

EIA Scoping Report

April 2024

Revision 5.0

**We inspire
with energy.**



Glossary

Table of Terms

Term	Description
Applicant	MVV Environment Ridham Limited, the operator of the Ridham Dock Biomass Facility.
Automatic Traffic Counter (ATC)	A form of traffic survey which typically occurs for 7 days and collects speed and volumetric data
Atmospheric residence time	The average time spent by a gas molecule in the atmosphere after it leaves a source and before it encounters a sink that removes it from the atmosphere in that form, which comprise a number of chemical and biological processes.
Balancing Pond	The existing surface water balancing pond located within the Swale SSSI and granted planning consent under LPA Ref: <u>SW/14/76 (KCC/SW/0007/2014)</u>
Carbon budget	The total amount of greenhouse gases that can be emitted over a 5-year period. In the UK, these exist at both local and national levels.
Carbon dioxide equivalent	A metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.
Carbon leakage	A concept to quantify an increase in greenhouse gas emissions in one country as a result of an emissions reduction by a second country with stricter climate change mitigation policies.
Characteristics	Elements, or combinations of elements, which make a contribution to distinctive landscape character.
Climate emergency	A situation in which urgent action is required to reduce or halt climate change and avoid potentially irreversible environmental damage resulting from it.
Combined Facility	The Ridham Dock Biomass Facility and the Proposed Development.
Conceptual Drainage Strategy	An outline drainage strategy for the Proposed Development.
Controlled Waters	The four classes of controlled waters for the purposes of pollution control are: (1) relevant territorial waters; (2) coastal waters; (3) inland freshwaters; and (4) ground waters. Controlled waters include the bed of the river, dry watercourses and waters that have overflowed from a stream.
Carbon Capture Facility (CC Facility)	The facility proposed to capture CO ₂ from the flue gas released by the Ridham Dock Biomass Facility. A component of the Proposed Development.
Carbon Capture Facility Site (CC Facility Site)	The location for the Carbon Capture Facility within the Proposed Development Boundary.



Term	Description
Cumulative effects assessment (CEA)	An assessment of the effects of the Proposed Development in combination with other developments, and the effects of the Proposed Development on any new sensitive Receptors (likely to experience greater effects than existing Receptors) introduced by other developments.
Daytime	The period 07:00 to 23:00 hours
Decarbonisation	Reduction or elimination of carbon dioxide emissions from a process such as manufacturing or the production of energy.
Designated landscape	Areas of landscape identified as being of importance at international, national, or local levels, either defined by statute, or identified in development plans or other documents.
Direct greenhouse gas emissions	Emissions that occur from sources that are controlled or owned by an organisation (e.g. emissions associated with fuel combustion in boilers, furnaces, vehicles)
Ditch Realignment	To accommodate the Storage Yard Extension, the realignment of an existing surface water ditch located to the south of the Ridham Dock Biomass Facility, including repositioning the Staff Pedestrian Bridge. A component of the Proposed Development.
EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).
EIA Scoping	The 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 to be not significant.
EIA Scoping Report	The report submitted by the Applicant to KCC/the Council setting out the proposed scope of the EIA for the Proposed Development.
Elements	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Embodied carbon	The indirect GHG emissions from the supply chain for those materials, particularly for concrete, metals and the major engineered components of the development
Emissions factors	A coefficient that describes the rate at which a given activity releases greenhouse gases (GHGs) into the atmosphere.
Enhancement	Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).



Term	Description
Environmental Statement (ES)	A document produced in accordance the EIA Regulations in which the process and results of an EIA are documented.
Emissions Trading Scheme (ETS)	A market mechanism that allows those bodies (such as countries, companies or manufacturing plants) which emit (release) greenhouse gases into the atmosphere, to buy and sell these emissions (as permits or allowances) amongst themselves.
Flood Risk Assessment (FRA)	A method and a process by which information on flood risk is collected, assessed, and used to inform decision-making.
Functional Floodplain/Flood Zone 3b	Refers to land which either stores water from rivers or the sea during flooding, or which allows such water to flow through in periods of flood.
Global warming potential	A measure of how much energy the emissions of 1 tonne of a gas will absorb over a given period of time, relative to the emissions of 1 tonne of carbon dioxide (CO ₂).
Greenhouse gas	A gas which possesses a global warming potential and contributes towards climate change
Green Infrastructure (GI)	Networks of green spaces and watercourses and water bodies that connect rural areas, villages, towns and cities.
Indirect greenhouse gas emissions	Emissions that occur from sources that are not controlled or owned by an organisation (e.g. emissions associated with purchased energy, upstream and downstream emissions)
Key characteristics	Those combinations of elements that are particularly important to the current character of the landscape and help give an area its particularly distinctive sense of place.
Kyoto basket	Six greenhouse gases: carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), and the so-called F-gases(hydrofluorocarbons and perfluorocarbons) and sulphur hexafluoride (SF ₆). Each gas is weighted by its global warming potential and aggregated to give total greenhouse gas emissions in CO ₂ equivalents.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.
Landscape Character	A distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape effects	Effects on the landscape as a resource in its own right.
Landscape quality (condition)	Measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.



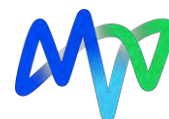
Term	Description
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Linkage	A pollutant linkage refers to situation where a source of contamination has been identified, a migration pathway exists and there is a viable receptor that could or is being harmed.
Lowest Observed Adverse Effect Level (LOAEL)	This is the level above which adverse effects on health and quality of life can be detected.
Mechanical and Electrical (M&E)	(Installation of) Mechanical and electrical systems and equipment.
Magnitude of change	A term that combines judgments about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Metal Storage Bay	<p>The existing metals storage bay at the Ridham Dock Biomass Facility and proposed to be repositioned as part of the Proposed Development into of the Storage Yard Extension area.</p> <p>Metals recovered at the Ridham Dock Biomass Facility are stored within the storage bay then exported offsite to a suitable licenced recycling facilities.</p>
MVV	Refers to MVV Environment Ridham Limited, the Applicant, and/or any other MVV companies within the MVV Energie AG group.
Net Zero	A target of completely negating the amount of greenhouse gases produced by human activity, to be achieved by reducing emissions and implementing methods of absorbing carbon dioxide from the atmosphere.
Nighttime	The period 23:00 to 07:00 hours
No Observed Effect Level (NOEL)	This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.
Options Appraisal	An assessment of the potential solutions to remediate contamination identified at a site.
Pathway	A method, mechanism or conduit for a source/hazard to reach a receptor.
Peak hours	Peak hours can vary on a case-by-case basis, however typically comprise the morning peak of 08:00-09:00 hours and the evening peak of 17:00-18:00 hours
Photomontage	A visualisation which superimposes a realistic coloured image of a proposed development upon a photograph or series of photographs.
Photowire	A visualisation which superimposes an outline of the proposed development upon a photograph or series of photographs.



Term	Description
Potential Roost Feature (PRF)	A feature within or on a tree that could be suitable for use by bats due to its size, shelter, protection and/or internal conditions. This term is also used to categorise trees on proposed development sites according to their suitability for bats.
Proposed Development	The whole of the development comprising the CC Facility, Storage Yard Extension, Ditch Realignment, PRow Realignment, landscaping and associated works.
Proposed Development Boundary/Site	The term Proposed Development Boundary/Site encompasses the elements of the Proposed Development and is defined by the Red Line Boundary.
PRow Realignment	To accommodate the Storage Yard Extension, the realignment of a section of the Saxon Shore PRow (reference 0139/ZR88/7), including the construction of a pedestrian bridge. A component of the Proposed Development.
Receptor	A component of the natural or built environment (such as a human being, water, air, a building) that is affected by an impact of the construction works and/or the operation of the Proposed Development.
Red Line Boundary	The demarcation of land which, for the purposes of the Environmental Impact Assessment (EIA) contains the land within which the Proposed Development will take place and the EIA is based upon.
Ridham Dock Biomass Facility	The existing biomass facility located at Ridham Docks and operated by the Applicant
Risk	The likelihood of harm occurring. For a risk to be realised there must be a source or hazard, a pathway (mechanism for harm to occur) and receptor (something that can be harmed).
Scope 1 emissions	Emissions released directly by the entity being assessed, e.g. from combustion of fuel at an installation
Scope 2 emissions	Emissions caused indirectly by consumption of imported energy, e.g. from generating electricity supplied through the national grid to an installation
Scope 3 emissions	Emissions caused indirectly in the wider supply chain, e.g. in the upstream extraction, processing and transport of materials consumed or the downstream use of products from an installation
Scoping	The process of identifying the issues to be addressed by the EIA process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered to be not significant.
Scoping Report	The Applicant's EIA Scoping Report for the Proposed Development.
Screened Zone of Theoretical Visibility (ZTV)	A digitally produced map, showing areas of land within which, a development is theoretically visible, accounting for the screening effects of woodland and buildings.



