbon and Energy (ICE) (University of Bath, 2019) and Department for Environment Food and Rural Affairs conversion factors (UK Government, 2023) to use the most accurate densities and emission factors as possible. Conversions between mass, volume and area have been calculated where appropriate to allow the application of specific emissions factors. In addition, some material types, build ups, weights and dimensions were based on publicly available information, where required.

A4-A5: Construction process stage

- 11.4.29 *Transport of materials to site and transport of construction waste from site* – Emissions associated with transport and fuel use have been estimated as a proportion of the anticipated embodied emissions based on data from LETI Climate Emergency Design Guide. The lodges were based on the ‘small-scale housing’ category, and the remainder of the buildings were based on the ‘commercial offices category’.
- 11.4.30 To calculate emissions from the transportation of materials associated with the roads, it was assumed that the aggregate and asphalt would have a delivery distance of 60km. For the lakes, it was assumed that the lining material would have a delivery distance of 80km. This data was based on material defaults provided by One Click LCA.
- 11.4.31 Emissions associated with fuel use for demolition activities (for existing structures to be demolished) was assumed to be at 80% of the emissions associated with fuel use required for construction of the Proposed Development.
- 11.4.32 For the boathouse and lodges, it was assumed that all existing structures are to be demolished and disposed of. For the village and spa and the pool, disposal emissions were based on the respective 10% and 5% uplift applied to account for the embodied carbon emissions to estimate waste emissions associated with the refurbishment. The existing maintenance and facility areas are contained within the village and spa area of the site. Therefore, construction waste emissions associated with these areas are accounted for within the uplift outlined above.

Operation

- 11.4.33 A GHG assessment of the operation of the Proposed Development has also been undertaken.
- 11.4.34 In the baseline ‘do-nothing’ scenario, without the Proposed Development, GHG emissions occur due to the activities associated with the existing site, such as energy consumption and visitor travel. Thus this assessment has assessed operational emissions from the current site, and those estimated from the Proposed Development to determine the net effect.
- 11.4.35 The assessment largely uses emissions factors published by the UK Department for Energy Security and Net Zero in 2023 (*UK Government GHG Conversion Factors for Company Reporting: June 2023*) and takes into account projected grid decarbonisation over the life span of the Proposed Development. It should be noted that all emission calculations for life cycle boundaries, B6-9, are based on the site being operational for 10 months of the year.
- 11.4.36 **Table 11.5** provides an indication of the key emissions sources which are anticipated during the use phase of the Proposed Development.

Table 11.5: Anticipated key emission sources during the in-use phase.

Life cycle boundary	Emissions source	Description
Use stage (B1-B5)	Repair, replacement	Emissions associated with the work activities and new materials used for maintenance, repair and

Life cycle boundary	Emissions source	Description
	and maintenance	replacement of the infrastructure during the use stage / operation of infrastructure.
Operational energy (B6)	Energy use	Emissions resulting from the energy used by infrastructure-integrated technical systems to enable it to deliver its service during operation.
Operational water (B7)	Water use	Emissions resulting from the consumption and treatment of water required by infrastructure to enable it to operate and deliver its service.
Other operational processes (B8)	Other sources	Emissions arising from infrastructure to enable it to operate and deliver its service including management of operational waste.
User's utilisation (B9)	User's use	Emissions arising from activities associated with user's utilisation of the infrastructure during the use stage.

B1-B5: Maintenance and repair

11.4.37 Major components of the Proposed Development have been designed to last for the lifetime of the Development with regular monitoring, maintenance and replacement of minor constituents.

11.4.38 No activity data was available for maintenance and replacement activities. Therefore, emissions were estimated as a proportion of the total embodied carbon based on data from LETI Climate Emergency Design Guide. The cabins were based on the 'small-scale housing' category, and the remainder of the buildings were based on the 'commercial offices category'.

B6: Operational energy

11.4.39 *Electricity* – the operational electricity data needed (kVA and kW load data for the various land uses) for the Site has been taken from the indicative electricity report produced for the existing and Proposed Development by CDI Building Services Engineers in December 2022. This report did not include the use of air sourced heat pumps to heat the hot tubs but did include the provision for increased electricity demand due to the increase in electrical appliances and inclusion of underfloor heating. It is therefore assumed this report remains a valid assessment of electricity consumption for the Proposed Development. It was assumed that all facilities would be in operation for 12 hours a day, 10 months of the year. The emissions calculations consider projected grid decarbonisation over the life span of the site.

11.4.40 *Fuel use – Pool* – calculations were based on data provided in terms of existing weekly Liquefied Petroleum Gas (LPG) consumption when the pool is in use. To estimate annual consumption of LPG for the pool, it was assumed that the pool would be in operation for 5 months of the year. In the absence of data, it was also assumed that existing emissions associated with heating the pool would be equal to emissions from the Proposed Development.

11.4.41 *Fuel use – Cars and equipment* – data for on-site vehicle use was extracted from fuel transaction data in the form of litres for the various vehicles used on-site over the course of a year. It was assumed that existing activity data associated with on-site vehicle fuel use would be equal to that of the Proposed Development. Although it is anticipated that there will be an increase in on-site fleet usage, the additional fleet will not use fuel and will instead be powered by electricity – accounted for as part of the total electricity usage of the site. Therefore, it is assumed that proposed fuel use will be equal to existing.

B7-8: Other operational processes

11.4.42 *Water* – to calculate emissions associated with water consumption and treatment, data was extracted from the indicative water report produced by CDI Building Services Engineers in December 2022 for the existing and Proposed Development. For the holiday lodges specifically, it was estimated that a total of 725 guests would be on site each day across the year (based upon average occupancy rate and 4 beds approx. per lodge for 242 lodges), each using 130 litres of water per day for the existing site (the latter as advised by the CDI water report). For the Proposed Development, it was assumed that a total of 870 guests would be on site each day (this is based on a 20% increase in the number of beds available in comparison to the existing site) and each using 110 litres of water per day. The rate of water consumption is in line with sustainability policy and building regulations.

11.4.43 All water usage was based on the site being operational for 10 months of the year.

11.4.44 In the absence of data, it was assumed that water consumption volume would be equal to wastewater treatment volume.

11.4.45 *Waste* – to calculate emissions associated with waste generation and disposal, data was extracted from the associated waste report for the development (**Appendix 13.1**).

11.4.46 The breakdown of waste by method of disposal was based on proportions available as part of the West Sussex County Council 2020/2021 waste disposal data. To estimate emissions for waste contained within the category for mechanical biological treatment, material recovery and refuse derived fuel, etc., an emissions factor related to waste recycling was applied given that no other suitable emissions factors were available.

B9: User's utilisation

11.4.47 *Commuting and Visitor Travel* – it was assumed that all staff and visitors would journey to and from the Site via car. The breakdown of engine type was based on UK Government data for licensed vehicles in England.

11.4.48 To calculate existing staff commuting emissions, it was estimated that an average of 20 staff would commute to site in the low season (5-months), and 50 staff in the high season (5-months), each travelling a one-way journey distance of 15 miles, across 10 months of the year. To calculate proposed staff commuting emissions, it was estimated that an average of 50 staff would commute to site in the low season (5-months), and 100 staff in the high season (5-months), each travelling a one-way journey distance of 15 miles, across 10 months of the year.

11.4.49 To calculate existing visitor commuting emissions, average daily vehicular movements was based on data from a traffic survey commissioned in June 2018, as provided by the associated Transport Assessment for the development (**Chapter 16**). Of these movements, it was assumed that 70% would be assigned to local trips (average distance of 3 miles) and 30% of trips would be assigned to arrivals/departures to/from the site (average distance of 100 miles). Emissions were based on an operational period of 10 months.

11.4.50 To calculate proposed visitor commuting emissions, a 20% uplift was applied to the average daily vehicular movements. Similarly to the calculations for water usage, this uplift is based on the 20% increase in the number of beds in comparison to the existing site.

End of life

11.4.51 **Table 11.6** provides an indication of the key emissions sources which are anticipated during the end-of-life phase of the Proposed Development.

Table 11.6: Anticipated key emission sources during the end-of-life phase.

Life cycle boundary	Emissions source	Description
Decommissioning (C1-4)	Activities associated with end of life.	Emissions associated with deconstruction, transport, waste processing and disposal of materials from the Scheme at end-of-life.

11.4.52 No activity data was provided for end-of-life activities. Therefore, emissions were estimated as a proportion of the total embodied carbon based on data from LETI Climate Emergency Design Guide. The cabins were based on the ‘small-scale housing’ category, and the remainder of the buildings were based on the ‘commercial offices category’.

Assessment Criteria and Assessment of Significance

11.4.53 Impact assessments normally assess to what degree the Proposed Development will affect the baseline environment of the study area. In the case of GHG emissions, any emissions will have a long-term, irreversible negative effect on the global climate, which is considered to be highly receptive to any emissions of GHGs. A specific source of GHG emissions cannot be linked to impacts at a specific location but will have impacts globally.

11.4.54 This GHG assessment will therefore evaluate the significance of emissions based upon guidance from IEMA’s Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022), which provides a framework of determining significance against the goals of the Paris Agreement (i.e., against a science-based 1.5°C trajectory: **Table 11.7**).

11.4.55 IEMA guidance states that a project’s significance in terms of GHG emissions should be based upon lifecycle emissions. Significance should not be determined purely on the magnitude of GHG emissions, but whether a project contributes to reducing GHG emissions consistent with a trajectory towards net zero by 2050.

Table 11.7: IEMA’s Guidance to Assessing GHG Significance (2022) Framework for assessment of significant effects.

Significance	Level	Criteria
Significant	Major adverse	Project adopts a business-as-usual approach, not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). GHG impacts are not mitigated or reduced in line with local or national policy for projects of this type.
	Moderate adverse	Project’s GHG impacts are partially mitigated, and may partially meet up-to-date policy; however, emissions are still not compatible with the national Net Zero trajectory or aligned with the goals of the Paris Agreement.
Not significant	Minor adverse	Project may have residual emissions, but the project is compatible with the goals of the Paris Agreement, complying with up-to-date policy and good practice.
	Negligible	Project has minimal residual emissions and goes substantially beyond the goals of the Paris Agreement, complying with up-to-date policy and best practice.
Significant	Beneficial	Project causes GHG emissions to be avoided or removed from the atmosphere, substantially exceeding the goals of the Paris Agreement with a positive climate impact.

- 11.4.56 The UK’s GHG inventory and corresponding 5 year carbon budgets provide a framework to measure the amount of GHG emissions the UK is legally permitted to emit in a defined 5 year period, in order to stay aligned with the goals of the Paris Agreement (see **Table 11.8**). The determination of significance will therefore reference the appropriate budget period in which the emissions arise.
- 11.4.57 The UK is currently in the 4th carbon budget period, which runs from 2023 – 27. The construction program for the Proposed Development falls within this 4th carbon budget. The operational phase emissions have been compared to the appropriate and available carbon budgets within the design life of the Proposed Development. These comprise the 5th and 6th carbon budgets, which span 2028 – 32 and 2033 – 2037 respectively.
- 11.4.58 Historically, some GHG assessments have considered that if the annual emissions from the Proposed Development are <1% of the UK’s carbon budget the magnitude of the GHG impact should be considered low. However, rather than comparing the project’s emissions to national carbon budgets, a more appropriate proxy would be a comparison against those of the Local Authority area.
- 11.4.59 Based upon 2020 data published by the UK Government (the latest available data at time of writing), the Chichester Local Authority area emits 0.18 % of the total UK emissions (based upon Chichester Local Authority emissions of 678.1 ktCO₂e and national emissions of 337,680.0 ktCO₂e). The Chichester Local Authority area carbon budget has therefore been based upon 0.18% of the national Carbon Budget and displayed in **Table 11.8**.

Table 11.8: UK Carbon budgets.

Carbon budget	Carbon budget level (MMtCO ₂ e)	Chichester Local Authority area proportional emissions budget (ktCO ₂ e)
1st (2008 – 12)	3,018	5,419
2nd (2013 – 17)	2,782	4,995
3rd (2018 – 22)	2,544	4,568
4th (2023 – 27)	1,950	3,501
5th (2028 – 32)	1,725	3,097
6 th (2033 – 37)	965	1,733

Difficulties and uncertainties

11.4.60 The accuracy of a GHG assessment depends on the quality of the data provided. Primary data should always be used where available. Where it has not been possible to collect this data, in view of the fact that this assessment represents a forecast of emissions and some information may not yet be known, secondary data (including estimates, extrapolations, benchmarks and proxy data such as distance travelled) have been used. Assessments such as this, based largely on secondary data, should only be viewed as an estimate of GHG emissions impact, and actual emissions may vary.

11.5 Approach to Climate Resilience

Study Area and Scope

- 11.5.1 In addition to the impact of the Proposed Development on the climate, IEMA guidelines published in 2020 state that EIA reports must appropriately consider the climate resilience of a development scheme.
- 11.5.2 The Proposed Development is located on the southern coast of England, bordering the English Channel. The temperature within Chichester averages 11.4 °C (compared to 7°C to 11°C for the rest of the UK), with 928 mm average annual rainfall.
- 11.5.3 A previous planning application for the development of the site, submitted in 2019 (19/02840/FULEIA), was refused, in part due to the increased number of people occupying an area at high risk of flooding. As such, an assessment of the effect of climate change on the Proposed Development is of utmost importance. The issue of flooding has been assessed in detail in the Flood Risk Assessment, as part of **Chapter 8**. As such, flood risk has only been assessed at a high level as part of the Climate chapter.
- 11.5.4 The sensitive receptors are identified as all infrastructure and assets associated with the Proposed Development, as well as workers during construction, and visitors and employees during the operational phase.

Methodology

- 11.5.5 This assessment adopts a standard risk assessment-based methodology towards the identification of potentially significant impacts, having consideration for both their likelihood and their magnitude.
- 11.5.6 The baseline climate conditions are considered as both:
- The climate at the location of the Site.
 - Local variables that are affected by global climate (i.e., sea-level rise).
- 11.5.7 Present baseline climate data for the Site has been obtained from UK climate averages between 1991 – 2020 from the UK Met Office. The future baseline climate data has been obtained from UK Climate Projection (UKCP18) probabilistic (25 km) projections which provide conditional probability density functions to express the relative strength of the evidence from models and observations which support future climate outcomes (scenarios). The probability distributions provide information on ranges of outcomes and the relative likelihood of alternative outcomes within these ranges. The projections displayed cover the indicative lifetime of the proposed scheme at the 10th, 50th and 90th probability level for the RCP 8.5 (high emissions) scenario.
- 11.5.8 In addition to the UK Met Office, the online resource ThinkHazard has been consulted to provide a high-level overview of current climate hazards in the West Sussex region³. Data from the World Bank Climate Change Knowledge Portal (CCKP) has been extracted to inform on average sea-level trends and projections across the United Kingdom⁴.

Design basis and assumptions

- 11.5.9 The proposed scheme is seeking consent without a limit to operational lifetime. However, in order to ensure a meaningful result is achieved from this assessment, an operational lifespan of 60 years has been assumed, as this is typical of modern buildings.
- 11.5.10 To align with the assumptions of the GHG assessment (see **Paragraph 11.4.9**), it is assumed that construction of the Proposed Development will occur in 2024, with full operation from 2025 onwards.

Assessment Criteria and Assessment of Significance

- 11.5.11 The likelihood of effects is premised upon both the probability and frequency of the projected occurrence. The criteria for likelihood is thus defined as detailed in **Table 11.9**.

3 <https://thinkhazard.org/en/report/40137-united-kingdom-england-west-sussex>

4 <https://climateknowledgeportal.worldbank.org/country/united-kingdom/impacts-sea-level-rise>

Table 11.9: Definition of impact likelihood.

Value	Description
Very high	The event occurs multiple times during the lifetime of the Proposed Development (60 years) e.g., approximately annually.
High	The event occurs several times during the lifetime of the project (60 years), e.g., approximately once every five years.
Medium	The event occurs limited times during the lifetime of the project (60 years), e.g., approximately once every 15 years.
Low	The event occurs infrequently during the lifetime of the project (60 years), e.g., once every 30 years.
Negligible	The event may occur once during the lifetime of the project (60 years).

*Note that the magnitude of effects takes account of the timing, scale, size, and duration of the potential effect.

11.5.12 The criteria for magnitude is thus defined as detailed in **Table 11.10**.

Table 11.10: Definition of impact magnitude.

Magnitude	Summary
Very large	Substantial change, affecting the majority of the site and for a prolonged period of time (more than one month) including irreversible changes.
Large	Noticeable change, affecting much of the site and for a relatively long period of time (more than one week but less than one month).
Moderate	Noticeable change, affecting a few areas of the site and for a moderate amount of time (more than three days but less than one week).
Minor	Noticeable change, affecting very few of the areas of the sites and for a small amount of time (no more than three days).
Negligible	Negligible and/or unnoticeable change or no change lasting one day or less.

11.5.13 The assessment of significant effects employs professional judgement to cross-examine the magnitude and likelihood scores using the criteria for significance of effects, as shown in **Table 11.11**.

Table 11.11: Significance assessment matrix.

		Magnitude/consequence				
		Negligible	Minor	Moderate	Large	Very Large
Likelihood	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate	Moderate or Major

		Magnitude/consequence				
	Medium	Negligible or minor	Minor	Moderate	Moderate or major	Major
	High	Minor	Minor or moderate	Moderate or major	Major	Major
	Very high	Minor or moderate	Moderate or Major	Major	Major	Major

11.5.14 Only major, and where justified, moderate effects are deemed **Significant** and will require additional mitigation to be applied.

Difficulties and uncertainties

11.5.15 As with all climate models, there are inherent limitations to the models used. In particular, the estimated ranges for future climate variability are conditional on a number of assumptions with expert judgement playing a role in the various methodological and data choices. For further information regarding model limitations, uncertainty, and bias, please see UKCP18 Guidance⁵.

11.3 Existing environment – GHG Assessment

Current baseline

11.6.1 The current baseline conditions of the Site include the existing carbon stock and GHG emissions associated with the activities of the site, prior to the construction and operation of the Proposed Development (**Table 11.12**).

Table 11.12: Current baseline greenhouse gas emissions.

Life cycle boundary	Description	Annual emissions (tCO ₂ e)	Percentage
Use (B1-B5)	Repair, replacement and maintenance	56	2.0%
Operational energy (B6)	Site electricity consumption	1,530	56.0%
	Site fossil fuel consumption	32	1.2%
Operational water (B7)	Water consumption and treatment	13	0.5%
Other operational processes (B8)	Waste	25	0.9%
User's utilisation (B9)	Visitor travel	995	36.4%
	Staff commuting	82	3.0%

⁵ <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-guidance---caveats-and-limitations.pdf>

Future baseline

- 11.6.2 The future baseline is a ‘business as usual’ scenario whereby the Proposed Development is not implemented. Future baseline construction emissions are therefore zero as this scenario involves no construction activities.
- 11.6.3 The total predicted operational emissions to 2085 have been estimated based upon the expected emissions from the current site.
- 11.6.4 Operational activities on site would be expected to remain relatively similar in the short-term with potential to decrease in the long-term due to the increasing disrepair of the facilities on Site. This, alongside the decarbonisation of the National Grid, will likely cause emissions from the current Site to decrease in the medium to long term (e.g. to the proposed end-of-life date of the Proposed Development).
- 11.6.5 To reflect the predicted decrease of activities on site, annual emissions occurring in the medium to long term (here defined as 2040 to 2085) have been reduced by 20%. In addition, projected future UK electricity emissions factors have been applied to the current electricity consumption to estimate emissions from future electricity consumption (**Table 11.13**).

Table 11.13: Future baseline greenhouse gas emissions.

Life cycle boundary	Description	Total lifetime emissions (2025 – 2085) (tCO ₂ e)	Percentage
Use (B1-B5)	Repair, replacement and maintenance	3,342	5.0%
Operational energy (B6)	Site electricity consumption	5,660	8.4%
	Site fossil fuel consumption	1,628	2.4%
Operational water (B7)	Water consumption and treatment	641	0.9%
Other operational processes (B8)	Waste	1,282	1.9%
User’s utilisation (B9)	Visitor travel	50,723	75.2%
	Staff commuting	4,189	6.2%

11.2 Existing Environment – Climate resilience

Current baseline

- 11.7.1 The nearest weather station to Medmerry is at Bognor Regis, located 3 m above mean sea level and 12 km east of Medmerry. It recorded information relating to temperature and precipitation for the thirty-year period between 1991 and 2020 (the standard baseline for climate data), as shown in **Table 11.14**.

Table 11.14: Bognor Regis (West Sussex) weather station data for the period between 1991 – 2020.

Climate Change Variable	Value (1991 – 2020)
Average Annual Maximum Temperature (°C)	14.66
Warmest Month Max Temperature (°C)	21.40 (August)
Coldest Month Min Temperature (°C)	3.15 (February)
Total Annual Rainfall (mm)	733.91
Driest Month (mm)	42.79 (May)
Wettest Month (mm)	87.73 (December)

11.7.2 The climate in Bognor Regis has been changing over the most recent decades, as shown in **Table 11.15**. Temperature has increased across the decades studied, with an increase of 1.4°C from the average annual maximum temperatures of 1961 – 1990 to those in 1991 – 2020. Rainfall has fluctuated across the decades studied, with the driest and wettest months experiencing an overall increase in rainfall of 2.91 mm and 6.51 mm respectively, from 1961 – 1990 to 1991 – 2020.

Table 11.15: Climate change in Bognor Regis since 1961.

Climate Variable	1961 – 1990	1971 – 2000	1981 – 2010	1991 – 2020
Average Annual Maximum Temperature (°C)	13.26	13.71	14.11	14.66
Warmest Month Max Temperature (°C)	19.87 (August)	20.65 (August)	20.99 (August)	21.40 (August)
Coldest Month Min Temperature (°C)	2.30 (February)	2.53 (February)	2.69 (February)	3.15 (February)
Total Annual Rainfall (mm)	714.27	717.37	725.12	733.91
Rainfall in Driest Month (mm)	39.88 (July)	39.02 (July)	44.01 (June)	42.79 (May)
Rainfall in Wettest Month (mm)	81.22 (November)	86.18 (October)	91.85 (October)	87.73 (December)

11.7.3 Although not a direct climate variable, sea-level change is driven by global climate and is thus a potential climate-related hazard. Sea-level has been rising across the United Kingdom, as shown from data from the World Bank in **Figure 11.1**.

11.7.4 Current climate hazards at a 'high' hazard level have been identified by ThinkHazard for the West Sussex region as coastal flood and wildfire. Other climate hazards, such as river

flood, urban flood, water scarcity and extreme heat, have been classified at a 'low' level, or below.

Future baseline

- 11.7.5 The climate projections displayed in **Table 11.16** to **Table 11.19** have been extracted from the UKCP18 data developed by the UK Climate Impacts Programme. The projections displayed cover the indicative lifetime of the proposed scheme at the 10th, 50th and 90th probability level for the RCP 8.5 (high emissions) scenario. The figures are expressed as temperature / precipitation anomalies in relation to a 1981 – 2000 baseline.
- 11.7.6 Future climatic conditions are projected to change in comparison to the present baseline conditions. In particular, winters are projected to become increasingly warmer and wetter whilst summers are projected to become increasingly hotter and drier, as shown in the following tables.
- 11.7.7 Extreme precipitation and heat events are predicted to increase in terms of extremity (i.e., in terms of rainfall intensity and maximum temperatures, respectively).
- 11.7.8 UKCP18 projections do not contain specific outputs for windspeed changes for the UK. However, global projections of wind speed over the UK at 10 m height show no significant changes in the first part of the 21st Century but predict increases in wind speed from 2050 onwards. This would be associated with an increase in frequency of winter storms⁶.

Table 11.16: Projected change in temperature in the South East of England.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Mean annual air temperature anomaly at 1.5m (°C)	+1.06	+1.88	+4.34
	(+0.45 to +1.7)	(+0.96 to +2.85)	(+2.58 to +6.2)
Mean summer air temperature anomaly at 1.5m (°C)	+1.37	+2.53	+5.83
	(+0.40 to +2.34)	(+1.13 to +3.96)	(+3.02 to +8.75)
Mean winter air temperature anomaly at 1.5m (°C)	+0.88	+1.60	+3.47
	(+0.09 to +1.73)	(+0.48 to +2.8)	(+1.42 to +5.67)
	+1.51	+2.79	+6.46

⁶ UKCP18 (2018) Factsheet: Wind.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Maximum summer air temperature anomaly at 1.5m (°C)	(+0.2 to +2.8)	(+0.95 to +4.71)	(+2.87 to +10.21)
Minimum winter air temperature anomaly at 1.5m (°C)	+0.91	+1.70	+3.71
	(+0.04 to +1.89)	(+0.4 to +3.14)	(+1.27 to +6.48)

Table 11.17: Projected maximum summer temperatures during extreme heat days, in the Chichester 25 km grid cell.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Extreme (1 in 100 year) maximum summer air temperature at 1.5m (°C)	+35.36	+36.42	+39.44
	(+33.85 to +37.13)	(+34.01 to +39.28)	(+34.28 to +45.29)

Table 11.18: Projected change in precipitation rate in the South East of England.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Annual precipitation rate anomaly (%)	+1.27	-0.48	-1.13
	(-5.42 to +8.12)	(-8.39 to +7.72)	(-12.65 to +11.09)
Summer precipitation rate anomaly (%)	-5.93	-16.79	-41.4
	(-29.34 to +17.37)	(-44.81 to +12.03)	(-71.21 to +0.58)
Winter precipitation rate anomaly (%)	+8.06	+12.56	+26.01
	(-4.59 to +21.95)	(-3.86 to +31.56)	(-1.69 to +59.79)

Table 11.19: Projected precipitation during extreme rainfall events, in the Chichester 25 km grid cell.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Extreme (1 in 100 year) 1-day total precipitation in winter (mm)	+50.50	+52.24	+57.15
	(+41.64 to +62.05)	(+42.70 to +65.00)	(+44.75 to +74.30)
Extreme (1 in 100 year) 5-day total precipitation in winter (mm)	+90.56	+93.25	+100.89
	(+84.18 to +98.14)	(+85.31 to +103.17)	(+86.57 to +118.59)

11.7.9 Annually, atmospheric pressure at sea level is predicted to increase across the short to long-term time horizons, although there is much variation in terms of model outputs (**Table 11.20**). High-pressure systems usually lead to fair, calm weather, and it may be expected that these conditions become more prevalent in the future.

Table 11.20: Projected Change in Sea Level Pressure in the South East of England.

Climate Variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Annual sea level pressure (hPa)	+0.28	+0.63	+0.83
	(-0.65 to +1.25)	(-0.57 to +1.8)	(-1.21 to +2.84)
Summer sea level pressure (hPa)	+0.50	+0.90	+1.26
	(-0.46 to +1.53)	(-0.66 to +2.53)	(-1.46 to +4.25)
Winter sea level pressure (hPa)	+0.01	+0.09	-0.45
	(-2.01 to +2.06)	(-2.43 to +2.71)	(-4.87 to +3.84)

11.7.10 Sea-level projections for the United Kingdom extracted from the World Bank CCKP show that within the operational life of the Proposed Development (until 2085), and under an RCP 8.5 scenario, sea-level may rise by approximately 50 cm compared to current levels (**Figure 11.2**).

11.3 Predicted effects – GHG Assessment

Construction (2024)

11.8.1 Within this section, the GHG emissions arising from construction of the Proposed Development are identified and assessed within each applicable lifecycle stage (**Table 11.21**). The Proposed Development includes the construction of 308 holiday lodges, a

maintenance, facilities and boathouse building, as well as refurbishment to the existing pool and village and spa.

Table 11.21: Estimated GHG emissions for site construction.

Life cycle boundary	Total emissions (tCO ₂ e)	Proportion of total construction emissions
Embodied carbon of construction materials (A1-3)	17,201	92.7%
Transport of materials to project (A4)	1,104	6.0%
Construction phase emissions (A5)	243	1.3%

Operation (no earlier than 2025, and assumed to 2085)

11.8.2 Within this section, the GHG emissions arising from operation of the Proposed Development are identified and assessed within each applicable lifecycle stage.

Table 11.22: Estimated GHG emissions for site operation (tCO₂e).

Description	Total emissions during operational life (2025 – 2085) (tCO ₂ e)	Proportion of total operation emissions
Repair, replacement and maintenance (B1-5)	3,342	3.4%
Energy use (B6) - Electricity	6,294	6.4%
Energy use (B6) – Fossil fuels	1,916	1.9%
Water use (B7)	3,820	3.9%
Other operational processes (e.g., waste) (B8)	740	0.8%
User's use – visitor travel (B9)	71,609	72.9%
User's use – staff commuting (B9)	10,562	10.7%

Decommissioning (2085)

11.8.3 Within this section, the GHG emissions arising from decommissioning of the Proposed Development are identified, aligned with standard practice for Life Cycle Assessments.

These emissions are subject to a very high level of uncertainty, as the decommissioning conditions cannot be predicted ~60 years into the future with any confidence.

Table 11.23: Estimated GHG emissions for site decommissioning (tCO₂e).

Description	Total emissions (tCO ₂ e)	Proportion of total decommissioning emissions
End of life (C1-4)	123	100.0%

Net effect

Net effect of construction, operation and decommissioning

11.8.4 The estimated lifecycle emissions from the construction, operation and decommissioning of the Proposed Development, assessed over 60 years, are 106,391 tCO₂e. Compared against the lifetime emissions of the current development, assessed over 60 years (63,277 tCO₂e), these equate to a net increase of 43,114 tCO₂e (**Table 11.24**).

Table 11.24: Lifetime GHG emissions of the baseline and Proposed Development to determine net emissions.

Life Cycle Module	Description	GHG emissions over the project lifetime (2025 – 2085) (tCO ₂ e)		
		Baseline	Proposed Development	Net emissions from Proposed Development
A1-3	Embodied carbon of construction materials	0	17,201	17,201
A4	Transport of materials to project	0	1,104	1,104
A5	Construction phase emissions	0	243	243
Construction total		0	18,548	18,548
B1-B5	Repair, replacement and maintenance	3,342	3,342	0
B6	Electricity	5,660	6,294	633

		GHG emissions over the project lifetime (2025 – 2085) (tCO ₂ e)		
Life Cycle Module	Description	Baseline	Proposed Development	Net emissions from Proposed Development
	Fossil fuel	1,628	1,916	287
B7	Water use	641	3,820	3,179
B8	Other operational processes (e.g., waste)	1,282	740	-542
B9	User's use – visitor travel	50,723	71,609	20,886
	User's use – staff commuting	4,189	10,562	6,372
Operation total		63,277	87,721	24,444
C1-4	End of life	0	123	123
End of life total		0	123	123
Lifecycle total		63,277	106,391	43,114

Significance

- 11.8.5 The project GHG emissions have been proportioned to the appropriate and available UK Carbon Budget cycle within the design life of the development in **Table 11.25** (to date the UK has agreed up to the 6th Carbon Budget which runs from 2033 to 2037). Those emissions falling within the 4th Carbon Budget (2023 – 2027) are largest as they include emissions from the construction stage. Emissions decrease annually during the operation of the Proposed Development due to the decarbonisation of the UK's electricity grid. These estimations have adopted a conservative approach, and are deemed to represent a reasonable worst-case scenario.
- 11.8.6 The GHG emissions from the Proposed Development up until 2037 range between 0.28% and 0.71% of the Chichester Local Authority area's proportioned carbon budget. This magnitude can be considered low.

Table 11.25: Estimated project emissions compared against the Chichester Local Authority area’s proportional emissions budget (as detailed in Table 11.8).

Carbon budget	Chichester Local Authority area proportional emissions budget (ktCO ₂ e)	Estimated project emissions (ktCO ₂ e)	Project emissions as a percentage of Chichester LA area emissions budget
1st (2008 – 12)	5,419	n/a	
2nd (2013 – 17)	4,995	n/a	
3rd (2018 – 22)	4,568	n/a	
4th (2023 – 27)	3,501	23.9	0.71%
5th (2028 – 32)	3,097	7.5	0.28%
6 th (2033 – 37)	1,733	6.6	0.44%

11.8.7 Adopting the IEMA framework of significance, the project is considered to comply with up-to-date policy and good practice, resulting in a **Minor adverse** effect on the climate, and therefore considered to be **Not Significant**.

11.3 Predicted Effects - Climate Resilience

11.9.1 Based upon the historic data and future projections presented by the UK Met Office, UKCP18 and ThinkHazard the following climate hazards have been identified:

- Heat waves (acute) and heat stress (chronic)
- Wildfire
- Coastal flood and sea-level rise
- Coastal erosion
- Drought (acute) and water stress (chronic)
- Heavy precipitation

Construction

11.9.2 The receptors projected to be vulnerable to climate risks during the construction process are:

- Construction workers
- Construction materials
- Heavy plant and machinery
- Site (e.g., access roads)
- Local residents and passers-by

- 11.9.3 The construction of the Proposed Development is vulnerable to climate change risks, and these have been identified in **Table 11.26**. In brief, potential impacts during the construction phase include:

Threat to human health and the wellbeing of the workforce during severe weather events, ranging from minor discomfort to serious ill-health. This may also result in decreased employee productivity.

Restricted access to site and/or unsuitable conditions for certain construction activities due to extreme weather events, restricting working hours and delaying construction.

Damage to plant, materials and site compound resulting from extreme weather.

Risk to supply chain and the availability of materials due to climate events around the world.

Operation

- 11.9.4 The receptors projected to be vulnerable to climate risks during the operational phase are:

Inhabitants and local residents

Residential dwellings

Community infrastructure

Vegetation

General site infrastructure

- 11.9.5 The operation of the Proposed Development is vulnerable to climate change risks, particularly with regards to those in the medium to long term. These risks have been identified in **Table 11.27** and, in brief, include:

Material and asset deterioration due to extreme events resulting in the need for enhanced maintenance of residential dwellings and community infrastructure.

Increased need for on the ground monitoring and maintenance due to chronic climatic change.

Damage to roads from periods of heavy rainfall, resulting in increased need for maintenance and potential health and safety risks to road users.

Increasing fluvial flood risk due to decreased protection afforded by embankment vegetation and vegetation adjacent to watercourses.

Deteriorating quality of green infrastructure, such as parks and green landscaping, due to climatic extremes.

Decommissioning

- 11.9.6 The receptors projected to be vulnerable to climate risks during the decommissioning phase are:

Construction workers

Heavy plant and machinery

Site (e.g., access roads)

Local residents and passers-by

- 11.9.7 The decommissioning of the Proposed Development is vulnerable to similar climate change risks to those faced during construction, and these have been identified in **Table 11.28**. In brief, potential impacts during the decommissioning phase include:

Threat to human health and the wellbeing of the workforce during severe weather events, ranging from minor discomfort to serious ill-health. This may also result in decreased employee productivity.

Restricted access to site and/or unsuitable conditions for certain construction activities due to extreme weather events, restricting working hours and delaying construction.

Damage to plant, materials and site compound resulting from extreme weather.

Net effect and assessment of significance

- 11.9.8 As detailed in **Table 11.26**, **Table 11.27** and **Table 11.28** the majority of risks are deemed **Negligible** to **Minor**. Those categorised as **Moderate** include:

Construction

- 11.9.9 Sea level rise and coastal erosion could lead to coastal flooding, which could:
- prevent the undertaking of some construction activities.
 - present heightened health and safety risk to the construction workforce.
 - cause damage to plant and machinery.
 - hamper access to site.

Operation

- 11.9.10 Sea level rise and coastal erosion could lead to coastal flooding, and increased winter precipitation alongside increase in magnitude and frequency of extreme rainfall events could lead to increased pluvial and fluvial flooding. This could:

- damage site infrastructure.
- pose a health and safety risk to visitors and staff on site.
- cause building and asset deterioration.

Decommissioning

- 11.9.11 Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.
- 11.9.12 Sea level rise and coastal erosion could lead to coastal flooding, and increased winter precipitation alongside increase in magnitude and frequency of extreme rainfall events could lead to increased pluvial and fluvial flooding. This could:
- prevent the undertaking of some decommissioning activities.



present a health and safety risk to personnel on site.

Table 11.26: Summary of likely climate change effects on the construction of the Proposed Development (Short-term: 2024 – 2025).

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
Construction workers	An increase in average summer temperatures has the potential to reduce employee productivity during the summer months.	Monitor changing weather forecasts daily and implement an adverse hot weather procedure which includes communication of high-risk temperatures (with consideration of humidity). Dependent on PPE needed for construction activities, ensure access to high temperature PPE, such as sun hats, sunscreen and loose light clothing. Provide breaks, shade and hydration. If possible, avoid undertaking particularly hot or strenuous activities with excessive/heavy PPE and consider a change in working hours/shift patterns to avoid the hottest part of the day.	Low	Minor adverse	Minor
	Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.		Low	Moderate adverse	Minor
Construction facilities, materials and activities	Overheating of plant and materials beyond technical tolerances. Particularly high temperatures can cause unsuitable conditions for construction, e.g., being unable to pour concrete because it sets too quickly.	Monitor changing weather forecasts daily and implement an adverse hot weather procedure if needed, including increased frequency of monitoring - e.g., tire pressure check, metal fatigue, etc... In the initial design phase, consider use of materials and equipment with superior qualities with regards to extreme or variable operating conditions. Cross check temperatures with equipment and material design specifications, and, if possible, allow flexibility in schedule to undertake activities during cooler periods of the day. Develop a plan to negate the effects of high temperatures upon concrete, paint	Low	Minor adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
		and other relevant materials. Precautionary measures might include moistening the subgrade, steel reinforcement and form work prior to concrete placement; cooling aggregates and mixing water added to the concrete mixture to reduce its initial temperature; use a concrete consistency that allows rapid placement and consolidation; protect the concrete surface during placement with plastic sheeting or evaporation retarders to maintain the initial moisture in the concrete mixture etc.			
Construction facilities, materials, activities and workers	Increased risk of wildfires spreading to site, or fires starting on site	Ensure all flammable materials are appropriately stored and monitored, preferably within structures designed with heat resilience considered. Fire safety protocols should be well established and understood by all workers, with all necessary and required PPE made available at set, known locations.	Low	Moderate adverse	Minor
Sea level rise and coastal erosion					
Construction facilities and activities	Sea level rise and coastal erosion may lead to coastal flooding of areas of the site which may prevent the undertaking of some construction activities.	An Incident Response Plan should be developed which identifies coastal flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such. In support of this plan, monitor changing weather forecasts on a daily basis, or more frequently if adverse weather is forecast. Appoint an on-site Health and Safety Manager and communicate emergency evacuation procedures for on-site workers and visitors and in relation to key assets if a fast emergency response is needed. Identify a place(s) of immediate safety for personnel and safe access routes. Cease or limit (as	Medium	Moderate adverse	Moderate

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
		appropriate) all works until conditions return to a safe state.			
Construction workers	Sea level rise and coastal erosion may lead to coastal flooding of areas of the site which may present heightened health and safety risk to the construction workforce. This could be made worse by the operating and maneuvering of heavy plant.	An Incident Response Plan should be developed which identifies coastal flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such. In support of this plan, monitor changing weather forecasts on a daily basis, or more frequently if adverse weather is forecast. Appoint an on-site Health and Safety Manager and communicate emergency evacuation procedures for on-site workers and visitors and in relation to key assets if a fast emergency response is needed. Identify a place(s) of immediate safety for personnel and safe access routes. Cease or limit (as appropriate) all works until conditions return to a safe state.	Medium	Moderate adverse	Moderate
Construction facilities and machinery	Sea level rise and coastal erosion may lead to coastal flooding of areas of the site which could cause damage to plant and machinery.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure a plan is in place to protect sensitive assets, such as relocating to a safer location or establishing in-situ protection, including a prioritisation system for most sensitive assets. Ensure any items left cannot cause further hazard. Ensure all items not in use are at a safe distance from the river and are located on stable and secure ground away from areas of potential pluvial flood risk. Ensure that all liquids that might contaminate surrounding land in the event of spillage are stored in bunded and lined enclosures designed for the containments of spills (as per GPP2/21). These	Medium	Moderate adverse	Moderate

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
		should be no less than 10 m from a watercourse and located near a spill kit.			
Access to site	Sea level rise and coastal erosion may lead to coastal flooding of areas of the site which could hamper access to site, particularly in high traffic areas where the operating and maneuvering of heavy plant in wet conditions causes ground disturbance and access tracks to become unnavigable. This has the potential to delay the project, with associated cost implications.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure safe access is always available to key assets with consideration given to ground conditions.	Medium	Moderate adverse	Moderate
Precipitation					
Increased winter precipitation					
Construction facilities and activities	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn prevent the undertaking of some construction activities.	An Incident Response Plan should be developed which identifies pluvial and fluvial flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such. In support of this plan, monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. If possible, allow flexibility in schedule to undertake activities away from any flooded areas or stop activities all together until conditions return to safe levels.	Low	Moderate adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Construction workers	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn present heightened health and safety risk to the construction workforce. This could be made worse by the operating and maneuvering of heavy plant.	An Incident Response Plan should be developed which identifies pluvial and fluvial flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such. In support of this plan, monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Appoint an on-site Health and Safety Manager and communicate emergency evacuation procedures for on-site workers and visitors and in relation to key assets if a fast emergency response is needed. Identify a place(s) of immediate safety for personnel and safe access routes. Cease or limit (as appropriate) all works until conditions return to a safe state.	Low	Moderate adverse	Minor
Construction facilities and machinery	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk, which could cause damage to plant and machinery.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure a plan is in place to protect sensitive assets, such as relocating to a safer location or establishing in-situ protection, including a prioritisation system for most sensitive assets. Ensure any items left cannot cause further hazard. Ensure all items not in use are at a safe distance from the river and are located on stable and secure ground away from areas of potential pluvial flood risk. Ensure that all liquids that might contaminate surrounding land in the event of spillage are stored in bunded and lined enclosures designed for the containments of spills (as per GPP2/21). These should be no less than 10 m from a watercourse and located near a spill kit.	Low	Moderate adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Access to site	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which could hamper access to site, particularly in high traffic areas where the operating and maneuvering of heavy plant in wet conditions causes ground disturbance and access tracks to become unnavigable. This has the potential to delay the project, with associated cost implications.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure safe access is always available to key assets with consideration given to ground conditions.	Low	Moderate adverse	Minor
Decreased summer precipitation, increased drought					
Ground stability; construction workers	Decreased precipitation may lead to instances of extreme drought, which may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or construction of the site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health	Monitor changing weather forecasts daily, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust, including dampening down of roadways and avoidance of any activities especially liable to generate dust when strong winds are forecast.	Low	Minor adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Increase in magnitude and frequency of extreme rainfall events					
Construction facilities, materials, activities and workers	Increased requirements for monitoring and maintenance due to enhanced severity and frequency of extreme rainfall events. damage to buildings from storms, fallen trees damaging residential buildings/blocking river channel.	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all checks done at once in a competent manner so that further visits are not needed. Replace/repair assets as early as required.	Negligible	Moderate adverse	Minor
Construction facilities, materials, activities and workers	Sudden flood events (including flash floods) could cause extreme damage to site ground, machinery and materials; as well as pose a risk to worker health.	Monitor changing weather forecasts daily, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency. Halt construction activities and have evacuation procedures prepared in case of sudden flood events.	Negligible	Moderate adverse	Minor
Atmospheric pressure					
Increased summer sea-level pressure					
Construction facilities, materials, activities and workers	Increased atmospheric pressure at sea level during summer could result in fine, warm weather.	N/A	Medium	Minor beneficial	Minor beneficial

Table 11.27: Summary of likely climate change effects on the operation of the proposed development (Medium- to long-term: 2025 – 2085).