Term	Description
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Significant Observed Adverse Effect Level (SOAEL)	This is the level above which significant adverse effects on health and quality of life occur.
Source (hazard)	For ground conditions this is the same as the hazard, it is something with the potential to cause environmental harm.
Staff Pedestrian Bridge	The pedestrian bridge over the existing swale (as granted planning consent under LPA Ref: SW/19/504919 (KCC/SW/0220/2019) and to be repositioned as part of the Ditch Realignment works to accommodate the Storage Yard Extension.
Storage Yard Extension	The extension to the existing external storage yard at the Ridham Dock Biomass Facility to accommodate the CC Facility, including the rearrangement of the; Wood Storage Bays; Metal Storage Bay, and mobile plant, equipment and structures; relocation/erection of two Workshop/Stores Buildings; and repositioning of the existing boundary fence and gate. A component of the Proposed Development.
Study Area	The geographical area under consideration. The Study Area can be specific to the individual environmental disciplines.
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
UK Climate Change Projections project 2018 (UKCP18)	Climate projections expressed in terms of absolute values or changes from a baseline period. A projection of the response of the climate system to emission scenarios of greenhouse gases and aerosols, or radiative forcing scenarios based upon climate model simulations and past observations.
Verification Report	A report to demonstrate that remedial measures required to manage or treat contamination in soil, groundwater or surface water have been successfully implemented.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive official setting or backdrop for the enjoyment of the activities of the people living, working, recreating, visiting or travelling through an area.
Visual effects	Effects on specific views and on the general visual amenity experienced by people
Visual receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal
Visualisation	A computer simulation, photo montage, or other technique illustrating the predicted appearance of a development.



Term	Description
Wood Storage Bays	<p>The existing wood (biomass) storage bays at the Ridham Dock Biomass Facility and proposed to be repositioned as part of the Proposed Development into the Storage Yard Extension.</p> <p>The wood storage bays store un-shredded and shredded wood used to fuel the Ridham Dock Biomass Facility.</p>
Workshop/Stores Buildings	To service the Proposed Development relocation/construction of up to two Workshop/Stores Buildings – 9m(w) x 9m(l) x 6m(h).
Zone of Theoretical Visibility (ZTV)	A digitally produced map, showing areas of land within which, a development is theoretically visible.

Table of Abbreviations

Abbreviation	Description
AADT	Annual Average Daily Traffic
ADS	Archaeology Data Service
AGI	Above-ground Installation
AHLV	Area of High Landscape Value
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
ATC	Automatic Traffic Counter
BECCS	Bioenergy with Carbon Capture and Storage
BGS	British Geological Survey
BNG	Biodiversity Net Gain
BPM	Best Practicable Means
BS	British Standard
BTNZ	Bacton Thames Net Zero
CC	Carbon Capture
CCC	Climate Change Committee
CCUS	Carbon capture, usage and storage
CDM	Construction Design and Management
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CEMS	Continuous Emission Monitoring System



Abbreviation	Description
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CoPA	Control of Pollution Act 1974
COSHH	Control of Substances Hazardous to Health
[the] Council	Kent County Council (KCC)
CTMP	Construction Traffic Management Plan
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EclA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ELV	Emission limit value
EMS	Ecological Mitigation Strategy
EPA	Environmental Protection Act 1990
EPS	European Protected Species
EPUK	Environmental Protection UK
ES	Environmental Statement
ETS	Emissions Trading Scheme
FEED	Front-end Engineering Design
FRA	Flood Risk Assessment
GGR	Greenhouse gas removal
GHG	Greenhouse gas
GI	Green infrastructure
GLTA	Ground Level Tree Assessment
GWP	Global warming potential



Abbreviation	Description
Ha	hectares
HDVs	Heavy-duty vehicles
HGV	Heavy Goods Vehicle
HSE	Health and Safety Executive
HHRA	Human Health Risk Assessment
IAQM	Institute of Air Quality Management
IDB	Internal Drainage Board
IECS	Institute of Estuarine & Coastal Studies
IEF	Important Ecological Feature
ISO	International Organization for Standardization
JNCC	Joint Nature Conservation Committee
KCC	Kent County Council ([the] Council)
Kent HER	Kent Historic Environment Record
km	Kilometre
LAQM	Local Air Quality Management
LCA (in Chapter 15)	Lice-cycle assessment
LCA (in Chapter 9)	Landscape Character Assessment
LCAS	Landscape Character Areas
LCRM	Land Contamination Risk Management
LCT	Landscape Character Type
LGV	Light Goods Vehicle
LiDAR	Light Detection and Ranging
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MtCO₂	Megatonnes of carbon dioxide
NAQS	National Air Quality Strategy



Abbreviation	Description
NDC	Nationally determined contribution
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act
NHLE	National Heritage List for England
NNR	National Nature Reserve
NOEL	No Observed Effect Level
NPPF	National Planning Policy Framework
NSR	Noise Sensitive Receptor
OLS	Outline Lighting Strategy
OMP	Odour Management Plan
PPE	Personal Protective Equipment
PRA	Preliminary Roost Assessment
PRF	Potential Roost Feature
PRoW	Public Right of Way
RPE	Respiratory Protective Equipment
SAC	Special Area of Conservation
SBC	Swale Borough Council
SFRA	Strategic Flood Risk Assessment
SHLAA	Strategic Housing Land Availability Assessment
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
TA	Transport Assessment
tCO_{2e}	Tonnes of carbon dioxide equivalent
TGN	Technical Guidance Note
TOMPS	Toxic Organic Micropollutants
tpa	Tonnes per annum
UKCP18	Met Office Hadley Centre's UK Climate Projections project 2018



Abbreviation	Description
UNFCCC	United Nations Framework Convention on Climate Change
US EPA HHRAP	United States Environmental Protection Agency Human Health Risk Assessment Protocol
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility



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1. Background

1.1 Introduction

- 1.1.1 MVV Environment Ridham Limited (the Applicant) is intending to submit a full planning application to Kent County Council (KCC/the Council) seeking planning consent for construction and operation of a post-combustion Carbon Capture Facility (CC Facility), at their Ridham Dock Biomass Facility located off Lord Nelson Road, Ridham Docks, Iwade in Sittingbourne, Kent. Together with the Storage Yard Extension, Ditch Realignment and Public Right of Way Realignment (PRoW Realignment), landscaping and associated works, these works are the Proposed Development.
- 1.1.2 The primary purpose of the Proposed Development is to reduce carbon emissions and atmospheric CO₂, thereby helping MVV achieve their target of being carbon neutral by 2035.
- 1.1.3 The Proposed Development would capture 90-95% of the approximately 225,000 tonnes of gaseous CO₂ of the Ridham Dock Biomass Facility so it can be transported and sequestered for long-term storage off-site, thereby allowing the Ridham Dock Biomass Facility to upgrade to Bioenergy with Carbon Capture and Storage (BECCS) and to achieve carbon removals due to the sequestration of biogenic CO₂.

1.2 The Applicant

- 1.2.1 The Applicant is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approximately 6,500 people with assets of around €5 billion and annual sales of around €7.5 billion¹.
- 1.2.2 The company has over 50-years' experience in constructing, operating and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes several Energy-from-Waste facilities in Germany and the UK. The largest EfW facility is a 700,000 tonnes per annum (tpa) residual waste EfW CHP facility in Mannheim, Germany. MVV operates four waste wood fuelled biomass facilities, a 140,000tpa biomass facility in Mannheim, Germany, a 110,000tpa biomass facility in Koenigs-Wusterhausen, near Berlin, Germany and the Ridham Dock Biomass Facility in the UK. In total MVV treats annually 2.5 million tonnes of waste and waste wood to generate 1,300GWh electricity and 2,500GWh heat in form of steam for industrial processes and hot water for district heating.
- 1.2.3 As illustrated in **Graphic 1.1**, MVV Energie has a growth strategy to be carbon neutral by 2035 and thereafter carbon negative, i.e. climate positive². Specifically, MVV Energie intends to:
- reduce its direct carbon dioxide (CO₂) emissions by over 80% by 2030 compared to 2018;
 - implement 100% green district heat in Mannheim and Offenbach by 2030 and in Kiel by 2035;
 - triple the generation of electricity from renewable energies from 614 megawatts to around 2,000 megawatts;