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
Park accommodation and facilities	An increase in temperature could cause material and asset deterioration due to increased intensity and duration of hot summers, and exacerbated by any decrease in rainfall e.g., desiccation of clay fills and peats.	The condition and integrity of buildings should be regularly assessed. Maintenance of these should be habitual and consideration should be given to the use of construction materials with enhanced tolerance to fluctuating temperatures.	Low	Minor adverse	Negligible
Landscaping / Habitats	Increased temperatures and diminished precipitation rates may contribute towards drought which may reduce vegetation cover for natural flood management. Vegetation type may also change as conditions become more preferable for some species than others, undermining native vegetation.	Initial planting of drought-tolerant species. Regularly assess the condition of vegetation cover. Maintenance of cover should be habitual and consideration should be given to the use of damping spray or sprinklers during extreme heat. An invasive species management plan should be produced to inform site personnel on biosecurity protocols when carrying out routine maintenance works to prevent the unlawful spread of species to additional areas.	Medium	Minor adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Staff and visitors	Prolonged exposure to high temperatures can lead to increased threat to human health and wellbeing.	Accommodation and park facilities should be designed with the recognition of increasing temperatures and air conditioning should be considered.	Medium	Minor adverse	Minor
Park accommodation and facilities	Instances of extreme drought may reduce groundwater levels and soil saturation thereby resulting in ground instability in areas where vulnerable soils are located.	Ground conditions should be regularly assessed, particularly in areas of vulnerable soils. Stable conditions should be maintained, and consideration should be given to the use of damping spray or sprinklers during extreme heat.	Low	Minor adverse	Negligible
Sea level rise and coastal erosion					
Park accommodation and facilities	Sea level rise and increased coastal erosion may increase the likelihood of coastal flooding which could damage site infrastructure	Given the coastal location of the development, designing assets to ensure functionality in future sea level rise scenarios should be planned for. As part of the proposals, the holiday units will be relocated on higher land within the site to reduce the risk of flooding, with plans to also raise the land within the red line boundary to ensure the development is above the maximum predicted flood level. In addition, numerous other flood risk mitigation measures are proposed, as detailed in the Flood Risk Assessment (Appendix 8.1).	Medium	Moderate adverse	Moderate
Visitors and staff	Sea level rise and increased coastal erosion may increase the likelihood of coastal flooding which could	In addition to the above, weather forecasts should be monitored daily as part of the day-to-day operations of the site, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. A Flood Warning and Evacuation Plan should be	Medium	Moderate adverse	Moderate

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
	present a health and safety risk to visitors and staff on site	developed to ensure occupants are able to safely evacuate the site prior to a flooding event.			
Landscape / Habitat	Sea level rise and increased coastal erosion may increase the likelihood of coastal flooding which could lead to loss of vegetation cover	Vegetation should be planted that is tolerant of changing conditions, such as those that can tolerate higher salt levels in the groundwater.	Medium	Minor adverse	Minor
Precipitation					
Increased winter precipitation; increase in magnitude and frequency of extreme rainfall events					
Park accommodation and facilities	Building and asset deterioration due to heavy rainfall and/or enhanced flooding (increased loading due to increased peak flood conditions) causing e.g., slippage, scour and erosion.	<p>The impacts of flooding from both the Earnley and Park Rife should also be considered.</p> <p>The condition of assets should be regularly assessed, including consideration of material and asset tolerances. Assets should be replaced and/or repaired as early as required.</p> <p>As previously discussed, the holiday units will be relocated on higher land within the site to reduce the risk of flooding, with plans to also raise the land within the red line boundary to ensure the development is above the maximum predicted flood level.</p> <p>Flood resistance and resilience measures have been incorporated into site design (see Chapter 8)</p>	Medium	Moderate adverse	Moderate

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Visitors and Staff	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may present a health and safety risk to personnel on site	As previously discussed, a Flood Warning and Evacuation Plan will also be developed to ensure occupants are able to safely evacuate the site prior to a flooding event.	Medium	Moderate adverse	Moderate
Park accommodation and facilities	Increased requirements for maintenance due to increased winter precipitation. This has implications for heightened emissions too.	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all (seasonal) checks are done at once in a competent manner so that further visits are not needed.	Medium	Minor adverse	Negligible
Decreased summer precipitation, increased drought					
Landscaping / Habitats	Drying out and loss of vegetation	Plant drought-tolerant species	Medium	Minor adverse	Negligible
Park accommodation and facilities	The oscillation of climatic conditions could result in soil moisture fluctuations which have the potential to increase risk of shrink-swell related failures.	Regular monitoring and maintenance checks should be carried out and repairs delivered as early as possible.	Medium	Minor adverse	Minor
Atmospheric pressure					
Increased summer sea-level pressure					
Park accommodation and facilities;	Increased atmospheric pressure at sea level during summer could	N/A	Medium	Minor beneficial	Minor beneficial

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
visitors and staff	result in fine, warm weather.				
Decreased winter sea-level pressure					
Park accommodation and facilities; visitors and staff	Decrease in atmospheric pressure can cause cloudiness, wind, precipitation and stormy weather, resulting in high winds, flying debris, flash-flooding and associated threat to assets.	Climate change should be considered during the design phase and incorporated into design outputs. Following extreme weather events, the condition of assets should be assessed, with maintenance and repair carried out where necessary.	Medium	Minor adverse	Minor
Wind speed and storms					
Increased wind speeds and frequency of winter storms from 2050 onwards					
Park accommodation and facilities	Increased requirements for monitoring and maintenance due to enhanced severity of climate change, e.g., damage to buildings from storms and fallen trees damaging buildings.	Replace and repair assets as early as required. Ensure efficiency during monitoring and maintenance checks, such as by ensuring that all checks are done at once in a competent manner so that further visits are not needed.	Medium	Minor adverse	Minor
Visitors and staff	Increased risk of storm events can deter visitors from visiting the site, as well as posing increased risks to human health and wellbeing.	An Extreme Weather Warning and Evacuation Plan should be developed to ensure occupants are able to safely evacuate the site prior to an extreme storm event.	Low	Moderate adverse	Minor

Table 11.28: Summary of likely climate change effects on the decommissioning of the Proposed Development (Long-term: 2085).

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
Construction workers	An increase in average summer temperatures has the potential to reduce employee productivity during the summer months.	Monitor changing weather forecasts on a daily basis and implement an adverse hot weather procedure which includes communication of high-risk temperatures (with consideration of humidity). Dependent on PPE needed for construction activities, ensure access to high temperature PPE, such as sun hats, sunscreen and loose light clothing. Provide breaks, shade and hydration. If possible, avoid undertaking particularly hot or strenuous activities with excessive/heavy PPE and consider a change in working hours/shift patterns to avoid the hottest part of the day.	Medium	Minor adverse	Minor
	Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.		Medium	Moderate adverse	Moderate
Precipitation					
Increased winter precipitation					
Construction facilities and activities	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn prevent the undertaking of some decommissioning activities.	An Incident Response Plan should be developed which identifies pluvial and fluvial flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such. In support of this plan, monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. If possible, allow flexibility in schedule to undertake activities away from any flooded areas or stop activities all together until conditions return to safe levels.	Medium	Moderate adverse	Moderate

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
Visitors and Staff	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may present a health and safety risk to personnel on site	As previously discussed, a Flood Warning and Evacuation Plan will also be developed to ensure occupants are able to safely evacuate the site prior to a flooding event.	Medium	Moderate adverse	Moderate
Decreased summer precipitation					
Ground stability; construction workers	Decreased precipitation may lead to instances of extreme drought, which may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or construction of the site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust, including dampening down of roadways and avoidance of any activities especially liable to generate dust when strong winds are forecast.	Minor	Minor adverse	Minor
Increase in magnitude and frequency of extreme rainfall events					
Construction facilities, materials, activities and workers	Increased requirements for monitoring and maintenance due to enhanced severity and frequency of extreme rainfall events. damage to plant from storms, fallen trees damaging	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all checks are done once in a competent manner so that further visits are not needed. Replace/repair assets as early as required.	Minor	Moderate adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
	residential buildings/blocking river channel.				
Construction facilities, materials, activities and workers	Sudden flood events (including flash floods) could cause extreme damage to site ground, machinery and materials; as well as pose a risk to worker health.	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency. Halt decommissioning activities and have evacuation procedures prepared in case of sudden flood events.	Minor	Moderate adverse	Minor
Increased risk of drought					
Ground stability; construction workers	Instances of extreme drought may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or operations on site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust, including dampening down of roadways and avoidance of any activities especially liable to generate dust when strong winds are forecast.	Medium	Minor adverse	Minor
Wind speed and storms					
Increased wind speeds and frequency of winter storms from 2050 onwards					
Construction facilities, materials,	Storms and sudden flood events (including flash floods) could cause extreme damage to site	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Maintain drainage systems on site with frequent checks to ensure they are operating at maximum	Medium	Minor adverse	Minor

Receptor	Effect	Embedded mitigation	Likelihood	Magnitude	Significance
activities and workers	ground, machinery and materials; as well as pose a risk to worker health.	efficiency. Halt decommissioning activities and have evacuation procedures prepared in case of sudden flood events.			

11.10 Mitigation – GHG Assessment

11.10.1 The GHG assessment provides a framework to identify sources and activities likely to contribute the largest amount of GHG emissions, allowing identification of priority areas for mitigation.

Construction

11.10.2 For construction, the largest emissions sources are from the embodied emissions from the materials used. As such, consideration of the design of buildings and units is highly important to mitigate against excessive GHG emissions:

Design

Reviewing design proposals with the view of implementing the carbon hierarchy:

- Build nothing – challenge the root cause of the need; explore alternative approaches to achieve the desired outcome.
- Build less – maximise the use of existing assets; optimise asset operation and management to reduce the extent of new construction required.
- Build clever – design in the use of low carbon materials; streamline delivery processes; minimise resource consumption.
- Build efficiently – embrace new construction technologies; eliminate waste.

The use of locally sourced and/or produced materials. Where wood is to be integrated within the design, source from certified managed/sustainable forests (FSC/UKWAS or similar). The use of recycled aggregates, where appropriate, for foundations, subbases, hard-standings and pavement materials.

Careful consideration of material quantity requirements to avoid the excess and unnecessary procurement of materials to reduce embodied emissions and transportation of materials alongside generation of waste.

11.10.3 A Construction Environmental Management Plan (CEMP) will be developed for this project to contain standard environmental protection measures. A number of measures are recommended to mitigate GHG emissions as part of the construction process, as listed below:

Energy

Implement measures to monitor and decrease fuel use by maximising energy efficiencies, for example to ensure all vehicles switch off engines when stationary and ensure construction vehicles are well maintained and conform to current emissions standards.

Welfare facilities to be connected to mains electricity to restrict use of on-site diesel generators, except for short term supplies. Where possible, a proportion of imported energy to be sourced from renewable energy sources.

Promoting the use of sustainable fuels in construction vehicles, where possible make use of electric vehicles to reduce fuel consumption.

Travel

Liaising with construction staff to minimise GHG emissions associated with commute to site, including provision of staff minibuses, and promoting of lower carbon modes of travel such as car sharing options and use of public transport.

Waste

Actions to meet the waste hierarchy in accordance with the principles of the Government's Resources and Waste Strategy 2018. Promoting the recycling of materials by segregating construction waste to be re-used and recycled where reasonably practical.

Operation

11.10.4 A number of measures are recommended to mitigate GHG emissions as part of the operation of the Proposed Development, as listed below. Priority should be made to target visitor travel, as these emissions represent over 70% of total operational emissions.

Design

A fabric-first approach which represents conscious design and embedding carbon reductions into design at an early phase.

Ensure adequate green and vegetated natural spaces to store carbon in the natural environment.

Engagement and approach

Engage with visitors, employees and business partners to promote more sustainable behaviours. E.g., cycle to work scheme, procurement policy ensuring the purchase of the most energy efficient plant, encourage use of public transport.

Top-level commitment and buy-in to ensure material changes are supported from the highest level of management, and seen to be done so by visitors, employees and business partners.

Include carbon reduction targets in performance reviews and basic expectations of all staff in job descriptions (including environmental awareness in induction programme).

Publicise the sustainability initiatives employed to get buy-in and participation at every level. Publicise the site's annual carbon footprint, carbon reduction targets and progress annually.

Energy

The use of air-sourced heat pumps consistent with the forthcoming ban related to the installation of gas boilers in residential properties which comes into force in 2025.

The electrification of heat and cooking within the homes will lead to reduced operation emissions and take advantage of future grid decarbonisation. Ensure use of a renewable electricity tariff.

Consideration of on-site renewables, e.g., solar, wind.

Ensure any on-site or company vehicles are fully electric.

All parking spaces will have the capacity for EV charging, and owners should be encouraged to install EV charging points.

Specify maximum energy efficiency plant and appliances (e.g., for office use, laptops generally use significantly less energy than equivalent desktops; ensure purchase of residential appliances of D rating or above). For any appliance, ensure that lifecycle cost (not just up-front capital cost) is taken into account at the procurement stage.

Encourage the running of appliances on energy-efficient modes.

Consider energy efficient building HVAC (20°C is a typical appropriate heating-season target temperature, while 25°C should be acceptable as a cooling setpoint on warm days). Ensure HVAC isn't running in empty units.

Use LED lighting with motion-sensors, timers and daylight compensation is in place where viable (focus on most commonly used areas first).

Ensure submetering at core locations to identify specific times and causes for high energy use to better target energy reduction efforts.

Refrigerant gas

Where refrigeration or AC is used investigate plant that uses refrigerant gas with the lowest GWP value.

Water

Grey-water harvesting.

Water saving devices such as push taps, dual flush toilets and aerated shower heads.

Reducing water use through education.

Regular maintenance to check for leaks and dripping taps, and fitting a water meter to monitor water use.

Waste

Ensure recycling schemes are implemented, publicised and optimised on site (e.g., consolidating bins into central and convenient locations and ensuring they are well labelled).

Avoid purchase of single-use materials where possible in both the residential units and restaurant/shop areas.

Travel

Contacting relevant local authorities to discuss other sustainable travel initiatives, and advocate improvement of local public transport infrastructure (e.g., street lighting and shelter at bus stops).

Provision of shuttle busses to local points of travel infrastructure (e.g., rail stations, 'park and ride' sites), and/or subsidised bus travel.

Dissemination of information pertaining to more sustainable travel. For example, safe cycle routes, current bus routes, or maps with information about local footpaths that can be used by runners and walkers who might want to avoid roads.

Bike hire to encourage greener leisure travel.

Implementing a Cycle to Work scheme that includes incentives for cycling instead of driving to work (e.g., free breakfast once a week for those that cycle to work, subsidised cycle-purchase, free bicycle-checks and repairs).

Provision of on-site shower facilities, secure bicycle storage and lockers for those that use active travel to commute to work.

Surveying visitors/staff to investigate any current barriers to sustainable travel.

11.11 Mitigation – Climate Resilience

Construction

11.11.1 Measures to mitigate and adapt to climate change risks to the construction of the Proposed Development have been identified in **Table 11.26** and summarised below:

Weather forecasts should be monitored on a daily basis. Forecasts should be used to inform the sequencing of activities and the use of appropriate PPE. Welfare facilities including breaks, shade, and hydration facilities, as well as first aid amenities will be provided.

A Construction Environment Management Plan will be produced along with an Emergency Response Plan, to include on-site fire prevention, suppression, and evacuation procedures.

An Incident Response Plan should be developed which identifies pluvial and coastal flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such.

Monitoring and maintenance of plant and equipment should take place to ensure compliance of machinery with design specifications and flexibility in the construction activities programme will be provided to account for climatic variation. Plant and equipment will be stored appropriately onsite.

Hazardous materials will be maintained in a safe storage area when not in use. This will be away from site access and egress points. Disposal of hazardous waste will be undertaken appropriately, taking into account the risks associated with high temperatures and increased rainfall, as outlined in the Waste Management Plan.

Appropriate first aid equipment and fire equipment should be provided. These should be tested and maintained at scheduled intervals.

Supply chain risks should be considered to determine resilience to climate-related events that may disrupt the procurement of time-sensitive materials.

Operation

11.11.2 Climate change has been considered during the design phase and incorporated into design outputs, most notably with regards to flood risk (see **Chapter 8** for more details). Climate hazards and measures to mitigate and adapt to these during the operation of the Proposed Development have been identified in **Table 11.27** and summarised below:

The condition and integrity of buildings should be regularly assessed, and maintenance of assets undertaken as early as required, giving consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall.

Regularly assess the condition of vegetation cover, with the initial planting of species tolerant to climate extremes.

Decommissioning

11.11.3 Measures to mitigate and adapt to climate change risks to the decommissioning of the Proposed Development have been identified in **Table 11.28** and summarised below.

11.11.4 Due to the significant time gap between the present and when decommissioning is projected to take place (60 years) consideration must be given to advancements which may be made in this time which could supersede any measures recommended here.

Weather forecasts should be monitored on a daily basis. Forecasts should be used to inform the sequencing of activities and the use of appropriate PPE. Welfare facilities including breaks, shade, and hydration facilities, as well as first aid amenities will be provided.

An Incident Response Plan should be developed which identifies coastal and fluvial flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such.

Appropriate first aid equipment and fire equipment should be provided. These should be tested and maintained at scheduled intervals.

11.11.5 Decommissioning will present similar risks to those experienced during the construction of the Proposed Development, and any measures recommended should be assessed for their applicability in this phase.

11.12 Summary of effects

GHG Assessment

11.12.1 There will be unavoidable GHG emissions resulting from the construction, operation and decommissioning of the Proposed Development; however, none of the effects are likely to be significant.

- 11.12.2 The largest emissions source for the construction phase are predicted to be the embodied carbon within construction materials. The largest emissions source for the operational phase overall are predicted to be visitor travel to site. Emissions from electricity consumption are initially high; however due to the projected decarbonisation of the UK's electricity grid these emissions decrease rapidly throughout the lifetime of the Proposed Development.
- 11.12.3 The net GHG emissions caused by the Proposed Development, over the assumed lifespan of 60 years, have been estimated as 43,114 tCO₂e. This equates to between 0.28% and 0.71% of Chichester Local Authority area's proportional Carbon Budget emissions, up until 2033 – 37 (the most recently published Carbon Budget period). This magnitude can be considered low.
- 11.12.4 Adopting the IEMA framework of significance, the project is considered to comply with up-to-date policy and good practice, resulting in a **Minor adverse** effect on the climate, and therefore considered to be **Not Significant**.

Climate resilience

- 11.12.5 Most of the effects of future climate change on the Proposed Development have been determined as **Negligible** to **Minor**. Those residual effects categorised as **Moderate** relate predominantly to the risk of coastal flooding to the site, in combination with predicted increased overall precipitation, and increased extreme precipitation events. These hazards become more likely in the medium- to long-term operation of the Proposed Development, and are covered in more detail in the Flood Risk Assessment. Extended periods of increased heat present a **Moderate** risk to construction workers during the decommissioning phase.
- 11.12.6 Overall, the effects of future climate change on the Proposed Development are considered to be **Not Significant**.

11.10 References

- IEMA. (2022). Institute of Environmental Management & Assessment (IEMA) Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance.
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12 AIR

12.1 Introduction

12.1.1 This chapter of the ES assesses the likely significant effects of the Proposed Development on the environment in terms of Air Quality. The chapter and its supporting appendix describe the planning policy context, the assessment methodology; the baseline conditions at the Site and surroundings; the likely significant effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. In summary, the objectives of the chapter are to:

Assess the impacts of fugitive dust emissions as a result of activities associated with the construction phase of the development.

Quantify pollutant exposure across the Site during the operational phase to determine the suitability of the site for the proposed use.

Identify mitigation measures, where appropriate, to ensure any adverse effects on air quality or amenity are minimised.

12.1.2 This chapter was prepared by RSK Environment.

11.5 Relevant legislation, planning policy and guidance

12.2.1 The relevant legislation, policy and guidance are listed in **Table 12.1** below, with details provided in the Air Quality Technical Report (**Appendix 12.1**).

Table 12.1: Legislation, policy and guidance relevant to Air Quality.

Document	Summary
Legislation	
The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland, 2007 (Volume 1), (Volume 2).	UK air quality policy is published under the umbrella of the Environment Act 1995, Part IV and specifically Section 80, the National Air Quality Strategy. The latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Clean Air, published in July 2007 sets air quality standards and objectives for ten key air pollutants to be achieved between 2003 and 2020.
The Clean Air Strategy, 2019.	The Clean Air Strategy 2019 supersedes the policies outlined in the 2007 strategy. This latest strategy aims to have a more joined-up approach, outlining actions the Government plans to take to reduce emissions from transport, homes, agriculture and industry. However, the air quality objectives remain as previously detailed within the 2007 strategy.
Directive 2008/50/EC of the European Parliament and of the Council of 21 st May 2008	Several pollutants for which limit, or target values have been, or will be, set in subsequent 'daughter directives'. The framework and daughter directives were consolidated by Directive 2008/50/EC on Ambient Air Quality and

Document	Summary
on Ambient Air Quality and Cleaner Air for European.	Cleaner Air for Europe which retains the existing air quality standards and introduces new objectives for fine particulates (PM _{2.5}).
Air Quality (England) (Amendment) Regulations, 2002.	The Air Quality Standards (AQs) in the United Kingdom are derived from European Commission (EC) directives and are adopted into English law via the Air Quality (England) Regulations 2000 and Air Quality (England) Amendment Regulations 2002.
Air Quality Standards Regulations, 2010.	The Air Quality Limit Values Regulations 2003 and subsequent amendments implement the Air Quality Framework Directive into English Law. Directive 2008/50/EC was translated into UK law in 2010 via the Air Quality Standards Regulations 2010.
Air Quality Standards (Amendment) Regulations, 2016.	The Air Quality Limit Values Regulations 2003 and subsequent amendments implement the Air Quality Framework Directive into English Law. Directive 2008/50/EC was translated into UK law in 2010 via the Air Quality Standards Regulations 2010.
The Environment Act, 1995.	These objectives are to be used in the review and assessment of air quality by local authorities under Section 82 of the Environment Act (1995). If exceedances are measured or predicted through the review and assessment process, the local authority must declare an Air Quality Management Area (AQMA) under Section 83 of the act and produce an Air Quality Action Plan (AQAP) to outline how air quality is to be improved.
The Environment Act, 2021.	The new Environment Act (2021) amends the Environment Act (1995) to reinforce the Local Air Quality Management (LAQM) framework in order to encourage cooperation at the local level and broaden the range of organisations that play a role in improving local air quality. The Environment Act requires targets to be set for fine particulate matter PM _{2.5} .
The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023	The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 introduce a reduced long-term annual average Air Quality Objective for PM _{2.5} of 10 µg/m ³ by 2040, with an interim target of 12 µg/m ³ by January 2028 and 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.
Planning Policy	
National Planning Policy Framework (NPPF, 2021).	Section 15 of the NPPF deals with conserving and enhancing the natural environment, and states that the intention is that the planning system should prevent “development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability” and goes on to state that ‘new development [should be] appropriate for its location’ and ‘the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential

Document	Summary
	<p><i>sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.”</i></p> <p>With specific regard to air quality, the NPPF states that: “Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”</p>
Chichester Local Plan (Regulation 19).	<p>CDC’s Local Plan is currently at regulation 19 consultation stage. The policies for managing developments are laid out in the Local Plan for which includes CDC policies relating to air quality.</p> <p>Policy NE20 Pollution includes the following: “Development proposals must be designed to protect, and where possible, improve upon the amenities of existing and future residents, occupiers of buildings and the environment generally.</p> <p>Development proposals will need to address the criteria contained in, but not limited to, the policies concerning water quality; flood risk and water management; nutrient mitigation; lighting; air quality; noise; and contaminated land.</p> <p>Where development is likely to generate significant adverse impacts by reason of pollution, the council will require that the impacts are minimised and/or mitigated to an acceptable level within appropriate local/national standards, guidance, legislation and/or objectives.”</p> <p>Policy NE22 Air Quality states the following: “Development proposals will be permitted where it can be demonstrated that all the following criteria have been addressed:</p> <ol style="list-style-type: none"> 1. Development is located and designed to minimise traffic generation and congestion through access to sustainable transport modes, including maximising provision of pedestrian and cycle networks. 2. Development that creates or results in pollution including particulates, dust, smoke, pollutant gases or odour is designed to minimise and mitigate impact on the amenities of users of the site and

Document	Summary
	<p>surrounding environment including wildlife habitats to an appropriate level.</p> <p>Where development is close to an existing use that has potential to impact on the amenity of the proposed development through dust, particulates, pollutant gases and/or odour then an air quality assessment will be required to identify the potential impact on the area and detail the mitigation measures required.</p> <p>3. Where development is likely to have a negative impact on an Air Quality Management Area, or other areas of poor air quality, then an air quality assessment will be required. The air quality assessment will need to identify the potential impact on the area and detail the mitigation measures required to avoid, reduce and where appropriate, offset the identified impact.</p> <p>The council will consider development proposals against the requirements and standards contained in legislation and current local and national guidance.”</p> <p>Policy T1 Transport Infrastructure also states: “Integrated transport measures will be developed to mitigate the impact of planned development on the highways network, improve highway safety and air quality, promote more sustainable travel patterns and encourage increased use of sustainable modes of travel, such as public transport, cycling and walking. The council will work with National Highways, West Sussex County Council, other transport and service providers (including through the Traffic and Infrastructure Management Group) and developers to provide a better integrated transport network and to improve accessibility to key services and facilities. All development is expected to demonstrate how it will support four key objectives to create an integrated transport network which will alleviate pressure on the road network, improve highway safety, encourage sustainable travel behaviours and help improve air quality, by:</p> <ul style="list-style-type: none"> Avoiding or reducing the need to travel by car; Enabling access to sustainable means of travel, including public transport, walking and cycling; Managing travel demand; and Mitigating the impacts of travel by car. <p>All parties, including applicants, are expected to support these objectives by:</p> <ol style="list-style-type: none"> 1. Ensuring that new development is well located and designed to avoid or minimise the need for travel, encourages the use of sustainable modes of travel as an alternative to the private car and provides or contributes towards new or improved transport infrastructure. 2. Working with relevant providers to improve accessibility to key services and facilities and to

Document	Summary
	<p>ensure that new facilities are easily accessible by sustainable modes of travel.</p> <p>Targeting investment to provide local travel options as an alternative to the car, focusing on the delivery of improved integrated bus and train services, and improved pedestrian and cycling networks, including the public rights of way network, based on the routes and projects identified in the Local Transport Plan, Local Cycling and Walking Infrastructure Plan (LCWIP) and <i>the Infrastructure Delivery Plan</i>;...</p> <p>Phasing the delivery of new development to align with the provision of new transport infrastructure and the outcomes of monitoring travel demand. It may also be necessary to proactively phase development to take into account the monitoring and effectiveness of travel plans to encourage sustainable travel behaviour.</p> <p>Using demand management measures, such as travel plans, to manage travel demand and minimise the need for new or improved transport infrastructure as part of the monitor and manage process.</p> <p>5. Delivering a coordinated package of infrastructure improvements to junctions on the A27 Chichester Bypass along with other small-scale junction improvements within the city and elsewhere, as identified through the monitor and manage process. These will increase road capacity, reduce traffic congestion, improve safety and air quality, and improve access to Chichester city from surrounding areas.</p> <p>Opportunities to secure funding to implement this package of improvements (in relation to criterion 7) will be maximised by working proactively with government agencies including National Highways and Homes England, other public sector organisations and private investors. Developer contributions from new development will also be sought from all new housing development that is not yet subject to planning permission, in accordance with the per dwelling contribution as set out in paragraphs 8.20 to 8.21. The Community Infrastructure Levy may be used to contribute towards the cost of improvements to the local transport network. New development may also be required to deliver or contribute towards specific transport improvements directly related to the development.”</p>
Guidance	
<p>Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, 2014.</p>	<p>The Institute of Air Quality Management (IAQM) published a guidance document in 2014 (Holman <i>et al.</i>, 2014) on the assessment of construction phase impacts. The guidance was produced to provide advice to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM₁₀ impacts on public exposure and impact upon sensitive ecological</p>

Document	Summary
	receptors) and to identify mitigation measure appropriate to the level of risk identified.
Environmental Protection UK (EPUK) and IAQM, Land Use Planning and Development Control: Planning for Air Quality, 2017.	Environmental Protection UK's (EPUK) and the IAQM jointly published a revised version of the guidance note 'Land-Use Planning & Development Control: Planning for Air Quality' in 2017 (herein the 'EPUK-IAQM guidance') to facilitate consideration of air quality within local development control processes. It provides a framework for air quality considerations, promoting a consistent approach to the treatment of air quality issues within development control decisions. The guidance includes methods for undertaken an air quality assessment and an approach for assessing the significance of effects. The guidance note is widely accepted as an appropriate reference method for this purpose.
Department for Environment, Food and Rural Affairs (Defra), local Air Quality Management (LAQM) Technical Guidance (TG.22), 2022.	The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their air quality review and assessment work. This guidance, referred to in this document as the Local Air Quality Management Technical Guidance ('LAQM TG.22'), is referred to where relevant.

11.5 Consultation

- 12.3.1 A pre-application enquiry was made to the Chichester District Council (CDC) in May 2022 and an email was also sent out to the Senior Environmental Protection Officer (Ms. Kate Simons) on 23rd May 2023 to seek to agree the methodology used for the assessment. The key issues raised and actions undertaken are detailed in **Table 12.2** below.

Table 12.2: Consultation response

Consultee	Key issues raised	Actions in response to consultee comments
Chichester District Council (13 th September 2022)	It was advised to give consideration to the Institute of Air Quality Management " <i>Land-Use Planning and Development Control: Planning for Air Quality</i> " document (Jan 2017). If the criteria for an air quality assessment is met, one will need to be provided. Even if it is determined that there shall be a modest increase in road traffic as a result of the Proposed Development measures should be provided that will mitigate and minimise any detriment in terms of air quality. Such measures would be the submission of a Travel	The Proposed Development is not expected to generate any additional traffic, however we have undertaken a quantitative assessment of air quality during the operational phase of the Proposed Development using the EPUK-IAQM 2017 guidance on existing and proposed receptors for a robust assessment. The mitigation measures have been recommended in accordance with the IAQM guidance.

Consultee	Key issues raised	Actions in response to consultee comments
	Plan for approval and adequate provision of electric vehicle charge points.	
Chichester District Council (email dated 24 th May 2023)	As there is now an Objective to work towards a reduction in PM _{2.5} , I suggest that an assessment of this pollutant is also included within the operational phase assessment. An assessment of the air quality impacts from the proposed infrastructure associated with the development (i.e., heating sources, plant within amenity/sports facilities) should also be included within the report.	<p>We have undertaken the assessment of PM₁₀ and PM_{2.5} in accordance with the Technical Guidance. The details are in Appendix D of AQTR (Appendix 12.1).</p> <p>Boiler plant may be proposed for heating the swimming pool. No further details of this boiler plant were available at the time of writing this report. However, if there is a risk of impacts at relevant receptors, further assessment may be required.</p>

12.4 Approach

12.4.1 The approach taken for assessing the potential air quality impacts of the Proposed Development may be summarised as follows:

Consultation with Chichester District Council.

Baseline characterisation of local air quality.

Qualitative assessment of the construction phase impacts of the development using the IAQM 2014 guidance.

Quantitative assessment of the operational phase impacts of the Proposed Development using the EPUK-IAQM 2017 guidance.

Recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality or amenity are minimised.

Baseline characterisation

12.4.2 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

12.4.3 A desk-based study was undertaken including a review of monitoring data available from CDC and estimated background data from the UK-AIR (United Kingdom Air Information Resource) website maintained by Defra. Consideration was also given to potential sources of air pollution in the vicinity of the application site.

Construction phase impact assessment

Construction dust and particulate matter

12.4.4 Construction works for the Proposed Development have the potential to lead to the release of fugitive dust and particulate matter. An assessment of the potential impact of construction phase dust and particulate matter at sensitive receptors has therefore been

undertaken following the IAQM's construction dust guidance. The assessment followed the methodology described below.

12.4.5 The first step in the assessment is to determine whether there is a need for a detailed assessment. An assessment is required where there is:

A human receptor within

- 350 m of the boundary of the site; or
- 50 m of the route used by construction vehicles on public highways, up to 200 m from the site entrance.

An ecological receptor within:

- 50 m of the boundary of the site; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 200 m from the site entrance(s).

12.4.6 Human receptors that should be considered include residential properties, hospitals, schools, commercial buildings, parks and footpaths. There are human receptors within 350 m of the boundary of the site and within 50 m of the trackout route; therefore, construction dust may have the potential to cause annoyance in the local area.

12.4.7 Ecological receptors in terms of air quality include Special Areas of Conservation (SAC) (or other international designations), Sites of Special Scientific Interest (SSSI) (or other national designations) and local Nature Reserves (or other local designations). The MAGIC Map application available online by Defra was used to identify statutory ecological receptors near the Site. There is Bracklesham Bay SSSI within 20 m of the site boundary and therefore, ecological receptors are considered in the construction phase assessment.

12.4.8 A qualitative construction impact assessment has been conducted to identify the potential risk of dust impacts and the level of mitigation required to reduce these impacts. Three separate dust impacts were considered:

Annoyance to dust soiling; and

The risk of human health effects due to an increase in exposure to PM₁₀.

Harm to ecological receptors.

Defining the potential dust emission magnitude

12.4.9 The dust emissions magnitude is calculated as large, medium or small depending on the construction activities taking place at the site. During the construction phase of the Proposed Development, demolition, earthworks, construction and trackout will take place.

12.4.10 The dust emissions magnitude for each category (demolition, earthworks, construction and trackout) is defined using the guidance detailed in Appendix B of the AQTR (**Appendix 12.1**).

Defining the sensitivity of the area

12.4.11 The sensitivity of the area is defined for dust soiling and human health. The sensitivity of the area takes into account the following factors:

The specific sensitivities of receptors in the area.

The proximity and number of those receptors.

In the case of PM₁₀, the local background concentration.

Site-specific factors, such as whether there are natural shelters such as trees, to reduce the risk of wind-blown dust.

12.4.12 Appendix B of the AQTR (**Appendix 12.1**) provides full details on how the sensitivity is determined. Sensitivity of the surrounding area can be classed as high, medium or low.

Defining the significance of the impact

12.4.13 The dust emission magnitude classification and the sensitivity of the area are used to determine the dust risk, prior to the application of mitigation. Appendix A of AQTR (**Appendix 12.1**) presents the significance of impact tables adopted within this assessment.

12.4.14 In EIA terms, high and medium dust risk could result in a significant impact on the environment and low and negligible have been considered to be insignificant. However, the IAQM guidance recommends that the significance of effects should only be assigned following consideration of mitigation measures and notes that with effective implementation of the mitigation measures residual effects will normally be 'not significant'.

Emissions to air from construction traffic and plant

12.4.15 Exhaust emissions from construction phase vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the Site and in the vicinity of the Site itself. Information on the plant associated with the construction phase is not available at this stage, therefore a qualitative impact assessment has been undertaken based on professional judgement. The EPUK-IAQM 2017 guidance provides indicative criteria for when an air quality assessment is required; if none of the criteria are exceeded, it is considered unlikely that there will be any significant impacts on air quality during the operational phase. The project transport consultants (ITP) have confirmed that the screening criteria (a change of LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere, and/or a change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere) will not be exceeded during construction phase. Therefore, further assessment of construction phase for traffic emissions should not be required.

Operational phase assessment

12.4.16 Nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5} are generally regarded as the most significant air pollutants released by vehicular combustion processes (as they tend to be more likely to be close to exceeding statutory limits in an urban environment), or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. The Proposed Development retains the same number of holiday bungalows as existing, and the traffic consultants have advised that the Proposed Development will not therefore generate additional traffic emissions in the local area.

12.4.17 Dispersion modelling was used to quantify future concentrations of NO₂, PM₁₀ and PM_{2.5} to assess the potential for the Proposed Development to introduce exposure to poor air quality. The methodology is set out in the paragraphs below.

Model inputs

12.4.18 Full details of the modelling assessment methodology can be found in **Appendix 12.1** and details are summarised below.

Modelling software

12.4.19 ADMS-Roads is an advanced dispersion model developed by the UK consultancy CERC (Cambridge Environmental Research Consultants) and is widely used and validated within the UK and Europe. The model allows for the skewed nature of turbulence within the atmospheric boundary layer. ADMS-Roads is capable of processing hourly sequential meteorological data, whilst taking the turbulence caused by vehicles into account in calculating the dispersion profiles of emitted pollutants. It enables the user to predict concentrations of pollutants of concern at multiple receptor locations.

12.4.20 ADMS-Roads (Version 5.0.0.1) has been used for assessing potential road traffic emission air quality impacts resulting from the operational phase of the Proposed Development, and the potential exposure of future residents at the Proposed Development to poor air quality.

Modelling scenarios

12.4.21 The transport consultants have confirmed that no traffic increase due to the Proposed Development is expected (see **Chapter 16** for further details), therefore baseline and future baseline scenarios have been assessed.

12.4.22 The operational phase assessment has been undertaken with an operational opening year of 2025 for a worst-case assessment. The assessment scenarios are therefore:

Scenario 1: 2019 Baseline = Existing Baseline Conditions (2019)

Scenario 2: 2025 Future Year Baseline = Baseline Conditions + Committed Development Flows (through local growth factor)

Traffic data

12.4.23 The transport consultants for the Proposed Development, ITP, provided the traffic data for use in the air quality assessment, further details can be found in **Appendix 12.1**.

12.4.24 Speed limits or average speed data (where available) from all roads assessed were provided and used within the model for all road links. Reduced speeds at junctions were employed in the model in line with LAQM.TG(22) and professional judgement. The traffic data used in the modelling are presented in Appendix C of the AQTR (**Appendix 12.1**).

12.4.25 2019 has been used as the baseline year and for the purpose of model verification. It is understood that the most recent year for which CDC has a full year of monitoring data is 2020. However, pollution levels were greatly impacted by the Covid-19 restrictions in 2020, and it is considered that 2019 is more appropriate for verification purposes. 2025

has been considered as the year of opening of the Proposed Development for a worst case assessment.

Emission factors

12.4.26 Version 11.0 of the Emission Factor Toolkit (EFT), published by Defra, was used to derive vehicle emissions factors (i.e. the amount of pollution emitted from the average vehicle fleet, in g/km/s) for nitrogen oxide (NO_x), PM₁₀ and PM_{2.5}. Within the EFT, emission factors are available for all years between 2018 and 2050 and take into account the most recent evidence relating to factors such as advances in vehicle and exhaust technology and changes in composition of the vehicle fleet. Emission factors for 2019 were used to estimate vehicle emissions for Scenario 1 (S1) modelling scenario and 2025 emission factors were used for Scenario 2 (S2) modelling scenario.

Time-varying profile

12.4.27 Vehicle movements vary with time. Diurnal profiles for the roads included within the model were not available therefore, the UK 2019 national diurnal profile from the Department for Transport (DfT) was applied to all roads, which is presented in Appendix C of the AQTR (**Appendix 12.1**).

Meteorological data

12.4.28 Hourly sequential meteorological data were employed in the dispersion model. The data were recorded in 2019 at the Thorney Island meteorological monitoring station which is located approximately 8.8 km north-west of the Site. The windrose derived from the 2019 dataset is presented in Figure 3.3 of the AQTR (**Appendix 12.1**). The predominant wind direction was from the south-west.

Background air quality data used in the modelling

12.4.29 The 2019 Defra mapped estimated background data was used for the 2019 base year and 2025 future years for NO₂, PM₁₀ and PM_{2.5}. The 2019 background was used for both baseline and future years for a conservative approach.

12.4.30 Background concentrations used within the assessment are presented in **Appendix 12.1**.

Receptor locations

12.4.31 Pollutant concentrations were predicted at a number of human receptors at the Proposed Development and along the roads included in the study area. A height of 1.5 m was used for human receptors to represent the approximate average breathing height of an adult. Details of all specific receptors included in the modelling study are summarised in Table 3.1 and shown in Figure 3.1 of the AQTR (**Appendix 12.1**).

12.4.32 Consideration has also been given to the potential impact on local air quality from operational phase traffic at nearby designated ecological sites. Further details are in Section 3.4.12 of the AQTR (**Appendix 12.1**).

Model verification and results processing

- 12.4.33 The dispersion model results were 'verified' by comparison with local monitoring data and adjusted according to the procedure described in Defra LAQM.TG(22). This process of verification attempts to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results. The verification procedure is detailed at Appendix D of the AQTR (**Appendix 12.1**).
- 12.4.34 An adjustment factor of 2.18 was obtained for the NO₂ verification process and applied to the modelled road-NO_x component predicted at assessment receptors. This was done prior to the conversion to annual mean NO₂ concentrations utilising the NO_x:NO₂ calculator (version 8.1) available from the Defra website.
- 12.4.35 Only one monitoring station is located in the study area that measures concentrations of PM₁₀ and PM_{2.5} (approximately 9 km north towards Chichester Bypass). TG(22) states that care needs to be taken when applying model adjustment based on one monitoring site only as the adjustment may not be representative of other locations. However, upon undertaking verification for PM₁₀ using the nearest automatic monitoring station C11, the adjustment factor was calculated as 1.96 which is less than the adjustment factor for NO₂.
- 12.4.36 Consequently, the predicted road-PM₁₀ and road-PM_{2.5} contributions were adjusted using the factor calculated for road-NO_x, before adding the appropriate background concentrations. This approach is consistent with guidance given in LAQM.TG.22.
- 12.4.37 The number of days with PM₁₀ concentrations greater than 50 µg/m³ was then estimated using the relationship with the annual mean concentration described in LAQM.TG(22).
- 12.4.38 The following method was used to calculate total annual mean NO₂, PM₁₀ and PM_{2.5} concentrations:
- Modelled annual mean road NO_x, PM₁₀ and PM_{2.5} concentrations were verified as set out above.
- The road source NO₂ at the verification location was estimated from the verified modelled NO_x concentration using version 8.1 of the NO_x:NO₂ calculator, using settings appropriate to the locality of the receptor and using 2019 or 2025 as the appropriate emissions factor year.
- Predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations were added to the applicable background concentration.
- 12.4.39 LAQM.TG(22) advises that an exceedance of the 1 hour mean NO₂ objective is unlikely to occur where the annual mean concentration is below 60 µg/m³, where road transport is the main source of pollution. This concentration has been used to screen whether the hourly mean objective is likely to be achieved.
- 12.4.40 Once processed, the predicted concentrations (full results presented in **Appendix 12.1**) were compared against the current statutory limit values and objectives for NO₂, PM₁₀ and PM_{2.5}.

Value of receptors

Construction phase

12.4.41 **Table 12.3** below sets out the general principals, along with professional judgement that have been considered to determine the scale of sensitivity that has been applied to receptors identified and considered within the construction phase assessment.

Table 12.3: Receptor value and sensitivity.

Value	Description	
	Dust soiling effects	Health effects
High	Locations where users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Indicative examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.	Locations where members of the public are exposed over a time period relevant to the air quality objective for particulate matter (PM ₁₀) (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
Medium	Locations where users would expect to enjoy a reasonable level of amenity but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM ₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM ₁₀ , as protection is covered by Health and Safety at Work legislation.
Low	Locations where the enjoyment of amenity would not reasonably be expected; or the property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of	Locations where human exposure is transient (e.g., playing fields, footpaths).

Value	Description	
	Dust soiling effects	Health effects
	time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.	

Construction phase

Magnitude of impact

12.4.42 **Table 12.4** and **Table 12.5** below indicate the scale of impact magnitude that has been used in undertaking the construction phase assessment. The descriptors included in this section are based upon the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction'.

Table 12.4: Scale of magnitude for dust emissions impacts used in the construction phase assessment.

Activity	Magnitude	Summary
Demolition	Large	Total building volume >50,000 m ³ , potentially dusty construction material, on-site crushing and screening, demolition activities >20 m above ground level.
	Medium	Total building volume 20,000 m ³ – 50,000 m ³ , potentially dusty construction material, demolition activities 10 m – 20 m above ground level.
	Small	Total building volume <20,000 m ³ , construction material with low potential for dust release, demolition activities <10 m above ground, demolition during wetter months.
Earthworks	Large	Total site area >10,000 m ² , potentially dusty soil type (e.g., clay), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
	Medium	Total site area 2,500 – 10,000 m ² , moderately dusty soil type (e.g., silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes.
	Small	Total site area <2,500 m ² , soil type with large grain size (e.g., sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <10,000 tonnes, earthworks during wetter months.
Construction	Large	Total building volume >100,000 m ³ , piling, on site concrete batching.

Activity	Magnitude	Summary
	Medium	Total building volume 25,000 – 100,000 m ³ , potentially dusty construction material (e.g., concrete), piling, on site concrete batching.
	Small	Total building volume <25,000 m ³ , construction material with low potential for dust release (e.g., metal cladding or timber).
Trackout	Large	>50 HDV (>3.5 t) trips in any one day, potentially dusty surface material (e.g., high clay content), unpaved road length >100 m.
	Medium	10 – 50 HDV (>3.5 t) trips in any one day, moderately dusty surface material (e.g., high clay content), unpaved road length 50 – 100 m.
	Small	<10 HDV (>3.5 t) trips in any one day, surface material with low potential for dust release, unpaved road length <50 m.

Table 12.5: Scale of magnitude for human health impacts used in the construction phase assessment.

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m ³	>10	Low	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM ₁₀ Conc.	Number of Receptors	Distances from the Source (m)				
			<20	<50	<100	<200	<350
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low

Significance of effect

12.4.43 The sensitivity of receptors and magnitude of impact were combined as detailed in **Table 12.6** below to determine the significance of effects (risk). The dust emission magnitudes determined have been used to recommend site-specific mitigation measures.

Table 12.6: Significance of Dust Emission Impacts.

Sensitivity of area		Dust Emission Magnitude		
		Large	Medium	Small
Demolition	High Risk	High Risk	High Risk	Medium Risk
	High Risk	High Risk	High Risk	Low Risk
	Medium Risk	Medium Risk	Medium Risk	Negligible
Earthworks	High Risk	High Risk	High Risk	Low Risk
	Medium Risk	Medium Risk	Medium Risk	Low Risk
	Low Risk	Low Risk	Low Risk	Negligible
Construction	High Risk	High Risk	High Risk	Low Risk
	Medium Risk	Medium Risk	Medium Risk	Low Risk
	Low Risk	Low Risk	Low Risk	Negligible
Trackout	High Risk	High Risk	High Risk	Low Risk
	Medium Risk	Medium Risk	Medium Risk	Negligible
	Low Risk	Low Risk	Low Risk	Negligible

12.4.44 The further details on the methodology for undertaking the construction phase dust impacts is shown in Appendix A of AQTR (**Appendix 12.1**).

Operational phase

Magnitude of impact

12.4.45 No significant combustion sources such as combined heat and power (CHP) or biomass boilers are proposed. It is likely that the development might have boilers installed for heating the swimming pool. No further details of this boiler plant were available at the time of writing this report. However, if the development will have one or more new combustion plants, where there is a risk of impacts at relevant receptors, a further assessment may be required.

- 12.4.46 The project transport consultant, ITP have confirmed that there would not be any change in the traffic due to the Proposed Development as the proposed number of units are same as existing number of units. Therefore, the change of LDVs and HDVs AADT is zero.
- 12.4.47 The operational phase assessment therefore consists of the quantified predictions of the NO₂, PM₁₀ and PM_{2.5} for the operational phase of the development. Predictions of air quality at the site have been undertaken for the operational phase of the development using ADMS Roads.
- 12.4.48 The impacts of a development are usually assessed at selected ‘receptors’. **Table 12.7** sets out the advice provided within the DEFRA guidance LAQM (TG.22) for where pollutant AQOs should apply.

Table 12.7: Examples of where the Air Quality Objectives apply

Averaging Periods	Objectives should apply at	Objectives should not apply at
Annual Mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work to which members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour Mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-Hour Mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets).	Kerbside sites where the public would not be expected to have regular access.

- 12.4.49 Given that schools, hospitals and care homes have not been identified in the immediate surrounding area, the assessment has focused on residential properties, both existing and proposed. As such, the annual mean AQO for all pollutants, has been considered in line with **Table 12.7**.

Significance of effect

- 12.4.50 In accordance with the EPUK-IAQM guidance, the significance of impacts is derived by the percentage of change in pollution concentration relative to the Air Quality Assessment Level (AQAL) and long term average pollutant concentration at receptors. However, there

is no change in traffic due to the Proposed Development and therefore, no increase of pollution concentration is expected due to the Proposed Development.

Nature of effect

12.4.51 A summary of the nature and significance of effect (risk) are summarised in **Table 12.8** below.

Table 12.8: Nature and significance of effect (risk).

Topic	Effect	Sensitivity	Nature of effect	Significance of effect (risk)
Construction activities	Dust effects - Fugitive dust affecting amenity.	Medium Sensitivity	Adverse, short-term (temporary)	Negligible*
Construction activities	Dust effects - Fugitive dust affecting PM ₁₀ and PM _{2.5} concentrations & increased risk to human health.	Medium Sensitivity	Adverse, short-term (temporary)	Negligible*
Construction activities	Reduced air quality due to increased exhaust emissions of combustion gases from Plant and Vehicles.	Medium Sensitivity	Adverse, short-term (temporary)	Negligible*
Operational Phase	There is no change in the traffic and therefore, no change in pollutant concentration is anticipated.	Medium Sensitivity	Adverse long-term (permanent)	Negligible (conservative assessment)

*With implementation of mitigation as per IAQM Guidance

12.4.52 In EIA terms, in the absence of mitigation, the construction phase could have a direct, adverse, short-term effect on the surrounding area during the demolition, earthworks, construction and trackout activities. According to the summary of dust risk, the potential impact on dust soiling is expected to 'medium' which could result in significant effects. The impact on human health is calculated to be 'low' and therefore, the significance level is likely to be minor for human health. However, these impacts are considered prior to mitigation and with mitigation in place the predicted effects are 'negligible' as detailed in Section 6 of the AQTR.

12.4.53 Operational traffic is also classified as direct, adverse, short-term and long-term effects on the surrounding area. The impact on human health is expected to be negligible and therefore is predicted to have a negligible significance on the local area.

Difficulties and uncertainties

12.4.54 In undertaking the operational phase assessment of the Site and wider surrounding area, there are a number of limitations and constraints affecting the outputs from this work. These include:

Data uncertainty - due to possible errors in input data, including emission estimates, operational procedures, land use characteristics and meteorology; and
Variability – potential randomness of measurements used.

12.4.55 These potential uncertainties in model results were minimised as far as practicable and worst-case inputs used in order to provide a robust assessment. This included the following:

Choice of model - ADMS-Roads (v5.2) is commonly used for atmospheric dispersion model and results have been verified against nearby monitoring data to ensure predictions are as accurate as possible.

Meteorological data - Modelling was undertaken using an annual meteorological data set from the most representative meteorological station observation to the site to take account of local conditions.

Emission rates - Emission Factor Toolkit v.11.0 was utilised in line with the current best practice approach.

Variability - All model inputs are as accurate as possible and worst-case conditions were considered as necessary in order to ensure a robust assessment of potential pollutant concentrations.

12.4.56 The limitations stated above are standard limitations associated with atmospheric dispersion modelling assessments. Based on the controls and assumptions it is considered that the assessment is both robust in its conclusions and in line with current industry standard practice.

Design basis and assumptions

Construction phase

12.4.57 Initial assumptions on construction activities are based on the size of the development. Prior to construction, a review of construction activities and HDV traffic should be carried out.

Operational phase

12.4.58 No combined heat and power (CHP) plants or boilers are included within the assessment. If the development has one or more substantial combustion processes, where there is a risk of impacts at relevant receptors, an updated detailed assessment may need to be considered.

11.5 Existing environment

Emissions sources and key air pollutants

- 12.5.1 The site is classed as a rural location within the Chichester district. It is bounded predominantly by agricultural land to the east, north and west. Medmerry Park Beach Front is situated to the south of site and the town, Bracklesham Bay, to the west. Therefore, the Site is located in an area where the main source of air pollution is likely to be road traffic emissions. The principal pollutants relevant to this assessment are considered to be NO₂, PM₁₀ and PM_{2.5}, generally regarded as the most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions.

Local authority air quality monitoring data

- 12.5.2 CDC currently has two declared Air Quality Management Areas (AQMA), the nearest is the Chichester St Pancras AQMA, which is approximately 10 km north of the Proposed Development, hence the Site is not located within or near an AQMA.
- 12.5.3 According to CDC's 2022 Air Quality Annual Status Report (ASR), there were four automatic monitoring station and a network of 20 NO₂ diffusion tubes in 2021.
- 12.5.4 No NO₂ diffusion tubes or automatic monitoring stations were within close vicinity (within 2 km) of the Proposed Development. Particulate matter monitoring data is also not available in the vicinity of the Site. The annual average measured NO₂ concentrations at monitoring locations nearest to the Site are presented in Section 4 of AQTR (**Appendix 12.1**).

LAQM background data

- 12.5.5 Estimated background air quality data available from the Local Air Quality Management (LAQM) website operated by Defra has been included in the assessment. No exceedances of the NO₂, PM₁₀ or PM_{2.5} AQs are predicted. As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective AQs.
- 12.5.6 A summary of Defra background concentrations can be found in Section 4.4 of the AQTR (**Appendix 12.1**).

11.5 Predicted effects

Dust and particulate matter generated by construction phase activities

- 12.6.1 Full details of the dust risks determined in the AQA before mitigation is considered and presented in Section 5.1 of the AQTR (**Appendix 12.1**) and have been summarised below.
- 12.6.2 With reference to the IAQM criteria, the dust emission magnitudes for demolition, earthworks, construction and trackout activities are summarised in **Table 12.4**. Where information is not yet known, a conservative approach has been adopted and professional

judgement has been used based on the scale of the Development and experience of working on similar schemes. Furthermore, conservative rating has been selected.

- 12.6.3 The dust emission magnitudes from **Table 12.9** have been combined with the sensitivity of the area from **Table 12.10**, to determine the risk of impacts of construction activities before mitigation, as summarised in **Table 12.11**.
- 12.6.4 Mitigation measures for construction activities are normally secured by planning conditions, or legal obligation within a section 106 agreement requiring a Dust Management Plan (DMP) or a Construction Environmental Management Plan (CEMP). Therefore, any adverse effects will be reduced through a DMP/CEMP, and thus the pre-mitigation impacts are not considered relevant. This chapter only reports the residual effects (after mitigation) for construction phase, which are detailed in the 'residual effect' section.

Table 12.9: Scale of magnitude for dust emissions impacts used in the construction phase assessment.

Activity	Dust emission magnitude	
Demolition	Total volume of buildings to be demolished 20,000 – 50,000 m ³ . On-site crushing and screening is unlikely to be proposed. The height of demolition above ground 10-20 m.	Medium
Earthworks	Total site area >10,000 m ² . Potentially clayey and silty soil type. 5-10 heavy earth moving vehicles active at any one time. Formation of bunds 4-10 m in height. Total material moved <20,000 tonnes.	Medium
Construction	Total building volume 25,000 – 100,000 m ³ . Potentially dusty construction material. On site concrete batching is not proposed.	Medium
Trackout	<10 trips (HDVs >3.5 t) in any one day. Unpaved road length >100 m.	Medium

Table 12.10: Sensitivity of the area.

Potential Impact		Sensitivity of the surrounding area			
		Demolition	Earthworks	Construction	Trackout
Dust soiling	Receptor sensitivity	Medium	Medium	Medium	Medium
	Number of receptors	>1	>1	>1	>1
	Distance from the source	<20 m	<20 m	<20 m	<20 m

Potential Impact		Sensitivity of the surrounding area			
		Demolition	Earthworks	Construction	Trackout
	Sensitivity of the area	Medium	Medium	Medium	Medium
Human health	Receptor sensitivity	Medium	Medium	Medium	Medium
	Annual mean PM ₁₀ concentration	<24 µg/m ³	<24 µg/m ³	<24 µg/m ³	<24 µg/m ³
	Number of receptors	1-10	1-10	1-10	1-10
	Distance from the source	<20 m	<20 m	<20 m	<20 m
	Sensitivity of the area	Low	Low	Low	Low
Ecological	Receptor sensitivity*	Medium	Medium	Medium	Medium
	Distance from the source	<20 m	<20 m	<20 m	<20 m
	Sensitivity of the area	Medium	Medium	Medium	Medium

*The development site is located adjacent to Bracklesham Bay SSSI, which considered to have a medium sensitivity to dust deposition.

Table 12.11: Summary of the dust risk from construction activities.

Potential Impact	Dust Risk Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium Risk	Medium Risk	Medium Risk	Low Risk
Human health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological	Medium Risk	Medium Risk	Medium Risk	Low Risk

12.6.5 The construction phase assessment determines the significance of any residual impacts once the pre-mitigation effects have been determined and the appropriate mitigation measures identified this is detailed in **Section 12.7**. Without implementation of the proposed construction phase mitigation measures, the impact is considered to be **Medium**.

Exhaust emissions from construction phase traffic and plant

12.6.6 The operation of vehicles and equipment powered by internal combustion engines results in the emission of exhaust gases containing pollutants including NO_x, PM₁₀, PM_{2.5}, volatile organic compounds, and carbon monoxide. The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.

- 12.6.7 Construction traffic will comprise haulage / construction vehicles and vehicles used for workers' trips to and from the Site. The greatest impact on air quality due to emission from construction phase vehicles will be in areas adjacent to the Site access and nearby road network. It is anticipated that construction traffic will access the Site via Drove Ln. At this stage, detailed information regarding construction phase traffic flow is not available, however, it is anticipated that there will be less than 10 HDV outward movements per day.
- 12.6.8 The EPUK and IAQM guidance states the following indicative criteria to help establish when an air quality assessment is likely to be considered necessary:
- Proposals that will cause a change in Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 elsewhere.
- Proposals that will cause a change in Heavy Duty Vehicles (HDV) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 elsewhere.
- 12.6.9 The traffic consultant has advised that it is unlikely that the above criteria will be exceeded during the construction phase, therefore air quality impacts of construction phase traffic exhaust emissions are likely to be **Not Significant** and no further assessment is required.
- 12.6.10 The operation of site equipment and machinery and site traffic will result in emissions to the atmosphere of exhaust gases, but with the implementation of the proposed construction phase mitigation measures (Section 6 of the AQTR), the effect of exhaust emissions from construction phase traffic and plant is considered to be **Negligible**, as per LAQM.TG.22.

Operational phase

- 12.6.11 The existing sensitive human receptors have been chosen to represent worst-case locations in respect to traffic emissions associated with the Proposed Development. These locations are detailed in **Table 12.12**.

Table 12.12: Diffusion tubes and receptors included in the dispersion modelling assessment.

Receptor ID	Receptor Location	Grid Reference		Height (m)
		X	Y	
Diffusion tubes used for verification				
2a, 2b	Kings Ave/Southbank Jct.	485772.00	103847.00	3.0
6	Claremont Court	485694.88	103731.45	2.9
1	Cabin	485776.00	103961.00	3.0
Automatic monitoring station used for verification				
CI1	Stockbridge	485881.00	103791.00	3.0
Existing receptors				

Receptor ID	Receptor Location	Grid Reference		Height (m)
		X	Y	
R1	Residential Receptor at Drove Lane	481641.50	096890.16	1.5
R2	Residential Receptor at Drove Lane	481632.28	096823.59	1.5
R3	Residential Receptor at Clappers Lane	481532.22	096951.07	1.5
R4	Residential Receptor at Bookers Lane	481532.62	097037.32	1.5
R5	Residential Receptor Clappers Lane	481063.72	096964.48	1.5
R6	Residential Receptor Bookers Lane	481334.56	097309.18	1.5
R7	Residential Receptor at Almodington	481771.53	097415.02	1.5
R8	Residential Receptor at Almodington	482886.12	098634.78	1.5
R9	Residential at Receptor Sidlesham Lane	483033.12	099853.37	1.5
R10	Residential Receptor at Birdham Road	485252.44	103290.58	1.5
R11	Residential Receptor at Upton Road	485695.75	103781.91	1.5
R12	Residential Receptor at A27	485600.81	103871.95	1.5
R13	Residential Receptor at Kings Avenue	485774.19	103847.15	1.5
R14	Residential Receptor at A27	485865.75	103726.08	1.5
R15	Residential Receptor at B2179	481730.03	099409.66	1.5
R16	Residential Receptor at B2179	479872.12	099224.85	1.5
R17	Residential Receptor at Rookwood	478576.84	099125.36	1.5
R18	Residential Receptor at Middlefield	477972.34	098411.18	1.5
R19	Residential Receptor at Cakeham Road	478186.62	098081.11	1.5
R20	Residential Receptor at Northern Crescent	479614.94	097303.45	1.5
R21	Residential Receptor Bracklesham Lane	480696.75	096888.55	1.5

Receptor ID	Receptor Location	Grid Reference		Height (m)
		X	Y	
R22	Residential Receptor Bracklesham Lane	481395.41	098293.76	1.5
R23	Residential Receptor at Birdham Road	481641.50	096890.16	1.5
Proposed receptors				
PR1	Proposed receptor Medmerry Holiday Park	481838.16	096091.45	1.5
PR2	Proposed receptor Medmerry Holiday Park	482003.53	096018.69	1.5
PR3	Proposed receptor Medmerry Holiday Park	482199.31	095878.46	1.5
PR4	Proposed receptor Medmerry Holiday Park	482167.81	095743.27	1.5
PR5	Proposed receptor Medmerry Holiday Park	482087.62	095620.66	1.5
PR6	Proposed receptor Medmerry Holiday Park	481982.84	095516.95	1.5
PR7	Proposed receptor Medmerry Holiday Park	481913.00	095715.91	1.5
PR8	Proposed receptor Medmerry Holiday Park	481729.91	095739.73	1.5
PR9	Proposed receptor Medmerry Holiday Park	481698.16	095895.30	1.5
Ecological receptors				
E1	Chichester and Langstone Harbours	477628.00	098329.10	0
E2	Bracklesham Bay	480460.56	096304.53	0
E3	Bracklesham Bay	481947.22	095574.42	0
E4	Bracklesham Bay	481624.41	095590.83	0

The IAQM Guidance recommends the assessment of ecological receptors which are located within 200 m of an affected road network. The Proposed Development is not predicted to result in any increase in road traffic, therefore there is no 'affected' road network and all ecological receptors can be scoped out. However, we have presented the NO_x concentrations at these receptors for a robust assessment. The NO_x concentrations at these receptors are presented in **Appendix 12.1**.

Nitrogen dioxide – NO₂

- 12.6.12 Results show that all the receptors modelled are predicted to be below the annual mean NO₂ AQS in the Future Year Baseline scenario. The highest modelled NO₂ concentration is along King's Avenue, which predicts concentrations of 29.63 µg/m³ in 2025. This receptor is near to the Chichester Bypass, where pollutant concentrations would typically be higher.
- 12.6.13 In accordance with the EPUK-IAQM guidance, the significance of impacts is derived by the percentage of change in pollution concentration relative to the Air Quality Assessment Level (AQAL) and long term average pollutant concentration at receptors. However, there is no change in traffic due to the Proposed Development and therefore, no increase of pollution concentration is expected due to the Proposed Development and therefore, changes in NO₂ concentration are considered to be **Negligible**.
- 12.6.14 LAQM.TG(22) notes that 'exceedances of the 1-hour mean objective for NO₂ are only likely to occur where annual mean concentrations are 60 µg/m³ or above'. Annual mean NO₂ concentrations are not predicted to exceed 60 µg/m³ at any modelled receptors. The EPUK-IAQM guidance recommends it is not normally necessary to consider impacts on short-term concentrations unless there is a risk of the AQAL being exceeded due to the Proposed Development. As the annual mean NO₂ concentrations are well below 60 µg/m³, the significance of short-term results is likely to be **Negligible** and has not been assessed further. The full table of results can be found in **Appendix 12.1**.

Particulate matter – PM₁₀

- 12.6.15 Results show that all the receptors modelled are predicted to be below the annual mean PM₁₀ AQS in the Future Year Baseline scenario. R13, the receptor at Kings Avenue is once again predicted to experience the highest modelled concentration. The PM₁₀ concentration is predicted to be 19.3 µg/m³ in 2025, significantly below the 40 µg/m³ limit.
- 12.6.16 In accordance with the EPUK-IAQM guidance, the significance of impacts is derived by the percentage of change in pollution concentration relative to the AQAL and long term average pollutant concentration at receptors. However, there is no change in traffic due to the Proposed Development and therefore, no increase of pollution concentration is expected due to the Proposed Development and is therefore considered to have a **Negligible** impact. The full table of results can be found in **Appendix 12.1**.
- 12.6.17 The number of exceedances of the daily mean PM₁₀ AQS was far fewer than the permissible 35 at all of the receptor locations for S1 and S2. No receptors were predicted to be exposed to concentrations of PM₁₀ or PM_{2.5} exceeding the annual mean AQSs with the development in place. Changes in PM₁₀ concentration are therefore considered to be **Negligible**.

Particulate matter – PM_{2.5}

- 12.6.18 All the receptors modelled are predicted to experience annual mean concentrations of PM_{2.5} below the annual mean Objective in the Future Year Baseline scenario, though marginal exceedance of the 2028 interim target for PM_{2.5} is predicted in 2025 at one existing receptor, which is not related to the proposed development. However, this is conservative assessment and assumes 2019 background concentration, but if we

consider 2025 background concentration, then the R13 is also expected to meet the interim target for PM_{2.5}.

Residual effects

- 12.6.19 With appropriate mitigation measures (such as those proposed for the construction phase) in place, the residual impacts of the development on local air quality during the construction phase of the development are likely to be short-term and **Negligible**. The mitigation measures are detailed in Section 6 of the AQTR (**Appendix 12.1**).
- 12.6.20 The residual impacts of the development on local air quality, when the development is complete and operational, are also likely to be long-term, insignificant (**Negligible**), without the need for further mitigation to that proposed in **Chapter 16** (Transport and Access).

11.5 Mitigation

Construction phase mitigation

- 12.7.1 Whilst construction activities are ongoing, the dust emitting activities can be effectively controlled by appropriate dust control measures and any adverse effects can be greatly reduced or eliminated. The dust risk categories identified have been used to recommend appropriate mitigation measures, which are presented in the Section 6 of the AQTR (**Appendix 12.1**).
- 12.7.2 It is also best practice to reduce emissions from construction phase activities by encouraging construction workers to use public transport, carpool, walk or cycle to and from site as practicable (and providing information regarding local cycle parking spaces and/or public transport routes as applicable). Establishing a system to control demand for construction vehicles to attend site (such as limiting / consolidating deliveries and arranging times when deliveries should arrive on site) is also recommended where practicable.
- 12.7.3 It is recommended that plant used on-site comply with the NO_x, PM and CO emissions standards specified in the EU Directive 97/68/EC and subsequent amendments as a minimum, where they have net power of between 37 kW and 560 kW. The emissions standards vary depending on the net power the engine produces. It is recommended that these emissions standards are also applied on site. The following actions can be taken to enable compliance:
- Reorganising the fleet.
 - Replacing equipment if required.
 - Installing retrofit abatement technology (such as by diesel particulate filters in existing Non-Road Mobile Machinery (NRMM).
 - 'Re-engining'.

Operational phase mitigation

- 12.7.4 The development is not expected to result in an increase in traffic generation, or therefore to significantly affect air quality, therefore no further mitigation to that proposed in **Chapter 16** (Transport and Access) should be required.

12.7.5 However best practice measures could be used to further reduce the effects of the development on local air quality where feasible. Such measures could include:

The preparation of a travel plan to encourage employees to use sustainable transport (public, cycling and walking).

Provision of electric vehicle charge points.

11.5 Summary of effects

12.8.1 The residual impacts during the construction phase, with the implementation of the proposed construction phase mitigation measures, are considered to be **Negligible** and therefore **Not Significant**.

12.8.2 No significant impacts are anticipated once operational and therefore, operational phase impacts are considered to remain of **Negligible** and therefore **Not Significant**.

11.5 References

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13 MATERIAL ASSETS AND WASTE

12.1 Introduction

- 13.1.1 This chapter assesses the potential impacts resulting from the use of material resources associated with the proposed works and waste management in the construction, demolition and excavation (CD&E) phase and operational phase of the Proposed Development.
- 13.1.2 The assessment does not make reference to impacts associated with the offsite manufacture of products. This is outside the boundaries of this assessment due to the range of unknown variables associated with the extraction and manufacturing processes.
- 13.1.3 Material resources include primary raw materials, such as aggregates and minerals, and manufactured construction products, which include recycled and secondary aggregates. Many material resources originate offsite, purchased as construction products, and some arise onsite such as excavated soils or recycled road planings.
- 13.1.4 Waste is defined in Article 1(a) of the European Waste Framework Directive 2008/98/EC as ‘any substance or object in the categories set out in Annex I which the holder discards or intends to discard or is required to discard’. The term ‘holder’ is defined as the producer of the waste or the person who is in possession of it and ‘producer’ is defined as anyone whose activities produce waste. Waste can be further classified as hazardous or non-hazardous (which includes inert wastes).
- 13.1.5 This chapter has been produced by RSK Environment.

11.3 Relevant legislation, planning policy and guidance

- 13.2.1 This impact assessment has been undertaken in accordance with current applicable international and national legislation, and national and regional plans and policies relating to material resources and waste. A summary of relevant legislation, policies and guidance has been provided **Table 13.1** below:

Table 13.1: Legislation, policies and guidance relevant to Materials and Waste.

Document	Summary
Legislation	
EU Landfill Directive (Directive 1999/31/EC on the landfill of waste).	Establishes a framework for the management of waste across the European Community. It also defines certain terms, such as ‘waste’, ‘recovery’ and ‘disposal’, to ensure that a uniform approach is taken across the EU. It also sets targets for the diversion of biodegradable municipal waste and controls the nature of waste accepted for landfill (e.g., banning flammable wastes).
EU Waste Framework Directive (Directive 2006/12/EC on waste).	The Waste Framework Directive (WFD) Directive 2006/12/EC on waste) contains the definition of waste. It also sets out basic waste management principles: it requires that

Document	Summary
	waste be managed without endangering human health and harming the environment, and in particular without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest.
The Clean Neighbourhoods and Environment Act 2005.	Outlines the responsibility of everyone working in the construction industry to ensure that all waste is disposed of properly. All employees need to be made aware that if they are tasked with waste disposal this must be carried out in accordance with the law, or they risk being fined.
Environmental Permitting (England & Wales) Regulations 2016 (amended).	The Environmental Permitting (England and Wales) Regulations (EPR) were created to standardise environmental permitting and compliance in England and Wales to protect human health and the environment.
Environmental Protection Act 1990.	Part II of the Environmental Protection Act 1990 sets out a regime for the regulation and licensing of the acceptable disposal of controlled waste (any household, industrial and commercial waste) on land. Unauthorised or harmful depositing, treatment or disposal of controlled waste is prohibited and enforced by criminal sanctions. Further, there is a broad duty of care on importers, producers, carriers, keepers, treaters or disposers of controlled waste to prevent harmful activities.
The Hazardous Waste (England and Wales) Regulations 2005 (amended in 2016).	The Hazardous Waste Regulations control the storage, transport and disposal of hazardous waste to ensure it is appropriately managed and any risks are limited. An amendment in 2016 removed a requirement to register premises in England only. Premises in Wales must still be registered.
Waste (England and Wales) Regulations 2011.	The Waste Regulations transpose the Waste Framework Directive into English law. The Regulations require businesses to confirm that they have applied the waste management hierarchy, introduce a new waste hierarchy permit condition and a two-tier system for waste carrier and broker registration.
Environment Act 2021.	<p>The Environment Act intention is to protect and enhance our environment for future generations. It aims to clean up the country's air, restore natural habitats, increase biodiversity, reduce waste and make better use of our resources. To support the UK's transition to a more circular economy by incentivising people to recycle more. It encourages businesses to create sustainable packaging, makes household recycling easier and stops the export of polluting plastics to developing countries.</p> <p>The Act contains several provisions relating to waste which waste collection and waste disposal authorities should be aware of.</p> <p style="padding-left: 40px;">Recyclable household waste must be collected separately from other household waste, for recycling or composting. The Secretary of State will have the power to add further recyclable waste streams.</p>

Document	Summary
	<p>Recyclable household waste must be collected as individual streams unless certain exceptions apply. To rely on these exceptions, a waste collection authority must provide a written assessment stating it considers that separate collection:</p> <ul style="list-style-type: none"> ○ Would not be technically or economically practicable; or ○ Has no significant environmental benefit <p>Dry recyclable waste streams must never be mixed with food or garden waste streams.</p> <p>Food waste collection must take place at least once a week.</p>
Planning Policy	
National Planning Policy Framework 2021.	<p>An update to the National Planning Policy Framework (NPPF) has been published in July 2021 to replace the previous version published in February 2019.</p> <p>The revised NPPF maintains that plans and decisions should apply a presumption in favour of sustainable development which should be delivered in accordance with three main objective areas: economic, social and environmental.</p>
National Planning Policy for Waste, Department for Environment, Food and Rural Affairs, 2014.	<p>Sets out detailed waste planning policies and guidance to waste planning authorities in preparing their Local Plans. Of key importance is the requirement for waste planning authorities to identify sufficient opportunities to meet identified needs of their area for the management of waste streams. Particularly, waste planning authorities should work collaboratively in groups with other waste planning authorities and in two-tier areas with district authorities, through the statutory duty to cooperate, to provide a suitable network of facilities to deliver sustainable waste management.</p>
Our waste, our resources: A strategy for England, DEFRA, 2018.	<p>The strategy sets out the government's plan to double resource productivity and eliminate avoidable waste of all kinds, including plastic by 2050.</p>
Waste Management Plan for England 2021.	<p>The plan aims to aid in embedding sustainable thinking around waste management and bring about a real change in how we consume resources.</p>
The Circular Economy Package: Policy Statement, DEFRA, 2020.	<p>Outlines the UK's commitment to move towards a more circular economy which will see resources kept in use for longer. The Circular Economy Package introduces a revised legislative framework that identifies steps for reduction of waste and a long term path for waste management and recycling.</p>
Guidance	
Waste & Resources Action Programme (WRAP) Designing out Waste: a design guide for civil engineering.	<p>This guidance document provides information on the key principles that designers can use during the design process and how these principles can be applied to projects to maximise opportunities to design out waste.</p>

Document	Summary
Institute of Environmental Management and Assessment (IEMA) guide to Materials and Waste in Environmental Impact Assessments, 2020.	Provides guidance and recommendations for those concerned with the impacts and effects of materials and waste on the environment. It provides guidance on key terms, concepts and considerations for assessing environmental impacts and effects of material and waste as part of the EIA process.
The Definition of Waste: Development Industry Code of Practice, Contaminated Land: Applications in Real Environments (CL:AIRE), 2011.	This Code of Practice (CoP) provides best practice for the development industry to use when assessing if materials are classified as waste, or not, and determining when treated waste can cease to be waste for a particular use.
Local Policy and Guidance	
West Sussex Waste Local Plan (April 2014).	Covers the period to 2031 and outlines the Authorities statement on land use planning policy for waste.
Hampshire Minerals and Waste Plan (October 2013).	Ensures that there are enough minerals for the county's needs and that waste is dealt with effectively until 2030.
West Sussex Minerals and Waste Safeguarding Guidance March 2020.	Guidance on how the safeguarding of minerals resources and infrastructure associated with minerals supply (e.g., wharves, railheads, processing plants) and waste management will take place in West Sussex. It explains how the safeguarding policies in the West Sussex Joint Minerals Local Plan 2018 and the West Sussex Waste Local Plan 2014 will be implemented in practice.
Chichester District Council Waste and Recycling Collection Policy V2 February 2023.	Sets out the responsibilities of the Council and the service users in relation to waste and recycling collections and defines the policies and procedures the Council abide by to ensure fairness to all customers.
Chichester District Council Waste Storage and Collection Guidance for New Housing Developments within the Chichester District.	Guidance to assist in the development of waste management strategies to facilitate the storage of waste and maximise the amount sent for recycling. It can be used as a design tool for architects and developers and is also used by Planning Officers in assessing planning applications to ensure waste management priorities are addressed.

11.3 Approach

13.3.1 The assessment of waste and material effects in this chapter follows the IEMA (2020) guidance. The effects associated with the Proposed Development are based on:

The layouts and plans of the Proposed Development.

The Proposed Development size and outline composition mix (outline floor areas and land-use type). These can be used to estimate approximate waste generation figures. The number of residents and the land use types, along with existing data

on waste provided by the site, have been used to determine the quantity of waste generated during the operational phase.

The development of an Outline Waste Management Plan (OWMP) for the Proposed Development (**Appendix 13.1**).

Applicable local, regional and national waste and material management regulations and policies.

- 13.3.2 A desktop study has been undertaken to determine the baseline conditions. The spare capacity of the current waste management infrastructure in West Sussex and the surrounding area were determined using data relating to maximum capacities and current usage (as publicly available).
- 13.3.3 The baseline with regards to waste management is set in relation to the latest estimated waste generation quantities in West Sussex and Hampshire. Data for waste management practices, infrastructure capacity and generation was obtained from:
 - West Sussex and Hampshire Local Plans and frameworks; and
 - Environment Agency, Waste Data Interrogator (2021) data.
- 13.3.4 A desktop study of the proposed buildings within the Site has been undertaken as far as possible at this stage to assess the volume and type of waste that will be generated during the demolition and construction phases of the development. Further assessment may be required following the preparation of detailed designs for the Proposed Development.
- 13.3.5 The quantities of CD&E waste generated by the development have been estimated despite a number of uncertainties around the construction methods to be employed and the final design of the development. Expected quantities and waste types have been outlined within the OWMP (**Appendix 13.1**).
- 13.3.6 The actual quantities and compositions of CD&E wastes generated will be dependent upon unpredictable variables that influence actual waste quantities and composition. For example:
 - eventual recycling systems and waste infrastructure available
 - material types and choices
 - individual contractor, resident or worker behaviour
 - changes to local policies and requirements.
- 13.3.7 Details on excavation including the quantities and potential to reuse excavation material on-site have been provided in **Chapter 7**.
- 13.3.8 The operational water use for the Proposed Development has been assessed in **Chapter 8 and 11**, vehicle movements for waste and materials in **Chapter 16**, and noise levels in **Chapter 15**.

Value of receptors

- 13.3.9 For waste, the sensitive receptor is available landfill capacity as landfill is a finite resource, as opposed to recycling or other treatment facilities which have an annual operating capacity (IEMA, 2020). The receptor sensitivity is based on the current landfill void capacity against the reduction of landfill capacity based on future projected waste forecasts without development (**Table 13.2** and **Table 13.3**).

Table 13.2: Criteria for determining waste receptor sensitivity for inert and non-hazardous landfills (IEMA, 2020).

Value	Description
Very High	Would reduce very considerably (by >10%); end (i.e., reach full capacity) during construction or operation; is known to be unavailable, or would require new capacity / infrastructure to be put in place to meet demand.
High	Would reduce considerably by 6-10% as a result of wastes forecast.
Medium	Would reduce by 1-5% as a result of wastes forecast.
Low	Would reduce minimally by <1% as a result of wastes forecast.
Negligible	Would remain unchanged, or expected to increase, through a committed change in capacity.

Table 13.3: Criteria for determining waste receptor sensitivity for hazardous landfills (IEMA, 2020).

Value	Description
Very High	Would reduce very considerably (by >1%); end (i.e., reach full capacity) during construction or operation; is known to be unavailable or would require new capacity / infrastructure to be put in place to meet demand.
High	Would reduce considerably by 0.5-1% as a result of wastes forecast.
Medium	Would reduce by 0.1-0.5% as a result of wastes forecast.
Low	Would reduce minimally by <0.1% as a result of wastes forecast.
Negligible	Would remain unchanged, or expected to increase, through a committed change in capacity.