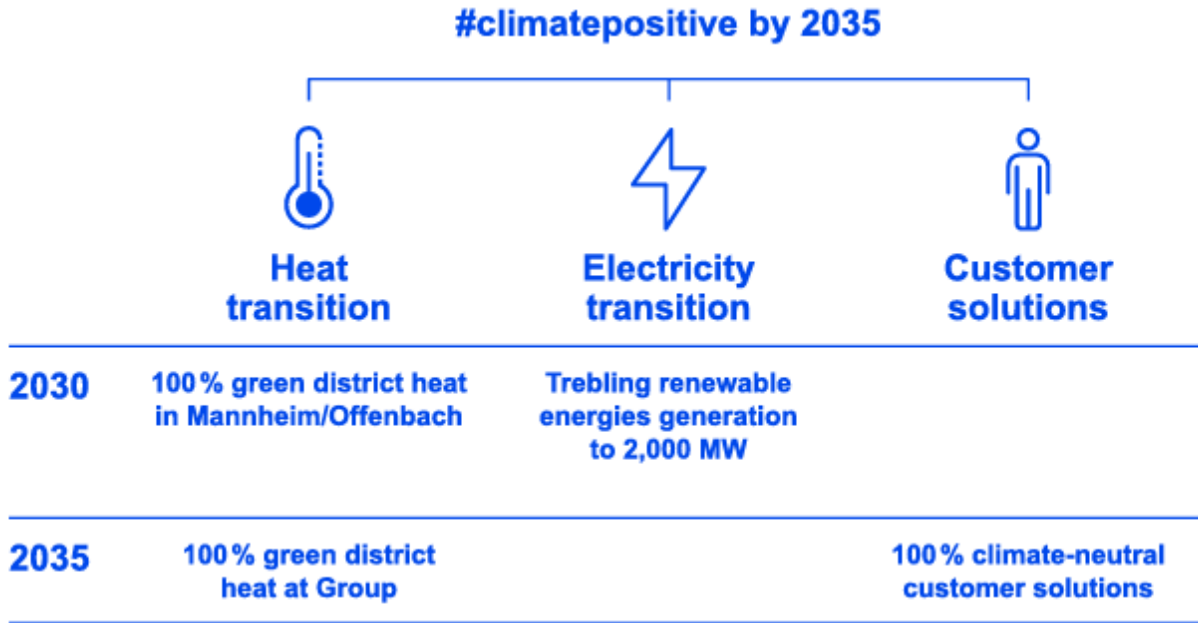
¹ Based on 2023 reports

² See MVV's Sustainability Report at <https://www.mvv.de/en/about-us/sustainability/sustainability-report>



- be climate neutral by 2035; and
- be climate positive from 2035.

Graphic 1.1: MVV Energie climate growth strategy targets



- 1.2.4 MVV’s UK business retains the overall group ethos of ‘belonging’ to the communities it serves whilst benefitting from over 50 years’ experience gained by its German parent and sister companies. In the UK, MVV currently consists of six separate companies (see **Table 1.1**).
- 1.2.5 Biomass is a key focus of MVV’s activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.
- 1.2.6 MVV’s largest operating facility in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using up to 275,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for His Majesty’s Naval Base Devonport in Plymouth, and export surplus electricity to the grid.
- 1.2.7 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Since 2021 the facility has been treating up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy in the form of heat and electricity.

Table 1.1: MVV Environment UK Group of Companies

Company	Detail
MVV Environment Ridham Limited	Merchant biomass facility generating energy up to 195,000tpa of waste wood and the company applying for planning permission for the Proposed Development. 25MWe renewable power generation.



Company	Detail
MVV Environment Baldovie Limited	Energy from Waste CHP Facility, diverting up to 220,000tpa of residual waste from landfill for Dundee and Angus Councils and for private waste disposal companies. 20MWe power generation and steam supply to adjacent Michelin Scotland Innovation Parc.
MVV Environment Devonport Limited	Energy from Waste CHP Facility, diverting up to 275,000tpa of residual waste from landfill for the South West Devon Waste Partnership and for private waste disposal companies. 25MWe power generation, power and heat supply to adjacent Ministry of Defence Naval Base.
Medworth CHP Limited	The company that in February 2024 secured a Development Consent Order to build a 625,600tpa Energy from Waste Combined Heat and Power Facility in Cambridgeshire and Norfolk..
MVV Environment Limited	The company has applied for planning permission for a 260,000tpa Energy from Waste CHP Facility in Canford, Poole. A decision is expected in 2024.
MVV Environment Services Limited	The UK electricity trading subsidiary of MVV.

1.3 Purpose of this document

- 1.3.1 Savills has been commissioned to prepare this Environmental Impact Assessment (EIA) Scoping Report to inform the scope and content of an EIA for the Proposed Development. The Proposed Development Site and location are shown in **Figure 1.1** and **Figure 1.2**.
- 1.3.2 The Applicant intends to voluntarily submit an Environmental Statement (ES), making the Proposed Development EIA development under Regulation 5(2)(a) of the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (the 'EIA Regulations') as amended.
- 1.3.3 This EIA Scoping Report constitutes a request under Regulation 15(1) that the relevant planning authority, Swale Borough Council, adopts a Scoping Opinion within 5 weeks beginning with the date of receipt of this request as prescribed in Regulation 15(4). In accordance with Regulation 15(2), this EIA Scoping Report provides:
- a description of the location of the development, including a plan sufficient to identify the land (**Chapter 2** of this Scoping Report and **Figure 1.1** and **Figure 1.2**);
 - a brief description of the nature and purpose of the development and of its likely significant effects on the environment (**Chapter 3 and 5** of this Scoping Report); and
 - such other information or representations as the developer may wish to provide or make (further detail of the proposed approach to the EIA, scoping of impact pathways and cumulative developments in **Chapters 6–17** of this Scoping Report).
- 1.3.4 On receipt of this Scoping Report, the Council should consult with statutory bodies (Regulation 2(1)) before adopting their formal EIA Scoping Opinion. The Scoping Opinion will confirm the key environmental considerations to be assessed.



1.4 Structure of this document

1.4.1 The remainder of this EIA Scoping Report provides the following:

- **Chapter 2:** Site Location and Setting – describes the Proposed Development Site, the surrounding context, and identifies sensitive Receptors.
- **Chapter 3:** Project Description – provides information about the Proposed Development.
- **Chapter 4:** Approach to the EIA – outlines the approach that will be undertaken in preparing the EIA and proposed structure of the ES.
- **Chapter 5:** Summary of the Proposed EIA Scope – summarises the proposed EIA scope, including the identification of effects considered to be insignificant and 'scoped out' of the EIA.
- **Chapters 6 to 15** – provides a review of the relevant baseline, potential environmental effects and the proposed scope of the assessment, under individual topic headings.
- **Chapter 16:** Other Impact Pathways – provides a summary of other impact pathways that are not considered to be relevant to the Proposed Development.
- **Chapter 17:** Cumulative Effects Assessment – sets out the proposed approach to the assessment of cumulative effects in the ES.



2. Site Location and Setting

2.1 Introduction

2.1.1 This section provides an overview of the existing environment within and the wider setting of the Proposed Development Site. Further detail of the baseline environment is provided within each EIA topic in **Chapters 6 to 15** of this Scoping Report.

2.2 Site location

2.2.1 The Proposed Development would be located at the established MVV Ridham Dock Biomass Facility within the administrative area of KCC. The Proposed Development Site is approximately 2km to the north-east of Iwade, approximately 3km to the north of Sittingbourne and 1.2km to the east of the A249. The British National Grid coordinates of the Proposed Development Site are TQ 92235 68178³.

2.2.2 Ridham Dock is a long-established industrial dock situated immediately south of the Swale, which is a tidal channel of the Thames estuary. The dock was first planned to service the paper making industry in Sittingbourne, with the aim to provide a deeper water anchorage for ships servicing the paper mill and replace the need to use the silted Milton Creek. Since it was opened in 1919, the dock has expanded to become an industrial hub.

2.2.3 The immediate business uses surrounding the Proposed Development Site include:

- Brett Concrete, a ready-mix concrete supplier;
- Brett Aggregates, a sand and gravel supplier;
- Bearsted Surfacing Contractors, a utilities company;
- Countrystyle Recycling Wood Operations, a waste management service;
- Blue Phoenix UK, an aggregate supplier;
- Heidelberg Materials, a ready-mix concrete supplier; and
- Flogas Britain Ltd, a gas company.

2.2.4 The industrial setting continues for a distance of approximately 2.2km to the south of the Proposed Development Site. Businesses throughout this stretch of land include:

- Knauf (UK), a building materials manufacturer;
- Countrystyle Recycling, a waste management service;
- DS Smith Recycling – Kemsley Depot, a waste management service;
- Enfinium Kemsley, an energy from waste facility; and
- DS Smith Kemsley Paper Mill.

2.2.5 Beyond the industrial areas, the surrounding land is predominantly low-lying grazing, agricultural and marshland areas.

³ What3words ref: "status.scatters.smoothly"



2.3 Access

- 2.3.1 Access to the Proposed Development would be taken from two single carriageway private roads suitable for use by heavy goods vehicles (HGVs). The primary access road (Lord Nelson Road) connects with Barge Road, which has been recently upgraded as part of a new high-capacity network which links to the A249 via the Grovehurst roundabout.
- 2.3.2 The Saxon Shore Way Public Right of Way (PRoW) (reference 0139/ZR88/7), which is part of the King Charles III England Coast Path, runs along the southern boundary of the Proposed Development Site before forking to north and south when it meets the Swale. Where the PRoW forks to the north, it follows the bank of the Swale for approximately 600m until it ends. Where the PRoW forks to the south, it continues along the coast.

2.4 Site setting

Residential areas

- 2.4.1 As previously described, the locality of the Proposed Development is an industrial setting. The nearest residential area is the village of Iwade, approximately 2km southwest of the Proposed Development Site. As of 2021, the village of Iwade had a population of 4,533⁴. Rural fields, the Swale Site of Special Scientific Interest (SSSI), Special Area of Protection (SPA) and Ramsar site and the A249 separate Iwade from the Proposed Development Site.
- 2.4.2 The more densely populated residential area of Sittingbourne, which has a population of 62,991⁵, is approximately 3km from the Proposed Development Site.

Nature conservation setting

- 2.4.3 There are a number of internationally-, nationally- and locally-designated nature conservation sites within a 5km radius of the Proposed Development Site. These are:
- 'The Swale' Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site immediately east and south of the Proposed Development Site;
 - 'Elmley' National Nature Reserve (NNR) approximately 500m east of the Proposed Development Site, across the Swale; and
 - 'Medway Estuary and Marshes' SSSI, SPA and Ramsar Site approximately 1.5km northwest of the Proposed Development Site.
- 2.4.4 The Swale SSSI, SPA and Ramsar Site is an extensive complex of mudflats, saltmarsh and freshwater grazing marsh, an estuarine channel, and areas of shingle, shell and sand beaches and mussel beds. It stretches from Sittingbourne to Whitstable, covering area of 6,509.4 hectares (Ha). The area is of international importance as it supports numerous species of wintering waterbirds and has been designated as a SPA under the European Union Directive on the Conservation of Wild Birds.

Landscape or townscape and cultural heritage setting

- 2.4.5 The majority of the Proposed Development Site is contained within the existing Ridham Dock Biomass Facility and comprises large scale buildings, associated structures, an electricity sub-station and Wood Storage Bays, surrounded by hardstanding as illustrated on **Figure 1.1**. The southern edge of the Proposed Development Site, beyond the existing

⁴ [Iwade \(Parish, United Kingdom\) - Population Statistics, Charts, Map and Location \(citypopulation.de\)](https://citypopulation.de/en/uk/parish/iwade/)

⁵ [Sittingbourne \(Agglomeration, Agglomerations, United Kingdom\) - Population Statistics, Charts, Map and Location \(citypopulation.de\)](https://citypopulation.de/en/agglomeration/uk/sittingbourne/)



Ridham Dock Biomass Facility boundary comprises rough grassland with scrub. Within this strip of man-modified land, there is a swale close to the Proposed Development Site boundary and along the top of a bund to the south of the Swale is a public footpath which accommodates a 300m long section of the Saxon Shore Way (reference 0139/ZR88/7). The Staff Pedestrian Bridge across the Swale links the Ridham Dock Biomass Facility to the public footpath.

- 2.4.6 The Proposed Development Site is not located within any statutory landscape designation, with the closest designation being the Kent Downs Area of Outstanding Natural Beauty, approximately 8.5km south of the Proposed Development Site.
- 2.4.7 There are no designated heritage assets within the Proposed Development Site and no designated heritage assets within a 1km Study Area of the Proposed Development Site. There are five Listed Buildings within a 2km Study Area and no further designated heritage assets. Two Scheduled Monuments are located around 2.1km from the Proposed Development Site.

Hydrological, hydrogeological and geological environment

- 2.4.8 Based on the EA's Flood Mapping, the Proposed Development Site is entirely within Flood Zone 3, corresponding to land assessed as having an Annual Exceedance Probability (AEP) of river flooding greater than 1%, or an AEP of flooding from the sea greater than a 0.5% AEP.
- 2.4.9 Based on the EA's surface water flood maps, the majority of the Proposed Development Site is at 'very low' risk of surface water flooding, with the north-eastern corner of the Proposed Development Site being at 'low' risk (with an associated chance of flooding of between 0.1% and 1% each year). Small, localised areas across the Proposed Development Site are shown to be at 'medium' risk (with an associated chance of flooding of between 1% and 3%).
- 2.4.10 There are two EA designated Main Rivers in the vicinity of the Proposed Development Site: the Swale and the Ridham Fleet.
- 2.4.11 A land drain/ordinary watercourse runs along the eastern boundary of the Proposed Development Site. The southern perimeter of the Proposed Development Site is bound by a surface water watercourse/Swale which is part of the surface water drainage system for the Proposed Development Site and discharges into the Swale.
- 2.4.12 British Geological Survey (BGS) mapping indicates the Proposed Development Site is underlain with Alluvium superficial deposits (Clay, silt, sand and peat). The underlying bedrock is formed of London Clay (Clay and silt). BGS borehole records (TQ96NW155, TQ96NW156, TQ96NW157) located approximately 1km to the west of the Proposed Development Site and dug to depths between 7m and 16m, indicate no groundwater was encountered in these locations. The Proposed Development Site is adjacent to the Swale and docks and therefore groundwater levels within the Proposed Development Site may be higher.
- 2.4.13 The Proposed Development Site is not within a groundwater Source Protection Zone (SPZ).



3. Project Description

3.1 Proposed Development overview

3.1.1 The Applicant is proposing to construct a post-combustion CC Facility at their Ridham Dock Biomass Facility. To accommodate the CC Facility the Proposed Development includes:

- An extension of the existing external storage yard to the South by up to 15m (the Storage Yard Extension) with hardstanding surface including the rearrangement of the:
 - Wood Storage Bays, Metal Storage Bay, and mobile plant, equipment and structures;
 - Relocation/erection of two Workshop/Stores Buildings; and
 - Repositioning of the existing boundary fence and pedestrian gate at the Southern site boundary.
- To accommodate the Storage Yard Extension:
 - The Ditch Realignment – Works to realign a section of an existing surface water swale, including repositioning of an existing staff pedestrian bridge (the Staff Pedestrian Bridge).
 - PRow Realignment – Works to realign a section of the Saxon Shore PRow (reference 0139/ZR88/7); and
 - Associated landscaping works.

3.2 The purpose of the Proposed Development

3.2.1 The purpose of the Proposed Development is to capture CO₂ from the flue gas stream of the Ridham Dock Biomass Facility, separate this from the nitrogen, water vapour, oxygen and trace contaminants in the flue gases, and compress the CO₂ for onward transport to allow geological sequestration or use by industry.

3.2.2 The Proposed Development is therefore for the construction and operation of a post-combustion CC Facility within the Ridham Dock Biomass Facility Site and associated works (see **paragraph 3.1.1**). Onward transport and storage of CO₂ beyond the Proposed Development Site are outside the Proposed Development, but will be considered as part of the cumulative effects assessment (CEA), discussed further in **Chapter 17** of this Scoping Report.

3.2.3 The layout for the Proposed Development is shown indicatively in **Figure 1.2**. It is important to note that the layout is subject to the selection of a CC technology supplier, further detailed design work and iterative updates are likely during the course of the EIA. The final design will be located within the Proposed Development's Boundary⁶. The CC Facility's key elements are as follows and the processes explained further below:

- flue gas tie-in to the existing Ridham Dock Biomass Facility exhaust;
- flue gas pre-treatment for the CO₂ capture process;
- CO₂ capture process (absorber and stripper columns);

⁶ The Red Line Boundary for the Proposed Development is subject to change



- steam and electricity tie-ins and any associated modifications to equipment within the existing Ridham Dock Biomass Facility;
- ancillary plant including a cooling system, new piping and duct work, a gas cooler, post CC chimney on top of absorber column, pumps and compressors, heat exchangers, electrical and control equipment, storage tanks;
- CO₂ compression and conditioning for export; and
- (outside the Proposed Development) CO₂ transport and storage.

3.2.4 In appearance, the CC Facility will comprise two vertical columns (narrow tank-like structures) for the absorber and stripper adjacent to the Ridham Dock Biomass Facility for the capture process. The absorber column is significantly taller than the stripper column and will incorporate a flue gas washing system with chimney on top to release the flue gases after removing the CO₂. Ground-level pipe and ductwork to tie into the existing Ridham Dock Biomass Facility, and ancillary plant are located at ground level for operation of the CC Facility. To reduce the footprint of the CC Facility, the ancillary plant and equipment will, where possible, be arranged to sit on a floor slab above ground level pipework and the fan cooling system will be placed above that. **Figure 3.1** provides illustrative elevations for the CC Facility, including heights.

3.2.5 Overall, the CC Facility is expected to capture around 90-95% of the CO₂ produced by the Biomass Facility, which is up to 240,000tCO₂/annum. Based on the typical composition of waste wood treated in the Ridham Dock Biomass Facility, the CO₂ is approximately 95% 'biogenic' in origin. Other materials in the waste wood like coatings, paints and glues result in approximately 5% 'fossil' in origin CO₂ emissions. Biogenic CO₂ refers to 'new' carbon in organic materials (timber, paper, plants, textiles and similar). The combustion of this source of carbon releases CO₂ into the atmosphere over a short time cycle, with no net increase. If the CO₂ is captured and sequestered, as proposed in this instance, there will be a net carbon removal (greenhouse gas removal), thus reducing the atmospheric concentration of CO₂. As a result, the capture and sequestration of biogenic CO₂ at the Ridham Dock Biomass Facility is expected to have a net climate-positive impact and generate negative greenhouse gas emissions, thus providing the ability to offset greenhouse gas emissions from hard to abate sectors.

3.3 CC Facility process and equipment

Carbon capture and treatment

3.3.1 In the current operation of the Ridham Dock Biomass Facility, exhaust gas from the waste combustion process passes through a continuous emission monitoring system (CEMS) and is then discharged through a 90m chimney.