13.3.10 The sensitivity of materials is based on supply and/or stock of materials, as well as the sustainable properties of each material as outlined in **Table 13.4**.

Table 13.4: Criteria for determining material receptor sensitivity (IEMA, 2020).

Value	Description
Very High	Insufficient in terms of production, supply and/or stock or not available with any sustainable features.
High	Suffer from known issues with supply / stock or available comprising little to no sustainable features.
Medium	Suffer from some potential issues with supply and stock or available comprising some sustainable features.
Low	Generally free from known issues regarding supply and stock or available comprising high portion of sustainable features.
Negligible	Free from known issues regarding supply and stock or available comprising of sustainable features.

Magnitude of impact (change)

13.3.11 The IEMA (2020) guidance provides criteria (**Table 13.5** and **Table 13.6**) for assessing magnitude and provides two approaches to determine the magnitude of impact for waste. Method 1 determines reduction in void capacity of landfill from the Proposed Development, which is the most robust approach, suitable for larger developments and statutory EIAs. It involves a detailed methodology using available industry data. The alternative approach, where data may not be available, is prioritising landfill diversion. This assessment has used Method 1 from the IEMA (2020) guidance, based on landfill void capacity where data is available.

Table 13.5: Criteria for determining magnitude of impact for inert and non-hazardous waste (IEMA, 2020).

Magnitude	Summary
Major	Reduce regional landfill void capacity by >10%.
Moderate	Reduce regional landfill void capacity by 6-10%.
Minor	Reduce regional landfill void capacity by 1-5%.
Negligible	Reduce regional landfill void capacity by <1%.
No change	Zero waste generation.

Table 13.6: Criteria for determining magnitude of impact for hazardous waste (IEMA, 2020).

Magnitude	Summary
Major	Reduce regional landfill void capacity by >1%.
Moderate	Reduce regional landfill void capacity by 0.5-1%.
Minor	Reduce regional landfill void capacity by 0.1-0.5%.
Negligible	Reduce regional landfill void capacity by <0.11%.
No change	Zero waste generation.

13.3.12 The criteria for determining the magnitude of impact for materials is outlined in **Table 13.7**. This comprises a percentage-based approach, measuring the volume of materials by percentage against regional or national baseline availability.

Table 13.7: Criteria for determining magnitude of impact for materials (IEMA, 2020).

Magnitude	Summary
Major	One or more material type is equal or greater than 10% by volume of the regional or national baseline availability.
Moderate	One or more material type is equal or greater than by 6-10% by volume of the regional or national baseline availability.
Minor	One or more material type is equal or greater than between 1-5% by volume of the regional or national baseline availability.

Magnitude	Summary
Negligible	No individual material type is equal or greater than 1% by volume of the regional or national baseline availability.
No change	No materials are required.

Determination of significance

13.3.13 The approach to determine the significance of effects has been as follows:

Identify the relevant receptors.

Derive their value (importance) based on the criteria set out in the above tables.

Identify and consider the likely impacts from each activity.

Determine the magnitude of change likely as a result of the impacts.

Present the environmentally and ecologically significant effects and then consider how additional mitigation may reduce negative effects.

13.3.14 An effect is considered to be significant if it meets any of the following criteria:

It could lead to an exceedance of defined guidelines or widely recognised levels of acceptable change.

It is likely that the consenting authority will reasonably consider applying a planning condition, requirement or legal agreement to the consent to require specific additional mitigation to reduce or overcome the effect.

It threatens or enhances the viability or integrity of a receptor or receptor group of concern.

It is likely to be material to the ultimate decision about whether the planning application should be approved.

Nature of effect

13.3.15 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect. These terms add additional information about how the effect would affect receptors (**Table 13.8**).

Table 13.8: Assessment descriptors

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g., during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed / reinstated); includes effects which are permanent (irreversible), or which may decline over longer timescales.

Term	Nature of effect descriptors
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases, a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

13.3.16 Measures are necessary to address likely **Significant adverse** environmental effects. The environmental effects of impacts can be referred to as either being before, or following establishment of, environmental mitigation.

13.3.17 The significance of an environmental effect has been established by way of reference to the importance / value of affected resources; the number and sensitivity of affected receptors; impact magnitude, duration, frequency and extent of effect; and the reversibility of effect.

13.3.18 Only very large and large, and where justified, moderate effects, which are likely to be factors in deciding whether a development is acceptable, are significant effects.

13.3.19 Those effects shaded in **Table 13.9** are considered significant.

Table 13.9: Matrix for determining effect significance (IEMA 2020).

Sensitivity of Receptor	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Difficulties and uncertainties

13.3.20 Data on current and future capacities has been estimated using the most recent data available from the Waste Data Interrogator (2021), West Sussex and Hampshire reports. Specifically, landfill void capacities derived from the EA Waste Interrogator. Data is only available up until the end of 2021, and therefore assumptions have been made on future landfill capacity based on waste forecasts from various sources, which have been referenced throughout this chapter.

13.3.21 The demolition estimates of the existing buildings on-site cannot be provided until the necessary pre-demolition audits have been completed. In addition, it is known that asbestos containing materials are present in some parts of the site. However, not all

areas have been fully investigated and until this work has been completed there will remain some uncertainty around the types of waste that will be present.

13.3.22 There is limited available data on current local and regional material availability, and baseline data is only available nationally up to 2018 or 2022 for the different materials in this assessment, as shown in **Table 13.10**.

13.3.23 A limited review and assessment of operational waste has been undertaken where enough information has been available to do so. However, as final designs for the site have not yet been completed there is still the potential for some changes to how this waste type is organised and managed. In addition, further discussions with the council regarding this waste type may still be required.

Design basis and assumptions

13.3.24 It has been proposed that new lodges will be mostly constructed off site and will arrive in parts mostly pre-built. By using this method of construction there will be a significant reduction in the quantities of construction waste generated on site.

13.3.25 Medmerry Holiday Park currently has 308 lodges on site. The Proposed Development will replace these lodges with the same number of lodges. As a result, the quantity of operational waste generated on site should not increase significantly. Any increase is most likely to arise due to increased occupancy at any one time of all the lodges on site (it is known that some lodges on the existing site are in a state of disrepair and are not being used).

11.5 Existing Environment

Materials Baseline

13.4.1 There is limited data on current local and regional material availability. As a result this baseline assessment focuses on the national production and import of materials. Various sources such as the Minerals Products Association (MPA) and Forest Research have been used to provide the data and status of the main materials expected to be used for the Proposed Development. The materials this assessment has focussed on (based on the types of units to be constructed) are aggregates, asphalt, concrete and timber.

13.4.2 A summary of the availability of the outlined materials is provided in **Table 13.10**. Data from 2018 is the most recent that has been published online. Also, it predates the Covid pandemic and is likely to be a more accurate reflection on current availability.

Table 13.10: Data on national demand for key construction products (MPA, Forest Research)

Material	Baseline Data Year	National Demand (million tonnes/year)
Aggregates (includes crushed rock, sand & gravel, recycled & secondary)	2018	251
Asphalt	2018	25.4

Material	Baseline Data Year	National Demand (million tonnes/year)
Concrete (includes ready-mixed and concrete products)	2018	86.2
Timber	2022	15.3 million cubic metres/year

Aggregates

- 13.4.3 The demand for aggregates totalled 251 million tonnes in 2018. This is made up of crushed rock, sand and gravel, recycled and secondary aggregates. A breakdown of the demand is summarised in **Table 13.11** below.

Table 13.11: Breakdown of aggregate material demand in UK.

Aggregate Type	Demand (million tonnes in 2018)
Crushed Rock	117.3
Sand & Gravel – land won	48.9
Sand & Gravel - marine	13.7
Recycled and Secondary	71.0

Asphalt

- 13.4.4 Produced mainly to support the construction and maintenance of road networks. The demand for asphalt in the UK in 2018 was 25.4 million tonnes.

Concrete

- 13.4.5 In 2018 the demand for concrete in the UK totalled 86.2 million tonnes. This total is made up of both ready-mixed concrete and concrete products.

Timber

- 13.4.6 In 2022 the total consumption of wood products in construction in the UK was 15.3 million cubic tonnes. This is made up of 9.1 million tonnes of sawn wood and 6.2 million tonnes of wood based panels.

Waste Baseline

- 13.4.7 To establish baseline data for waste management this assessment has considered the location of the site within West Sussex and very close to the boundary of Hampshire. Data on landfill capacities and future inputs has been used. Infrastructure such as recycling, composting and other methods to divert waste away from landfill is only to be included if necessary for the assessment.

West Sussex

- 13.4.8 The West Sussex Waste Local Plan 2014 - 2031 provides guidance on the County's sustainable approach to dealing with waste by outlining the aspiration of 'zero waste to landfill' by 2031.
- 13.4.9 West Sussex is a predominantly rural county and overall, nearly 90% of the population live in the twenty-four main towns and villages that are located along the coast and in the east and northeast of the county. The Proposed Development is located within Chichester District Council on the south coast.
- 13.4.10 Within West Sussex the remaining landfill capacity at the end of 2021 was 305,000 m³ (Environment Agency, Waste Data Interrogator). There is a mixture of inert and non-hazardous landfills. A breakdown of landfill capacity is provided in **Table 13.12**.

Table 13.12: West Sussex landfill capacity breakdown (Environment Agency 2021).

Landfill Type	Number of Active Landfills	Capacity (thousand cubic metres)
Non-Hazardous	1	115
Inert	1	190
Total	2	305

- 13.4.11 The West Sussex Waste Local Plan provides estimates of Commercial and Industrial (C&I) Waste, and CD&E Waste in 2011. A breakdown is provided in **Table 13.13**.

Table 13.13: Management of C& I and CD&E waste within West Sussex (Environment Agency 2021).

Waste Stream	Commercial and Industrial Waste (million tonnes/year)	Construction, Demolition & Excavation Waste (million tonnes/year)
Recycled	0.33	0.45
Other Management	0.08	0.22
Landfilled	0.20	0.28
Total	0.61	0.95

Hampshire

- 13.4.12 Within Hampshire the remaining landfill capacity at the end of 2021 was 1,992,000 m³ (Environment Agency, Waste Data Interrogator). There is a mixture of inert and non-hazardous landfills. A breakdown of landfill capacity is provided in **Table 13.14**.

Table 13.14: Hampshire landfill capacity breakdown (Environment Agency 2021).

Landfill Type	Number of Active Landfills	Capacity (thousand cubic metres)
Non-hazardous	1	599

Inert	3	1,393
Total	4	1,992

13.4.13 The Assessment of Need for Waste Management Facilities in Hampshire report (Version 5, February 2012) summarises the quantities of CD&E waste produced and landfilled in 2010 in Hampshire. A breakdown is provided in **Table 13.15**.

Table 13.15: Estimated annual tonnages of CD&E waste landfilled in 2010 in Hampshire.

Waste Type	Estimated Annual Arisings (million tonnes)	Amount landfilled (million tonnes)
CD&E/Inert	2.38	0.19

Summary of Current Baseline in West Sussex and Hampshire

13.4.14 To determine capacity gaps in waste infrastructure in the wider areas of West Sussex and Hampshire, recent waste arisings and available capacities have been sought where available for C&I and CD&E waste. A summary of the arisings and capacity gaps are shown in **Table 13.16**. These capacities are a total of landfill and other waste infrastructure.

Table 13.16: Capacities for West Sussex and Hampshire at end of 2021.

	West Sussex	Hampshire	Total
Operational Waste			
Current Landfill Capacity for non-hazardous (C&I) waste within area (m ³)	115,000	599,000	714,000
Construction Waste			
Current inert landfill capacity within area (m ³)	190,000	1,393,000	1,583,000

13.4.15 The number of active landfills is summarised in **Table 13.16**.

Table 13.17: Total number of active landfills in West Sussex and Hampshire at end of 2021.

	West Sussex	Hampshire	Total
Number of active non-hazardous landfills	1	1	2
Number of active inert landfills	1	3	4

13.4.16 The indications are that there are no active hazardous waste landfills within either West Sussex or Hampshire. It is assumed that all hazardous waste arisings from the areas are either treated by alternative methods than landfill or transported elsewhere to an appropriate hazardous landfill facility.

- 13.4.17 In order to assess hazardous waste effects, regional or national hazardous landfill capacities are required (IEMA, 2020). Due to the availability of data, England has been used as the receptor at a national level. Remaining hazardous landfill capacity at the end of 2021 in England was recorded at over 12.1 million m³ (EA, Waste Data Interrogator).
- 13.4.18 **Chapter 7** details the findings of the PRA and potential for contaminated soils to be produced during excavation works. All contaminated soils will need to be handled and treated appropriately in line with the requirements and processes set out in **Chapter 7**.

Future Baseline

- 13.4.19 The projected C&I and CD&E waste arisings for West Sussex are presented in **Table 13.18**. Data is taken from the West Sussex Joint Minerals Local Plan and Waste Local Plan Monitoring Report 2020/21. The future quantity shown is the waste forecast for 2031.

Table 13.18: Waste Forecast for West Sussex.

Waste Type	Estimated Waste Arisings in 2021 (tonnes)	Estimated Waste Arisings in 2031 (tonnes)
C&I Waste	444,000	524,000
CD&E Waste	805,000	1,389,000

Cumulative Baseline

- 13.4.20 Individual waste forecasts for consented/planned developments within the study area are not known and as a result have not been collated. The cumulative baseline for the Proposed Development has been developed using the future baseline and the waste forecast for the Site.
- 13.4.21 The combined total waste arisings from the future baseline (2031) and the construction waste forecast for the Proposed Development (1,234.3 tonnes) (assuming all waste is sent for recycling or to landfill) is 1,390,234.3 tonnes. This represents 0.08% of current waste infrastructure capacity.

Construction materials and waste forecasts

- 13.4.22 The following waste forecasts have been completed for the Proposed Development. See **Appendix 13.1** for further details regarding the calculated estimates of waste arisings from the Proposed Development.
- 13.4.23 The choice of material resources and opportunities for waste reduction have been considered during the initial design phase and will be considered further during the detailed design phase of the Proposed Development. The waste hierarchy illustrates that implementing waste minimisation at the initial and detailed design phases are the most effective options for reducing waste generated by a Proposed Development.
- 13.4.24 CD&E material resources required for the Proposed Development will consist of Type 1 subbase, pavement, concrete, steel and grout. Although the reuse of materials within the Site will be maximised, raw materials will still be needed for the construction works. Detailed forecasts of material resources required at the site will be refined as the development progresses.

- 13.4.25 The current proposed cut and fill analysis for the site show 56,494 m³ of material will need to be cut from the Site. However, to achieve the levels on site 56,700 m³ of fill material will be required. The intention is to reuse all site-won material on Site. Assuming all site won material is suitable for reuse, these calculations show that only around 206 m³ of material will need to be imported to achieve the final proposed levels. However, as the calculations do not take into account arising from services and drainage etc., this deficit may be accounted for. Further information on this strategy is provided with **Chapter 7**.
- 13.4.26 It is proposed that all individual lodges will be constructed offsite in a factory prior to being transported to site for final assembly. Currently it is anticipated that the foundation for each lodge will comprise of a concrete pad. This strategy will further reduce the requirement for construction material at the site and the generation of waste.

11.5 Predicted effects

Construction

- 13.5.1 The construction period is anticipated to take approximately six years and has been designed so each phase can be self-contained with minimal impact on the existing operation of the park. The work is separated into the following main stages:

Two wetland lakes and an activity lake (with boathouse) will be constructed.

The Village Hub, Medmerry Arms, swimming pool area and entrance to the site will be retained and refurbished/upgraded.

The existing lodges and associated areas of hardstanding will be demolished.

It is proposed that all individual lodges will be constructed offsite prior to final assembly onsite. Currently it is anticipated that the foundation for each lodge will comprise of a concrete pad.

In addition a children's play area and open-air cinema will be constructed on site.

Waste

- 13.5.2 Construction and demolition waste comprises of wastes arising from the construction and demolition phase and is likely to be made up of mainly inert materials such as soils, stone, concrete, brick and tile. There will also be non-hazardous elements in this waste stream such as wood, metals, plastics, cardboard and residual household-like waste. Hazardous elements will mainly consist of asbestos containing materials but may also consist of some treated woods and chemicals that might be used in the construction process (i.e. some adhesives, sealants, paints etc.). Due to their weight, inert materials typically make up the majority of total CD&E tonnage.
- 13.5.3 Construction methods employed on site will significantly reduce the amount of waste generated on site that will reduce landfill capacities. Potential volumes and quantities of waste generated have been estimated as part of this chapter and are summarised in **Table 13.19**. The estimations are based on the industry standards from BRE 2016 benchmarks using the Proposed Developments gross floor areas for construction waste. The approach is outlined within **Appendix 13.1**.
- 13.5.4 Waste volumes provided exclude the volumes of waste expected from the demolition of the existing lodges and other buildings and structures on site. A pre-demolition survey

will be undertaken to determine the types and quantities of waste generated during demolition activities associated with the Proposed Development.

- 13.5.5 The use of pre-built buildings on site will significantly reduce the quantity of waste generated during the construction of the 308 proposed lodges. This will have the advantage of preserving materials by reducing exposure to weather. Also any factory manufacturing pre-built buildings is better able to ensure that materials are appropriately sized and fit for purpose to result in a significant reduction of offcuts and damaged materials. It has been suggested by some sources (*Modular and Portable Building Association*) that off-site production of buildings can reduce waste by as much as 90%, though this will likely depend upon the factory and the nature and size of the building. When calculating the quantity of construction waste generated by the construction of the lodges on site, a conservative assumption that waste will be reduced by 60% has been used.
- 13.5.6 The quantity of excavation material is estimated to be significantly greater than construction and demolition waste. It is expected that the majority of the excavated material will be suitable for reuse. Details of cut and fill calculations are summarised in paragraph **13.4.25**.

Table 13.19: Estimated CD&E waste quantities before mitigation.

Waste Type	Total Estimated Waste (tonnes)	Total Estimated Waste (m ³)
Construction*	1,234.3	3,857.2
Demolition	Currently unknown	Currently unknown
Excavation**	59,883.6	56,494
Total (excluding demolition waste)	61,117.9	60,351.2

*To convert from tonnes to m³ and conversion factor of 0.32 (for 17 09 04) has been used.

** To convert from m³ to tonnes a conversion factor of 1.06 (for 17 05 04) has been used

- 13.5.7 For CD&E waste the magnitude of impact is determined by comparing the generation of known CD&E waste from the Proposed Development against remaining inert and non-hazardous landfill capacity. The magnitude of impact assumes that waste generated within the Proposed Development will be managed regionally within either West Sussex or Hampshire (see **Table 13.20**).

Table 13.20: Magnitude of impact of CD&E waste.

	Magnitude of Impact before Mitigation (worst case)	Reduction in Landfill Void Capacity	Justification
West Sussex and Hampshire (Inert)	Minor	3.6%	In 2021 landfill capacity for inert waste in both counties was 1,583,000m ³ . Development inert waste before mitigation approx. 56,494m ³ .
West Sussex and Hampshire (Non-hazardous)	Negligible	0.5%	In 2021 landfill capacity for non-hazardous waste in both counties was 714,000m ³ . Development non-hazardous waste before mitigation approx. 3,857.2m ³ .

Materials

- 13.5.8 During construction there will be a demand for raw materials that will have an adverse effect of reducing supplies, though recycled materials should be used where practical.
- 13.5.9 Estimates of the quantities of construction materials have not yet been completed and will be determined during the detailed design stage of the Proposed Development and will be further refined as the design development progresses and more information becomes available.
- 13.5.10 The use of prefabricated lodges will significantly reduce the demand for materials and the reuse of suitable inert materials on site will significantly reduce any need for soil, stones and aggregates.
- 13.5.11 The magnitude of impact for materials, based on the criteria in **Table 13.7** and on what is known, is highly unlikely to be significant. The magnitude of impact has therefore been judged to be **Moderate** for all types of materials outlined.

Identified receptors and their sensitivities

- 13.5.12 Receptor sensitivity can be determined using the IEMA Guidance (2020). Cumulative future waste generation rates have been used for each waste type (C&I and CD&E) from 2021 to 2031, which have been outlined in the future baseline section. For CD&E waste, this includes inert and non-hazardous waste based on BRE 2016 assumptions.
- 13.5.13 The totals expected to be deposited in landfill for these cumulative years have been compared to the 2021 landfill capacities to determine the reduction in landfill void capacity as a result of future waste generation. The waste receptor sensitivity has been based on the IEMA guidance as outlined above.
- 13.5.14 **Table 13.21** to **Table 13.23** provide a summary of the identified receptors and their sensitivity for waste and materials respectively, based on the information outlined in the

baseline section. Inert and non-hazardous landfill receptors in both West Sussex and Hampshire have a very high sensitivity due to West Sussex’s aspirations for ‘zero waste to landfill’ by 2031 and Hampshire’s target of no additional capacity for inert wastes by 2030. Non-hazardous landfill capacity is expected to be available in Hampshire and will be approximately 2.1 million tonnes/year by 2030. Hazardous landfill receptors England also have a very high sensitivity, considering the future generation rates for West Sussex and England respectively.

Table 13.21: Identified inert and non-hazardous waste receptors sensitivity.

Receptor	Sensitivity	Justification
West Sussex and Hampshire Inert Landfill Void	Very High	Landfill capacity for inert waste for both counties by 2030/31 is expected to be zero.
West Sussex and Hampshire Non-hazardous Landfill Void	Negligible	Landfill capacity for Hampshire only is expected to be 2.1mtpa by 2030. No landfill capacity in West Sussex should be anticipated.

Table 13.22: Identified hazardous waste receptors sensitivity.

Receptor	Sensitivity	Justification
England hazardous void	Very High	Total hazardous waste input within England up to the year 2029 is expected to deplete current capacity as of 2018 by 28%, resulting in very high receptor sensitivity.

Table 13.23: Identified material receptors sensitivity.

Receptor	Sensitivity	Justification
Aggregates	Medium	Information provided by Mineral Products Association (MPA) suggests that there may be a lack of some aggregates such as sand and gravel in future years. Other aggregate types appear to have stable supplies and are also available through recycled sources.
Asphalt	Negligible	MPA state that asphalt is sustainable due to its 100% recyclable use in new asphalt. Sensitivity is therefore considered to be negligible.
Concrete	Low	Imports of cement have been stable and have increased over recent years.
Timber	Low	Timber supplies have fluctuated recently. However, many timber sources are considered to be sustainable overall. It is recommended that recycled or other sustainable certified sources such as FSC certified timber products are used in the Proposed Development to minimise environmental impact.

13.5.15 The significance of effects is determined by the criteria outlined in **Table 13.9**. This is all summarised in **Table 13.24** below. The effects are considered to be **Not Significant**.

Table 13.24: Summary of known construction effects before mitigation.

Receptor	Sensitivity	Description of Effect	Magnitude of Impact	Significance of Effect
Waste				
Inert Landfill	Very High	Pressure on regional landfill arising from the Proposed Development reducing landfill vid capacities	Minor	Moderate (adverse)
Non-hazardous Landfill	Negligible		Negligible	Neutral (adverse)
Hazardous Landfill	Very High	Pressure on national hazardous landfill capacities	Unknown	Unknown
Materials				
Aggregates	Medium	Pressure on supplies/availability of materials	Moderate	Moderate (adverse)
Asphalt	Negligible		Moderate	Slight (adverse)
Concrete	Low		Moderate	Slight (adverse)
Timber	Low		Moderate	Slight (adverse)

Operational Effects

- 13.5.16 There is a need to ensure that waste is removed from the Proposed Development and back of house areas once the site is operational. This will prevent hygiene issues. The OWMP (**Appendix 13.1**) provides an overview on how operational waste will be managed at the Proposed Development to comply with regional requirements.
- 13.5.17 Calculations showing the expected waste arising from the Proposed Development have been undertaken. These calculations use figures that the council has reported to DEFRA.
- 13.5.18 Further calculations to show the quantity of waste that will be generated by the activities undertaken in the boathouse, facilities building, and maintenance building have also been provided. These calculations are based on tables provided within BS5906 and are known to be conservative. The actual quantities of waste generated by non-residential activities at the site will be determined only once the site is fully operational.
- 13.5.19 The magnitude of impact is determined based on **Table 13.5**, comparing the generation of waste from the Proposed Development against remaining non-hazardous landfill capacity. In a worst-case scenario, all waste including all recyclables would be sent to landfill. This is shown in **Table 13.25**.

Table 13.25: Estimated operational waste quantities at full build of the proposed development.

Land Use	Total Estimated Waste (litres/ week)	2020/2021 Amount of waste separated for recycling, composting and reuse (%)	Recyclable Waste (litres/ week)	Residual Waste (litres/week)
308 Lodges (residential)	8,983	44.5	3,997.8	4,985.2
Non-residential waste (i.e., boathouse, facilities building and maintenance building)	4,675	-	-	-
Total	13,658			

13.5.20 **Table 13.26** shows the magnitude of impact if all waste was sent to landfill within West Sussex only. Due to the location of the site it is expected that any private waste contractors would be easily able to transport waste elsewhere if required. **Table 13.27** provides a summary of the known operational effects before any mitigation measures have been implemented.

Table 13.26: Magnitude of impact from waste generated when site is fully operational.

	Reduction in Landfill Void Capacity	Magnitude of Impact (worst case)	Justification
Operational Waste (Non-hazardous)	11.9%	Major	In 2021 landfill capacity for non-hazardous waste in West Sussex was 115,000m ³ .

Table 13.27: Summary of known operational effects before mitigation.

Receptor	Sensitivity	Description of Effect	Magnitude of Impact	Significance of Effect
Non-hazardous Landfill	Negligible	Pressure on regional landfills arising from the Proposed Development reducing landfill void capacity.	Major	Slight (adverse)

13.5.21 Prior to mitigation measures the magnitude of impact will be major for West Sussex non-hazardous landfills from the operational stage of the Proposed Development. West Sussex has been confirmed to have limited non-hazardous waste landfill capacity based

on forecasting with a target of 'zero waste to landfill' by 2031. It is expected that the majority of the non-hazardous operational waste will be treated elsewhere or by alternative measures such as waste-to-energy. Overall, the generation of operational waste by the Proposed Development will have a **Slight adverse** effect in terms of significance which is considered to be **Not Significant**.

11.3 Mitigation

13.6.1 To reduce the effects from both construction and operational waste, mitigation measures are explained in further detail within the OWMP (**Appendix 13.1**). These measures include reducing waste and materials, and ensuring reuse and recycling options and targets are in line with local and national legislation, policy and guidance. Best practice measures outlined should allow the developer to achieve material and waste savings and reduce any associated environmental effects.

Construction Waste

13.6.2 The largest quantity of waste produced during the construction phase will be excavation waste. In order to mitigate any impacts resulting from this excavated waste, as much as possible of it will be reused. In order to achieve the levels required on site and to provide visual screening for the site, there will be a requirement for clean and uncontaminated suitable material. Cut and fill calculations show that the site will produce 56,494m³ of excavated material. This material will be tested and if deemed suitable it will be reused. To achieve the levels required on site for the Proposed Development it has been calculated that 56,700m³ of fill material will be required.

13.6.3 A more detailed breakdown of the waste generated, and measures and actions to be taken to mitigate any effect from waste generation during construction has been provided within the OWMP (**Appendix 13.1**). The OWMP contains recommendations and best practice guidance for the management of construction and demolition waste onsite to help increase recovery and recycling rates, thereby reducing the quantities of waste that could potentially be landfilled.

13.6.4 The Principal Contractor will be responsible for waste management and all contractors will take reasonable steps to ensure that all waste from the Proposed Development is dealt with in accordance with the waste duty of care requirements.

13.6.5 All materials will be handled efficiently to reduce wastage and all waste arisings from the Proposed Development will be managed appropriately.

13.6.6 Checks will be undertaken to ensure that all waste carriers are registered to convey any waste materials offsite to a suitable permitted facility. All waste transfer notes, and hazardous waste consignment notes will be completed correctly, and records kept for the required amount of time.

13.6.7 All waste arisings will be segregated wherever possible to ensure that the most appropriate method of reuse, recycling or disposal can be used.

Specific areas will be allocated and labelled to facilitate the segregation of waste for potential reuse, recycling and recovery.

Hazardous waste will be stored separately from non-hazardous waste to avoid contamination in line with the Hazardous Waste Regulations.

Packaging waste will be recovered and recycled wherever possible in accordance with Packaging legislation.

Recycling and waste skips will be kept clean and will be clearly marked to reduce the contamination of materials.

Designated waste storage areas will be isolated from surface water drainage wherever feasible. Waste containers will be covered to prevent dust and litter being blown out and rainwater accumulating.

Training will be provided for all site personnel to inform them of the correct disposal routes for materials.

Regular checks will be undertaken by the site manager or a nominated member of staff to ensure that waste is being managed appropriately. This will include inspections of containers to ensure they are being used correctly and being replaced when full.

Material Management

- 13.6.8 The developer will establish a system to ensure that the correct quantities of materials are ordered. This will both reduce the risk of ordering excessive quantities of materials and reduce the quantity of unused materials being disposed of.
- 13.6.9 Dedicated areas will be created that allow the correct storage of new building materials and where any excavated materials can be stockpiled prior to reuse elsewhere on site. Areas will be designed to reduce the risk of contamination or spoiling. Stockpiles of excavated materials will be managed to ensure no impact to the environment and to limit any deterioration of quality.
- 13.6.10 Timely ordering of materials will reduce the time that materials are stored on-site. This will also reduce the risk of spoiling.
- 13.6.11 Recycled materials will be used wherever possible to reduce the demand for virgin materials. Recycled materials may come from off-site or onsite.

Operational

- 13.6.12 Operational waste is currently generated by the park by residents and back of house activities. As the park in its current layout and the Proposed Development both have 308 lodges there should not be a significant increase in the quantities of operational waste generated. Any increase will be as a result of increased occupancy on site.
- 13.6.13 It will be ensured that adequate provision is made for clean and efficient waste management on the Proposed Development. The OWMP (**Appendix 13.1**) provides further details regarding how operational waste will be managed effectively and in accordance with national, regional and local legislation, policy and guidance.
- 13.6.14 Waste receptacles will be provided in suitable areas around the Proposed Development. The number and type of waste receptacle provided will comply with guidance provided by Chichester District Council.

11.3 Summary of effects

- 13.7.1 This section outlines the residual effects that remain once mitigation measures have been applied.
- 13.7.2 To better understand the waste types and quantities that will be generated during the demolition phase, a pre-demolition survey will be required.
- 13.7.3 **Table 13.28** provides a summary of the magnitude of impact both before and after any mitigation has been implemented.
- 13.7.4 The significance of any effect has been provided for the use of both construction, demolition and excavation wastes, and the use of materials in **Table 13.29** and **Table 13.30**. The significance of these effects has been provided both before and after mitigation. Overall, the significance of effect is considered to be **Not Significant**.

Table 13.28: Magnitude of impact before and after mitigation of construction demolition and excavation waste.

Type	Magnitude of Impact before Mitigation (worst case)	Magnitude of Impact after Mitigation	Justification
Waste			
Inert Landfill	Minor	Negligible	Reuse of excavated materials will result in significant reduction in the quantities of inert waste sent to landfill. Inert waste can also be sent to permitted facilities to be treated for reuse.
Non-hazardous Landfill	Negligible	Negligible	No change to magnitude. However, by using best practice in waste management, the quantity of non-hazardous waste sent to landfill will be significantly reduced.
Hazardous Landfill	-	-	Undertaking appropriate assessment and segregation of hazardous wastes will reduce the quantities to be sent to landfill.
Materials			
Aggregates	Moderate	Minor	Establishing a system for ordering the correct quantities of materials at the appropriate time, good storage and the use of recycled material where appropriate will reduce the quantities of materials required.
Asphalt	Moderate	Minor	
Concrete	Moderate	Minor	
Timber	Moderate	Minor	

Table 13.29: Summary of residual effects of construction demolition and excavation waste on the proposed development.

Receptors	Description of Effect	Significance of Effect before Mitigation	Supplementary Mitigation	Residual Significance of Effect
Inert Landfill Void (regionally)	Pressure on regional waste management infrastructure to collect and manage CD&E waste arisings from the construction of the Proposed Development throughout the phases.	Moderate (adverse)	An OWMP has been developed to be implemented and developed during construction to increase recycling and reduce waste. In addition, as part of the design, measures to design out waste have been considered.	Slight (adverse)
Non-hazardous Landfill Void (regionally)	Pressure on regional waste management infrastructure to collect and manage CD&E waste arisings from the construction of the Proposed Development throughout the phases.	Neutral (adverse)	An OWMP has been developed to be implemented and developed during construction to increase recycling and reduce waste. In addition, as part of the design, measures to design out waste have been considered.	Neutral (adverse)
Hazardous Landfill Void (Nationally)	Pressure on regional waste management infrastructure to collect and manage CD&E waste arisings from the construction of the Proposed Development throughout the phases.	-	An OWMP has been developed to be implemented and developed during construction to increase recycling and reduce waste. In addition, as part of the design, measures to design out waste have been considered.	

Table 13.30: Summary of residual effects of material usage on the proposed development.

Receptors	Description of Effect	Significance of Effect before Mitigation	Supplementary Mitigation	Residual Significance of Effect
Consumption of Materials	Depleting of natural resources that will result in either temporary or permanent loss within the natural environment	Slight to Moderate (adverse)	The OWMP outlines how materials will be managed and how recycled materials will be used where possible.	Slight (adverse)

- 13.7.5 The magnitude of impact from operational waste arisings is calculated including mitigation reductions (**Table 13.31**). For operational wastes, mitigations measures are considered to be the diversion of the recyclable waste from landfill.
- 13.7.6 In a best case scenario all recyclables will be diverted from landfill and suitable non-recyclable wastes will be diverted to an alternative means to treatment or to a waste to energy facility. **Table 13.32** provides a summary of the effects from operational waste both before and following mitigation. Overall, the significance of effect is considered to be **Not Significant**.

Table 13.31: Magnitude of impact before and after mitigation of operational waste generated when site is fully operational.

Receptors	Magnitude of Impact before Mitigation (worst case)	Magnitude of Impact after Mitigation	Justification
Operational Waste to Non-hazardous Landfill	Major (11.9%)	Moderate (6 – 10 %)	By ensuring that waste is recycled and providing appropriate bins the quantity going to landfill will be significantly reduced

Table 13.32: Summary of residual effects during operation.

Receptors	Description of Effect	Significance of Effect before Mitigation	Supplementary Mitigation	Residual Significance of Effect
Non-hazardous Landfill Void	Pressure on regional area to collect and manage residual waste arisings from the Proposed Development.	Slight (adverse)	The OWMP outlines the measures to ensure appropriate storage and collection of wastes.	Slight (adverse)

11.3 References

- Chichester District Council Waste and Recycling Collection Policy V2 February 2023
- Chichester District Council Waste Storage and Collection Guidance for New Housing Developments within the Chichester District.
- Complete Asbestos Solutions, Refurbishment and Demolition Survey of Amusement Building, September 2021
- CMJ Consultants, Asbestos Survey of Medmerry Park, October 2021
- Forest Research (2020) UK Wood Production and Trade: provisional figures, 2021
- Hampshire Minerals and Waste Plan (October 2013)
- IEMA (2020) Materials and Waste in Environmental Impact Assessment
- Minerals Products Association (2018) Profile of the UK Mineral Products Industry
- Tuffin Ferraby Taylor LLP,
- Waste Data Interrogator/Environment Agency (2018) Remaining Landfill Capacity 2021 for England
- Waste Data Interrogator/Environment Agency (2018) Waste Summary Tables for England 2021
- West Sussex Minerals and Waste Safeguarding Guidance March 2020
- West Sussex Waste Local Plan (April 2014).

12 SOCIOECONOMICS

11.1 Introduction

- 14.1.1 This chapter provides an assessment of the key socio-economic impacts associated with the Proposed Development.
- 14.1.2 The main socio-economic issues covered in this chapter include:
 - The extent of the main area of impact of the Proposed Development.
 - Current economic and labour market conditions within the defined area of impact.
 - Temporary construction employment generated by the Proposed Development.
 - Contribution of the Proposed Development to the local tourism economy in terms of additional expenditure and operational employment.
- 14.1.3 The assessment also identifies the role of appropriate mitigation measures to reduce any negative socio-economic effects of the Proposed Development, before the residual impact of the Proposed Development is considered.
- 14.1.4 This chapter was prepared by Lichfields.

Area(s) of Impact

- 14.1.5 The primary area of socio-economic impact has been taken to constitute the local authority area of Chichester. This area is where the majority of impacts of the Proposed Development will be felt, and it also allows for use of a range of data sources, given that many of these sources apply local authority boundaries.
- 14.1.6 The approach of this assessment also considers the localised impacts of the Proposed Development, which will be experienced primarily in the Chichester 013 Middle Super Output Area (MSOA), where the site is located, as illustrated in **Figure 14.1**.

11.2 Relevant legislation, planning policy and guidance

- 14.2.1 This impact assessment has been undertaken in accordance with current applicable international and national legislation, and national and regional plans and policies relating to material resources and waste. A summary of relevant legislation, policies and guidance has been provided **Table 14.1** below:

Table 14.1: Legislation, planning policy and guidance relevant to socio-economics.