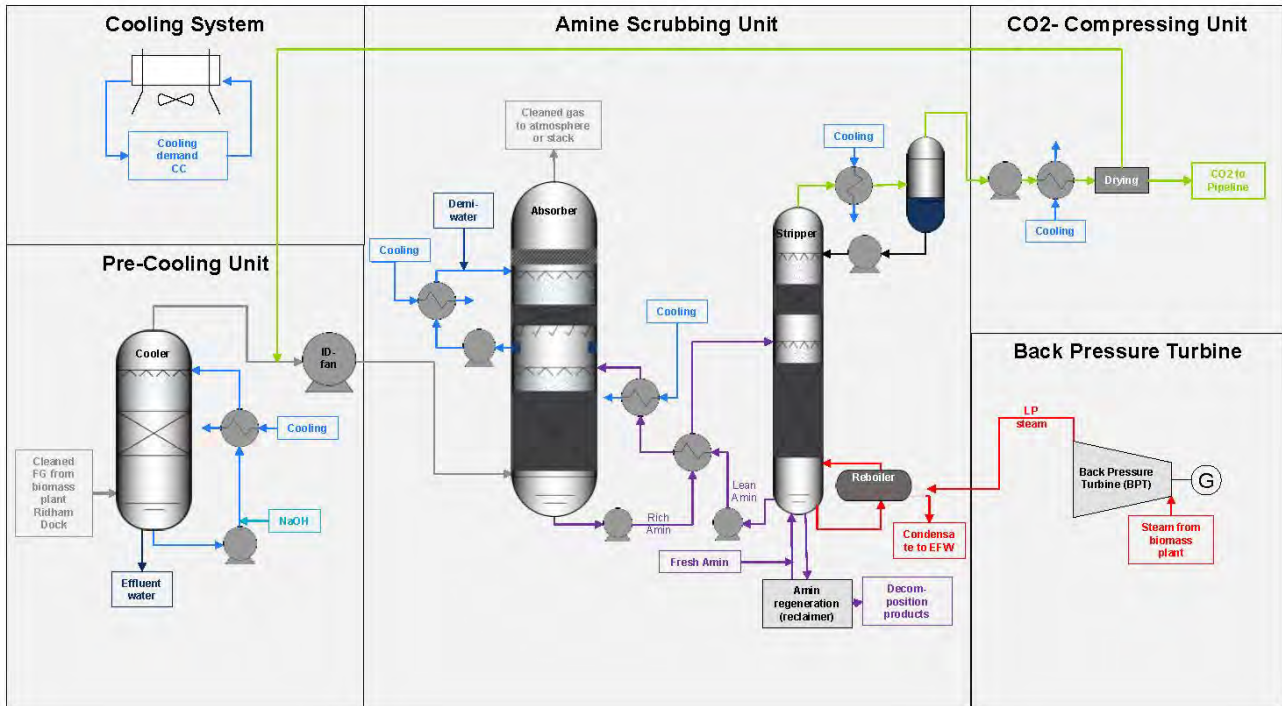
3.3.2 In the CC Facility, flue gas will be pre-conditioned via a direct contact cooler column and will then enter a vertical absorber column at the base. The flue gas will be brought into direct contact in a counter flow fashion with a liquid amine solution that absorbs CO₂ from the gas in the lower part of the absorber. As the flue gas passes through the column, the flue gas temperature increases as the reaction between the CO₂ and amine solution is exothermic. Cooling the flue gas before introducing the solvent is required because the solvent absorbs CO₂ at relatively low temperatures (around 40°C), and releases it at higher temperatures. During the cooling some of the water within the flue gas will condense out and will be released as effluent from the bottom of the cooler. The effluent will require treatment before it can be discharged from the CC Facility Site.



- 3.3.3 Upon contact with the flue gas, a minor percentage of the amine solution is degraded into nitrosamines and nitramines. These chemicals are hazardous, and the emissions need to be controlled. A water wash is installed at the top of the absorber column to abate these emissions, as these chemicals are highly soluble in water, before the remaining flue gas post CO₂ removal will be released to the atmosphere through the new chimney on top of the absorber column. Subject to Environmental Permitting requirements, a Continuous Emission Monitoring System (CEMS) may be installed.
- 3.3.4 The CO₂-rich solvent solution will leave the absorber at the bottom of the absorption column and be pumped to the top of a vertical stripper column. As the amines are heated, they lose their affinity for CO₂ and the CO₂ outgases (reverts back to gaseous form) from the solution.
- 3.3.5 A carbon capture pre-feasibility study has been conducted by MNV's technical and engineering teams and concludes that a heat exchanger to minimise the overall heat demand and maximise efficiency of the CC Facility should be used. This will transfer heat from the hot CO₂-lean solution before entering the absorber column to the cold CO₂-rich solution before entering the stripper column. Final cooling will be via a separate cooling system, and final heating through the use of low-pressure steam heat from the Ridham Dock Biomass Facility in the reboiler at the bottom of the stripper column. This energy input separates the CO₂ from the amine solution and the hot amine and CO₂ gasses flow upward through the stripper column, heating the incoming rich amine solution and releasing more CO₂.
- 3.3.6 A mixture of CO₂ and water vapour is emitted from the top of the stripper. This is cooled by an overhead condenser, with the CO₂ gas and condensate separated for further compression, cooling and moisture separation as required for subsequent pipeline transport or liquefaction.
- 3.3.7 Regenerated (CO₂-lean) amine solution collects at the base of the stripper column and is then pumped through a heat exchanger which transfers heat to the CO₂-rich amine and cools the CO₂-lean amine solution for re-use in the absorber column.
- 3.3.8 The remaining flue gas, with 90-95% of CO₂ removed, will be released from an exhaust chimney. At this stage, it is anticipated that this will be located at the top of the absorber column and that it will be no more than 90m in overall height subject to further design and dispersion modelling to be reported in the ES. Alternatively, the remaining flue gas can be routed to the existing chimney.
- 3.3.9 **Graphic 3.1** presents an illustrative process flow diagram for the CC Facility.



Graphic 3.1: CC Facility process flow diagram



- 3.3.10 The solvent (amine) used in the CC Facility is re-used in the process, being recirculated through the absorber and stripper columns multiple times to move CO₂ between them, as described above. However, it is eventually spent and requires topping-up. An estimated 300 tonnes per year of top up solvent will be required. In addition, sodium hydroxide (NaOH), with an estimated consumption of 100 tonnes per year, is required to treat the condensate effluent and to operate the amine regeneration reclaimer. There will therefore be occasional tanker deliveries of chemical consumables to the CC Facility Site, a fresh solvent storage tank, a spent solvent tank and occasional tanker exports of spent solvent for disposal at a suitably licensed installation. The quantities and vehicle numbers associated with deliveries of consumables and waste discharges will be set out and assessed in the EIA, but are anticipated to be minor and transported with light goods vehicles (LGVs) and/or HGVs.
- 3.3.11 At this stage, the exact design of the carbon capture process is not confirmed and is subject to change. As a conservative approach, it is assumed that an Amine-based carbon capture process (as described above) will be used and which represents a worst-case scenario for the EIA.

Export of CO₂ from the CC Facility

- 3.3.12 A separate Transportation and Storage (T&S) project, which will deliver one or more of the CO₂ transportation options to a storage cluster referred to below, will be advanced either by the Applicant, or by a separate T&S company likely to be established to collect CO₂ from the Applicant's CC Facility as well as from other CO₂ producing installations (such as Kemsley ERF and Kemsley paper mill). A subsequent consenting process for this project will of necessity consider in combination and cumulative effects with the CC Facility in detail. It will be subject to EIA.



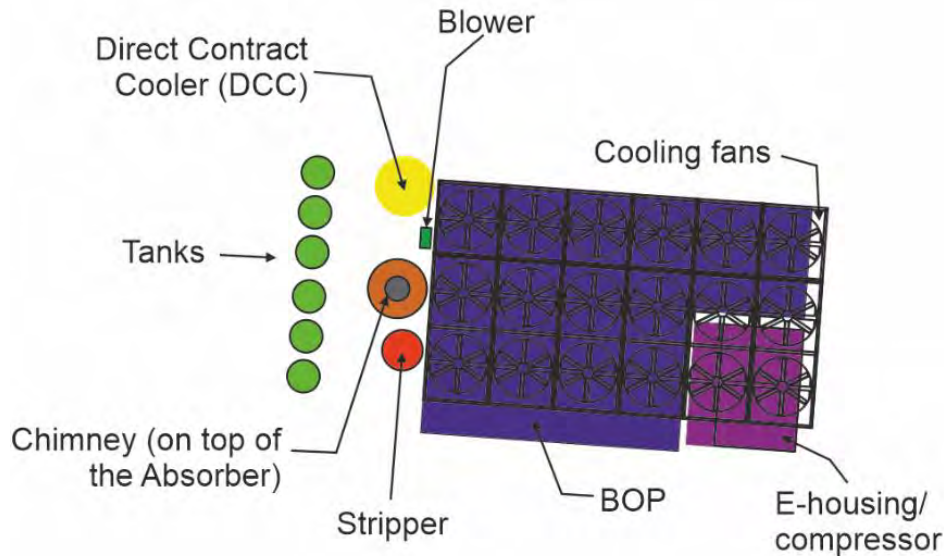
- 3.3.13 For the purposes of this Scoping Report and subsequent EIA, it is proposed to assess the in combination and cumulative effects of the following four options at a high level.
- provision of a purpose-built CO₂ gas pipeline⁷ and then subsequent liquification, buffer storage and transportation as liquid CO₂ by Ship from nearby ports, wharfs or jetties;
 - liquification at Ridham Dock or nearby location with connections to the road network and for example loading to cryogenic tanker lorries for transport to the Port of Sheerness for temporary buffer CO₂ storage and subsequent transportation as liquid CO₂ by rail and/or ship (approx. 40 lorries per day with 22 to 24 tonnes capacity each);
 - reopening of the railway siding into Ridham Dock with provision of a purpose-built CO₂ gas pipeline to the railway siding and then subsequent liquification, buffer storage and transportation as liquid CO₂ by rail using cryogenic train wagons; and
 - connection to a CO₂ gas pipeline provided by a storage cluster provider (for example the Bacton Thames Net Zero (BTNZ) initiative).
- 3.3.14 The development of these export options are actively being explored with other parties.
- 3.3.15 To enable the connection to the transportation network, the CC Facility will have a connection point within the Proposed Development Boundary.
- 3.3.16 To avoid the construction of a stranded asset, the Applicant accepts it may be necessary for KCC to impose a negatively worded condition (a “Grampian” style condition) to the resulting planning permission. This would prevent the operation of the new CC Facility until such time as a means existed to export the CO₂ had been established. Such conditions may be used when it is likely that an action such as the provision of “supporting infrastructure” is reasonably likely. In this case it is very likely that a T&S operator will come into being and that it will wish to connect Ridham to its system. This approach will enable the Applicant to proceed with the planning application with a degree of flexibility surrounding the transport and storage of CO₂.