Document	Summary
Planning Policy	
National Planning Policy Framework 2021.	The National Planning Policy Framework (NPPF, July 2021) sets out the Government’s planning policies for England, which underpin both plan-making and decision-taking. Chapter 2, “Achieving sustainable development”, places an emphasis on the importance of promoting sustainable

Document	Summary
	<p>development. To achieve sustainable development, paragraph 7 states that the planning system has three overarching objectives which need to be pursued, including:</p> <p>“An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth, innovation and improve productivity; and by identifying and coordinating the provision of infrastructure;</p> <p>“A social objective – to support a strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural wellbeing; and,</p> <p>“An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”</p> <p>The NPPF supports the creation of conditions in which businesses can invest, expand and adapt. Paragraph 81 states that “significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future.” Notably, the requirement for significant weight is not qualified, and there is no justification for reducing weight because a benefit may be temporary.</p>
Local Policy and Guidance	
<p>Adopted Chichester Local Plan 2014-2029.</p>	<p>The Chichester Local Plan 2014-2029 (adopted 14 July 2015) sets out a Vision for the District by 2029, as a place where people can:</p> <p>“Find a range of jobs that match different skills and pay levels and meet their aspirations for employment; Use their entrepreneurial flair to start and grow creative, innovative and competitive businesses.”</p> <p>The Local Plan includes the following objective in relation to the Economy:</p> <p><i>“A strong local economy where businesses can thrive and prosper.”</i></p> <p>The Plan’s vision for the Manhood Peninsula, where Medmerry is located, includes the following statement:</p> <p>“The local visitor economy will develop niche markets including green tourism, reflecting the area’s natural</p>

Document	Summary
	<p>assets and shift from a day trip destination to one which encourages short stay breaks.” (paragraph 3.9).</p> <p>Paragraph 16.25 notes the importance of visitors in supporting a range of facilities and services, “<i>which are important to the local economy and enhance its attractiveness as a location for businesses and residents.</i>”</p> <p>However, paragraph 16.25 identifies a lack of suitable tourist accommodation in the district:</p> <p>“...due to a lack of suitable accommodation an insufficient number of tourists are able to stay overnight. To support the visitor economy, new tourist accommodation and attractions will be encouraged in areas that can accommodate additional visitor numbers without detriment to the environment. This will enable development and provide facilities that could extend the tourist season and also benefit the local community.”</p> <p>Policy 3 (The Economy and Employment Provision) includes a commitment to support and promote “<i>a high quality tourism economy</i>”.</p> <p>Policy 30 (Built Tourist and Leisure Development) includes the following requirements for built tourism and leisure development, including tourist accommodation:</p> <p>“It provides a high quality attraction or accommodation; and, Encourages an extended tourist season”.</p>
<p>Emerging Chichester Local Plan 2021-2039.</p>	<p>Regulation 19 Consultation on the emerging Chichester Local Plan took place between 3rd February and 17th March 2023.</p> <p>Draft Objective 4 of the emerging Local Plan relates to employment and the economy: “to support the delivery of a strong, thriving and diverse economy, improving job opportunities for all skill levels while supporting a move to a diverse and low carbon economy.” Tourism is identified as a key employment sector.</p> <p>The draft Plan’s aspirations for the Manhood Peninsula include the ambition for the visitor economy to develop niche markets including green tourism and for the area “<i>to shift from a day trip destination to one which encourages short stay breaks</i>”. It also states that local industries, including tourism, will flourish.</p>
<p>A Prosperous and Sustainable Economy: Economic Development Strategy for Chichester District 2022-2024.</p>	<p>The Economic Development Strategy (EDS) for Chichester District sets out a strategy for the following priority areas of focus in the local economy:</p> <p>Ongoing delivery of Inward Investment Delivery Plans to promote the district as open for business and on supporting the high street.</p> <p>Horticulture.</p> <p>Viticulture.</p> <p>The visitor economy.</p>

Document	Summary
	<p>It prioritises the creation of a more flexible economy that can respond quickly to changed economic and organisational conditions, such as those associated with Brexit, Covid-19 and the decline in the retail sector, and their respective impacts on local supply chains and recruitment. It therefore recommends a “<i>targeted approach to supporting (high growth potential) indigenous businesses: horticulture, viticulture and the visitor economy</i>” (page 3).</p> <p>In describing Chichester’s characteristics, the EDS highlights the district’s reputation for its countryside and theatres, galleries, museums and beaches which “<i>support a strong visitor sector which contributes £460 m per year to the District’s economy</i>” (page 4). The wide-ranging events and festivals hosted in the district attracts 6.5 million every year, demonstrating the strong existing visitor economy, and its potential to further capitalise on its natural assets.</p> <p>The fourth priority of the EDS is to “make best use of the district’s natural and cultural assets” (page 9). To meet this priority, its aims include:</p> <ul style="list-style-type: none"> “Encourage coordinated, high value visitor packages and to increase the value of tourism and culture to the economy through supporting the emerging Tourism and Cultural Strategy work; and, “Support the development of a comprehensive list of the cultural and tourism offer” (page 9).
<p>West Sussex County Council: Economy Reset Plan 2020-2024.</p>	<p>The West Sussex County Council Economy Reset Plan was prepared in November 2020 to establish a ‘reset’ plan to enable the County Council to respond to challenges facing the broader economy such as Brexit, Covid-19 and challenges relating to unemployment. The Plan included nine priority themes, as follows:</p> <ul style="list-style-type: none"> “Themes 1-3 reflect the spatial economic challenges for Crawley and the wider Gatwick Diamond; and for the coastal and rural economies; “Themes 4-5 focus on the fundamental platforms of business start-ups, existing businesses, and employment and skills; “Themes 6-7 focus on two key sectors hit hard, the visitor economy, with links to hospitality; and the health and social care market, under considerable strain from Covid-19; and, “Themes 8-9 focus on the opportunities we are keen to embrace around digital infrastructure and the application of digital technology to boost business productivity and enhance digital skills; and the importance of embedding climate change and the environment in the reset approach.” <p>Theme 2 (protect and revive coastal towns) details one of the challenges facing this area related to coastal towns being dependent on hospitality and tourism. To respond to</p>

Document	Summary
	<p>the challenges facing coastal towns, the Council will undertake steps to support investment and create the conditions for start-ups, support town centre recovery, and secure infrastructure investment for strategic transport and digital infrastructure.</p> <p>The Plan's sixth theme is to protect and revive tourism and the visitor economy following Covid-19. It states that "sustainable and responsible tourism should underpin the approach to help secure for the longer term the environmental gains from the Covid-19 crisis, such as supporting natural capital projects, improvements in air quality, increased access to nature and increased use of sustainable active travel" (page 21).</p>
<p>Gatwick 360° The Coast to Capital Strategic Economic Plan 2018-2030.</p>	<p>The Coast to Capital Strategic Economic Plan (SEP) identifies four functional economic hubs within the Plan Area that each have distinctive characteristics. It identifies different growth and development opportunities within one of the hubs, the County of West Sussex, and highlights the "growing tourism economy centred around the natural environment" (page 9) in Chichester.</p> <p>The SEP sets eight economic priorities for the Coast to Capital area. The following are relevant to this socio-economic assessment:</p> <ul style="list-style-type: none"> "Priority 2: Develop business infrastructure and support; "Priority 3: Invest in sustainable growth; and, "Priority 8: Build a strong national and international profile." <p>As part of Priority 8, the SEP has an ambition to "coordinate work with active partners in inward investment and tourism, to establish an alliance of organisations focused on developing a strong brand proposition" (page 53).</p>
<p>Chichester District Council Corporate Plan 2022-2025.</p>	<p>The Chichester District Council's Corporate Plan's mission is "to support our communities by enabling a choice of quality housing to high sustainable standards, promoting growth and inward investment which protects the environment, and working with partners to maintain the outstanding quality of life available to our residents" (page 3).</p> <p>Under the Thriving Economy priority, the Plan aims to "promote the visitor offer that the city, market towns and rural communities across our district can provide" (page 11).</p>
<p>Experience West Sussex Partnership Strategic Priorities & Objectives April 2022 to March 2024.</p>	<p>The Experience West Sussex Partnership's strategic priorities relate to supporting the sector's recovery and supporting the growth in overnight staying visitors. In addition to this, the Partnership intends to highlight the region's natural assets and increase the delivery of a more responsible tourism with a lower environmental impact.</p>

11.3 Consultation

14.3.1 In order to inform this socio-economic assessment, Lichfields consulted with the Economic Development Officer at Chichester District Council and Partnership Manager at Experience West Sussex Partnership. These discussions took place via Microsoft Teams in February and March 2023 and provided insight into the views of these key stakeholders in respect of the contribution of the tourism sector to the local economy.

Table 14.2: Consultee comments

Consultee	Key issues raised	Actions in response to consultee comments
<p>Economic Development Officer at Chichester District Council (meeting on Microsoft Teams on 27 February 2023).</p>	<p>The Council's Economic Development Team recognises the importance of tourism for the local economy.</p> <p>Tourism and horticulture are the two key employers in the district.</p> <p>The Council's Economic Development Strategy includes the aims to encourage high value tourism and to treat Chichester's high quality natural environment as an economic asset, not an obstacle.</p> <p>Visitor attractions in the local area, including Goodwood, often bemoan the lack of high quality tourism accommodation in the area.</p> <p>Visitors are becoming more discerning. As well as high quality accommodation visitors are increasingly looking for tourism providers to have an environmental strategy, contributing to a low carbon economy.</p>	<p>The Proposed Development will support and contribute towards growing the tourism economy by providing high quality holiday accommodation, thereby filling the gap in the local area.</p> <p>The other chapters of this ES provide information on the environmental focus and benefits of the Proposed Development.</p>
<p>Partnership Manager at Experience West Sussex Partnership (meeting on Microsoft Teams on 1 March 2023).</p>	<p>There is scope for more tourism accommodation, and high quality accommodation in particular, in the region.</p> <p>Other providers have had success in attracting visitors out-of-season by holding festivals during the winter months.</p>	<p>The Proposed Development will provide high quality accommodation, which will help to support tourism activity and will support health and wellbeing, including by offering accommodation to those</p>

Consultee	Key issues raised	Actions in response to consultee comments
	<p>The West Sussex section of the England Coast Path is due to open this year, which will help to drive visitors to the area. This will create additional demand for holiday accommodation.</p> <p>Tourism activities that support health and wellbeing are particularly welcomed.</p> <p>It would be good if the Proposed Development could provide opportunities for education and training for visitors and/or staff.</p> <p>It would be beneficial if the Proposed Development could provide additional benefits for the community, e.g., hosting Parkrun or allowing community use of facilities (even if just for some events).</p> <p>Support for local supply chains would be welcomed.</p>	<p>using the England Coast Path.</p>

6.10 Approach

- 14.4.1 This section sets out the methodological approach used to consider the socio-economic effects of the Proposed Development, including outlining the adopted “area(s) of impact” and “significance criteria” for the assessment.
- 14.4.2 The report draws on Lichfields’ Evaluate methodology, which provides an analytical framework for assessing the economic benefits arising from new development, as summarised in **Figure 14.2**.
- 14.4.3 The analysis focuses on the key quantifiable economic impacts of the Proposed Development during the construction phase and after completion in the context of the role that a leisure development of this type has in supporting economic growth generally.
- 14.4.4 For proposed developments of this type, the scale and type of economic impacts are determined by:

The scale of capital investment associated with the development, including any significant infrastructure requirements, which generates employment and economic output at the construction phase.

The quantum and type of accommodation units proposed, which lead to additional operational employment at the site, and generates additional expenditure from visitors and by Cove Communities itself.

- 14.4.5 The findings of this economic assessment should be positioned in the wider context relating to the role of tourism in facilitating the post Covid-19 economic recovery. The tourism and hospitality sector was disproportionately affected by repeated periods of lockdown and travel restrictions for both domestic and international holidaymakers. However, it is an area of the economy that is central to the recovery.

Assessment Methodology

- 14.4.6 The assessment first establishes the baseline position in terms of local demographic and economic conditions before examining the potential impacts of the Proposed Development and their significance during the construction and operational phases respectively. Opportunities for the mitigation of any adverse effects are then examined, including any built-in elements of the Proposed Development.
- 14.4.7 This assessment draws upon a range of data sources including nationally published statistics from the Office of National Statistics (ONS), Visit Britain, as well as local authority statistics, data from the 2011 and 2021 Census and other published national statistics.

Significance criteria

- 14.4.8 Since there are no standard criteria for assessing the significance of socio-economic effects, these impacts are assessed based on the scale of increase over the baseline position, as well as the nature and context of the effects, taking account of the value and sensitivity of the identified receptor. Key considerations include the nature and scale of economic impact, in terms of the level of employment generation and additional expenditure, resultant impact on the labour market and effect on existing levels of deprivation. The approach taken is summarised below.

Nature of effect

- 14.4.9 The socio-economic effects of the Proposed Development are identified as beneficial, negligible or adverse (**Table 14.3**). The duration of the socio-economic effects is considered against whether they are temporary or permanent. Due to their nature, all operational effects are considered to be permanent unless otherwise stated. In terms of temporary effects, the duration can be determined to be short term (less than 5 years), medium term (5-10 years), or long term (more than 10 years).

Table 14.3: Nature of effect descriptors.

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.

Term	Nature of effect descriptors
Short-term	Effects that persist only for a short time, e.g., during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases, a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

Magnitude of change

14.4.10 The following terms in **Table 14.4** are used to define the magnitude of the change identified.

Table 14.4: Definition of impact magnitude

Magnitude	Summary
Large	Where the Proposed Development could be expected to have considerable impacts (by extent, duration or magnitude) or of more than local significance on the identified receptors.
Medium	Where the Proposed Development could be expected to have noticeable impacts on the identified receptors which may be considered significant.
Small	Where the Proposed Development could be expected to result in a small, very short or highly localised impact on the identified receptors.
Negligible	Where no discernible impact is expected as a result of the Proposed Development on the identified receptors.

Receptor sensitivity

14.4.11 Sensitivity varies between receptors, and qualified judgment is required to establish where the receptors sit on a scale from low sensitivity (negligible/small: easily adapt to change) to high sensitivity (do not easily adapt to change). In identifying the sensitivity of receptors, factors including the capacity to accept or respond to change and the local position, local needs and priority groups are taken into account.

Determination of significance

14.4.12 A matrix identifying the significance of the potential effects is set out in **Table 14.5**.

Table 14.5: Matrix for determining the significance of effects.

		Sensitivity of receptor / environment to change or effect			
		Large	Medium	Small	Negligible
Magnitude of change / effect	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

14.4.13 Based on the principles above, **Table 14.6** sets out the receptors falling under each topic area and the approach to determining the magnitude of effects for the purposes of this assessment.

14.4.14 Those that result in a Major effect are considered **Significant**.

Table 14.6: Definition of impacts in relation to the Proposed Development

Significance of effect	Topic	Beneficial	Adverse
Major	Construction jobs	Employment generation >100 FTE jobs.	Employment loss >100 Full Time Equivalent (FTE) jobs.
	Operational jobs	Employment generation >75 FTE jobs. No displacement of existing employment-generating activities.	Employment loss >75 FTE jobs Complete displacement of activities with no option for relocation; long-term displacement.
	Expenditure	Substantial increase in visitor expenditure >£5 million per annum.	Substantial reduction in visitor expenditure >£5 million per annum.
	Labour market	Potential for new employment opportunities to reduce unemployment by >5%.	Potential for increase in unemployment by >5%.
	Deprivation	Substantial reduction in the barriers to income and access to employment.	Substantial increase in the barriers to income and access to employment.
Moderate	Construction jobs	Employment generation 40-75 FTE jobs.	Employment loss 40-75 FTE jobs.
	Operational jobs	Employment generation 40-75 FTE jobs. No displacement of existing employment-generating activities.	Employment loss 40-75 FTE jobs. Complete displacement of activities with options for relocation; medium to long term displacement.
	Expenditure	Moderate increase in visitor expenditure £1-5 million per annum.	Moderate reduction in visitor expenditure £1-5 million per annum.
	Labour market	Potential for new employment opportunities to reduce unemployment by 1-5%.	Potential for increase in unemployment of 1-5%.
	Deprivation	Moderate reduction in the barriers to income and access to employment.	Moderate increase in the barriers to income and access to employment.
Minor	Construction jobs	Employment generation 10-40 FTE jobs.	Employment loss 10-40 FTE jobs.
	Operational jobs	Employment generation 10-40 FTE jobs.	Employment loss 10-40 FTE jobs.

Significance of effect	Topic	Beneficial	Adverse
		No displacement of existing employment-generating activities.	Partial displacement of activities with options for relocation; short to medium term displacement.
	Expenditure	Minor increase in visitor expenditure <£1 million per annum.	Minor reduction in visitor expenditure <£1 million per annum.
	Labour market	Potential for new employment opportunities to reduce unemployment by <1%.	Potential for increase in unemployment of <1%.
	Deprivation	Minor reduction in the barriers to income and access to employment.	Minor increase in the barriers to income and access to employment.
Negligible	All	Minimal change or change that is difficult to measure.	Minimal change or change that is difficult to measure.

Source: Lichfields

Difficulties and uncertainties

14.4.15 The key assumptions applied in this assessment are as follows:

The assessment of effects is based on the figures and plans provided.

The assessment of employment associated with the construction period is based on an estimated construction cost.

14.4.16 This assessment takes account of a comprehensive data set for Chichester and the area located within the Chichester 013 MSOA. However, some of the baseline data is only available at a local authority or regional level, which might not necessarily accurately reflect the local economic and demographic conditions in the immediate vicinity of the site. Therefore, whilst the majority of impacts have been assessed for Chichester as a whole, it has not been possible to provide the same level of detail for the smaller MSOA area. The available data for the Chichester 013 MSOA enables an assessment of the potential impacts of the Proposed Development to be undertaken in relation to the key socio-economic indicators for the area, including population, economic activity, and local services and facilities. The identified data sources are therefore considered to be appropriate.

14.4.17 Secondly, the baseline data that has been taken from published sources has not been verified by Lichfields. Whilst the latest available data has been used, it should be noted that many data sources are frequently updated and could be subject to change during the course of the planning application process. We also note that data from the 2011 Census may no longer reflect the current position but remains the most accurate source of information in respect of a number of metrics.

Design basis and assumptions

14.4.18 The analysis contained within this chapter is based on the masterplan layout and information provided by Applicant regarding the details of the existing and proposed accommodation units and the quantum/type of additional leisure facilities that are to be provided as part of the Proposed Development.

Existing accommodation and facilities

14.4.19 As set out at **Table 14.7** below, the existing holiday accommodation at Medmerry Holiday Park comprises 244 lodges that are currently in use by guests and 64 lodges that are in poor condition and not available to guests.

14.4.20 Of the 244 lodges that are currently in use, a total of 175 lodges are privately owned and 69 lodges comprise the Park's holiday rental fleet.

14.4.21 Cove Communities estimates that 10% of all lodges in use (24 lodges) are retained for the sole use of private owners and 90% (151 lodges) are let to holiday makers (either sub-let by owners or as part of the Park's rental fleet).

Table 14.7: Existing lodge numbers

Existing lodge numbers	
Owned units - for sole use by owners (10% of units in use)	24
Owned units - sub-let to holiday makers (90% of units in use)	151
Holiday fleet owned and managed by the Park	69
In poor condition and not available to guests	64
Total lodges	308
Total retained for sole use by owners	24
Total let to holiday makers	220
Total in use	244

Source: Cove Communities

14.4.22 The existing facilities provided onsite include:

- The Medmerry Arms food and beverage venue
- Outdoor lido
- Adventure playground
- Crazy golf
- Bicycle hire
- Tennis court
- Dog agility track
- Small convenience shop.

14.4.23 Some existing facilities are open to non-resident members of the public as well as on-site guests. However, few members of the public currently use these facilities.

14.4.24 Medmerry Holiday Park is currently open from April to December, inclusive.

Proposed accommodation and facilities

14.4.25 As set out at **Table 14.8** below, the Proposed Development includes the replacement of all 308 existing lodges, including the 64 units that are currently in poor condition and not available for use.

14.4.26 It is understood that, following the completion of the Proposed Development, Cove Communities will retain a holiday rental fleet of 31 lodges to be managed by the Park, and the remaining 277 lodges will be privately owned.

14.4.27 Reflecting the current patterns of use onsite, Cove Communities estimates that c.10% of the 277 privately owned lodges (27 lodges) will be retained for the sole use of private owners and c.90% (250 lodges) will be sub-let to holiday makers.

14.4.28 As a result, the Proposed Development will result in a 27.7% increase in the number of units that are to be available for rent by holiday makers, and a 12.5% increase in the number of units that are retained for the sole use by their owners.

Table 14.8: Existing and proposed lodge numbers

Lodges	Lodge numbers		
	Current	Future	Change
Owned units - for sole use by owners (10%)	24	27	+3
Owned units - sub-let to holiday makers (90%)	151	250	+99
Holiday fleet owned and managed by the Park	69	31	-38
In poor condition and not available to guests	64	0	-64
Total lodges	308	308	0
Total retained for sole use by owners	24	27	+3 (+12.5%)
Total let to holiday makers	220	277	+61 (+27.7%)
Total in use	244	308	+64 (+26.2%)

Source: Cove Communities

14.4.29 The Proposed Development is expected to provide an enhanced village hub, including:

A new enhanced reception and welcoming area.

A convenience store offer providing small goods and local produce.

A new luxury day spa (including treatment rooms, a fitness suite, adaptable fitness studio, sauna, steam room, nail bar, external spa area with plunge pool.

A new lounge area with beverage offers, cocktail school, an external terrace, and external star gazing pods.

An enhanced food and beverage offer contained within the Medmerry Arms.

14.4.30 These facilities will be made open to the public, although some will need to be booked.

14.4.31 Additional new facilities for use solely by guests staying at the Park are anticipated to include:

Activity lake (with kayaks, canoes, paddle boards, and pedalos)

Waterside beach with lake water swimming

Adventure golf

Paddle tennis

Adventure playground

Open-air swimming pool

Nature/sensory trails

Guest allotments with horticultural classes

Various walking routes.

14.4.32 The Applicant anticipates that the Park will retain its current operating season from April to December, inclusive.

11.5 Existing environment

14.5.1 This section establishes the baseline socio-economic context for the Proposed Development. It highlights key demographic, economic and market trends.

Demographic context

- 14.5.2 The population of Chichester was 124,068 in 2021, having increased by 9.0% from 113,794 residents since 2011¹.
- 14.5.3 The population of MSOA Chichester 013 was 11,629 in 2021, equivalent to 9.4% of the total population of Chichester. The population of this area increased by 8.1% between 2011 and 2021, from 10,760.
- 14.5.4 The 2018-based subnational population projections anticipate that the population of Chichester will increase to 135,093 by the end of the emerging Local Plan period in 2039, representing an increase of 8.9% when compared to the 2021 Census population². The number of residents aged over 65 is projected to increase by 43.7%, such that by 2039, the number of people over the age of 65 will account for 35.8% of the total population in Chichester, compared to 27.1% in 2021. By contrast, there is expected to be a 5.3% decrease in the number of people aged between 16 and 64 over the same period.
- 14.5.5 No population projection figures are available for MSOA Chichester 013. However, if the trends experienced between 2011 and 2021 continue, the area will experience a smaller relative increase in population when compared to the district, given that 33.0% of MSOA 13's population was aged over 65 in 2021 compared with 27.1% in Chichester District.
- 14.5.6 This demographic context will have implications for the future economic wellbeing of the area and points towards the need for additional employment to attract and retain working age people. This will be necessary to ensure that adequate services and amenities can be supported and retained within the area.

Economic and labour market

Tourism ratio

- 14.5.7 The tourism ratio is a good measure of the economic importance of the tourism sector within regions. It highlights the proportion of output of all industries in a county or region that is attributable to tourism expenditure³ and therefore demonstrates how tourism expenditure affects the economic output of a region. This calculation is the result of dividing the total demand (or visitor expenditure) by the total supply (or output of all industries) in each region.
- 14.5.8 The most recently available tourism ratio data is from 2013, when the Surrey East and West Sussex sub-region had a ratio of 4.9%, ranking 7th out of 30 sub-regions in England (i.e. in the top 25%). Surrey East and West Sussex had a higher tourism ratio than the average for the South East region (3.4%).

¹ Census data 2011 and 2021

² Census 2021 and 2018-based sub-national population projections.

³ The tourism ratio is not published as local authority level.

Economic activity and employment

- 14.5.9 Between October 2021 and September 2022, 50,200 residents in Chichester over the age of 16 were economically active (67.7% of those aged between 16 and 64) and 49,100 were in employment (66.1%). In each case, these figures were lower than the averages for the South East (economic activity: 80.4%; in employment: 78.0%) and England (economic activity: 78.7%; in employment: 75.7%)⁴.

Unemployment

- 14.5.10 Between October 2021 and September 2022, model-based unemployment in Chichester for those aged between 16 and 64 was 3.8%. This equated to 1,900 people. This is similar to the national average of 3.7% for England but higher than the average for the South East (3.0%).
- 14.5.11 Among the claimant unemployed (i.e. those claiming Job Seekers Allowance plus those who claim Universal Credit and are required to seek work and be available for work⁵) in Chichester District in January 2023, 55.2% (80 people) were seeking positions in 'elementary' occupations (i.e. those that consist of "*simple and routine tasks which mainly require the use of hand-held tools and often some physical effort*") and 27.6% (40 people) were seeking 'sales and customer services' occupations. Within MSOA Chichester 013, all 10 jobseekers (i.e. 100%) were seeking roles in 'elementary' occupations. It should be noted that the Jobseekers Allowance claimant figures are very low because this data set does not represent a full count of those claiming unemployment related benefits. However, given that data on Claimant Count is not provided by occupation sector, this data is useful in showing the types of occupation that were being sought.
- 14.5.12 The tourism sector is a key provider of jobs in the elementary and customer service sectors. The creation of new jobs as part of the Proposed Development will therefore play an important role in helping to further reduce unemployment within the local area by focusing on these occupations within which there is the greatest need.

Key employment sectors

- 14.5.13 According to BRES data, 62,900 people were in employment in Chichester in 2021, of which 3,015 were employed in MSOA Chichester 013. Compared to the population data set out above, this indicates that MSOA 013 had a disproportionately low level of employment – with 4.8% of the total number of jobs in Chichester, compared to 9.4% of the total population and 8.5% of the working age population.
- 14.5.14 In respect of individual sectors, MSOA Chichester 013 has a particular concentration of workers in the accommodation and food services sector. This is the largest sector by employment numbers in the MSOA, accounting for 14.9% of total employment, which is significantly higher than the average for Chichester (9.5%), the South East (7.2%) and England (7.4%). This underlines the importance of encouraging developments that will support key economic sectors, such as tourism. This data highlights the importance of

⁴ ONS Annual Population Surveys Oct 2021 to Sept 2022

⁵ The Jobseekers Allowance claimant count figure this figure is lower than the model-based unemployment figure which includes all unemployed people, including those that are not claiming any benefits. The two measures of unemployment are therefore not comparable.

Medmerry Holiday Park to the local tourism sector and also to the total employment in MSOA Chichester 013 more generally.

14.5.15 It is noted that the MSOA also has a disproportionately high level of representation in the following sectors (**Table 14.9**):

Construction
Wholesale
Property
Transport and storage
Health

Table 14.9: Employment by sector (2021).

Sector	No jobs in MSOA 013	% total jobs in MSOA 013	% total jobs in Chichester	% total jobs in South East	% total jobs in England
Agriculture, forestry and fishing	0	0.0%	4.8%	1.3%	1.3%
Mining, quarrying and utilities	0	0.0%	0.2%	1.4%	1.1%
Manufacturing	350	11.6%	9.5%	5.7%	7.3%
Construction	350	11.6%	4.8%	5.8%	4.9%
Motor trades	50	1.7%	1.6%	1.8%	1.7%
Wholesale	175	5.8%	2.8%	3.9%	3.6%
Retail	400	13.3%	11.1%	10.1%	9.0%
Transport and storage (inc. postal)	75	2.5%	1.6%	5.1%	5.2%
Accommodation and food services	450	14.9%	9.5%	7.2%	7.4%
Information and communication	100	3.3%	2.4%	5.3%	4.5%
Financial and insurance	25	0.8%	2.0%	2.8%	3.6%
Property	150	5.0%	2.8%	1.8%	2.0%
Professional, scientific and technical	200	6.6%	7.2%	9.2%	9.3%
Business, administration and support services	100	3.3%	6.4%	8.8%	8.9%
Public administration and defence	15	0.5%	4.0%	3.2%	4.1%
Education	200	6.6%	9.5%	9.3%	8.5%

Sector	No jobs in MSOA 013	% total jobs in MSOA 013	% total jobs in Chichester	% total jobs in South East	% total jobs in England
Health	125	4.1%	14.3%	12.7%	13.1%
Arts, entertainment, recreation and other services	250	8.3%	5.6%	4.5%	4.3%

Source: ONS Business Register and Employment Survey (2021).

Economic output by sector

14.5.16 A review of GVA data obtained from Experian Business Strategies⁶ can also be used to underline the economic profile of Chichester.

14.5.17 **Figure 14.3** provides an overview of the contribution of 38 different economic sectors to the total GVA of Chichester in 2022. This data highlights the dominance of real estate as the largest sector (account for 28.5% of total GVA in the local authority area). It also highlights the relative dominance of accommodation and food services, the fifth largest sector in terms of economic output (after real estate, education, public administration and defence, and transport equipment), which accounts for 5.2% of Chichester’s total GVA, equivalent to £175.9 million out of a total of £3.4 billion GVA.

Occupation

14.5.18 ONS Annual Population Survey data indicates that between October 2021 and September 2022, a lower proportion of workers in Chichester were employed in caring, sales and customer services (10.6%) than the South East (13.4%) and England (14.2%) (**Figure 14.4**). Whilst this data is not available at a sub-district level, it is expected that these occupations will have a larger representation in the Chichester 013 MSOA, given the importance of the accommodation and food sector in this local area, as evidenced by the BRES data above.

Deprivation

14.5.19 Deprivation at the local level is measured by the Index of Multiple Deprivation (IMD) (2019) which uses a series of data to rank across seven domains ranging from income to health. Together, these categories produce an overall multiple deprivation score.

14.5.20 In overall terms, Chichester ranks 213 out of the 317 local authorities in England in the IMD, indicating that the district is one of the 35% best performing (least deprived) local authorities in the country⁷.

14.5.21 Chichester ranks within the best performing 50% of authorities (least deprived) in respect of five of the seven metrics that are considered by IMD, performing best in respect of crime (**Figure 14.5**):

Crime (263/317 – within 20% best performing local authorities).

⁶ December 2022 data release

⁷ IMD 2019

Income (233/317 – within 30% best performing local authorities).

Employment (232/317 – within 30% best performing local authorities).

Education, skills and training (226/317 – within 30% best performing local authorities).

Health (208/317 – within 35% best performing local authorities).

14.5.22 LSOA 013B ranks within the best performing 50% of authorities (least deprived) in respect of four of the seven metrics that are considered by IMD, performing best in respect of employment:

Employment (25,953/32,844 – within 25% best performing LSOAs).

Health (25,260/32,844 – within 25% best performing LSOAs).

Income (24,221/32,844 – within 30% best performing LSOAs).

Crime (21,830/32,844 – within 45% best performing LSOAs).

14.5.23 However, it is ranked within the worst performing 50% of authorities (most deprived) in respect of three domains, performing worst in respect of barriers to housing and social services:

Barriers to housing and services (6,432/32,844 – within 20% worst performing LSOAs).

Living environment (14,334/32,844 – within 45% worst performing LSOAs).

Education, skills and training (16,059/32,844 – within 50% worst performing LSOAs).

14.5.24 Both Chichester District and the Chichester 013B LSOA ranked most poorly in relation to the barriers to housing and services domain, which measures the physical and financial accessibility of housing and local services.

14.5.25 Affordability of housing is particularly challenging in the study area, as indicated by median house prices in the year ending September 2022 (see **Table 14.10** below).

14.5.26 The median house price in the Chichester MSOA 013 (£605,000) was 64% higher than the average for the South East region (£370,000) and 120% higher than the England average (£275,000). The median house price for Chichester District (£425,000) was 15% higher than the average for the South East region and 55% higher than the England average.

Table 14.10: Median house prices (year ending September 2022).

	Chichester LSOA 013B	Chichester MSOA 013	Chichester District	South East of England	England
Median house price	£481,375	£605,000	£425,000	£370,000	£275,000

Source: ONS House Price Statistics (March 2023)

Tourism in Chichester

14.5.27 As illustrated in **Table 14.11**, Visit Britain destination-specific data for the period between 2017 and 2019⁸ shows that, on average, tourism visits to Chichester by visitors based in Great Britain amounted to:

5.32 million day and overnight visits per annum.

432,000 overnight trips per annum, comprising 247,000 holiday trips, 149,000 trips to visit friends and relatives (VFR), and 26,000 business trips per annum.

1.1 million nights per annum, comprising 659,000 holiday nights, 355,000 VFR nights, and 78,000 business nights per annum.

The average stay was 2.6 nights (all trips) and 2.7 nights for holiday trips.

Total (day and overnight) tourism expenditure of £207 million per annum.

£67 million expenditure from overnight tourism per annum, comprising £44 million for holiday trips, £14 million for VFR, and £7 million for business trips per annum.

14.5.28 Compared to the data for the period between 2006 and 2008, the Visit Britain data shows that:

The total number of trips to Chichester (for holiday, VFR and business) has increased by 1.1% (from 427,000 overnight trips per annum).

The number of nights has decreased by 24.2% (from 1.5 million per annum) whilst the number of holiday nights decreased by 38.9% (from 1.1 million per annum).

Absolute annual expenditure has increased by 2.6% over the same period (from £65 million per annum) whilst holiday spend has decreased by 2.2% (from £45 million per annum).

14.5.29 The change in tourism activity in Chichester shows that whilst the total number of trips and nights spent in Chichester has decreased over the period from 2006-08 to 2017-19, absolute annual expenditure relating to total trips has slightly increased. Whilst holiday spending has also decreased over the same period, it has fallen at a much slower rate than the number of holiday nights in Chichester. This differential rate of decline has resulted from a 35.3% increase in the average spending per night from £43.83 in 2006-08 to £59.29 per night in 2017-19, and a 1.5% increase in average spending per trip increasing from £152.22 to £154.44 per trip over the same period.

14.5.30 By contrast, the number of nights in England fell by 2% (holiday nights: +4.2%), and the total spending increased by 20.2% (holiday spend: +31.6%). Average spending per trip in England increased by 19.2% to £194.70 whilst average spending per night increased by 22.6% to £65.32. This shows that spending per visitor in Chichester lags behind the national average.

14.5.31 Although the figures for Chichester are lagging behind the national average, this analysis highlights the significance of both day and overnight tourism to the local economy, as well as the importance of different types of tourism. Whilst there is a clear need to encourage all types of tourism, it is apparent that overnight holiday visits by domestic visitors generate higher levels of spending per visit; however, holiday nights have decreased at a much faster rate than total nights in Chichester. This points to the particular importance

⁸ Visit Britain – local authorities spreadsheet: <https://www.visitbritain.org/destination-specific-research>



of seeking to offer a range of high-quality accommodation that is appropriately varied in terms of type, location and price-point in order to meet the demands of overnight visitors.

Table 14.11: Key tourism data for Chichester and England (2017-19).

Great Britain (GB) visits	Visits (million)		Nights (million)		Expenditure (£ million)		Expenditure per visitor (£)	
	Chichester	England	Chichester	England	Chichester	England	Chichester	England
GB based tourism day visits	4.89	1.492.16	-	-	£141.56	£50,326	£28.95	£33.73
GB based overnight total visits	0.432	99.03	1.124	295.17	£66.67	£19,281	£154.33	£194.70
GB based overnight holiday visits	0.247	40.86	0.659	152.08	£44.00	£11,035	£178.14	£238.37

Source: Visit Britain Combined spreadsheet for Local Authorities

Holiday Park Context in the UK

14.5.32 Research commissioned by the UK Caravan & Camping Alliance published in a 2019 report entitled *Pitching the Value*⁹ indicates that domestic visitors to holiday parks in England stayed for an average 4.6 days per trip in 2018. The average length of stay ranged between 4.5 days for all visitors staying in rented or touring accommodation and 5.2 days for those staying in owned accommodation.

Occupancy

14.5.33 According to the UK Caravan & Camping Alliance Report, approximately 52% of holiday parks and campsites in England operate seasonally, the majority of which are open from late March until the end of October, whilst 48% of parks are open all year round.

14.5.34 The highest occupancy rates were achieved in August (70%), whilst the lowest occupancy rate was in January (11%) (**Figure 14.6**).

14.5.35 Medmerry Holiday Park is open from April to December.

14.5.36 As illustrated in Error! Reference source not found., reported occupancy levels for rental units at Medmerry (excluding units that are unfit for use) are significantly higher than the average figures identified by the UK Caravan & Camping Alliance data for holiday parks in England. This difference reflects the position of Medmerry within the marketplace. It is not a traditional holiday park or campsite but instead provides high quality, bespoke built units which plays a specific role in enhancing the local tourism offer.

Existing economic impact of Medmerry Holiday Park

14.5.37 The Park makes a valuable contribution to the local community by supporting employment and attracting expenditure to the local area, as set out below.

Direct jobs

14.5.38 Medmerry Holiday Park currently employs c.12 members of staff in the low season and c.30 staff in the high season.

14.5.39 Information provided by the applicant indicates that a total of 60% of the existing jobs at Medmerry Holiday Park are provided on a full time basis (more than 30 hours per week), whilst the remaining 40% are part time positions. This compares to the position for all industries across Chichester whereby 65% of jobs are full time and 35% are part time. Providing part-time positions can often be important to staff in enabling them to balance family commitments and other interests against their work.

14.5.40 Based on the proportion of full and part-time workers at Medmerry, the number of existing staff is equivalent to 9.6 FTE workers during the low season and 24.0 FTE workers during the high season. On an annual basis, this equates to 5.6 FTE jobs during the low season and 10.0 FTE jobs during the high season, totalling 15.6 FTE jobs across the year (**Table 14.12**).

⁹ UK Caravan & Camping Alliance, *Pitching the Value*: 2019 Economic Benefit Report: Holiday Parks and Campsites England (February 2019)

Table 14.12: Existing employment at Medmerry.

	Low season (7 months)			High season (5 months)		
	Total	Full-time (60%)	Part-time (40%) (equivalent to 0.5 FTE jobs)	Total	Full-time (60%)	Part-time (40%) (equivalent to 0.5 FTE jobs)
No. of jobs	12.0	7.2	4.8	30.0	18.0	12.0
FTE jobs (during low and high season)	9.6	7.2	2.4	24.0	18.0	6.0
FTE jobs (all-year basis)	5.6	-	-	10.0	-	-
Total FTE jobs (all-year basis)	15.6					

14.5.41 Information provided by the Applicant indicates that nine members of staff live onsite, whilst the other half live within the surrounding communities of Earnley, Bracklesham, Selsey, Pagham and Bognor Regis – all within 10 miles of the Park.

14.5.42 By way of comparison, the 2021 census records that 28% of people in employment in Chichester District travel less than 10 km (c. 6 miles) to work while 43% travel less than 30 km (c.18 miles) (**Figure 14.8**). Although the distances are not directly comparable, this does underline the extent to which Medmerry Holiday Park employs an above-average proportion from the local area.

Indirect and induced jobs

14.5.43 The existing direct employment at the Park will generate “indirect” employment in the surrounding area through expenditure on goods, supplies and services in the surrounding area. This impact is strengthened by Cove Communities’ “buy local” produce policy for food and beverage which supports local employment in the food and beverage sector. It will also support “induced” jobs in other local shops, services and firms as a result of spending of wages by employees at the Park and staff at the local firms supplying goods and services to the Park.

14.5.44 As set out in **Table 14.13**, based on standard multipliers in the HCA Additionality Guide¹⁰, it is estimated that the Park supports a total of 8.7 permanent indirect and induced FTE jobs in the South East region, of which 5.9 FTE jobs are in the local area.

Table 14.13: Existing employment impacts of Medmerry Holiday Park.

¹⁰ Fourth Edition 2014

	Direct jobs (FTE)	Indirect and induced jobs (FTE)	
	Medmerry Holiday Park	South East region (0.56 indirect and induced FTE jobs per 1 direct FTE job)	Local area (included in South East total) (0.38 indirect and induced FTE jobs per 1 direct FTE job)
Low season (7 months of the year)	5.6	3.1	2.1
High season (5 months of the year)	10.0	5.6	3.8
Total	15.6	8.7	5.9

Source: Cove Communities / HCA Additionality Guide, Fourth Edition 2014 / Lichfields analysis

Economic output

14.5.45 The Park makes a contribution to local economic output, as measured by Gross Value Added (GVA). Based on March 2022 Experian data, the hospitality sector generates an average GVA per FTE worker of £33,881 per annum in the South East of England. This indicates that the Park currently generates c. £529,000 of direct GVA per annum.

14.5.46 In addition, it is estimated that the indirect and induced jobs will contribute an additional £296,000 in GVA per annum across the South East.

14.5.47 Therefore, the total GVA produced by the existing Park is in the region of £825,000 per annum across the region.

Visitor expenditure

14.5.48 Medmerry Holiday Park attracts and contributes expenditure to the local economy through the spending patterns of visitors, as well as expenditure by the Park itself. This expenditure can be estimated based on the number of current units at the Park and average levels of spending per unit.

14.5.49 The UK Caravan and Camping Alliance Report, Pitching the Value (2019), quantified on- and off-site spending by guests staying at different types of accommodation in each region of the UK.

14.5.50 Taking account of an adjustment for inflation¹¹, a summary of the average expenditure per holiday home/lodge per annum in the South East is set out in **Table 14.14**. It should be noted that these figures do not include the cost of purchasing a lodge, which may not be retained in the local area.

Table 14.14: Visitor expenditure relating to holiday homes/lodges in the South East (per unit/per annum).

¹¹ Based on a Bank of England figure of 17.3% between 2019 and 2023.

	On-site expenditure	Off-site expenditure	Total direct expenditure	Indirect and induced expenditure	Total expenditure
Owned	£9,537.47	£6,709.99	£16,247.46	£7,638.41	£23,885.87
Rented	£9,685.05	£6,250.00 ¹²	£15,939.05	£14,263.43	£30,198.48

Source: Lichfields analysis of Pitching the Value 2019 Economic Benefit Report: Holiday Parks and Campsites England²¹.

14.5.51 Rented holiday homes / lodges tend to attract higher levels of visitor expenditure than owned units. This is due to a shorter typical length of stay and a tendency for these visitors to “make the most” of their holidays by drinking or eating out and visiting attractions more often than those that own their holiday homes. Also, for rented accommodation, occupancy rates are typically higher than for owned units.

14.5.52 Based on the average expenditure figures for the South East set out in **Table 14.15**, the existing Park generates:

£3.9 million (on and off-site) direct expenditure per annum.

£3.3 million indirect expenditure per annum; equating to,

A total of £7.2 million total expenditure per annum.

Table 14.15: Total expenditure arising from existing accommodation in use at Medmerry Holiday Park.

	No. units	Total on-site expenditure	Total off-site expenditure	Total direct expenditure	Total indirect expenditure	Total expenditure
Sole use by Owner	24	£228,899	£161,040	£389,939	£183,322	£573,261
Rented	220	£2,130,710	£1,375,000	£3,505,710	£3,137,955	£6,643,665
Total	244	£2,359,609	£1,536,040	£3,895,649	£3,321,277	£7,216,926

Source: Lichfields analysis.

Employment supported by visitor expenditure

14.5.53 Pitching the Value (2019) also identifies the level of employment associated with on-site, off-site and indirect expenditure in different types of holiday park accommodation. This data indicates that expenditure of c. £55,000 supports one FTE job in the South East of England.

¹² There appears to be an error in the *Pitching the Value* report regarding the level of off-site expenditure associated with rented lodges in the South East. This figure has been based on the relationship between average level of off-site expenditure associated with owned and rented lodges in England. This ratio was applied to the stated figure for off-site expenditure associated with owned lodges in the South East.

14.5.54 As set out in **Table 14.16**, this evidence can be used to identify the number of jobs supported by current levels of visitor expenditure at Medmerry Holiday Park, as follows:

72.2 FTE jobs supported by direct (on and off-site) expenditure.

61.6 FTE jobs supported by indirect expenditure; equating to

A total of 133.8 FTE jobs supported by visitor expenditure.

Table 14.16: Existing visitor expenditure and employment (FTE jobs) supported.

		Direct	Indirect	Total
Sole use by Owner	Annual expenditure	£389,939	£183,322	£573,261
	Spending/FTE job	£53,997	£53,997	-
	FTE jobs supported	7.2	3.4	10.6
Rented	Annual expenditure	£3,505,710	£3,137,955	£6,643,665
	Spending/FTE job	£53,920	£53,920	-
	FTE jobs supported	65.0	58.2	123.2
Total	FTE jobs supported	72.2	61.6	133.8

Source: Lichfields analysis of Pitching the Value 2019 Economic Benefit Report: Holiday Parks and Campsites England.

Economic output supported by visitor expenditure

14.5.55 Based on 2022 Experian data, the accommodation and food sector generates an average of £33,881 GVA per FTE job within the South East of England¹³. It is therefore estimated that the FTE jobs supported by visitor expenditure associated with the existing Park contributes a total of £2.9 million in GVA to the regional economy per annum (**Table 14.17**).

Table 14.17: Existing GVA impact supported by visitor expenditure.

Direct FTE jobs	Direct GVA (Based on £ £33,881 per FTE job)	Indirect and Induced GVA (South East region) (Based on 0.56 multiplier)	Total GVA (South East region)
72.2	£2,447,471	£1,370,584	£3,818,054

Source: Lichfields analysis. Figures may not sum due to rounding.

Maintenance expenditure

14.5.56 In addition to visitor expenditure, holiday parks also support expenditure by private owners on maintenance, which is not included in the visitor expenditure figures above set out above. Pitching the Value (2019) found that, on average, owners of holiday homes in

¹³ Source: Experian, March 2022

England spent £867 on maintenance per annum. Applying an adjustment for inflation¹⁴, this equates to £1,017 per annum.

- 14.5.57 There will also be expenditure by the Park itself on maintaining and managing its rental fleet, including marketing, cleaning and maintenance of the site and its communal facilities. This would include the costs of staff and materials / equipment and the procurement of any external services.
- 14.5.58 In order to provide an approximate estimate of this expenditure, the average levels of expenditure by private owners has been applied for lodges owned and/or managed by the Park. This would include the costs of staff and materials / equipment and the procurement of any external services.
- 14.5.59 It is noted that there are likely to be economies of scale for this type of expenditure by holiday parks; however, the Park will have additional expenses that are not paid by owners, including grounds maintenance. It is noted that a proportion of this expenditure will be focused outside of the local area. No jobs have been calculated as relating specifically to this expenditure, as some of these will already be present at the holiday park.
- 14.5.60 The level of total maintenance expenditure per annum associated with the existing Park has been calculated at **Table 14.18**.

Table 14.18: Maintenance expenditure impacts.

No. holiday homes/lodges in use	Maintenance expenditure per unit p.a.	Total maintenance expenditure p.a.
244	£1,017	£248,097

Source: UK Caravan & Camping Alliance, Pitching the Value: 2019 Economic Benefit Report: Holiday Parks and Campsites Wales (February 2019) / Lichfields analysis.

- 14.5.61 This maintenance expenditure provides important support for key suppliers to Medmerry Holiday Park, many of which are likely to be based in the local area.

11.3 Predicted Effects

- 14.6.1 This section sets out the anticipated impacts of the Proposed Development. It considers the temporary impacts that will be expected during the construction period before assessing the longer-term operational impacts.

Construction Impacts

- 14.6.2 Based on an estimated development cost provided by Cove Communities, the construction cost of the Proposed Development will be £57.8 million. The construction of the Proposed Development is expected to take place over a build period totalling a 6-year and 10-month year period, beginning in May 2024.

¹⁴ Based on a Bank of England figure of 17.3% between 2019 and 2023

Direct Employment

- 14.6.3 Labour coefficients from the HCA Calculating Cost per Job Best Practice Note (2015) set out that 16.6 direct FTE construction jobs will be created for every £1 million investment in private commercial development (2011 prices). Using this data, we have calculated the number of direct construction jobs to be supported by the Proposed Development over the course of the construction phase (see **Table 14.19**):

Table 14.19: Assessment of construction employment.

a	b	c	d	e
2023 Construction value	2011 Deflated construction value a x deflation ratio (0.781)	Direct FTE jobs per £1m investment p.a. (2011 prices)	Total jobs Created (b ÷ £1,000,000) x c	No. direct FTE jobs p.a. d ÷ build period (6 years and 10 months)
£57,840,000	£45,170,109	16.6	750	110

Source: HCA Calculating Cost per Job Best Practice Note 2015 / Lichfields analysis.

- 14.6.4 This analysis indicates that the Proposed Development will support 110 gross direct FTE jobs annually over the construction phase. It is acknowledged that levels of employment on-site will not remain uniform throughout this period. Rather, they will vary to reflect different stages of the build – some of which will, inevitably, be more labour intensive than others.
- 14.6.5 The extent to which construction opportunities created by the Proposed Development will be taken up locally cannot be estimated with any certainty until contracts have been let. Based upon experience, however, it would be reasonable to expect that at least a proportion of the construction jobs would be taken up by the local workforce.

Indirect and Induced Employment

- 14.6.6 In addition to direct employment opportunities, construction activity also involves purchases from a range of suppliers (e.g., concrete, glass, steel), some of which will be based in the local area. In turn, these suppliers purchase from other businesses further down the supply chain. Consequently, a number of indirect jobs would be supported in companies supplying construction materials and equipment.
- 14.6.7 Workers spending their wages in local shops, bars, restaurants and other facilities will help to support the creation of induced jobs. Therefore, businesses in the local area and beyond are also expected to benefit to some extent from temporary increases in expenditure linked to the direct and indirect employment effects of the construction stage.

- 14.6.8 Research by CEBR for the National Housing Federation (2019)¹⁵ indicates that the construction industry has an indirect and induced employment FTE multiplier of 1.11 for commercial development¹⁶.
- 14.6.9 As a result, it is anticipated that the Proposed Development could support an additional 122 spin-off FTE jobs annually over the construction phase (in addition to the 110 FTE jobs set out above). These jobs would be distributed across the UK economy.

Economic output

- 14.6.10 The construction phase of the Proposed Development will also make a contribution to local economic output, as measured by Gross Value Added (GVA), a commonly used measure of productivity and economic performance.
- 14.6.11 On average, the construction sector generates an average GVA per FTE worker of £81,904 per annum in the South East¹⁷. As such, the Proposed Development has the potential to deliver an additional £9.0 million of direct GVA per annum during the construction period (£61.4 million GVA in total over the full build period). In addition, the spin-off impact would equate to an additional £10.7 million of GVA per annum during the build period¹⁸ (£73.4 million of GVA in total). The total (direct and indirect) GVA produced would therefore be £19.7 million per annum – equivalent to a total of £134.8 million over the construction period. It should be noted that not all of the GVA impact will be retained locally.

Summary of Construction Impacts

- 14.6.12 The effect of the investment, direct and indirect employment and economic impact associated with the construction of the Proposed Development is assessed to be temporary (medium term), and is based on the definition contained in **Table 14.6** that construction employment generation of more than 100 jobs would constitute a **Major beneficial** impact and is therefore considered **Significant**.

Operational Impacts

- 14.6.13 The Proposed Development will support the creation of new jobs at Medmerry Holiday Park in order to serve new visitors and maintain site premises.

Direct employment

- 14.6.14 The Applicant has estimated that, following completion of the Proposed Development the Park will employ 50 staff members in the low season and 100 in the high season. When compared to the existing workforce of 12 staff members in the low season and 30 in the

¹⁵ <https://www.housing.org.uk/globalassets/files/resource-files/leic/local-economic-impact-calculator-2019---methodology.pdf>

¹⁶ This multiplier relates to total employment and means that 1.11 indirect/induced jobs will be created across the UK for every new direct job in the construction of commercial floorspace.

¹⁷ Source: Experian, March 2022

¹⁸ This figure is based on research undertaken by CEBR on behalf of the NHF which indicates that £1 of GVA would support £1.26 of indirect GVA for the construction of housing and £1.20 for the construction of commercial floorspace.

high season, this represents an additional 38 members of staff in the low season and 70 in the high season.

14.6.15 The current breakdown of 60% of staff on full-time contracts and 40% work on a part-time basis is expected to continue.

14.6.16 On this basis, the number of new staff is equivalent to 30.4 FTE workers during the low season and 56.0 FTE workers during the high season. On an annualised basis, this equates to 17.7 FTE jobs associated with work during the low season and 23.3 FTE jobs associated with work during the high season, totalling 41.1 FTE jobs across the year (**Table 14.20**).

Table 14.20: Additional employment at Medmerry.

	Low season (7 months)			High season (5 months)		
	Total	Full-time (60%)	Part-time (40%) (equivalent to 0.5 FTE jobs)	Total	Full-time (60%)	Part-time (40%) (equivalent to 0.5 FTE jobs)
No. of jobs	38.0	22.8	15.2	70.0	42.0	28.0
FTE jobs (during low and high season)	30.4	22.8	7.6	56.0	42.0	14
FTE jobs (all-year basis)	17.7	-	-	23.3	-	-
Total FTE jobs (all-year basis)	41.1					

Indirect and induced employment

14.6.17 Based upon multipliers from the HCA Additionality Guide, it is estimated that the new 41.1 FTE direct jobs at the Park across the year resulting from the Proposed Development will generate an additional 23.0 indirect and induced FTE jobs in the South East of England, of which 15.6 FTE jobs would be based in the local area (**Table 14.21**).

Table 14.21: Additional employment impacts of Medmerry Holiday Park

	Direct jobs (FTE)	Indirect and induced jobs (FTE)	
	Medmerry Holiday Park	South East region (0.56 indirect and induced FTE jobs per 1 direct FTE job)	Local area (included in South East total) (0.38 indirect and induced FTE jobs per 1 direct FTE job)
Low season (7 months of the year)	17.7	9.9	6.7
High season (5 months of the year)	23.3	13.1	8.9
Total	41.1	23.0	15.6

Source: Cove Communities / HCA Additionality Guide, Fourth Edition 2014 / Lichfields analysis.

14.6.18 The provision of additional jobs in the local authority area will help to attract and retain working age people, which is particularly important given the context of an anticipated 5.3% reduction in the number of people aged 16 to 64 in Chichester between 2021 to 2039 (as discussed in **Section 14.5**)¹⁹.

Economic output supported by employment

14.6.19 As with the construction phase of the development, the creation of new employment when the Proposed Development is operational will also make a contribution to local economic output.

14.6.20 Based on 2022 Experian data, it is estimated that the additional direct FTE jobs supported by the Proposed Development would contribute an additional £1.4 million in GVA to the regional economy per annum²⁰. In addition, it is estimated that the indirect and induced jobs will contribute an additional £779,000 in GVA per annum across the South East region, including £529,000 per annum within the local area²¹. Therefore, the total (direct and indirect) GVA produced across the South East region would be £2.2 million per annum (**Table 14.22**).

Table 14.22: GVA impact of additional employment during the operational phase.

Direct FTE jobs	Direct GVA (Based on £33,881 per FTE job)	Indirect and Induced GVA (South East region) (Based on 0.56 multiplier)	Indirect and Induced GVA (local area) (Based on 0.38 multiplier)	Total GVA (South East region)
41.1	£1,391,364	£779,164	£528,718	£2,170,528

¹⁹ Census 2021 and 2018-based sub-national population projections.

²⁰ Based on March 2022 Experian data, which sets out that the accommodation and food sector generates an average of £33,881 GVA per FTE job within the South East of England.

²¹ Based on the GVA multipliers from the HCA Additionality Guide for recreation activities (including tourism). The multipliers relate to total GVA and mean that, for every £1 in direct GVA, £0.56 indirect/induced GVA will be created across the region and £0.38 within the local area.

Source: Lichfields analysis. Figures may not sum due to rounding.

Summary of Operational Employment Impacts

- 14.6.21 The effect of the direct, indirect and induced employment created during the operational phase of the Proposed Development is assessed to be a long-term, **Moderate beneficial** effect across the impact area and is therefore considered **Not Significant**.

Expenditure Impacts

Visitor expenditure

- 14.6.22 The Proposed Development provides an opportunity to increase expenditure in the local area. The scale of these benefits will be determined by the spending patterns of visitors, as well as expenditure by the Park itself. The existing economic impact of the holiday park is set out above. The new development will build on this by:

Ensuring that all of the 308 lodges that are approved and provided on site are of a high quality and capable of being occupied by holiday-makers.

Increasing the number of lodges that are available to rent (either as part of the fleet owned by Cove Communities or sub-let by private owners) - recognising that rented units attract a higher level of expenditure.

Increasing the range of on-site facilities and attractions, which will encourage greater levels of spending (albeit that it is difficult to quantify this impact on the context of the data available).

Improving the overall quality of provision which will substantially improve the attractiveness of Medmerry Park and reduce the vacancy rates, whilst also attracting visitors that might be likely to spend more than the average figures identified by Pitching the Value (2019).

- 14.6.23 In the light of this, the figures set in **Table 14.23**, which are likely to underestimate the true economic impact of the Proposed Development.

- 14.6.24 Based on the average expenditure figures for the South East set out in **Table 14.23**, the Proposed Development would be expected to generate:

c.£1.0 million direct (on and off-site) expenditure per annum

c.£0.9 million indirect and induced expenditure per annum

A total of c.£1.9 million spending per annum.

- 14.6.25 This represents a 26% increase in existing expenditure associated with Medmerry Park.

Table 14.23: Additional visitor expenditure.

	Change in units	On-site spending	Off-site spending	Total direct spending	Total indirect and induced spending	Total
Sole use by Owner	3	£28,612	£20,130	£48,742	£22,915	£71,658
Rented	61	£590,788	£381,250	£972,038	£870,069	£1,842,107
Total	64	£619,400	£401,380	£1,020,780	£892,985	£1,913,765

Source: Lichfields analysis.

Employment supported by visitor expenditure

14.6.26 Pitching the Value (2019) also identifies the level of employment associated with on-site, off-site and indirect expenditure in different types of holiday park accommodation. Again, this information is provided at a regional level. An interrogation of this indicates that expenditure of c. £55,000 supports one FTE job in the South East.

14.6.27 As set out in **Table 14.24**, this evidence can be used to identify the number of jobs that could be supported by the additional spending at Medmerry Holiday Park, as follows:

18.9 FTE jobs supported by direct (on and off-site) expenditure.

16.5 FTE jobs supported by indirect expenditure; equating to

A total of 35. FTE jobs supported by the expenditure associated with the additional holiday homes/lodges brought into use.

Table 14.24: Employment supported by additional visitor spending.

		Direct	Indirect	Total
Sole use by Owner	Annual spending	£48,742	£22,915	£71,658
	Spending/FTE job	£53,997	£53,997	-
	FTE jobs supported	0.9	0.4	1.3
Rented	Annual spending	£972,038	£870,069	£1,842,107
	Spending/FTE job	£54,098	£54,098	-
	FTE jobs supported	18.0	16.1	34.1
Total	FTE jobs supported	18.9	16.5	35.4

Source: Lichfields analysis of Pitching the Value 2019 Economic Benefit Report: Holiday Parks and Campsites England.

14.6.28 The direct employment supported by additional visitor expenditure associated with the Proposed Development equates to an increase of 1% in the number of tourism jobs in Chichester (if all of these jobs were to be created within the district)²².

Economic output supported by visitor expenditure

14.6.29 Based on 2022 Experian data, the accommodation and food sector generates an average of £33,881 GVA per FTE job within the South East of England. It is therefore estimated that the additional FTE jobs supported by visitor expenditure associated with the Proposed Development would contribute an additional c. £997,500 in total (direct and indirect) GVA to the regional economy per annum (**Table 14.25**).

Table 14.25: GVA impact supported by visitor expenditure.

Direct FTE jobs	Direct GVA (Based on £33,881 per FTE job)	Indirect and Induced GVA (South East region) (Based on 0.56 multiplier)	Total GVA (South East region)
18.9	£639,349	£358,036	£997,384

Source: Lichfields analysis. Figures may not sum due to rounding.

14.6.30 The additional GVA supported by visitor expenditure resulting from the Proposed Development equates to 0.01% of the total GVA from the accommodation and food service sector in the South East region²³. Whilst this is limited in the context of the total value of the accommodation and food service sector in the region (which accounts for 2.7% of the total value of the regional economy), the Proposed Development will make a more significant contribution to the local economy in Chichester, where the accommodation and food sector accounts for 5.2% of the total value of the District economy, and within MSOA 013 (for which GVA data is unavailable).

14.6.31 Furthermore, the provision of very high quality accommodation units will be important in helping to address a number of key tourism objectives, including an improvement in the quality of accommodation and, as a result of this, encouraging a greater number of visits in the off-peak and shoulder seasons. The nature of the accommodation offer at Medmerry Holiday Park is well suited to the meeting the needs of visitors seeking a break outside of the main summer period. The high quality accommodation and a range of indoor activities mean that it is not a weather dependent resort.

Maintenance expenditure

14.6.32 In addition to visitor expenditure, holiday parks also support expenditure by private owners on maintenance, which is not included in the visitor expenditure figures above set out above. Pitching the Value (2019) found that, on average, owners of holiday homes in

²² Based on 6,000 jobs in the accommodation and food sector in Chichester in 2021 (ONS Business Register and Employment Survey).

²³ Based on GVA of £7,937.7 million generated by the accommodation and food sector in the South East region in 2022 (Experian, December 2022).

England spent £867 on maintenance per annum. Applying an adjustment for inflation²⁴, this equates to £1,017 per annum.

- 14.6.33 There will also be expenditure by the Park itself on maintaining and managing its rental fleet, including marketing, cleaning and maintenance of the site and its communal facilities. This would include the costs of staff and materials / equipment and the procurement of any external services.
- 14.6.34 In order to provide an approximate estimate of this expenditure, the average levels of expenditure by private owners has been applied for lodges owned and/or managed by the Park. This would include the costs of staff and materials / equipment and the procurement of any external services.
- 14.6.35 It is noted that there are likely to be economies of scale for this type of expenditure by holiday parks; however, the Park will have additional expenses that are not paid by owners, including grounds maintenance. It is noted that a proportion of this expenditure will be focused outside of the local area. No jobs have been calculated as relating specifically to this expenditure, as some of these will already be present at the holiday park.
- 14.6.36 The level of total maintenance expenditure per annum to be supported by the Proposed Development following the completion of the Proposed Development has been calculated in **Table 14.26**.

Table 14.26: Maintenance expenditure impacts.

No. holiday homes/lodges brought into use	Maintenance expenditure per unit p.a.	Total maintenance expenditure p.a.
64	£1,017	£65,075

Source: UK Caravan & Camping Alliance, Pitching the Value: 2019 Economic Benefit Report: Holiday Parks and Campsites Wales (February 2019) / Lichfields analysis.

- 14.6.37 This additional maintenance expenditure will provide important support for key suppliers to Medmerry Holiday Park, many of which are based in the local area.

Impact of additional facilities

- 14.6.38 The proposed additional facilities at the park will assist in improving the attractiveness of the park for visitors. These facilities will be especially important in helping to sustain visitor numbers in the shoulder season, thereby supporting visitor expenditure in the local area.
- 14.6.39 The proposed new central hub, including the luxury day spa and food and beverage venue, will be open to members of the public, albeit with some facilities subject to availability. This provision will therefore also broaden the range of amenities in the area and attract additional expenditure in the local economy.

²⁴ Based on a Bank of England figure of 17.3% between 2019 and 2023

Summary of Visitor and Maintenance Expenditure Impacts

14.6.40 The effect of the additional visitor and maintenance expenditure associated with the Proposed Development is based on the definition contained in **Table 14.6** that an increase in visitors expenditure of between £1m and £5m per annum would constitute a **Moderate beneficial** effect and is therefore considered **Not Significant**.

Labour Market

14.6.41 The creation of 41.1 new operational FTE across the year jobs as part of the Proposed Development will have a beneficial impact in terms of meeting the employment needs of residents and helping to reduce unemployment.

14.6.42 If all 41.1 FTE jobs were taken up by people in Chichester who are currently unemployed, this would reduce unemployment levels by 2%²⁵.

Summary of Impact on Labour Market

14.6.43 The effect of the Proposed Development on the labour market is based on the definition contained in **Table 14.6** that a potential reduction in unemployment of between 1% and 5% would constitute a **Moderate beneficial** effect and is therefore considered **Not Significant**.

Deprivation

14.6.44 It is not considered that the Proposed Development would have a significant impact on existing deprivation levels given that Chichester ranks in the 35% overall best performing (least deprived) local authorities in England and within the 30% best performing authorities in relation to income and employment. Similarly, LSOA 013B, where Medmerry Holiday Park is located, ranks within the 35% overall best performing LSOAs in England, the 25% best performing LSOAs in relation to employment and within the 30% best performing LSOAs in relation to income. However, the provision of additional employment will still help to reduce deprivation.

14.6.45 The provision of additional, higher quality holiday lodge accommodation at the Proposed Development may also offer an alternative for some visitors who would otherwise seek to purchase a second (bricks and mortar) home in the area. In turn, this may contribute to reducing the loss of housing stock for second homes, thereby relieving housing affordability pressures in the local area and helping to reduce deprivation for residents in relation to access to housing and services, which was identified as the most critical domain for Chichester and the Chichester 013B LSOA.

Summary of Deprivation Impacts

14.6.46 The impact of the Proposed Development is considered to be long-term, **Minor beneficial** and is therefore considered **Not Significant**.

²⁵ Based on model-based unemployment of 1,900 in Chichester for those aged 16 to 64 (October 2021 to September 2022) (ONS Annual Population Survey).

11.2 Mitigation

- 14.7.1 The economic impacts of the proposals will largely be positive and so will generally not require mitigation.
- 14.7.2 Owing to the nature of the Proposed Development, there are no requirements for ongoing monitoring.

11.3 Summary of effects

- 14.8.1 **Table 14.27** below sets out the residual effects of the Proposed Development, taking into account the baseline position and any proposed mitigation measures. Those in bold are classified as **Significant**.

Table 14.27: Summary of effects.

Topic	Nature of effect	Timescale	Significance of effect
Construction jobs	Beneficial	Temporary	Major
Operational jobs	Beneficial	Long-term	Moderate
Expenditure	Beneficial	Long-term	Moderate
Labour market	Beneficial	Long-term	Moderate
Deprivation	Beneficial	Long-term	Minor

11.3 References

- A Prosperous and Sustainable Economy: Economic Development Strategy for Chichester District 2022-2024.
- Adopted Chichester Local Plan 2014-2029 (adopted July 2015).
- Chichester District Council Corporate Plan 2022-2025.
- Emerging Chichester Local Plan 2021-2039 (Reg 19 consultation version, 2023).
- English indices of deprivation 2019.
- Experience West Sussex Partnership Strategic Priorities & Objectives April 2022 to March 2024.
- Gatwick 360° The Coast to Capital Strategic Economic Plan 2018-2030.
- HCA Additionality Guide, Fourth Edition 2014.
- HCA Calculating Cost per Job Best Practice Note 2015.
- ONS Annual Population Survey (October 2021 to September 2022).
- ONS Census Data (2011 and 2021).
- ONS House Price Statistics, March 2023.
- National Planning Policy Framework 2021.
- UK Caravan & Camping Alliance, *Pitching the Value: 2019 Economic Benefit Report: Holiday Parks and Campsites England*, February 2019.



Visit Britain – local authorities spreadsheet: <https://www.visitbritain.org/destination-specific-research>.

West Sussex County Council: Economy Reset Plan 2020-2024, 2020.

15 NOISE AND VIBRATION

12.1 Introduction

- 15.1.1 This chapter addresses the likely significant environmental noise and vibration effects of the demolition, construction and operational phases of the Proposed Development on the surrounding area. It considers the likely significant environmental effects of the proposed uses of the Site and the effect of demolition, construction and operation noise and vibration on noise sensitive receptors.
- 15.1.2 The chapter describes the methods used to establish the baseline environmental sound conditions which currently exist at the Site and surrounding areas, the potential direct and indirect effects of the Proposed Development arising from noise and vibration, the mitigation measures required to prevent, reduce or offset the effects and the residual effects.
- 15.1.3 This chapter has been prepared by RSK Environment.

11.3 Relevant legislation, planning policy and guidance

- 15.2.1 **Table 15.1** presents a summary of the legislation, planning policy and guidance relevant only to noise and vibration. More detail is provided in the ‘Determination of significance’ section of this chapter.

Table 15.1: Legislation, policy and guidance relevant to Noise and Vibration.

Document	Summary
Legislation	
Control of Pollution Act 1974.	The Control of Pollution Act 1974 (COPA) Section 61, sets out procedures for contractors to obtain ‘Prior Consent’ for demolition and construction works within agreed noise limits.
Environmental Protection Act.	Under Part III of the Environmental Protection Act 1990, local authorities have a duty to investigate noise complaints from premises (land and buildings) and vehicles, machinery or equipment in the street. This includes noise arising from demolition and construction sites.
Planning Policy	
National Planning Policy Framework (NPPF).	The National Planning Policy Framework (NPPF) (published March 2012; updated in July 2021) is the means by which noise is considered within the planning regime. The NPPF does not contain assessment criteria, instead providing a series of policies, giving local authorities the flexibility in meeting the needs of local communities.
Noise Policy Statement for England.	The Noise Policy Statement for England is published by the Department for Environment, Food and Rural Affairs (DEFRA) and sets out the approach to noise within the Government’s sustainable development strategy.

Document	Summary
Planning Practice Guidance.	The Government's Planning Practice Guidance (PPG) on noise provides guidance on the effects of noise exposure, relating these to people's perception of noise.
Chichester Local Plan: Key Policies 2014-2029.	The Chichester Local Plan: Key Policies 2014-2029 sets out the main planning approach and policies for Chichester District outside the South Downs National Park area.
Planning Noise Advice Document: Sussex (2021).	The document provides the assessment criteria for a variety of development types and scenarios.
Guidance	
British Standard 8233:2014 'Guidance on sound insulation and noise reduction for buildings'.	Provides design guidance, including internal and external noise limits for different building types.
WHO Guidelines for community noise (1999).	Values are provided as limits for noise in order to protect against adverse health effects.
WHO night noise guidelines for Europe (2009).	An update to community guidelines specifically relating to night-time values for residential amenity.
WHO Environmental Noise Guidelines for the European Region (2018).	A regional update to the WHO Guidelines for Community Noise published in 1999. The document provides recommendations for the protection of human health from exposure to noise originating from various sources such as transportation noise, wind turbine noise and leisure noise.
BS 5228-1 & -2: 2009+A1: 2014 'Code of Practice for noise and vibration control on construction and open sites'.	Provides methodology for prediction of construction effects, assessment criteria and mitigation guidance.
Design Manual for Roads and Bridges for assessment of road traffic, Volume 11, Section 3, Part 7 HD 213/11 Revision 1 (Highways Agency, 2011).	DMRB provides guidance on the assessment of noise impacts from roads and contains guidance for assessing the likely impact on amenity of noise generated by road traffic in the short and long term.
Professional Planning Guidance on Planning and Noise (ProPG Planning and Noise), 2017.	The main objectives of this document are to provide technical guidance regarding the management of noise affecting new residential developments in England. The document provides advice on good acoustic design and 'aims to protect people from the harmful effects of noise'.
BS 4142:2014 Methods for rating and assessing industrial and commercial sound.	BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature.

Document	Summary
IEMA 'Guidelines for Environmental Noise Impact Assessment', 2014.	This document sets out key principles and advice on how to effectively integrate noise impacts and effects into the consenting process of all types of development. Section 7 'Assessment' includes guidance regarding determining the overall significance of the noise impact.
British Standard 7445, Parts 1 to 3 'Description and measurement of environmental noise - Guide to quantities and procedures'.	Provides the framework within which environmental noise should be quantified and refers to a further standard, BS EN 61672 (Ref 10.10), which prescribes the equipment necessary for such measurements.
Calculation of Road Traffic Noise ('CRTN', Department of Transport/ Welsh Office, 1998).	CRTN provides a method for the prediction of noise from road traffic.
Waterbird Disturbance Mitigation Toolkit: Informing Estuarine Planning & Construction Projects, 2013	Toolkit produced by the Institute of Estuarine & Coastal Studies (IECS) University of Hull. It is designed for use by works planners and site managers to initially assess whether impacts to migrating and wintering waterbirds are likely to arise from a proposed project, and to identify additional information requirements to meet consenting needs.

11.3 Consultation

- 15.3.1 Consultation with Chichester District Council (CDC) was sought by RSK Acoustics in March 2023.
- 15.3.2 An email was sent to CDC on Wednesday 22nd February 2023 detailing the proposed survey methodology. The proposed methodology was considered to be acceptable by the Planning Authority as per the email issued by the Senior Environmental Health Officer on Thursday 2nd March 2023.
- 15.3.3 Comments about the assessment methodology were also provided during the pre-application stage, in which it was stated that:
- “It shall have to be demonstrated that any neighbouring sensitive receptors shall not be adversely impacted as a result of the development. The noise sources could be from general site activities, traffic movements or external mechanical plant. Likewise, it shall have to be demonstrated that the Proposed Development site shall not be significantly adversely impacted by any neighbouring noise sources, for example the industrial units to the east of the Proposed Development.”
- 15.3.4 It should be noted that no external mechanical plant is proposed as part of the operational phase of this development.
- 15.3.5 The above points have been noted and incorporated within this noise and vibration assessment report.

11.5 Approach

15.4.1 This section summarises the approach adopted to apply noise and vibration related legislation, planning policy and industry standard guidance to the EIA process.

Value of receptors

15.4.2 **Table 15.2** below defines the sensitivity to noise and vibration of a number of different types of receptors generally considered as part of the EIA process.

Table 15.2: Summary of receptor sensitivity.

Sensitivity to Noise and Vibration	Description	Example Receptor
High	Receptors where people or operations are particularly sensitive to noise or vibration	Residential, including private gardens. Quiet outdoor areas used for recreation Theatres/Auditoria/Studios. Schools and Nurseries during the daytime. Hospitals/residential care homes. Places of worship.
Medium	Receptors where noise or vibration may cause some distraction or disturbance	Offices. Retail areas and other commercial developments. Bars/Cafes/Restaurants where external noise may be intrusive. Sports ground where quiet conditions are necessary (e.g., tennis, golf, bowls).
Low	Receptors where distraction or disturbance from noise and vibration is minimal	Industrial areas. Sports ground with no specific requirement for quiet conditions. Night clubs.

Study Area

15.4.3 For the purposes of this assessment, noise and vibration sensitive receptors are considered to be any existing occupied premises adjacent to, or in the vicinity of, the Site used as a dwelling, place of worship, educational establishment, hospital or similar institution, or any other property likely to be adversely affected by noise or vibration.

15.4.4 The study area also includes existing noise sensitive receptors along the links that could be affected by changes in traffic flows as a result of traffic generated by the Proposed Development. The change in traffic flows has been assessed along all links provided by the traffic model.

15.4.5 The RSPB reserve and the Bracklesham Bay Site of Special Scientific Interest (SSSI) have also been considered noise sensitive receptors.

- 15.4.6 The existing receptors on site and the proposed development receptors have also been included as sensitive receptors to be considered during the construction noise assessment, as certain existing receptors will still be occupied during some phases of the construction; and certain phases of the development will be constructed and occupied whilst other phases are still being constructed.
- 15.4.7 The identified noise sensitive receptors are detailed in **Table 15.3** below and presented in **Figure 15.1**.

Table 15.3: Identified noise sensitive receptors.

Receptor Reference	Noise Sensitive Receptor Description	Receptor Type	Receptor Sensitivity
A	Dwellings along East Bracklesham Drive	Residential	High
B	Marsh Farm	Residential	High
C	Storage Facilities	Commercial	Medium
D	Bracklesham Bay SSSI	Site of Special Scientific Interest	High
E	Medmerry RSPB Reserve	RSPB Reserve	High
F	Existing Residential Receptors on Site	Residential	High
G – Phases 1-5	Proposed Residential Receptors on Site	Residential	High

- 15.4.8 The different phases of the development have been assessed separately when relevant. The residential receptors in the five construction phases, as presented in the construction chapter, have been called G1-G5 for clarity.

Magnitude of impact

Potential impacts in terms of noise and vibration

- 15.4.9 The PPG provides advice regarding how to determine the impact of noise, including whether or not a significant adverse effect, or adverse effect is occurring, or likely to occur and whether or not a good standard of amenity can be achieved.
- 15.4.10 It provides more descriptive detail for the definitions of NOEL, LOAEL and SOAEL but refrains from using numerical values. **Table 15.4** summarises the noise exposure hierarchy, based on the likely average response of those affected by potential noise and vibration impacts.

Table 15.4: Definition of impact magnitude

Response	Examples of Outcomes	Magnitude in Noise and Vibration Terms	Action
Very Noticeable Improvement	Causes a material change in behaviours and/or attitude e.g., individuals engage in activities which may have been avoided in the past. Quality of life enhanced due to change in character of the area.	Major	No specific measures required.
Noticeable Improvement	Improved noise climate results in small changes in behaviour and/or attitude e.g., turning down the volume of television, speaking more quietly, opening windows. Affects the character of the area such that there is a perceived change in the quality of life.	Moderate	No specific measures required.
Just Noticeable Improvement	Noise impact can be heard but does not result in any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	Minor	No specific measures required.
No Observed Effect Level (NOEL)			
Not present	No Effect	Negligible	No specific measures required.
No Observed Adverse Effect Level (NOAEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	Minor	No specific measures required.
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response e.g., turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual	Moderate	Mitigate and reduce to a minimum.

Response	Examples of Outcomes	Magnitude in Noise and Vibration Terms	Action
	or perceived change in the quality of life.		
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response e.g., avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Major	Avoid
Very disruptive and harmful	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress e.g., regular sleep deprivation / awakening; loss of appetite, significant, medically definable harm e.g., auditory and non-auditory.	Substantial*	Prevent

*Substantial magnitude of impact is not a standard scale across this ES.

15.4.11 The impact in noise and vibration terms have been assessed with consideration to the proposed LOAELs and SOAELs based on the guidance set out in PPG and other relevant policy and standards.

Potential impacts in EIA terms

15.4.12 **Chapter 5** sets out the general methodology for assessing the impact in terms of Environmental Impact Assessment (EIA) significance.

15.4.13 The approach to assessing and assigning significance to an environmental effect relied upon the context of the results of the assessment undertaken in noise and vibration terms.

15.4.14 Effects that are described as ‘minor’ or ‘negligible’ in EIA terms are determined to be ‘not significant’, and effects that are described as ‘moderate’ or ‘major’ in EIA terms are determined to be ‘significant’ in the context of the EIA Regulations 2017.

15.4.15 The level of impact and significance in EIA terms has been determined based on the results of the assessments and is discussed further in the ‘Assessment Approach’ section discussed below.

Determination of significance

Demolition and Construction Noise

- 15.4.16 BS 5228:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' does not provide specific limits for construction noise, but it does define methods of assessing the significance. The standard also provides information on demolition and construction noise and vibration reduction measures promoting a 'Best Practice Means' approach to control noise and vibration. A method for determining the sound levels associated with demolition and construction activities is also detailed and considers the numbers and types of equipment operating, their associated Sound Power Level (L_w), and the distance to receptors, along with the effects of any screening.
- 15.4.17 Based on the guidance detailed in the BS 5228:2009+A1:2014 construction noise adverse effect levels have been derived.
- 15.4.18 Normal demolition and construction hours are assumed to be Monday to Friday between 08:00 to 18:00 and Saturday 08:00 to 13:00. No demolition or construction works are anticipated to take place on Sundays or Bank Holidays. For any works outside of these times, agreement with the local authority will be required.
- 15.4.19 **Table 15.5** defines the construction noise adverse impact levels for residential buildings.

Table 15.5: Construction noise impact levels for residential buildings

Significance of Impact in Noise Terms	Construction Sound Level $L_{Aeq,T}$ (dB) at Residential Receptor
Major	Above the Threshold Level*.
SOAEL	
Moderate	Above the Ambient Sound Level and below or equal to the Threshold Level*.
LOAEL	
Minor	Below or equal to the Ambient Sound Level.
Negligible	Below the Ambient Sound Level -10 dB.

*Threshold level determined as per BS 5228:1 Section E3.2 and Table E.1.

- 15.4.20 The threshold levels have been calculated, based on the survey results, for each of the identified receptors and are presented in Table T14 of the Noise Impact Assessment report (NIA), in **Appendix 15.1**.
- 15.4.21 An assessment of noise due to construction traffic was not undertaken due to the small number of additional movements expected during the construction phase (see **Chapter 16** for further details).

Construction Vibration

- 15.4.22 The effects of human response to whole body vibration in buildings are defined in BS 6472-1: 2008 'Guide to evaluation of human exposure to vibration in buildings - Vibration

sources other than blasting’ in terms of Vibration Dose Value (VDV). However, for human response to construction-related vibration, it is considered more appropriate to use the Peak Particle Velocity (PPV) measure, as suggested in BS 5228-2:2009+ A1:2014 ‘Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration’.

15.4.23 The limit of human perception to vibration is between approximately 0.15 mm/s and 0.3 mm/s PPV. The sensitivity of the human body also varies according to different frequencies of vibration, with perception generally possible between 1 Hz to 80 Hz.

15.4.24 Based on the above guidance **Table 15.6** details the proposed assessment criteria.

Table 15.6: Construction Vibration Adverse Effect Levels

Vibration Adverse Effect Levels	Vibration Level PPV, mm/s
SOAEL	Greater than or equal to 5.0
LOAEL	Greater than or equal to 3.0

Operational external environmental noise levels

15.4.25 With reference to BS8233 and WHO Guidelines, **Table 15.7** details the proposed assessment criteria for environmental noise levels affecting proposed residential receptors on the Site before mitigation.

Table 15.7: Environmental sound impact levels – residential

Significance of Impact in Noise Terms	Environmental Sound Levels $L_{Aeq,T}$ (dB)	
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
Major	> 65	> 55 80 dB L_{Amax} > 10 events
SOAEL		
Moderate	50 - 65	40 – 55 60 dB L_{Amax} > 10 events
LOAEL		
Minor	45 - 50	35 - 40
Negligible	<45	< 35

Operational road traffic noise affecting existing receptors

15.4.26 The assessment of noise due to the Proposed Development on the existing sound climate in surrounding areas is based on the change in sound levels at noise sensitive receptors due to a change in the volumes of road traffic generated by the Proposed Development.

15.4.27 Assessment for this EIA uses short-term and long-term criteria taken from the LA111/DMRB to assess the effects of the Proposed Development. This is summarised in **Table 15.8** below.

Table 15.8: Change in noise levels due to operational road traffic noise

Significance of Impact in Noise Terms	Short term change in Noise Levels dB* at Noise Sensitive Receptor	Long term change in Noise Levels dB* at Noise Sensitive Receptor
Major	≥ 5.0	≥ 10.0
SOAEL		
Moderate	3.0 to 4.9	5.0 to 9.9
LOAEL		
Minor	1.0 to 2.9	3.0 to 4.9
Negligible	< 1.0	< 3.0

* LA_{10,18hr} Or LA_{eq,8hr} (night-time)

15.4.28 Where the impact in noise terms is above negligible, the assessment of significance has taken into account the following factors:

- Proximity of calculated change to the minor/moderate boundary.
- Consideration of the calculated change in the long term.
- Absolute noise level with reference to relevant criteria in BS8233:2014.
- The context of the specific noise sensitive receptor.
- Acoustic context of the area and likely perception of change by the receptor.

Operational building services plant and operational noise from existing storage facilities

15.4.29 The following assessment criteria apply to building services plant and operational noise associated with the existing storage facilities.

15.4.30 Based on BS 4142:2014, the proposed LOAEL and SOAEL values are provided in **Table 15.9**.

Table 15.9: Proposed LOAEL and SOAEL for building services plant and existing industrial/commercial sources.

Significance of Impact in Noise Terms	Rating Level (L _{Ar,Tr} dB) at Noise Sensitive Residential Receptor
Major	Greater than or equal to 10 dB above the typical background sound level, depending on context.
SOAEL	
Moderate	5-9.9 dB above the typical background sound level, depending on context.
LOAEL	
Minor	0-4.9 dB above the typical background sound level, depending on context.
Negligible	Less than the typical background sound level, depending on context.

Difficulties and uncertainties

Baseline sound survey

15.4.31 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey and the conditions were considered to be representative of typical conditions at the survey positions. This report refers, within the limitations stated, to the environment of the Site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary. No warranty is given as to the possibility of changes in the environment of the Site and surrounding area at differing times.

Construction noise assessment

15.4.32 BS 5228:2009 Annex E (Informative) states that noise predictions should be undertaken to determine eligibility for noise insulation or temporary re-housing. However, the informative also states that these assessments should be undertaken when a contractor has been appointed and detailed method statements on the construction programme and plant to be used are available.

15.4.33 The details of the types of construction methods and plant likely to be used during the construction phases are yet to be finalised. Therefore, at this stage in the Proposed Development's design, it is not possible to state precisely where plant will operate and for how long during the working day. However, reasonable assumptions have been made to inform the assessment of construction noise presented in this assessment.

11.5 Existing environment

15.5.1 An unattended environmental sound survey was undertaken between approximately 11:00 on Tuesday 4th April and 11:00 on Tuesday 11th April 2023 in order to determine the existing sound climate across the site and in the surrounding area.

15.5.2 The details of the survey, including the equipment used and the weather conditions can be found in Section 3 of the NIA, presented in **Appendix 15.1**. Data collected on Monday 4th, Monday 10th and Tuesday 11th April have not been used in the calculations and assessment due to the high level of wind and/ or precipitation affecting the measurements. These have not been presented in the survey results tables below.

15.5.3 Sound levels across the site are low and are currently dominated by vehicular movements on the surrounding road network.

15.5.4 A summary of the unattended sound survey results is presented in **Table 15.10** to **Table 15.13**. Time history graphs detailing the full set of noise data for the unattended locations are contained in **Appendix 15.2**.