Cooling system

- 3.3.17 Cooling systems will be required for the flue gas, solvent (post-stripper) and CO₂ stream. The design of the cooling system is subject to a pre-FEED (front-end engineering design) study. The pre-feasibility study highlights that a separate cooling system to the existing Ridham Dock Biomass Facility cooling system will be required. This is because the existing cooling system has insufficient capacity to provide the additional required cooling load. The cooling for the CC Facility is envisaged to be achieved by a dry air cooling system, the fans for which would be located on top of the ancillary plant of the CC Facility.
- 3.3.18 **Graphic 3.2** presents identifies the component parts of the CC Facility.

⁷ For this scenario, equipment above ground will be required to provide the connection point into the off-site pipeline. In the gas transport industry, this is referred to as an above-ground installation or AGI. The AGI would have a section of pipeline above ground to enable access for maintenance and inspection, together with metering, monitoring and control equipment.

Graphic 3.2: Proposed illustrative layout of the CC Facility



Water inputs

- 3.3.19 A small continuous flow of water will be required for the CO₂ capture process. However, the pre-feasibility study indicates that no external water supply is required for the process as a large flow of water will be condensed from the flue gas and reused.

Process effluent (wastewater)

- 3.3.20 When the flue gas is cooled for the CC Facility, water vapour that is present in it will partially condense, creating a new process wastewater stream to be managed. Ultimately, process effluent will be treated and discharged in accordance with the Environmental Permit. Further details will be set out in the application following the pre-FEED study to determine the most suitable means of treatment, re-use and disposal route.

Exhaust plume

- 3.3.21 The expected minimum flue gas emission temperature from the chimney either on top of the absorber column or by using the existing is 40°C, which may lead to a visible exhaust plume due to residual water vapour condensation under some weather conditions. This will be assessed further in the pre-FEED study and EIA to determine whether exhaust re-heating to aid buoyancy and reduce the potential for visible plume formation is appropriate.

Surface water runoff

- 3.3.22 It is anticipated the existing surface water drainage infrastructure at Ridham Dock Biomass Facility will be used to manage any additional runoff from new impermeable areas. The capacity of this and any required alterations to provide appropriate runoff attenuation will be confirmed through a Conceptual Drainage Strategy to be provided in the application, informed by the Flood Risk Assessment which will form part of the EIA.



Operating hours

- 3.3.23 The Proposed Development operates as an extension to the Ridham Dock Biomass Facility, therefore the operational hours will be the same:
- Hours of operation – Continuous operation i.e. 24/7/365; and
 - Hours for the import of consumables and export of residuals – 06:00 to 20:00 Monday to Sunday⁸.

Operational staff

- 3.3.24 In common with the Ridham Dock Biomass Facility, it would be staffed in a shift pattern with employees holding a variety of skillsets for operating the control room, undertaking maintenance and providing site security and administration. The number of additional employment opportunities will be set out in the application, however it is anticipated one additional operative per shift plus one to two on day shift (Monday to Friday) would be required.
- 3.3.25 At intervals a temporary contractor workforce would be required during planned maintenance and overhaul of equipment.

Operational access and parking

- 3.3.26 Vehicular access to the CC Facility will be via the existing Ridham Dock Biomass Facility access road, weighbridge and gatehouse off Lord Nelson Road, see **Figure 1.2**.
- 3.3.27 To accommodate the additional shift operative(s), It is anticipated that the existing staff and visitor car parking arrangements will be sufficient, but any changes to the existing internal parking arrangement will be confirmed in the ES.
- 3.3.28 A loading/unloading area for solvent and other process inputs to the CC Facility will be provided.

3.4 Storage Yard Extension

- 3.4.1 To accommodate the CC Facility and maintain operations at the Ridham Dock Biomass Facility, the existing external storage yard will be extended south by up to 15m, providing an additional area of up to 2,000m², see **Figure 1.2** and be positioned outside of the SSSI located to the south.
- 3.4.2 The Storage Yard Extension will include construction of a retaining wall along the southern boundary and be an impermeable surface (concrete) connected to the existing contained surface water drainage system. See **paragraph 3.3.22** for further information.
- 3.4.3 The extended storage yard will allow for the rearrangement of existing Wood Storage Bays, the Metal Storage Bay, other plant, equipment and structures required for the efficient operation of the Ridham Dock Biomass Facility, and the relocation/erection of up to two Workshop/Stores Buildings 9m(w) x 9m(l) x 6m(h).
- 3.4.4 To maintain site security, an existing 2.4m high boundary fence and pedestrian gate will be relocated around the perimeter of the Storage Yard Extension area. The pedestrian gate allows safe staff access via the Staff Pedestrian Bridge to inspect the Balancing Pond located to the south of the Ridham Dock Biomass Facility.

⁸ See Condition 17 of LPA Ref: SW/20/505774



Wood Storage Bays

- 3.4.5 The existing and proposed Wood Storage Bays accommodate shredded wood used to fuel the Ridham Dock Biomass Facility.

Metal Storage Bay

- 3.4.6 The existing and proposed Metal Storage Bay store metals separated from the wood during the pre-treatment and shredding process at the Ridham Dock Biomass Facility. The metal is exported for recycling at a suitable licenced facility.

3.5 Ditch Realignment

- 3.5.1 To accommodate the Storage Yard Extension and maintain the existing surface water drainage network within the vicinity of the Ridham Dock Biomass Facility Site, a section of an existing surface water swale located to the south of the Ridham Dock Biomass Facility shall be realigned up to 15m south of its current position and into the Swale SSSI/SPA/Ramsar site⁹, see **Figure 1.2** and refer to **Table 11.1** and **Table 11.2** which outline nearby international and national statutory designations.
- 3.5.2 The Ditch Realignment works include the repositioning of the existing Staff Pedestrian Bridge.

3.6 PRoW Realignment

- 3.6.1 To accommodate the Ditch Realignment works and maintain public access along the Shore Way PRoW, a section of this PRoW shall be relocated up to approximately 15m south, see **Figure 1.2**.

3.7 Embedded operational mitigation

Design

- 3.7.1 The Combined Facility will continue to be regulated by the Environment Agency and a variation to the Environmental Permit will be required. Overall, the Combined Facility will be designed to meet the emission limit values (ELVs) defined by the Environmental Permit, minimise the release of odours, and suitably control noise (e.g. through attenuated stacks, or installation of permanent barriers or plant enclosures).

Safety protocols

- 3.7.2 The Applicant plans to arrange discussions with the Health and Safety Executive (HSE) to discuss the CC Facility and any specific risks which could have an HSE regulatory impact. The Ridham Dock Biomass Facility is not a site covered by the Control of Major Accident Hazards (COMAH) Regulations 2015. As an Amine-based solution is assumed to be used in the CC Facility, a small percentage of this will degrade over time and therefore must be replaced. This would be removed from site as hazardous waste for specialist off-site treatment and disposal. The COMAH status and any requirement for a Hazardous Substances Consent (HSC) will be confirmed in the application, as detail emerges from the pre-FEED study and from engagement with HSE.

⁹ Other sections of the existing surface water swale network are within the Swale SSSI/SPA/Ramsar site



Landscaping and habitat creation

- 3.7.3 To compensate for the loss of landscaping and habitats disturbed by the Proposed Development, in accordance with the requirements of the Environment Act¹⁰, the Applicant shall provide a minimum of 10% Biodiversity Net Gain (BNG) The BNG may be via a mixture of on- and off-site habitat creation areas.
- 3.7.4 Unlike the operational areas at the Ridham Dock Biomass Facility, CC Facility and Storage Yard Extension, works associated with the Ditch Realignment and PRoW Realignment offer potential landscaping and habitat creation opportunities; to be explored by the Applicant.