Table 15.10: Summary of measured environmental sound survey results at location UT1

Date	Time Period	Measured noise levels, dB*		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
	Daytime (07:00-23:00)	49	-	38

Date	Time Period	Measured noise levels, dB*		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
Wednesday 05/04/2023	Night-time (23:00-07:00)	44	57	44
Thursday 06/04/2023	Daytime (07:00-23:00)	48	-	44
	Night-time (23:00-07:00)	38	52	34
Friday 07/04/2023	Daytime (07:00-23:00)	46	-	36
	Night-time (23:00-07:00)	44	54	32
Saturday 08/04/2023	Daytime (07:00-23:00)	47	-	35
	Night-time (23:00-07:00)	42	54	34
Sunday 09/04/2023	Daytime (07:00-23:00)	43	-	36
	Night-time (23:00-07:00)	41	51	40
Averaged Sound Levels	Daytime (07:00-23:00)	46	-	38
	Night-time (23:00-07:00)	42	54	37

*L_{Aeq, T} values are the logarithmic average of L_{Aeq, 15min} samples. L_{A90, T} are calculated based on the statistical distribution of background sound levels during the measurement period in general accordance with guidance in BS 4142:2014+A1:2019. L_{Afmax, 15min} is based on the 10th highest measured L_{Afmax} sample within the period. All values rounded to the nearest whole number.

Table 15.11: Summary of measured environmental sound survey results at location UT2.

Date	Time Period	Measured noise levels, dB*		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
Wednesday 05/04/2023	Daytime (07:00-23:00)	51	-	38
	Night-time (23:00-07:00)	45	56	39
Thursday 06/04/2023	Daytime (07:00-23:00)	46	-	45
	Night-time (23:00-07:00)	40	56	34
Friday 07/04/2023	Daytime (07:00-23:00)	44	-	36
	Night-time (23:00-07:00)	44	57	31
Saturday 08/04/2023	Daytime (07:00-23:00)	45	-	33
	Night-time (23:00-07:00)	41	55	35
Sunday 09/04/2023	Daytime (07:00-23:00)	41	-	35
	Night-time (23:00-07:00)	41	51	42
Averaged Sound Levels	Daytime (07:00-23:00)	45	-	37
	Night-time (23:00-07:00)	42	55	36

*L_{Aeq, T} values are the logarithmic average of L_{Aeq, 15min} samples. L_{A90, T} are calculated based on the statistical distribution of background sound levels during the measurement period in general accordance

with guidance in BS 4142:2014+A1:2019. $L_{AFmax,15min}$ is based on the 10th highest measured L_{AFmax} sample within the period. All values rounded to the nearest whole number.

Table 15.12: Summary of measured environmental sound survey results at location UT3.

Date	Time Period	Measured noise levels, dB*		
		$L_{Aeq, T}$	$L_{AFmax,15min}$	$L_{A90, T}$
Wednesday 05/04/2023	Daytime (07:00-23:00)	52	-	40
	Night-time (23:00-07:00)	48	57	44
Thursday 06/04/2023	Daytime (07:00-23:00)	46	-	46
	Night-time (23:00-07:00)	39	51	34
Friday 07/04/2023	Daytime (07:00-23:00)	43	-	37
	Night-time (23:00-07:00)	45	55	43
Saturday 08/04/2023	Daytime (07:00-23:00)	45	-	31
	Night-time (23:00-07:00)	44	52	41
Sunday 09/04/2023	Daytime (07:00-23:00)	43	-	41
	Night-time (23:00-07:00)	44	54	42
Averaged Sound Levels	Daytime (07:00-23:00)	46	-	39
	Night-time (23:00-07:00)	44	54	41

* $L_{Aeq, T}$ values are the logarithmic average of $L_{Aeq,15min}$ samples. $L_{A90,T}$ are calculated based on the statistical distribution of background sound levels during the measurement period in general accordance with guidance in BS 4142:2014+A1:2019. $L_{AFmax,15min}$ is based on the 10th highest measured L_{AFmax} sample within the period. All values rounded to the nearest whole number.

Table 15.13: Summary of measured environmental sound survey results at location UT4.

Date	Time Period	Measured noise levels, dB*		
		$L_{Aeq, T}$	$L_{AFmax,15min}$	$L_{A90, T}$
Wednesday 05/04/2023	Daytime (07:00-23:00)	51	-	42
	Night-time (23:00-07:00)	48	56	43
Thursday 06/04/2023	Daytime (07:00-23:00)	47	-	43
	Night-time (23:00-07:00)	41	53	37
Friday 07/04/2023	Daytime (07:00-23:00)	43	-	34
	Night-time (23:00-07:00)	45	56	39
Saturday 08/04/2023	Daytime (07:00-23:00)	45	-	34
	Night-time (23:00-07:00)	43	54	38
Sunday 09/04/2023	Daytime (07:00-23:00)	43	-	38
	Night-time (23:00-07:00)	44	52	42

Date	Time Period	Measured noise levels, dB*		
		L _{Aeq, T}	L _{AFmax, 15min}	L _{A90, T}
Averaged Sound Levels	Daytime (07:00-23:00)	46	-	38
	Night-time (23:00-07:00)	44	54	40

*L_{Aeq, T} values are the logarithmic average of L_{Aeq, 15min} samples. L_{A90, T} are calculated based on the statistical distribution of background sound levels during the measurement period in general accordance with guidance in BS 4142:2014+A1:2019. L_{AFmax, 15min} is based on the 10th highest measured L_{AFmax} sample within the period. All values rounded to the nearest whole number.

11.3 Predicted effects

Demolition and Construction Noise

- 15.6.1 Demolition and construction noise could potentially increase the ambient noise levels at existing noise-sensitive receptors.
- 15.6.2 Precise details of the types of construction methods and plant are still to be determined; however, the assessment considers construction activities during the following principal stages:
- site preparation works
 - demolition, foundations and substructure works
 - building erection and superstructure works
 - road works
 - landscaping works, internal building construction and fit-out.
- 15.6.3 The assessment of construction noise at the identified noise sensitive receptors is presented in Section 4.1 of the NIA in **Appendix 15.1**.
- 15.6.4 Calculations indicate that, the impact is likely to be up to a moderate temporary direct adverse impact in noise terms at all the identified existing receptors.
- 15.6.5 Some of the proposed future receptors are likely to experience elevated noise levels during the construction of adjacent phases; however, the impact will be temporary, as it will be for a specific construction stage of a specific phase of work.
- 15.6.6 The impact in EIA terms is therefore considered to be up to **Moderate** and considered **Significant** at all identified receptors.

Demolition and Construction Vibration

- 15.6.7 Demolition and construction noise could potentially increase the ambient noise levels at existing noise-sensitive receptors.
- 15.6.8 However, there are no sensitive receptors are likely to be located within 10 m of the construction areas. Taking this into account, it can be concluded that there is no potential for perceptible vibration levels affecting the closest sensitive receptors to the construction site; therefore, the potential annoyance due to construction vibration is likely to be **Negligible** and considered **Not Significant**.

Operational Noise

Calculated incident sound levels

15.6.9 The acoustic model was used to create noise maps showing the predicted noise levels across the Site. The latest plans (ref '1000.2 Proposed Masterplan', Revision P1 dated 10/07/2023) have been used to assess the impacts based on the noise contours produced.

15.6.10 The following noise contour maps for the future (year 2026) daytime and night-time with development scenarios were produced using the acoustic model:

Daytime: Noise grid map with a grid resolution of 5 m by 5 m, at a distance of 1.5 metres above ground level (representative of the ground floor and outdoor amenity areas) showing the $L_{Aeq,16h}$ sound pressure levels. This is presented in **Figure 15.2**.

Night-time: Noise grid map with a grid resolution of 5 m by 5 m, at a distance of 1.5 metres above ground level (representative of a ground floor window) showing $L_{Aeq,8h}$ sound pressure levels. This is presented in **Figure 15.3**.

15.6.11 The assessment is presented in Section 5.3 of the NIA in **Appendix 15.1**.

15.6.12 Calculations indicate that daytime sound levels at proposed external amenities are likely to fall below the proposed LOAEL of 50 dB $L_{Aeq,16h}$ across the site, without the requirement for specific mitigation. This corresponds to a **Negligible** impact and considered **Not Significant** in EIA terms.

15.6.13 Calculations also indicate that appropriate internal noise levels can be achieved during both the daytime and night-time periods across the site without the requirement for any specific mitigation. This corresponds to a **Negligible** impact and considered **Not Significant** in EIA terms.

Change in ambient levels – existing receptors

15.6.14 The assessment of noise due to the Proposed Development on the existing sound climate in surrounding areas is based on the change in sound levels at noise sensitive receptors due to a change in the volumes of road traffic generated by the Proposed Development.

15.6.15 In accordance with guidance contained in DMRB LA111, **Figures 15.4** and **15.5** present the predicted change in noise levels, in the short term and in the long term respectively, based on the traffic flow predictions along the road links provided by the transport consultants, ITP, in May 2023 (see **Chapter 16**).

15.6.16 Based on the assessment presented in Section 5.4 of the NIA in **Appendix 15.1**, the change in noise levels at noise sensitive receptors as a result of traffic generated by the Proposed Development is likely to be below the LOAEL at all noise sensitive receptors in both the short and the long term. This is likely to be a negligible/minor impact in noise term.

15.6.17 This corresponds to a **Negligible** impact and considered **Not Significant** in EIA terms and no mitigation measured has therefore been deemed necessary.

Operational Noise from Open Amenity Area Affecting RSPB Reserve and SSSI

- 15.6.18 Calculations were undertaken to work out the potential sound levels from the open amenity area at the receptors.
- 15.6.19 The assessment of operational noise from open amenity area at RSPB Reserve and SSSI is presented in Section 5.5 of the NIA in **Appendix 15.1**.
- 15.6.20 The calculated sound levels from the open amenity area are likely to be below 55 dB L_{Aeq}, as recommended in the Waterbird Disturbance Mitigation Toolkit, at the boundary of the receptors. The noise impact on birds is therefore likely to be low at both the SSSI and the RSPB reserve.
- 15.6.21 This corresponds to a **Negligible** impact and considered **Not Significant** in EIA terms and no mitigation measures have therefore been deemed necessary, as noted in **Chapter 6, Section 6.7.59**.

Industrial and commercial noise

- 15.6.22 There is no fixed plant proposed associated with the operation of the site, an assessment in accordance with BS4142 for any new plant items has therefore not been undertaken.
- 15.6.23 However, during consultation with the environmental health department, it was requested that the report includes an assessment of the potential noise impact from the storage facilities to the east of site.
- 15.6.24 Based on the assessment presented in Section 5.5 of the NIA in **Appendix 15.1**, the noise impact from the existing storage facilities to the east of the site is likely to be **Negligible** and considered **Not Significant**.

11.3 Mitigation

Demolition and Construction Noise

- 15.7.1 As part of the CEMP, the following advice based on the guidance provided in BS5228-1:2009+A1:2014, will be applied to minimise the noise breakout from the demolition and construction activities affecting noise sensitive receptors:

Ensuring the use of quiet working methods, the most suitable plant and reasonable hours of working for noisy operations where reasonably practicable.

Locating noisy plant and equipment as far away from dwellings as reasonably possible, and where practical, carry out loading and unloading in these areas.

Screening plant to reduce noise which cannot be reduced by increasing the distance between the source and the receiver (i.e., by installing noisy plant and equipment behind large site buildings).

Shutting down any machines that work intermittently or throttling them back to a minimum.

Orientating plant that is known to emit noise strongly in one direction so that the noise is directed away from houses, where possible.

Closing acoustic covers to engines when they are in use or idling.

Lowering materials slowly, whenever practicable, and not dropping them.

Use of temporary acoustic barriers, where appropriate, and other noise containment measures, such as screens, sheeting and acoustic hoardings at the construction site boundary to minimise noise breakout and reduce noise levels at the potentially affected receptors.

Operational Noise

- 15.7.2 Other than the installation of conventional double glazing and hit and miss trickle vents for the proposed lodges, no mitigation is proposed for the operational phase of the site.

11.3 Summary of effects

Construction Noise

- 15.8.1 By incorporating appropriate mitigation measures through the CEMP, it is likely that noise levels associated with the construction stage will not exceed the proposed SOAEL.
- 15.8.2 This would result in a temporary **Minor adverse** short-term effect and is therefore considered **Not Significant** in EIA terms.

Operational Noise

- 15.8.3 Operational noise would result in up to **Minor adverse** effects and would therefore be considered **Not Significant** in EIA terms.

11.3 References

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open Sites Part 1 Noise. British Standards Institution, 2014.

BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open Sites Part 2 Vibration. British Standards Institution, 2014.

BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings - Vibration sources other than blasting. British Standards Institution, 2008.

BS 7445-1:2003, Description and measurement of environmental noise. Parts 1 to 3: Guide to quantities and procedures. British Standards Institution, 1991 to 2003.

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Professional Practice Guidance on Planning & Noise (ProPG: Planning & Noise). Acoustics & Noise Consultants (ANC), Institute of Acoustics (IoA) and Character Institute of Environmental Health (CIEH). November 2017.

Waterbird Disturbance Mitigation Toolkit: Informing Estuarine Planning & Construction Projects, Institute of Estuarine & Coastal Studies, 2013

13 TRANSPORT AND ACCESS

12.1 Introduction

16.1.1 This chapter sets out the effects of the Proposed Development at Medmerry Holiday Park on Transport and Access. It details the environmental impact of transport to and from the Site, both during construction and operation. The effects are assessed based on the Site’s current baseline travel behaviour and accessibility.

16.1.2 This chapter is supported by the following appendices:

Appendix 16.1 Transport Assessment (TA)

Appendix 16.2 Construction Traffic Management Plan (CTMP)

Appendix 16.3 Travel Plan (TP)

16.1.3 This chapter has been prepared by Integrated Transport Planning (ITP) Ltd.

11.3 Relevant legislative, planning policy and guidance

16.2.1 This chapter sets out the strategy for the Proposed Development in the context of local, regional, and national policy and guidance (**Table 16.1**). It outlines policy directions that should be followed and summarises how the Proposed Development aligns with these policies.

Table 16.1 Planning policy and guidance relevant to transport and access.

Document	Summary
Planning Policy	
National Planning Policy Framework (2021).	<p>The National Policy Planning Framework, first published in March 2012 by the Department for Communities and Local Government and updated in July 2021, is the statutory national planning document for England. It takes an overriding position in favour of sustainable development, however, provides high-level policy covering a wide range of themes and topics, including transport and travel, with a focus on reducing development impact, with decisions taking account of whether:</p> <ul style="list-style-type: none"> a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location; b) safe and suitable access to the site can be achieved for all users; c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or

Document	Summary
	<p>on highway safety, can be cost effectively mitigated to an acceptable degree.'</p> <p>Crucially paragraph 111 states: <i>'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'</i></p>
<p>Chichester Local Plan: Key Policies 2014-2029 (2015).</p>	<p>The Chichester Local Plan: Key Policies 2014-2029 was adopted on 14th July 2015. This is the statutory local planning document for the district, excluding the South Downs National Park, and therefore is a material consideration for the Proposed Development, which is in the south of the district.</p> <p>Relevant policies include:</p> <ul style="list-style-type: none"> Policy 8 Transport and Accessibility Policy 22 Integrated Coastal Zone Management for the Manhood Peninsula Policy 31 Caravan and Camping Sites Policy 39 Transport, Accessibility and Parking <p>Policy 8 discusses Chichester District Council's approach to working with West Sussex County Council to improve access to services and facilities and to provide an improved integrated transport network.</p> <p>This includes:</p> <p><i>'Ensuring that new development is well located and designed to minimise the need for travel, encourages the use of sustainable modes of travel as an alternative to the private car, and provides or contributes towards necessary transport infrastructure, including through travel plans.'</i></p> <p><i>'Working with relevant providers to improve accessibility to key services and facilities and to ensure that new facilities are readily accessible by sustainable modes of travel.'</i></p> <p>Policy 22 discusses the Council's approach to developing, in partnership with other organisations, a management plan for the Manhood Peninsula, and includes promoting:</p> <p><i>'[Improved] infrastructure to support sustainable modes of transport, especially cycle ways, bridleways and footpaths, including the National Coastal Footpath.'</i></p> <p>It is considered that the holiday park is well located to encourage the use of these upgraded footpaths and cycleways, particularly as the proposal includes plans to upgrade and extend the existing coastal wildlife habitats and flood defences.</p> <p>Policy 31 provides criteria which will allow the granting of planning permission for new caravan and camping sites. It is required that applicants demonstrate that:</p> <p><i>'The road network and the site's access can safely accommodate any additional traffic generated.'</i></p> <p>The existing holiday park currently operates without known issue regarding highway capacity or safety; and does not propose an increase in the number of units on site.</p>

Document	Summary
	<p>Policy 39 provides further criteria of which the application must demonstrate that they have considered for any application. These are:</p> <p><i>‘All development provides for the access and transport demands they create, through provision of necessary improvements to transport networks, services and facilities, either directly by the developer or indirectly in the form of financial contributions.</i></p> <p><i>‘Development is located and designed to minimise additional traffic generation and movement, and should not create or add to problems of safety, congestion, air pollution, or other damage to the environment.</i></p> <p><i>‘The proposal has safe and adequate means of access and internal circulation/turning arrangements for all modes of transport relevant to the proposal.</i></p> <p><i>‘The proposal encourages development that can be accessed by sustainable modes of transport, in part, through the creation of links between new development and existing pedestrian, cycle and public transport networks.</i></p> <p><i>‘The proposal provides for safe, easy and direct movement for those with mobility difficulties.</i></p> <p><i>‘The proposal does not create residual cumulative impacts which are severe.</i></p> <p><i>‘Proposals provide for high quality linkage direct from the development to the broadband network.’</i></p>
<p>DfT Circular 01/2022 (2022).</p>	<p>National Highways is responsible for the management and maintenance of a safe and effective Strategic Road Network (SRN). The Department for Transport (DfT) Circular 01/2022 is the policy of the Secretary of State in relation to the SRN. The Circular explains how National Highways will engage with the planning system and fulfil its remit to be a delivery partner for sustainable economic growth whilst maintaining, managing and operating a safe and efficient SRN. This Circular replaces the policies in the DfT Circular 02/2013; and sets out how National Highways will engage with the development industry, public bodies and communities to assist the delivery of sustainable development. The SRN near the application site is the A27, approximately 8 kilometres to the north of the site by road.</p> <p>The Circular sets out that new developments should be facilitating a reduction in the need to travel by private car; and in the first instance, should give priority to walking, wheeling and cycle movements and facilitate access to high-quality public transport where possible. As such, sustainable transport opportunities should be prioritised ahead of capacity enhancements and new connections on the SRN.</p> <p>The Circular also outlines that National Highways will engage with local planning authorities and development promoters at the pre-application stage of Transport Assessments, Transport Statements and/or Travel Plans if requested to do so. This is in order to determine the inputs and methodology to establish the potential impacts on the SRN and net zero principles; to help</p>

Document	Summary
	resolve any potential issues and maximise sustainable opportunities.
Guidance	
Guidelines for the Environmental Assessment of Road Traffic (1993).	<p>The Guidelines for the Environmental Assessment of Road Traffic were published in 1993 by the Institute of Environmental Assessment (now the Institute of Environmental Management & Assessment (IEMA)).</p> <p>The Guidelines for the Environmental Assessment of Road Traffic sets out a guideline for assessment of the environmental impact of road traffic associated with major new developments.</p> <p>Section 3 within the document sets out how to determine the traffic impact including the need to understand the baseline level of traffic, the Proposed Development traffic, and what the future levels of traffic will be like on the local road network. Section 4 then sets out how to assess the magnitude and significance of the traffic on the local road network and the environment.</p> <p>The document also sets out the need to mitigate the impacts of road traffic, such as restricting the hours of operation and installing traffic calming measures. This ES has considered the guidelines and principles set out within this document as well as the accompanying CTMP to limit all impact of the construction traffic.</p>

11.3 Consultation

- 16.3.1 As part of the planning application process, pre-application submission was made to Chichester District Council (CDC). With West Sussex County Council (WSSCC) being the Local Highway Authority, they also form a key consultee and decision maker in regard to roads and transport; and have provided a recommendation of what is to be provided in **Table 16.2** below.
- 16.3.2 Given that the pre-application submission made to CDC is related to a previous, refused application, which is a key theme throughout CDC's responses; it is considered relevant and useful to set out the planning history to determine the scope of assessment.

Planning History

2016 Permission

- 16.3.3 Planning Permission was granted on 11th March 2016 (E/15/00368/FUL) to Medmerry Park Limited, the previous owners of the site, for the following proposals: *'Proposed holiday use of Medmerry Chalet Park from the 1 March in any one year to the 6 January the following year.'*
- 16.3.4 The 2016 permission appears to be the primary operative permission of the site's use.

2021 Refusal

- 16.3.5 In 2019, a hybrid planning application (E/19/02840/FULEIA) was submitted on behalf of Medmerry Park Limited for the following development: *'Hybrid planning application - Full*

application for the redevelopment of Medmerry Park to provide 518 static holiday caravans and lodges in lieu of 308 holiday bungalows and associated works including drainage, landscaping, habitat enhancement areas, access roads, footpaths and a comprehensive flood defence scheme including bund. Outline planning application for the part demolition of the existing facility buildings and erection of replacement facility buildings together with extension/refurbishment of existing facility buildings (with all matters reserved except for access.)

- 16.3.6 The planning application was refused under Delegated Powers on 26th January 2021 for five reasons relating to the increase of units from 308 to 518 units.
- 16.3.7 Transport was not a reason for refusal. Feedback from Chichester District Council, West Sussex County Council and National Highways at the time did not indicate any reasons for objecting this larger scheme from a highways and transport perspective.

Pre-application consultation responses

- 16.3.8 A summary of the pre-application responses is provided in **Table 16.2** below:

Table 16.2: Actions in response to consultee pre-application response.

Consultee	Key issues raised	Actions in response to consultee comments
WSSC	<p>WSSC recommend the following to be provided:</p> <ul style="list-style-type: none"> A site location plan scale (1:1250) with site boundary indicated. Schedule of existing uses including planning history with reference numbers. Description, including site layout plans, of the Proposed Development and schedule of uses. Summary of reasons supporting the site access/highways work proposals, including plan (scale 1:250 or similar) with achievable visibility splays indicated. A Transport Statement or Transport Assessment, including location plan of key services, availability of sustainable modes of transport and existing/future vehicular generation. Reference to supporting national, regional and local 	<p>All recommendations have been included within a separate Transport Assessment (Appendix 16.1) which includes site location plan; schedule of existing uses; access visibility splays; supporting planning documents and policies; parking provision; and trip rates.</p>

	<p>planning documents and policies.</p> <p>Parking strategy, including provision of parking for all modes of transport.</p> <p>Relevant data collected to date.</p> <p>Proposed trip rates supported with TRICS outputs and site selection methodology.</p>	
CDC	<p>Impact of additional traffic through the Conservation Area of Earnley could have a negative impact on the village.</p>	<p>As there are no additional units proposed, it is not anticipated that there will be additional operational traffic through the Conservation Area of Earnley.</p> <p>Nevertheless, the CTMP (Appendix 16.2) sets out how to control and mitigate for the temporary impact caused during the construction phase. It is important to note that the site earthworks have been designed to minimise external vehicle movements for cut and fill, which will significantly reduce the construction impact of the Proposed Development.</p>

11.5 Approach

16.4.1 For the purposes of this chapter, the assessment approach considers both the construction and operational phases of the Proposed Development.

16.4.2 As detailed in **Appendix 16.1** and later in this chapter, it is not anticipated that there will be additional vehicle trips once the Proposed Development is operational, as the proposed number of holiday chalets is the same as the extant permission. The majority of effects will occur during the construction phase when materials and contractors will have to be brought to the Site.

Direct effects during construction:

- Temporary rise in the amount of traffic travelling to and from the Site on the local road network.
- Traffic will consist of delivery of construction materials and equipment, using a mix of Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs).

Indirect effects during construction:

- Potential risk to the safety of vulnerable users.

Direct effects during operation:

- There will be negligible impact on transport and access when the Proposed Development is operational, as no additional units are proposed compared to the extant permission.
- Some indoor facilities, including the spa, will be open to the public; however will be subject to availability and outside of peak holiday periods, and therefore these trips would be generated when Medmerry Holiday Park is operating well under capacity.

Indirect effects during operation:

- There are no anticipated indirect effects during operation.

Cumulative effects during construction:

- There is potential conflict in traffic with the nearby approved (via appeal) 100-dwelling and 32-dwelling developments, both on land south of Clappers Lane.

Cumulative effects during operation:

- There are no anticipated cumulative effects during operation.

16.4.3 The effects of the Proposed Development on transport and access will occur mostly in line with the construction activities and therefore, will happen throughout the working day. The most significant period of impact, during construction, is temporary by definition and will not result in any sustained or irreversible effects. Once construction is complete, traffic levels will reduce, particularly the number of HGVs.

Study area

16.4.4 The Site is located on the southwestern fringe of the Manhood Peninsula, south of Chichester and is currently set back from the coast by approximately 200 m. The Site is accessed via Drove Lane, a private access road, from the village of Earnley, which is approximately 1 km to the north.

Data sources

16.4.5 The following data sources have informed the assessment:

Desk based research (Google satellite and Google maps) to identify potential receptors.

Ordnance Survey to distinguish local road classifications.

Personal Injury Collisions (PICs) on the local road network obtained from 'Crash Map'.

2018 traffic survey data at holiday park entrance.

2019 National Highways website data for A27.

Sensitivity

16.4.6 Sensitivity has been determined on the basis of the level of effect that traffic associated with the Site has on the local road network, the safety of vulnerable road users (i.e. pedestrians and cyclists) and the potential impact on local air and noise quality.

16.4.7

16.4.8 **Table 16.3** describes the adopted sensitivity value of receptors for the purpose of this assessment.

Table 16.3: Transport sensitivity

Sensitivity value	Description
High	Receptors with high sensitivity to traffic flows, such as schools, day care centres, nurseries, play areas, parks, hospitals, retirement homes, shopping centres, accident hotspots, congested junctions, areas with no/narrow footways but high numbers of pedestrians.
Medium	Receptors with medium sensitivity to traffic flows, such as residential areas, shops and listed buildings.
Low	Receptors with low sensitivity to traffic flows, distant from affected roads and with low number of pedestrians.
Negligible	Receptors with no sensitivity to traffic flows.

Magnitude of impact

- 16.4.9 The magnitude of impact has been assessed using the anticipated construction and operation activities being undertaken at the Site.
- 16.4.10 The impact will largely be experienced on the local unclassified roads and adjacent to the Site since these have a lower baseline traffic level than surrounding classified routes.
- 16.4.11 On the basis that the local highway network, in particular, Clappers Lane will currently experience relatively low numbers of Heavy Goods Vehicles (HGVs), the magnitude of impact has been benchmarked against the increase in the number of vehicles and HGVs, rather than a percentage change to current baseline levels.
- 16.4.12 **Table 16.4** defines the adopted magnitude thresholds for transport impact based on the number of vehicle movements. Note that a journey by a single vehicle to and from the site has been counted as two movements. An equivalent average movements per minute figure has also been presented to allow easier comprehension.

Table 16.4: Transport impact magnitude

Magnitude	Summary	
Large	Cars/vans	Over 30 additional movements in any hour (1 every 2 minutes on average)
	HGVs	Over 12 additional movements in any hour (1 every 5 minutes on average)
Medium	Cars/vans	Up to 30 additional movements in any hour (1 every 2 minutes on average)
	HGVs	Up to 12 additional movements in any hour (1 every 5 minutes on average)
Small	Cars/vans	Up to 20 additional movements in any hour (1 every 3 minutes on average)
	HGVs	Up to 6 additional movements in any hour (1 every 10 minutes on average)

Magnitude	Summary	
Negligible	Cars/vans	Up to 12 additional movements in any hour (1 every 5 minutes on average)
	HGVs	Up to 2 additional movements in any hour (1 every 30 minutes on average)

16.4.13 The thresholds have been defined as maximum movements per hour to reflect how receptors will experience any impact. The same number of movements over a shorter period is considered to have a higher impact and therefore the magnitude is defined on a peak hourly basis rather than daily movements.

Determination of significance

16.4.14 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 16.5**. Major and moderate effects are considered significant in the context of the EIA Regulations 2017.

Table 16.5: Transport significance criteria.

Significance of effect	Description
Major	Significant increase in traffic on the local road network and/or local trunk roads, causing greater network delay, a substantial risk to safety of vulnerable road users.
Moderate	Moderate increase in traffic on the local road network, causing slight network delay, slight risk to safety of vulnerable road users.
Minor	Minor increase in traffic on the local road network potentially causing slight delay on the local road network. There is little change in risk to safety of vulnerable road users.
Negligible	Minor increase in traffic on the local road network causing little to no traffic impact on the local road network. There is no change to the level of risk to safety of vulnerable users.

16.4.15 **Table 16.6** below sets out the matrix for the assessment of significance of effects; where the level of effect is determined by the sensitivity to change and magnitude of impact. The shaded cells indicate effects that are considered to be **Significant**.

Table 16.6: Transport assessment matrix.

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible/minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible/minor	Negligible	Negligible	Negligible

Difficulties and uncertainties

- 16.4.16 No information gaps have been identified therefore it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant transport and access effects on the environment.
- 16.4.17 Given the outline nature of the proposals, it should be noted that the full construction methodology and number of HGV movements is not confirmed at this stage; however, high-level estimations of HGV movements are set out in **Appendix 16.2**.

Design basis and assumptions

- 16.4.18 As the Site is already a well-established holiday park, with no change to use or number of units, the existing external transport arrangements will remain. As such, vehicular access will continue to be taken via the private road (Drove Lane) from Earnley, with secondary emergency access possible via the adjacent RSPB nature reserve – as per the existing arrangement. There are no planned alterations to the existing access as part of the Proposed Development.
- 16.4.19 As such, there are no design considerations to introduce anything 'new' to the highway network or access. Nevertheless, ITP Drawing 4150-001, included in **Appendix 16.1**, presents the existing access arrangement where the unadopted and adopted stretches of Drove Lane meet in the hamlet of Earnley. It should be noted that no physical changes to this interface are proposed as part of this application and therefore no Road Safety Audit has been deemed necessary.
- 16.4.20 It should also be noted that since the private lane is effectively a continuation of the adopted highway, there is no give-way line at the point of access from which to plot visibility splays. Forward visibility is generally acceptable in line with the rural nature of the lane and does not encourage high vehicle speeds.

11.5 Existing Environment

- 16.5.1 Medmerry Park comprises an existing holiday village of 308 holiday chalets, supporting leisure and operational facilities, including a clubhouse, The Medmerry (an on-site public house/restaurant), outdoor swimming pool, children's play area, mini-golf park, and tennis courts along with various landscaped areas.
- 16.5.2 The park currently operates a mix of:
- Owned chalets – sold to and used by owners.
 - Owned chalets – sold to owners and sub-let to holiday makers.
 - Holiday fleet owned chalets – managed by the Applicant and let to holiday makers.
- 16.5.3 For those owning chalets, this promotes a greater respect for the site, its surroundings and neighbours. They have an interest in maintaining the reputation of the site to maximise the return on their investment, in monetary terms but also in creating a sense of community, like that seen in surrounding villages.
- 16.5.4 Chalet owners will have a familiarity with the site which means they have a better understanding of the local road network to drive appropriately on the streets around the park; they will likely generate a lower number of trips on the surrounding network with

less demand for sightseeing; and they are more likely to arrive and depart during off-peak periods as they will understand when congestion occurs.

- 16.5.5 Those sub-letting from chalet owners are likely to share similar characteristics with a proportion likely to be repeat bookings and therefore benefitting from a familiarity of the surrounding area.
- 16.5.6 The redevelopment of the site is focussed on retaining this mixture going forward, as a high-quality modern holiday resort.

Site location

- 16.5.7 The Site is located on the southwestern fringe of the Manhood Peninsula, south of Chichester and is currently set back from the coast by approximately 200 m. The immediate surroundings are largely undeveloped, with the Site being accessed via Drove Lane, a private access road, from the village of Earnley (**Figure 1.1**).
- 16.5.8 The Site is located in proximity to a range of local attractions, including:
 - RSPB Medmerry Nature Reserve
 - West Witterings Beach
 - Chichester Beach

Site Access

- 16.5.9 Vehicular access to the Site from the local highway network is gained from an existing point of access from Drove Lane, which is a private access road with passing bays. Drove Lane leads to the Clappers Lane in the village of Earnley to the north, which then connects on to the wider highway network.

Local Highway Network

- 16.5.10 The geography of the Manhood Peninsula and the resulting layout of the highway network means that there are a limited number of routes available to access the Site from the highway network. The likely routing of vehicles arriving at the holiday park is shown in **Figure 16.1**.
- 16.5.11 The west of the peninsula is served by the A286, which joins the strategic road network at the Stockbridge Roundabout on the A27 Chichester Bypass. The A286 also continues into Chichester city centre.
- 16.5.12 Routing north of Earnley varies by navigation tool however, the most appropriate route is via the B2198 Bracklesham Lane, which is a wider road that is more suited to those unfamiliar with the area. The more direct route, via Bookers Lane, is a narrower rural road which is likely to be unsuitable for larger vehicles.
- 16.5.13 Alternative routing via the B2145 is also available to the Whyke Roundabout on the A27, however this is unlikely to be used by those unfamiliar with the area due to a convoluted routing via several rural lanes.
- 16.5.14 The Site is signed within Earnley with heritage-style finger posts, shown in **Figure 16.2**.

Accessibility

Walking and Cycling

- 16.5.15 Whilst it is not anticipated that a significant proportion of holidaymakers will choose to arrive initially on foot or by bicycle, the holiday park's location offers a wide range of options for active travel as a leisure activity during visitors' stays, therefore reducing the need for holidaymakers to travel away from the Site by car to access similar opportunities. **Appendix 16.3** further supports this by identifying a package of measures that promotes sustainable transport and reduces private vehicle journeys originating from the Site.
- 16.5.16 The Site benefits from its proximity to RSPB Medmerry nature reserve and the continuous beach front along the coast, which are major attractors for the holiday park.
- 16.5.17 **Figure 16.3** highlights the existing walking and cycling routes near the holiday park. As well as footpaths along the coast from the park, there are many footpaths crossing the peninsula.
- 16.5.18 The park is accessible and bordered by a Public Right of Way (PRoW) along its western boundary (footpath number 55). PRoW footpath 55 follows a fully surfaced private lane directly between the park and the village of Earnley, therefore does not require any improvement in order to make it fully accessible.
- 16.5.19 A link to Bracklesham is also provided via the beach which runs directly from the holiday park to Bracklesham and onwards. Equally, this also provides access to the neighbouring RSPB site and forms part of a longer circular route taking in the reserve, as shown in **Figure 16.3**.
- 16.5.20 **Figure 16.4** highlights the existing cycling routes in proximity of the holiday park. The nearest recognised cycle route is Salterns Way, which follows the western coast of the Manhood Peninsula from Chichester to East Head. National Cycle Network route 88 follows the eastern coast and joins route 2 near Chichester.
- 16.5.21 Some useful locations frequented by visitors that are accessible via foot and cycle include Bracklesham, East Wittering and West Wittering. Walking and cycling distance to amenities and attractions are presented in **Table 16.7**.

Table 16.7: Local attractions.

Destination	Distance	Walking time	Cycling time
East Wittering Beach	0.4 km	5 min	1 min
East Wittering	3.8 km	45 min	12 min
West Wittering	6.0 km	1 hr 15 min	18 min
Chichester Harbour	7.7 km	1 hr 34 min	23 min

Bus

- 16.5.22 Access to the holiday park using public transport is limited due to its rural location. The nearest bus stops are located at the junction of Clappers Lane and Bracklesham Lane,

approximately 1.8 km from the park, and are served by the frequent number 52 and 53 services to Chichester, as shown in **Figure 16.5**.

- 16.5.23 The services operate as 'lollipop' routes with service number 52 completing a clockwise circuit and service number 53 completing an anticlockwise circuit. Combined, the two services provide up to four services an hour to Chichester.

Rail

- 16.5.24 Chichester railway station is located approximately 12 km from the holiday park and provides access to frequent services from London and along the south coast. There is no direct connection from the rail station to the Site however, a bus connection via a change at Bracklesham facilitates a limited degree of access.

- 16.5.25 Chichester rail station also provides a taxi rank which can take users directly from the station to the Site.

Traffic Counts

Holiday Park entrance

- 16.5.26 To understand the current traffic generation of the holiday park, traffic surveys were conducted at the Site's entrance for a week commencing 27th June 2018. This coincided with a prolonged period of excellent weather across the UK, therefore providing a robust assessment of peak operations at the current holiday park.

- 16.5.27 This data has previously been accepted by WSCC and is considered robust and up to date as the site has not changed since 2018. As such the counts remain representative of the current operation, particularly in the context of Covid-19 impacting data in 2020 and 2021.

- 16.5.28 **Figure 16.6** shows the results of the traffic survey. The data shows that most trips to and from the park occur around midday and slowly tail off into the afternoon and evening. This pattern is observed across all seven days of the week with little difference between weekdays and weekends.

- 16.5.29 It can also be seen that the trip generation is highest on Saturdays and Sundays, as would be expected for a leisure resort. The peak period for trip generation was shown to be between 10:00 and 11:00 on Saturday and Sunday.

- 16.5.30 **Table 16.8** shows the trip generation for the holiday park during the traditional weekday AM and PM peak periods, as well as a daily trip rate from Midnight to Midnight. The rates have been calculated as averages based on traffic flows from Monday-Friday displayed in **Figure 16.6**, inclusively.

Table 16.8: Existing weekday trip generation and rates.

	AM peak (8-9)			PM peak (17-18)			Daily (00-24)		
	Arr.	Dep.	Total	Arr.	Dep.	Total	Arr.	Dep.	Total
Vehicle trips (308 units)	11	3	14	11	19	30	192	193	385

	AM peak (8-9)			PM peak (17-18)			Daily (00-24)		
	Arr.	Dep.	Total	Arr.	Dep.	Total	Arr.	Dep.	Total
Trip rates (per unit)	0.04	0.01	0.05	0.04	0.06	0.10	0.62	0.63	1.25

16.5.31 **Table 16.9** shows the trip generation for the peak period on a Saturday (10:00-11:00) as well as a daily trip rate from midnight to midnight. The trip generation on a Saturday is significantly higher than on a typical weekday, however does not overlap with traditional weekday peak periods on the wider highway network.

Table 16.9: Existing Saturday trip generation and rates

	AM peak (8-9)			PM peak (17-18)		
	Arr.	Dep.	Total	Arr.	Dep.	Total
Vehicle trips (308 units)	28	24	52	245	251	496
Trip rates (per unit)	0.09	0.08	0.17	0.80	0.81	1.61

Highway safety

16.5.32 Personal Injury Collision (PIC) data from the ‘Crash Map’ website for the local highway network in the vicinity of the Proposed Development site has been investigated. National Planning Practice Guidance states that collision records should be interrogated for the most-recent available three-to-five-year-period – in this case 2017-2021, inclusively.

16.5.33 Within the five-year period reviewed, there were no recorded collisions along the private access road, Drove Lane, or the Site access itself. However, a total of five collisions were recorded on the highway network within a 250 m radius of the Drove Lane / Clappers Lane junction. Four of the recorded incidents were classified as ‘slight’ in severity; and one incident recorded as ‘serious’ in severity.

16.5.34 The collision search area is displayed in **Figure 16.7** which shows the five collisions took place at the junction of Bookers Lane and Clappers Lane. Collision data has been obtained via Crashmap Pro, which details the following casualties and manoeuvres:

Collision in 2017 involving two cars, resulting in a ‘slight’ injury for a driver and passenger in one of the cars.

- o Car proceeding normally along the carriageway, on a right-hand bend.
- o Car proceeding normally along the carriageway, on a left-hand bend.

Collision in 2019 involving three cars, resulting in a ‘slight’ injury for a driver in one of the cars.

- o Car proceeding normally along the carriageway, not on a bend.
- o Car waiting to proceed normally but is held up.
- o Car proceeding normally along the carriageway, not on a bend.

Collision in 2020 involving one car and one pedal cycle, resulting in a ‘slight’ injury for the pedal cyclist.

- o Car in the act of turning right.
- o Pedal cycle proceeding normally along the carriageway, not on a bend.

Collision in 2020 involving one car and one pedal cycle, resulting in a 'serious' injury for the pedal cyclist.

- Car in the act of turning right.
- Pedal cycle proceeding normally along the carriageway, not on a bend.

Collision in 2020 involving one van and one car, resulting in a 'slight' injury for the driver and passenger in the car.

- Van slowing down.
- Car waiting to proceed normally but is held up.

16.5.35 In planning terms, the Proposed Development seeks the same number of holiday units as the extant permission; and as such, there would be no change in vehicle trips and the development would not exacerbate any existing road safety issues. Nevertheless, the cluster of collisions is recognised. Noting the time limited impact of construction vehicles, this is something that has been considered within the accompanying CTMP (**Appendix 16.2**) alongside appropriate mitigating actions.

11.3 Predicted effects

16.6.1 This assessment of effects is based on the project description. Unless otherwise stated, no potential effects have been identified.

Predicted construction effects

16.6.2 The potential effects are most likely to arise during the construction phases, when materials, equipment and contractors will have to be brought to the Site. The impact will be a temporary rise in the amount of traffic travelling to and from the Site on the local road network.

16.6.3 **Appendix 16.2** provides a high-level estimation of 1,720 anticipated two-way HGV movements over the 6-year (72-month) construction period. This averages to:

- 287 two-way HGV movements on average per year
- 24 two-way HGV movements on average per month
- 1 two-way HGV movement on average per day

16.6.4 It should be noted that the average yearly, monthly and daily two-way movements are an average, and there may have been instances where HGV movements are may be more concentrated during certain days. Although unlikely, there may have been instances (before mitigation) whereby there could be up to 12 additional HGV movements in any hour.

16.6.5 In addition, the potential risk to the safety of vulnerable users is an indirect effect during the construction phase.

16.6.6 It is important to note that cut and fill methodology is proposed to ensure that site earthworks do not require external vehicle movements to bring in materials from off-site, which will significantly reduce the construction vehicle impact of the development.

16.6.7 The Proposed Development will therefore have **Moderate** impact during the construction phase which is considered to be **Not Significant**.

Predicted operational effects

- 16.6.8 The number of holiday units will remain the same as the extant permission; and therefore, there is likely to be no or a minor increase in traffic on the local road network causing little to no traffic impact on the local road network.
- 16.6.9 Although some indoor facilities, including the spa, will be open to the public; these will be subject to availability and outside of peak holiday periods. As such, these trips would be generated when Medmerry Holiday Park is operating well under capacity.
- 16.6.10 There are no anticipated indirect effects during the operational phase of the holiday park.
- 16.6.11 The Proposed Development will therefore have **Negligible** impact once it is operational which is considered to be **Not Significant**.

11.3 Mitigation

- 16.7.1 Due to the planned nature of construction, multiple actions can be put in place to reduce the impact of the Proposed Development on the transport network. This can formally be controlled by the CTMP (**Appendix 16.2**), which includes:
- Construction vehicle routing.
 - Temporary signage and traffic control.
 - Limited operational hours e.g., to avoid peak periods.
 - Staggered timing of inbound / outbound construction traffic movements.
 - Designated 'routing staff' to enforce construction routes.
 - Travel information packs for workers at the Site.
- 16.7.2 Following mitigation, the Proposed Development will have **Minor** impact during the construction phase.
- 16.7.3 The CTMP (**Appendix 16.2**) will mitigate and balance the concentration of HGV movements to ensure they are staggered, thus reducing the number of HGV movements in any given hour.
- 16.7.4 No mitigation is required for the operational phase of the Proposed Development.

11.3 Summary of effects

- 16.8.1 It is anticipated that the effects of the Proposed Development will be **Minor** which is considered to be **Not Significant**. The largest combined effect will be experienced during the construction period. This will be the period where traffic to the Site will be at its highest level as traffic to the Site will remain similar to the existing situation during the operational period.
- 16.8.2 During the construction period, where traffic to the Site is greatest, there is a potential increased risk of delay for other road users and traffic which may in turn have an impact upon road safety for more vulnerable road users.
- 16.8.3 However, as has been discussed within this chapter, the construction traffic that will be present will be subject to the accompanying CTMP (**Appendix 16.2**) which details construction routes for HGVs and ensures that traffic accesses the Site outside of peak

traffic hours and away from sensitive receptors where their interaction with vulnerable groups would be greater. This will lower the effects of any additional traffic on the local road network that could impact aspects such as road safety.

16.8.4 **Table 16.10** summarises the predicted effects of the Proposed Development on transport and access.

Table 16.10: Summary of significant effects.

Predicted effect	Significance	Mitigation	Significance of residual effect
Construction			
Increase in local traffic	Moderate	CTMP (Appendix 16.2) includes: Construction vehicle routing Restricted hours for construction vehicle movements Coordination to limit or restrict construction vehicle movements during large events	Minor
Increase in PICs	Moderate	CTMP (Appendix 16.2) includes: Construction vehicle routing Warning signage	Minor
Operation			
Increase in local traffic	Negligible	Indoor facilities only open to the public outside of peak holiday periods and when available.	Negligible
Increase in PICs	Negligible	None	Negligible

11.3 References

- National Planning Policy Framework (2021).
- Chichester Local Plan 2014-2019 (2015).
- DfT Circular 01/2022 (2022).
- Guidelines for the Environmental Assessment of Road Traffic (1993).
- Google Maps (2023).
- Ordnance Survey (2023).
- Crash Map (2023).
- Traffic Survey Data (2018).
- Highways England WebTRIS data (2019).

17 OTHER ENVIRONMENTAL CONSIDERATIONS

11.1 Arboriculture

- 17.1.1 A Tree Survey and Arboricultural Impact Assessment (AIA) has been carried out by RPS to assess the quality of the trees on site, assess the arboricultural impact of the Proposed Development and provide recommendations for tree protection measures (**Appendix 17.1**). This includes the production of a Tree Protection and Removal Plan. The report has been prepared in accordance with the requirements of British Standard 5837:2012.
- 17.1.2 The impact assessment stated that 96 individual trees, six tree groups and 8 scrub and hedgerow areas will need to be removed out of 136 individual trees, 16 tree groups and 8 hedgerow and 24 scrub areas. Out of the trees removed, only one is Category A ('High quality') and the majority are Category C ('Low quality').
- 17.1.3 The AIA concluded that with the adoption of documented measures, there would be a **Moderate** impact but **Not Significant** effect upon trees as none of the trees are classified as 'special'. The measures include:

Agreement with the LA on the extent of tree canopy reductions.

All tree work to adhere to BS 3998:2010 and the latest arboricultural best practice.

All tree work is required to be completed prior to any construction and enabling works on the site.

All tree work should be timed with regard to nesting bird and roosting bat seasons.

Construction exclusion zones will be erected around retained trees.

Tree protection fences shall be erected as shown in the Tree Protection and Removal Plan.

New hard surfaces within root protection zones are to be permeable and constructed using 'no-dig' design principles in accordance with AA Guidance Note 12.

11.2 Population and Human Health

- 17.2.1 Consideration of the potential for significant effects upon the existing and future resident local population and human health has several facets. Impacts on air quality and on noise and vibration during construction each have the potential to result in significant effects and therefore have been addressed separately in **Chapters 12** and **15**. The potential significant effects likely to arise from contaminated land have been addressed separately in **Chapter 7**.
- 17.2.2 During operation it is predicted that there will be no significant effect due to the nature of the Proposed Development. The Proposed Development is for the redevelopment and refurbishment of the existing Medmerry Holiday Park as 66 of the current units are not in a habitable state and a number are falling into disrepair, including the amenity facilities. The Proposed Development's objectives are around improving the quality of the sit as

experienced by tourists and lodge owners, by enhancing the current amenities, providing more amenities, and to improve the accommodation provided. It is therefore, considered to have a **beneficial** impact.

11.3 Major accidents and disasters

- 17.3.1 A requirement of the EIA Regulations is to consider any increase in the risks and consequences of major accidents or disasters related to the Proposed Development. For the development the risks are considered to be adequately managed through good design and standard construction approach including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work Act 1974. It is envisaged that the normal planning controls would be sufficient to control risk arising from commercial elements of the Proposed Development, which would not result in any significant adverse effects on the population.
- 17.3.2 The risks of major accidents or disasters have accordingly been scoped out of the ES.

6.10 Heat and radiation

- 17.4.1 Due to the nature of the Proposed Development, it is anticipated that there would not be any significant heat or radiation generated or emitted. Electromagnetic radiation (EMR) that is emitted by electrical equipment will be controlled within safe occupational limits by accepted industry standards and best practice. Effects of heat and radiation have therefore been scoped out of the ES.

11.5 Transboundary effects

- 17.5.1 The Proposed Development would not result in any emissions or other factors that could result in adverse effects being perceived in any other country and so such effects have been scoped out of the ES.

11.3 References

British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

British Standards Institute. British Standard (BS3998) Trees Work. 2010.

AA Guidance Note 12 Cellular Confinement Systems Near Trees.

18 CUMULATIVE EFFECTS

18.1 Introduction

- 18.1.1 Cumulative effects can arise from the combined effect on a given receptor or resource of other committed development projects when considered in combination with the proposed scheme. For example, a proposed industrial plant may be predicted to generate low levels of emissions to air, but when such emissions are considered in combination with predicted emissions from a nearby proposed bypass, these may result in exceedances in air quality standards.
- 18.1.2 Cumulative effects can also arise from the interaction of two or more environmental effects associated with the proposed scheme on a given receptor or resource. For example, a residential receptor may be exposed to air quality degradation and increased noise levels from a project that singly may be deemed acceptable, but in combination may result in an unacceptable level of nuisance.

18.2 Scope and methodology

- 18.2.1 Paragraph (5)(e) of Schedule 4 of the EIA Regulations 2017 states that the Environmental Statement should include “*a description of the likely significant effects of the development on the environment resulting from...the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*”.
- 18.2.2 Regulation 4(2) states that the EIA must “identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors [.] population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape”. Regulation 4(2)(e) refers to the need to assess the interaction between those factors.
- 18.2.3 There is no widely accepted methodology or best practice for assessing cumulative effects. However, relevant guidance has been considered, including from the Institute of Environmental Management and Assessment (IEMA), 2011.
- 18.2.4 The following types of cumulative effects have been considered in accordance with the EIA Regulations 2017 and best practice guidance:
- Intra-project combined effects –the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
 - Inter-project cumulative effects –the combined residual (post-mitigation) effects of the Proposed Development and other projects on a single receptor/resource, considering the deviation from the baseline conditions at common sensitive receptors/resources as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments.

Inter-project combined effects

- 18.2.5 The approach to the assessment of inter-project effects considered the deviation from the baseline conditions at common sensitive receptors as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments. The assessment of the inter-project effects has been based upon the residual (post-additional mitigation) effects that have been identified in the various factor assessments for the Proposed Development, as well as available environmental information for the approved (committed) developments.
- 18.2.6 The criteria used to determine whether to include or exclude an approved (committed) development have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly CDC). The criteria address the following:
- Temporal scope
 - Scale and nature of development
 - Other factors (e.g., the nature and/or capacity of the receiving environment).
- 18.2.7 Consultation was undertaken with Chichester District Council in June 2023 to identify committed developments with which the proposed scheme could potentially combine. The outcome of this consultation is presented in **Appendix 18.1**.
- 18.2.8 Information gathered from consultation was reviewed to determine whether any resources and receptors identified as being potentially affected by these developments would also be affected by the proposed scheme.
- 18.2.9 Where potential overlap was identified, an assessment was made using available data to predict whether a cumulative effect would occur. In relation to some environmental aspects (e.g. landscape), the nature of the assessment has been more speculative, relying on professional judgement using qualitative methods to identify potential cumulative effects.
- 18.2.10 The focus of the assessment was directed appropriately towards predicting the contribution that the proposed scheme would have in a given cumulative effect, and the overall significance of that effect.

Intra-project cumulative effects

- 18.2.11 The approach to the assessment of interactions of environmental effects considers the changes in baseline conditions at common sensitive receptors (i.e., those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the Proposed Development.
- 18.2.12 Each environmental topic specialist has undertaken an assessment to portray the intra-project cumulative effects that will work in combination with their specific factor.
- 18.2.13 In addition, an overall assessment of the intra-project combined effects has been undertaken by assuming a worst case scenario in that each environmental factor impacts the same sensitive receptor during each phase of development. Taking the residual effect (after mitigation is applied) of each environmental factor, the worst impact has been determined to be the overall impact on a sensitive receptor.

Significance criteria

18.2.14 There is no formal guidance on the criteria for determining significance of cumulative effects. The following principles have been considered when assessing the significance of cumulative effects in relation to both intra-project and inter-project cumulative effects:

- Is there an intra-project and/or inter-project effect on any receptors/resources.
- The nature of the receptors/resources affected.
- How the impacts identified combine to affect the condition of the receptor/resource.
- The probabilities of the impacts occurring in relation to each other in such a way so as to produce a cumulative effect, considering the extent and duration of the impact change.
- The ability of the receptor/resource to absorb further impacts.
- Is the level of effect different to that considered at the project level and is the in-combination effect significant or not.

18.3 Difficulties and uncertainties

18.3.1 The assessment of inter-project cumulative effects is limited to publicly available information obtained from the relevant planning applications on the CDC planning portal. For some of the identified approved developments, relevant information for this assessment was not available. Where this is the case, the inter-project cumulative effects assessment have been based upon assumptions and professional judgement, and some statements made have relied on the review of mitigation measures proposed as part of the approved (committed) developments rather than the Proposed Development.

18.4 Predicted cumulative effects

18.4.1 Inter-project cumulative effects have been assessed using the short-listed developments within 1 km of the site set out in **Appendix 18.1** and shown in **Figure 18.1**.

18.4.2 The list has been assembled using the criteria listed above for any approved (committed) development within a 1 km radius of the Site and construction of more than two dwellings.

18.4.3 The relatively low threshold, that is construction of two dwellings and above, was applied due to the rural area of the Proposed Development, since their contribution to cumulative effects may be disproportionately greater than compared to developments located in a more urban environment.

18.4.4 Further detail of the inter-project cumulative effects for each environmental factor is set out below.

18.4.5 Interactions of environmental effects due to the Proposed Development have taken into account the impacts on the receptors deemed sensitive by each environmental factor. Further detail is set out below.

18.4.6 In addition, utilising the worst-case scenario, as set out above, intra-project cumulative effects have been assessed to understand the overall cumulative impact using the outcome of each ES topic in **Table 18.1** below. It has been shown that there will likely be an overall **Moderate** impact during the construction phase and a **Minor** impact during the operational phase and therefore overall intra-project effects would be **Not Significant**.

Table 18.1: Summary of the residual impact on each environmental factor from the Proposed Development.

	Construction	Operation
Biodiversity	Minor	Minor Beneficial
Land and Soil	Minor	Negligible
Water	Negligible	Negligible
Cultural Heritage	Minor	Negligible
Landscape	Moderate	Minor
Climate	Minor	Minor
Air	Negligible	Negligible
Material Asset and Waste	Minor	Minor
Socioeconomics	Major beneficial	Moderate Beneficial
Noise and Vibration	Minor	Minor
Transport and Access	Minor	Negligible

Biodiversity

Inter-project cumulative effects

Cumulative effects on internationally designated sites

- 18.4.7 The potential cumulative and in-combination impacts on internationally designated sites arising from the Proposed Development is discussed in detail in the HRA (**Appendix 6.7**). This includes assessments of the following designated sites:
- Chichester and Langstone Harbours SPA;
 - Chichester and Langstone Harbours Ramsar site;
 - Pagham Harbour SPA;
 - Pagham Harbour Ramsar site;
 - Solent Maritime SAC;
 - Medmerry Reserve (Compensatory Habitat); and
 - Solent and Dorset Coast SPA.
- 18.4.8 No projects have been identified which are considered likely to act cumulatively upon the local ecology of the identified designated sites during the construction and operational phases of the Proposed Development. Furthermore, the Site has been identified as not being functionally linked to any of the internationally designated sites within the Zone of Influence. Significant effects in combination with other developments are therefore considered highly unlikely.
- 18.4.9 The regional projects identified in proximity to the Site have all been subject to their own relevant detailed biodiversity impact assessments and mitigation measures. This would include assessments and mitigation measures associated with the increased risk of recreational pressure from residential developments. The proper planning and implementation of environmental controls, monitoring and mitigation for projects of that

scale greatly minimises the risk of significant residual impacts upon ecological features of conservation importance. The enforcement of planning policies set out within the Chichester Local Plan would ensure that projects alone would not, without any scientific doubt, cause any significant impacts to internationally designated sites, and would enforce any mitigation payments where necessary, which would offset impacts on a landscape scale (i.e., payments towards the Bird Aware Solent Recreation Mitigation Strategy). Consequently, the risk of cumulative and in-combination effects on any of the internationally designated sites within the Zol is unlikely to be significant, especially considering the low-impact nature of the Proposed Development and other developments assessed for cumulative effects. As a result, it is concluded that inter-cumulative effects on internationally designated sites are expected to be **Not Significant**.

Cumulative effects on nationally designated sites and habitat

18.4.10 Due to the constraints led design approach and the avoidance of direct impacts on high-value habitats, there is no likely potential for cumulative impacts on designated sites and habitats of relevance to this Proposed Development. It should be noted that no residual effects are predicted in relation to designated sites and habitats and any habitat loss within the Site is mostly restricted to such habitats which are common and widespread in the surrounding landscape, and which are of intrinsically low value for biodiversity. Furthermore, where significant effects from other proposed developments are predicted, mitigation and compensation measures are included to ensure that any losses of valued habitats are reinstated and/or sufficiently replaced to avoid significant residual effects. As a result, it is concluded that inter-cumulative effects on nationally designated sites and habitats are expected to be **Not Significant**.

Cumulative effects on fauna

18.4.11 The constraints led design approach has minimised the risk of disturbance, displacement, and loss of habitats of importance for species. There is potential for bat and bird species to be impacted by other developments due to their transitory nature as volant species. However, they are unlikely to be significantly impacted by the projects listed in **Appendix 18.1** due to their temporary and low-impact construction nature. Additionally, the land take involved with the Proposed Development and that of the other identified projects is unlikely to cause a significant loss to important ecological features in the region. Furthermore, where significant effects from other proposed developments are predicted, mitigation and compensation measures are included to ensure that any losses of valued habitats are reinstated and/or sufficiently replaced or disturbances to species are mitigated to avoid significant residual effects. Therefore, disturbances and habitat loss from construction and operation of these developments are unlikely to result in significant cumulative effects associated with the Proposed Development.

18.4.12 No permitted or operational developments in the wider receiving environment were identified which were likely to act cumulatively or in combination with the Proposed Development to impact upon fauna species. As a result, it is concluded that inter-cumulative effects are expected to be **Not Significant**.

Intra-project cumulative effects

- 18.4.13 Intra-project cumulative effects on ecological features are assessed (as per standard practice) as part of the assessment of effects detailed within Section 6.7. As such, all evaluations and conclusions made have included the likelihood and effects of intra-project activities upon ecological features. It is considered that the implementation of project design embedded mitigation as well the mitigation of likely significant effects during construction is sufficient to avoid significant intra-cumulative effects. As a result, it is concluded that intra-project cumulative effects are expected to be **Not Significant**.

Land and Soil

Inter-project cumulative effects

- 18.4.14 There is no residual significant adverse effect predicted; inter-project cumulative effects have therefore not been considered further.

Intra-project cumulative effects

- 18.4.15 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered.

Water

Inter-project cumulative effects

Demolition and Construction Phase

- 18.4.16 As part of the relevant cumulative projects planning submissions, it is considered that in accordance with the NPPF, NPPG and local planning policy, construction mitigation measures will be required to be implemented and therefore the residual effects are considered to be negligible. As a result, it is concluded that cumulative effects are expected to be **Not Significant**.

Operational Phase

- 18.4.17 As with the construction and demolition phase, the developments listed would be subject to meeting the requirements of the NPPF, NPPG, NTSS and local planning policy to demonstrate that during the operational stage the development does not increase flood risk to the surrounding area, including managing surface water, wastewater and pollutants generated onsite. Without demonstrating compliance with this legislation, the developments would not achieve planning permission.
- 18.4.18 As a result of achieving compliance with policy, the developments will include suitable mitigation and management strategies to prevent negative impacts. With these measures included in the developments, it is considered that cumulative operational effects on flood risk and drainage will be **Not Significant**.

Intra-project cumulative effects

- 18.4.19 There is no residual significant adverse effect predicted at both the demolition and construction phase and the operational phase; intra-project cumulative effects have therefore not been considered.

Cultural Heritage

Inter-project cumulative effects

- 18.4.20 There is no residual significant adverse effect predicted; inter-project cumulative effects have therefore not been considered further.

Intra-project cumulative effects

- 18.4.21 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

Landscape

Inter-project cumulative effects

- 18.4.22 No local developments have been identified that will occur during the time frame anticipate for this project so no cumulative effects are considered.

Intra-project cumulative effects

- 18.4.23 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

Climate

Inter-project cumulative effects

- 18.4.24 Most developments and infrastructure projects cause the emissions of GHGs, and therefore all developments, no matter where they are located, can lead to cumulative GHG emissions and cumulative climate effects on a global scale. It is thus not possible to define a study area with which to assess cumulative effects of GHG emissions, nor undertake an in-depth cumulative effects assessment.

- 18.4.25 The Climate Resilience assessment considers the effects of climate change on the assets of the Proposed Development, and as such, a cumulative assessment is not appropriate.

Intra-project cumulative effects

- 18.4.26 Climate change affects many of the topics considered within this Environmental Statement; notably ecological and hydrological receptors are identified as being most sensitive to climate change. The impacts of climate change on the ecological and hydrological baseline have been considered within their respective sections above.

Air

Inter-project cumulative effects

- 18.4.27 Construction phase cumulative effects have not been assessed in detail as all committed development would be further than 350m from the proposed development site. Notwithstanding this, all committed development should follow DMPs and contain appropriate dust mitigation measures. Therefore, cumulative construction phase impacts are considered to be **Not Significant**.
- 18.4.28 Operational phase cumulative effects were assessed in the detailed dispersion modelling assessment by the inclusion of committed development traffic flows through the traffic growth factor, in the future year (2025) modelling scenarios. Therefore, cumulative effects are considered **Not Significant**.

Intra-project cumulative effects

- 18.4.29 The proposed development will be constructed and become operational in phases and therefore it is likely to have intra-project cumulative impacts within the different phases of the proposed development. However, the construction will be undertaken in accordance with the dust management plan (DMP) and contain appropriate dust mitigation measures. Therefore, intra-project cumulative construction phase impacts are considered to be **Not Significant**.
- 18.4.30 Interaction of effects among air quality and other assessed impacts such as transport, biodiversity and landscape during the operational phase is possible. However, such interactions are likely to have a positive effect. For example, biodiversity and landscape assessments identify biodiversity improvements, green space and tree planting, which would result in improvement of local air quality. Similarly, the transport assessment promotes active transport and inclusion of EV charging points which will again have positive impact on air quality. Overall, the intra-project cumulative effects are considered to be **Minor beneficial** during the operational phase.

Material Assets and Waste

Inter-project cumulative effects

- 18.4.31 Currently there are five developments within relevant proximity of the site that may be under construction or currently awaiting decisions regarding planning permissions. Of these four only two appear to be of sufficient size to have an impact on regional landfill voids. These are:
- Land southeast of Thorney Farm House –proposed irrigation reservoirs (18/00760/PNO).
 - Earnley Concourse – development of up to 32 residential dwellings (19/02493/OUT).
 - Land south of Clappers Lane, Earnley –outline application for erection of up to 100 dwellings (20/03125/OUT)
- 18.4.32 It is assumed that each individual development will carefully plan to ensure that waste is minimised, reused and recycled where appropriate. Developments should have plans outlining how these actions will be taken. The phased approach of the Proposed

Development over six years will further reduce any pressure on waste treatment infrastructure as the generation of waste arisings will be spread over time.

- 18.4.33 It is acknowledged that there will be an impact on future landfill capacities of both West Sussex and Hampshire. It is expected that a large proportion of the residual waste generated from the Proposed Development and the surrounding area will either be sent outside of West Sussex and Hampshire to an appropriate landfill, or instead will be sent for incineration at a nearby waste to energy plant.
- 18.4.34 Additionally, there should be no significant increase in the quantities of operational waste the Proposed Development produces as the development proposes to replace 308 existing chalets with another 308 new lodges. The new site will offer an improved infrastructure for the management of waste by residents. A waste collection scheme will be discussed with the Local Authority and private waste management contractors to ensure all operational waste is collected at an appropriate time to reduce any impact to the environment or local amenity.
- 18.4.35 As with the Proposed Development, other developments should comply with best practice principles of the waste hierarchy, a circular economy and relevant design standard such as British Standard (5906:2005). This will ensure minimisation of waste and material demands, as well as recycling provision and segregation.
- 18.4.36 Overall, the cumulative impact following the implementation of any proposed mitigation measures at both the construction and operational phases are considered **Negligible** and considered **Not Significant**. The cumulative impact from the use of materials at the development following the implementation of appropriate mitigation measures is considered to be **Minor** and considered **Not Significant**.

Intra-project cumulative effects

- 18.4.37 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

Socioeconomics

Inter-project cumulative effects

- 18.4.38 The schemes in **Appendix 18.1** would provide irrigation reservoirs and up to 136 dwellings, with associated works. They will provide homes and will generate employment, GVA and expenditure within the local area during construction.

Construction impacts

- 18.4.39 Based on the level of development that is proposed, it is considered that the cumulative impact of the additional schemes with the Proposed Development in terms of construction employment and GVA generation will be temporary, **beneficial** and **Major** in scale and considered **Significant**.

Operational impacts

- 18.4.40 The additional schemes are largely residential and are not anticipated to support new direct operational jobs. Hence, the cumulative impact of the additional schemes with the

Proposed Development will reflect the impact of the proposed scheme when assessed individually i.e., long-term, **beneficial** and **Moderate** in scale and considered **Not Significant**.

Expenditure impacts

18.4.41 The identified residential schemes will attract new resident expenditure, including upon first occupation of the new homes and ongoing expenditure from new households moving to the area. The Proposed Development will provide holiday accommodation, which will generate new visitor expenditure. It is not appropriate to combine both residential and visitor expenditure as a cumulative impact. Therefore, the assessment of impacts for the Proposed Development when taken individually will remain: long-term, **beneficial** and **Moderate** and considered **Not Significant**.

Impact on local labour market

18.4.42 The identified residential schemes will accommodate new residents, which will strengthen the availability of workers in the local labour market. This will not result in a cumulative impact with the Proposed Development, which offers holiday accommodation. However, some new residents from the additional schemes may take up new jobs provided at Medmerry Holiday Park. Therefore, the assessment of impacts for the proposed development when taken individually will remain: long-term, **beneficial** and **Moderate** and considered **Not Significant**.

Impact on deprivation

18.4.43 The additional schemes will generate benefits in relation to the supply of new homes and supporting expenditure by new residents. This will not result in a cumulative impact with the Proposed Development, which offers holiday accommodation and will support new jobs and visitor expenditure. Therefore, the assessment of impacts for the proposed development when taken individually will remain: long-term, **beneficial** and **Minor** and considered **Not Significant**.

Summary of inter-project cumulative impacts

18.4.44 If all of the identified schemes were to be approved and commenced simultaneously, the identified impacts for construction employment would receive further benefit.

18.4.45 The identified impacts of the additional schemes for operational employment, expenditure, labour market and deprivation receptors cannot be combined with the proposed development. Therefore, the assessment of impacts for the Proposed Development will remain.

18.4.46 If all the schemes provide adequate mitigation contributions through CIL, Section 106 agreements or onsite provision then any negative impacts would be **Negligible** and considered **Not Significant**.

18.4.47 The scale and significance of the residual impacts, following adequate and fair mitigation measures at all development sites would result in the impacts in **Table 18.2**.

Table 18.2: Summary of effects of all development commencing simultaneously (after mitigation).

Topic	Nature of effect	Timescale	Magnitude
Construction jobs	Beneficial	Temporary	Major
Operational jobs	Beneficial	Long-term	Moderate
Expenditure	Beneficial	Long-term	Moderate
Labour market	Beneficial	Long-term	Moderate
Deprivation	Beneficial	Long-term	Minor

Intra-project cumulative effects

18.4.48 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

Noise and Vibration

Inter-project cumulative effects

18.4.49 Potential cumulative construction effects could occur should construction of the identified schemes occur at the same time. However, significant cumulative effects are unlikely to occur as each development is anticipated to have a DCEMP in place, such that the individual construction phase effect is not significant, alone or in combination. The committed development would also be further than 500 m from the proposed development site and cumulative effects for the construction phase are therefore considered **Not Significant**.

18.4.50 The future year traffic data utilised within the assessment includes cumulative changes in traffic flow. The predicted noise levels are therefore considered representative of noise arising from cumulative developments in the area and cumulative effects for the operational phase are therefore considered **Not Significant**.

18.4.51 The list of development included in the traffic data is presented in **Chapter 16**.

Intra-project cumulative effects

18.4.52 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

Transport and Access

Inter-project cumulative effects

18.4.53 It is understood that two housing developments along Clappers Lane were both approved by appeal in 2022. These are:

- A 100-dwelling housing development in Earnley (20/03125/OUT) was approved by appeal in August 2022: 'Outline Application for the erection of up to 100 dwellings with associated access, landscaping and public open space. All matters reserved other than access –at land south of Clappers Lane.'

- A 32-dwelling housing development in Earnley (19/02493/OUT) was approached by appeal in May 2022: 'Outline planning application with all matters except Access reserved. Demolition of Earnley Concourse buildings, Elm Lodge, Gate Cottage and the Ranch House and replacement with residential development of up to 32 no. dwellings with associated access and footway works, landscaping, open space and drainage infrastructure.'

18.4.54 The proposed housing development accesses are both via Clappers Lane which runs along the northern boundary of the proposed housing sites. The proposed accesses are approximately 1 km north-west of the Medmerry Holiday Park site access.

18.4.55 The Proposed Development for Medmerry Holiday Park will have a **Negligible** transport effect once it is operational. As such the inter-project cumulative operational effects of the housing developments and Medmerry Holiday Park are likely to be **Negligible**; particularly as the Medmerry Holiday Park is anticipated to have no change in vehicle trips compared to the extant permission, and also as the development traffic peaks between the housing development and holiday park will differ.

18.4.56 However, there are likely to be inter-project cumulative construction effects when considering both the Proposed Development and the two proposed housing developments. The construction programme for the proposed housing developments are not known, but there may be crossover whereby all sites are under construction.

18.4.57 As such, the CTMP for the Medmerry Holiday Park seeks to mitigate the construction effect of transport where possible. Clear communication and liaison with the Local Highway Authority (LHA) will seek to ensure any potential impact on the local highway network will be minimised.

Intra-project cumulative effects

18.4.58 There is no residual significant adverse effect predicted; intra-project cumulative effects have therefore not been considered further.

18.5 Mitigation

18.5.1 The declared residual effects for the Proposed Development in **Sections 6 to 17** are those that are predicted to remain after taking account of environmental mitigation measures.

18.5.2 The majority of significant cumulative effects are predicted only to occur should implementation of the proposed scheme coincide with other committed developments (e.g. construction phase overlap and consequential demands on the local labour supply).

18.5.3 The only potential adverse impact will likely be from construction traffic if construction phases overlap. This has been considered in the outline CTMP for the Proposed Development to mitigate this.

18.5.4 Mitigation for other development effects falls outside the scope of this EIA. However, it is recognised that local authorities responsible for such developments have the ability to influence the timing of developments and secure measures to avoid adverse effects occurring simultaneously.

18.6 Summary of effects

18.6.1 Taking into consideration all of the above, it is deemed that there is no significant effect arising from cumulative impacts. A summary is provided in **Table 18.3** below.

Table 18.3: Summary of inter-project and intra-project cumulative effects.

	Inter-project cumulative effects	Intra-project cumulative effects
Biodiversity	Not significant	Not significant
Land and Soil	Not significant	Not significant
Water	Not significant	Not significant
Cultural Heritage	Not significant	Not significant
Landscape	Not significant	Not significant
Climate	N/A	Not significant
Air	Not significant	Beneficial
Material Asset and Waste	Not significant	Not significant
Socioeconomics	Beneficial	Not significant
Noise and Vibration	Not significant	Not significant
Transport and Access	Not significant	Not significant
Overall	Not significant	Not significant

18.7 References

IEMA. (2011). Special Report on 'The State of Environmental Impact Assessment in the UK'. Institute of Environmental Management and Assessment. Online. Available at: <https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf>

13 ENVIRONMENTAL MANAGEMENT

12.1 Introduction

19.1.1 The assessment of the proposed scheme has identified a number of impacts that are likely to arise as a result of progression of the proposed scheme. Mitigation measures have accordingly been identified and developed to counter adverse impacts and reduce the significance of residual effects on the receiving environment.

19.1.2 This chapter has been collated by RSK Environment.

11.3 Commitments

19.2.1 Environmental mitigation measures identified during the EIA process, including monitoring of potentially significant effects, are reported in **Sections 6 to 17** of this Environmental Statement. Subject to the granting of planning consent, these measures will form a mandatory schedule of commitments under the terms of any contract(s) for the construction and future maintenance of the proposed scheme.

19.2.2 Environmental commitments are scheduled in **Table 19.1** below.

Table 19.1: Summary of environmental management measures and commitments.

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
Biodiversity	<p>Demolition and construction:</p> <p><i>Habitats</i> - In the absence of mitigation the Proposed Development potential impacts could include damage to the retained hedgerows during construction.</p> <p><i>Birds</i> - In the absence of mitigation, the demolition of the buildings on site will have a direct adverse impact on nesting birds.</p> <p><i>Bats</i> - In the absence of mitigation the demolition of buildings and removal of trees on site will have a direct adverse impact through loss of potential roost sites.</p> <p><i>Water Vole</i> - In the absence of mitigation, the Proposed Development potential impacts could include incidental mortality, damage to burrows, and disturbance and displacement of Water Voles during construction.</p> <p><i>INNS</i> - In the absence of mitigation, the Proposed Development potential impacts could include spread of invasive non-native species during construction.</p>	<p><i>Habitats</i> - Any retained hedgerows will be protected by tree/root protection fencing to prevent impacts.</p> <p>0.37 km of retained hedgerow will be enhanced.</p> <p>1.88 km of new hedgerow will be planted.</p> <p>All new and retained hedgerows will be managed by an appointed managed company.</p> <p>The proposed enhancements stated in the BNG assessment will be implemented to provide a 6.06% net gain.</p> <p><i>Bats</i> – pre-construction roost characterisation surveys will be undertaken.</p> <p>Adhere to produce lighting plan, reducing Lux levels to, or below, 0.4 Lux.</p> <p><i>Birds</i> - A precautionary working method statement, ensuring the protection of birds will be adhered to. This will involve timing of works outside breeding bird season (March to September) and subject to a pre-works nesting bird survey.</p> <p>To compensate for the loss of a potential nesting site, external and integral nest boxes will be erected in line with BS1 42020 and B2 42021:2022 on a one-to-one basis of new buildings being built.</p> <p><i>Water Vole</i> – Any demolition of buildings and removal of hardstanding within 7 m of</p>	<p>To be detailed in a CEMP and LEMP secured by planning condition.</p> <p>A bird box installation plan to be secured by planning condition.</p> <p>Production of a Tree and Hedgerow Protection/Retention Plan.</p> <p>Production of an Invasive Species Management Plan.</p>

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
		<p>the watercourse will be conducted via hand or handheld machinery.</p> <p>Provision of an Ecological Clerk of Works who will oversee construction and demolition related activities and provide an Ecological Watching Brief and toolbox talks. This will include marking out burrows and delineating sensitive areas of watercourse.</p> <p>Enhancement of watercourses 2, 7, 9, 14 and part of 5 to allow for displacement.</p> <p><i>INNS</i> - production of an invasive species management plan.</p>	
	Operation: None	N/A	Adherence to the LEMP.
Land and Soils	Construction: None	Need for additional mitigation to be determined following Phase 2 S.I.	Phase 2 to be secured by planning condition. Additional mitigation to be documented in a CEMP.
	Operation: None	N/A	N/A
Water	Construction: Risk of pollutants from demolition and construction works.	Standard best practice guidance for pollution control to be followed. Construction Drainage Design Plan to be produced.	To be detailed in a CEMP secured by planning condition.
	Operation: None	N/A	N/A
Cultural Heritage	Construction: <i>Archaeology</i> - Impact on currently unknown below ground archaeology assets where impact to depths is greater than 15 cms bgl.	<i>Archaeology</i> - Need for additional mitigation to be determined following a programme of archaeological investigation in accordance with a WSI. <i>Built Heritage</i> - Implementation of a CTMP.	To be detailed in a CTMP secured by planning condition. WSI to be secured by planning condition.

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
	<i>Built Heritage</i> - Impacts on built heritage assets within Earnley conservation Area.		
	Operation: None	N/A	N/A
Landscape	Construction: <i>Visual</i> – Impacts on views from public rights of way of the surrounding land. <i>Landscape</i> – Impact on landscape character as a result of construction.	Installation of a green privacy mesh to compound fencing on the eastern boundaries.	To be detailed in a CEMP secured by planning condition.
	Operation: None	N/A	N/A
Climate	Construction and demolition: <i>GHG Assessment</i> - Impacts of the Proposed Development on GHG emissions during construction and demolition. <i>Climate Resilience</i> - Flooding may impact the construction and development of the Proposed Development. Increase in temperature may impact the construction and demolition of the Proposed Development.	<i>Design</i> - Review design with view of implementing the carbon hierarchy. Use of locally sourced / produced materials. Consideration for material quantity requirements. <i>Energy</i> - Maximise energy efficiencies. Ensure construction vehicles are well maintained and conform to current emission standards. <i>Travel</i> - Reduce emissions from construction staff commutes to site. <i>Waste:</i> Implement actions to meet the waste hierarchy. <i>Climate resilience</i> - Develop and implement an Incident Response Plan and an Emergency Response Plan. Daily monitoring of weather forecasts.	To be detailed in a CEMP secured by planning condition. Emergency Response Plan to be produced and secured by planning condition. Incident Response Plan to be produced and secured by planning condition.

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
		<p>Monitoring and maintenance of plan and equipment.</p> <p>Consideration of supply-chain risks.</p> <p>Hazardous material to be stored in a safe storage area.</p> <p>Appropriate first aid and fire equipment will be provided.</p>	
	<p>Operation:</p> <p><i>GHG Assessment</i> - Impacts of the Proposed Development on GHG emissions during operation.</p> <p><i>Climate Resilience</i> - Flooding may impact the operation of the Proposed Development.</p> <p>Increase in temperature may impact the operation of the Proposed Development.</p> <p>Increase in wind speeds and storms may impact the operation of the Proposed Development.</p>	<p><i>Design</i> - A fabric-first approach to be used.</p> <p>Adequate green and vegetated natural spaces.</p> <p><i>Engagement and approach</i> - Promote more sustainable behaviours.</p> <p>Top-level commitment.</p> <p>Publicise sustainability initiatives employed.</p> <p><i>Energy</i> - Ensure any onsite vehicles are fully electric.</p> <p>Specify maximum energy efficiency plant and appliances.</p> <p>Use of LED lighting with motion-sensors, timers and daylight compensation.</p> <p>Submetering at core locations.</p> <p>Consideration of energy efficient building HVAC.</p> <p>Consideration of on-site renewables and the use of air-sourced heat pumps.</p> <p>Installation of EV charging points.</p> <p><i>Refrigerant gas</i> - Use refrigerant gas with the lowest GWP value.</p>	<p>Specifications to be confirmed by detailed design.</p> <p>An operational Emergency Response Plan to be produced secured by planning condition.</p> <p>An operational maintenance programme to be produced.</p> <p>A sustainability management plan to be produced.</p>

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
		<p><i>Water</i> - Consideration of grey-water harvesting. Installation of water saving devices. Regular maintenance.</p> <p><i>Waste</i> - Implement and publicise recycling schemes.</p> <p><i>Travel</i> - Consideration of sustainable travel initiatives. Promote sustainable travel information. Provide bike hires. Implement a Cycle to Work scheme.</p> <p><i>Climate Resilience</i> - Regularly assess and maintain condition and integrity of buildings. Regularly assess condition of vegetation cover.</p>	
Air	<p>Construction: Dust soiling from construction and demolition</p>	Production of a Dust Management Plan or a CEMP.	To be detailed in a CEMP secured by planning condition.
	<p>Operation: None</p>	N/A	Adherence to a Travel Plan.
Material Assets and Waste	<p>Construction: Depleting of natural resources that will result in either temporary or permanent loss within the natural environment.</p>	Implementation of the Outline Waste Management Plan.	To be detailed in a CEMP secured by planning condition.
	<p>Operation: Pressure on regional area to collect and manage residual waste arising from the Proposed Development.</p>	N/A	Waste Management Plan (WMP) to be produced and secured by planning condition.

ES Chapter	Potential significant effect	Mitigation / enhancement measure proposed	Means of implementation and timing
Socioeconomics	Construction: None	N/A	N/A
	Operation: None	N/A	N/A
Noise and Vibration	Construction: Noise and vibration from demolition and construction works.	Considerate working practices, including restricted working hours, considered placement of plant and other machinery, keeping tools, machinery, plant and other equipment up-to-date and well maintained, using quieter tools, machinery, plant and other equipment, as well as methods of construction, as far as possible.	Throughout the demolition and construction phase, measures to be contained in the CEMP
	Operation: High levels of noise ingress into most exposed units.	Enhanced façade sound insulation measures in the form of double glazing and trickle vents to units.	Specifications to be confirmed by detailed design and implemented during unit build.
Transport	Construction: Increase in local traffic during the construction and demolition of the Proposed Development.	Construction vehicle routing, restricted hours for construction movements, limits of construction movements during large events, and warning signage.	To be detailed in a CTMP secured by planning condition.
	Operation: None	N/A	N/A