3.8 Construction

Construction programme

- 3.8.1 Should planning consent be granted for the Proposed Development and a solution secured for the transportation of CO₂ from the CC Facility, it is anticipated that Engineering, Procurement and Construction Contractor (EPC Contractor) could commence in Q2 2027 and take approximately 36 months to complete. Therefore, the Proposed Development could be operational by Q2 2030¹¹.

Construction phasing

- 3.8.2 To minimise operational disruption at Ridham Dock Biomass Facility, construction activities are likely to be undertaken in the following phases:
- Phase 1 (month 1) – mobilisation and site set-up and demolition/removal of structures;
 - Phase 2 (month 2 to 6) to – PRoW Realignment and Ditch Realignment works;
 - Phase 3 (month 4 to 8) – Storage Yard Extension, including demolition/removal of structures;
 - Phase 4 (month 6 to 34) – construction of the CC Facility; and
 - Phase 5 (month 30 to 36) – a period of start-up and testing known as ‘commissioning’. This would end with performance testing before the planned start of CC Facility operation.
- 3.8.3 To assess environmental impacts, an indicative construction programme will be prepared for the ES.

Construction working hours

- 3.8.4 Proposed working hours would be 07:00 to 19:00 Monday to Friday, 08:00 to 16:00 on Saturdays, and no work on Sundays or Public holidays without prior approval from the LPA. A limited number of works may be required outside of these days and hours, including:
- Continuous and over running concrete pours;
 - Radiographic weld testing;
 - Mechanical and electrical fit out;
 - Abnormal load deliveries; and

¹⁰ Environment Act 2021, Schedule 14]

¹¹ The construction programme is subject to confirmation.



- Abnormal lifts;

3.8.5 During the hour before and hour after the core working hours, some mobilisation activities would occur and include:

- Arrival and departure of the workforce at the Proposed Development Site;
- Site inspections and safety checks; site meetings (briefings and quiet inspections/walkovers);
- Site clean-up (site housekeeping that does not require the use of plant); and
- Low-key maintenance including site maintenance, safety checking of plant and machinery (provided this does not require or cause hammering or banging).

3.8.6 Mobilisation activities would not include HGV movements into and out of the Proposed Development Site.

3.8.7 Any need to carry out works outside of the working hours would be subject to prior agreement from the LPA. The process of doing so would be set out in the Construction Environmental Management Plan (CEMP).

3.8.8 The EPC Contractor for the Proposed Development has yet to be determined. It is expected that a variety of local, national, and international subcontractors will be required to construct the Proposed Development.

3.8.9 Over the duration of construction, there are likely to be around 150 construction personnel from a range of disciplines employed. During the peak periods of construction for all elements of the Proposed Development, there could be approximately 50 construction personnel onsite at any one time¹².

3.8.10 To assess environmental impacts, indicative construction personnel numbers will be stated in the ES.

Construction access and parking

3.8.11 Construction vehicular access to the CCF Facility Site and Storage Yard Extension area would be via the existing main site entrance to Ridham Dock Biomass Facility off Lord Nelson Road.

3.8.12 Site access to the Ditch Realignment and PRoW Realignment works would be via the main entrance (see **paragraph 3.8.11**) and an existing field entrance off Ridham Dock Road at British National Grid coordinates TQ 92024 68056¹³.

3.8.13 In addition to areas within the Ridham Dock Biomass Facility, it is envisaged that third party land at Ridham Docks might be utilised for contractor parking. Details to be confirmed in the ES.

Construction plant

3.8.14 Mobile and fixed plant would be used during the construction of the Proposed Development. A representative of the tools and equipment that will be used will be listed in the ES. Piling will be required; type to be confirmed in the ES.

3.8.15 At the peak of construction, various cranes would be present at the CC Facility Site. This could include tower cranes, mobile cranes and crawler cranes. To erect the chimney, a temporary crane capable of extending approximately 5m above the height of the chimney

¹² Construction staff estimates to be confirmed in the Environmental Statement

¹³ What3words reference: rents.flocking.extreme



would be required. The height of this temporary crane will increase in line with the erection of the chimney such that it will only achieve its maximum operational height at the point at which the final section of the chimney is fitted.

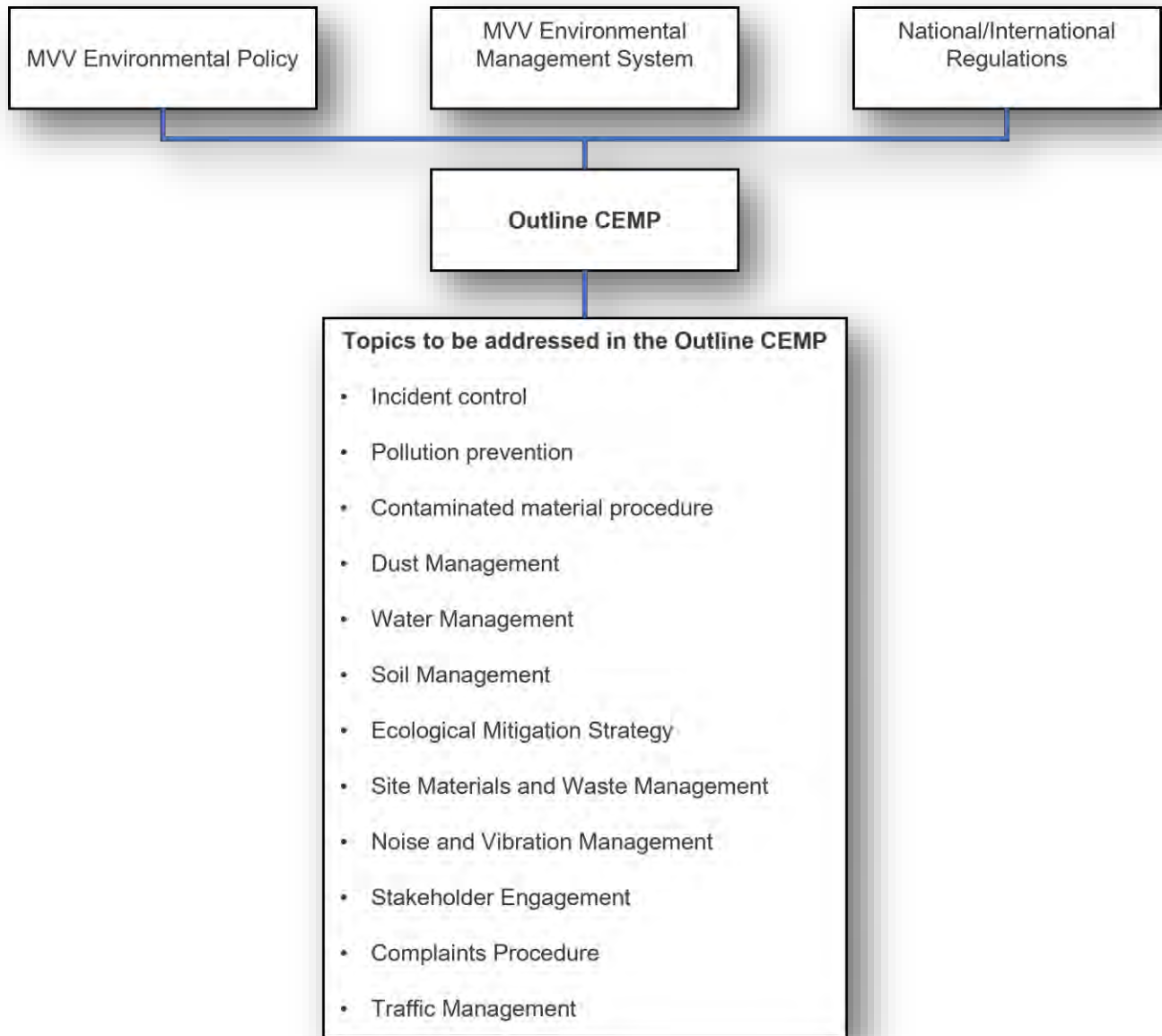
3.9 Embedded Construction Mitigation

Control of construction activities

- 3.9.1 The assessment of effects prior to the adoption of additional mitigation measures will assume that construction will proceed in accordance with industry standard best practice techniques and that all legislative requirements will be met. Standard measures can be secured through planning conditions and will therefore not be repeated as additional mitigation in the ES.
- 3.9.2 To assist the EIA, the Applicant will present these standard measures and any others that are identified in preparing the ES within an Outline Construction Environmental Management Plan (Outline CEMP); to accompany the planning application for the Proposed Development. The Outline CEMP identifies the site management responsibilities regarding the management and reporting of the environmental impact of the construction phase. The overall environmental objectives that will apply to the construction of the Proposed Development are:
- All practicable steps shall be taken to avoid or minimise the environmental effects of construction works;
 - All activities shall be conducted in accordance with the CEMP, relevant legislation, Codes of Practice, Guidelines, and any local environmental procedures;
 - Environmental licenses, permits and consents and other statutory requirements are to be obtained prior to works commencing, and fully complied with;
 - All construction personnel (including subcontractors) shall be aware of the environmental issues relevant to the construction of the Proposed Development through the provision of site-specific information on the environmental impacts of construction and the mitigation measures to be applied during inductions, briefings and toolbox talks; and
 - Regular review of the environmental requirements to ensure that environmental controls remain adequate throughout the duration of the construction phase of the Proposed Development.
- 3.9.3 **Graphic 3.3** illustrates the standard topics to be addressed in the Outline CEMP and their relationship to MVV policies and legislative requirements.



Graphic 3.3: Outline CEMP topics and relationship to MVV policies and legislative requirements



3.10 Decommissioning

- 3.10.1 The Applicant does not intend to seek a time-limited planning permission. The Proposed Development will have an initial design lifetime consistent with that of the existing Ridham Dock Biomass Facility. Further operation of the Combined Facility beyond this timescale will be dependent on prevailing market conditions, although it is noted that the addition of the CC Facility is expected to be a key element in the long-term viability of power stations under the UK’s balanced pathway to net zero greenhouse gas emissions.
- 3.10.2 The CC Facility, if in continuing use beyond the initial design lifetime, would be refurbished and upgraded as required, and would follow any necessary approvals process in place at that time.



- 3.10.3 The CC Facility will be developed from equipment manufactured offsite and assembled on-site, so would be capable of being decommissioned and deconstructed non-intrusively in future in a reverse of that process. Any future decommissioning activities are, therefore, expected to give rise to types of potential impact that are similar to construction and which would be no greater in terms of magnitude or duration. Any future decommissioning would be undertaken in accordance with an approved Decommissioning Plan.
- 3.10.4 In the event of decommissioning, the Ditch Realignment and PRow Realignment would remain in situ.



4. Approach to the EIA

4.1 The proposed EIA

- 4.1.1 EIA is a process through which the likely significant environmental effects of a development proposal can be identified and, where possible, adverse effects avoided or mitigated and beneficial effects enhanced. This process is reported in an ES, which is submitted with a planning application.
- 4.1.2 This section of the Scoping Report sets an overarching assessment methodology to be followed in the EIA.
- 4.1.3 The EIA Regulations require that the ES should identify those aspects of the environment likely to be 'significantly affected' both directly and indirectly by the Proposed Development. It should then describe the nature of those significant effects taking into account the magnitude of the impact and the sensitivity of the Receptor. These assessments will be individual to the specific environmental parameters and will identify mitigation where appropriate and evaluate residual effects with this in place. This Scoping Report describes the potential environmental impact pathways that are or are not likely to cause significant effects, and which should therefore either be scoped in or scoped out of the ES to ensure a proportionate assessment.
- 4.1.4 The environmental effects of the Proposed Development will be assessed for the construction and operational phases. Assessment of decommissioning effects is proposed to be scoped out on the basis that the Applicant does not intend to seek a time-limited planning permission and that any future decommissioning effects would be no greater than construction, so are sufficiently represented by the construction assessment.

4.2 Assessment methodology

Guidance

- 4.2.1 The EIA process will be undertaken with regard to the requirements of the EIA Regulations and good practice guidance. The overarching EIA methodology is set out below. Further details of the topic-specific methodologies based on professional practice guidance for those topics are provided in the following sections of this Scoping Report.
- 4.2.2 The impact assessment methodology will draw on legislation, policy and guidance including:
- Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations');
 - Planning Inspectorate (2017, 2018 and 2019) Advice Notes Seven: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping; Nine: Rochdale Envelope; and Seventeen: Cumulative Effects Assessment;
 - Highways England et al. (2020) Design Manual for Roads and Bridges (DMRB), LA 104 Environmental assessment and monitoring, revision 1;
 - Institute of Environmental Management and Assessment (IEMA) (2004) Guidelines for Environmental Impact Assessment;
 - IEMA (2015) Environmental Impact Assessment Guide to Shaping Quality Development; and
 - IEMA (2016) Guide to Delivering Quality Development.



Assessment structure

4.2.3 The assessment for each environmental impact pathway will form a separate topic chapter of the ES. For each topic chapter, the following components will be set out:

- identification of the Study Area for the topic specific assessments;
- description of the legislation, policy and guidance for that topic assessment;
- summary of consultation activity undertaken, including comments received in the Scoping Opinion;
- description of the approach to assessment, including details of the methodologies used;
- description of the baseline environmental conditions; and
- presentation of the impact assessment undertaken, which includes:
 - ▶ identification of the maximum design scenario for each impact assessment;
 - ▶ a description of the measures adopted as part of the design of the Proposed Development, including mitigation and design measures which seek to prevent, reduce or offset environmental effects or enhance beneficial effects;
 - ▶ an assessment of the likely impacts and effects associated with the Proposed Development;
 - ▶ identification of any further mitigation measures required in respect of likely significant effects (in addition to those measures adopted as part of the project design); and
 - ▶ identification of residual effects and any future monitoring required.

4.2.4 For each topic, an assessment of any cumulative effects with other major developments and any inter-related effects with other impact pathways will be provided. Cumulative effects and inter-related effects will be reported for each EIA topic and summarised in separate ES chapters.

Study area and temporal scope

4.2.5 Each assessment topic will define its Study Area geographically and indicate the timescales over which the environmental effects will be considered. The temporal scope will consider the construction phase, and thereafter when the Proposed Development is completed and operational.

Environmental baseline conditions

4.2.6 The existing and likely future environmental conditions in the absence of a proposed development are known as 'baseline conditions'. Each topic chapter in the ES will include a description of the current baseline environmental conditions, which will be drawn from surveys and/or desk-based assessments.

4.2.7 A summary of existing knowledge of the baseline is provided in each topic section of this Scoping Report. The need for and proposed scope of any further baseline surveys or desk-based research is identified in the topic sections.

4.2.8 The baseline for the assessment should represent the conditions that will exist in the absence of the Proposed Development at the time that the development is likely to be implemented. Consideration will be given to any likely changes between the time of surveys



or desk-based assessments and the future baseline at the time of construction and operation of the Proposed Development.

4.2.9 The characterisation of future baseline conditions in the ES will take into account the likely effects of climate change, as far as these are known at the time of undertaking the EIA. This will be based on information available from the Met Office Hadley Centre's UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK and on published documents such as the UK Climate Change Risk Assessment published by the Climate Change Committee (CCC).

4.2.10 In some cases, future baseline may include the construction or operation of other planned or consented developments in the area. Where such developments are built and operational at the time of writing and data collection, these will be considered to form part of the baseline environment. In other cases, planned future developments will be considered within the assessment of cumulative effects, discussed further in **Section 4.5** and **Chapter 17** of this Scoping Report.

Determining the significance of effects

4.2.11 A standard approach based on the guidance cited above will be used for describing impacts and forming a judgement as to the significance of effects, as follows. However, this approach may be modified or different definitions of terms used for particular topic chapters where required by professional guidance for that topic.

Sensitivity or importance of Receptors

4.2.12 Receptors are defined as the physical or biological resource or user group that would be affected by a project. For each topic, the baseline studies will inform the identification of potential environmental Receptors. Some Receptors will be more sensitive to certain environmental effects than others. The sensitivity or value of a Receptor may depend, for example, on its frequency, extent of occurrence or conservation status at an international, national, regional or local level.

4.2.13 Each ES chapter will identify those Receptors relevant to the topic and their sensitivity to change as a result of the project will be characterised. Receptor sensitivity will take into account factors, which will vary by topic but typically include the:

- vulnerability of the Receptor;
- recoverability of the Receptor; and
- value/importance of the Receptor.

4.2.14 The Receptors will be attributed a sensitivity level typically ranging from high to low. For some topics, a further category of very high may be used where applicable. An example of the definitions for each of these categories is set out in **Table 4.1**. These definitions have been adapted from the DMRB. Topic-specific definitions for each of these categories, where different, will be provided in each of the ES topic chapters. The value of a Receptor for each topic will draw upon relevant topic specific guidance and material, including specialist knowledge, which is relevant to that topic.



Table 4.1: Sensitivity of a generic environmental Receptor to change

Sensitivity	Receptor type
Very high	Very high importance and rarity, international scale and very limited potential for substitution.
High	Receptors of high importance with a high susceptibility to change and limited potential for substitution or replacement.
Medium	Receptors with some sensitivity to change and medium importance. Often have relevance at a regional scale with some opportunity for substitution or replacement.
Low	Receptors with low importance and sensitivity to change, often of relevance at a local scale.
Negligible	The Receptor has very low importance/is not sensitive to change.

Magnitude of impact

4.2.15 The magnitude of impact affecting each Receptor will then be considered. Impacts are defined as the physical changes to the environment attributable to the Proposed Development. For each topic, the likely environmental impact pathways will be identified. For each impact pathway, the likely environmental change arising from the Proposed Development compared with the baseline (the situation without the Proposed Development) will be predicted. The categorisation of the magnitude of impact is topic-specific but will generally take into account factors such as:

- extent;
- duration;
- frequency; and
- reversibility.

4.2.16 With respect to the duration of impacts, the following will be used as a guide within the EIA, unless defined otherwise within the topic assessments:

- short term: a period of months, up to one year;
- medium term: a period of more than one year, up to five years; and
- long term: a period of greater than five years.

4.2.17 The magnitude of an impact will generally be defined using the following scale of major to negligible. Where applicable in some cases, a further category of ‘neutral’ or ‘no change’ may be used. An example of the definitions for each of these categories is set out in **Table 4.2**. The table describes both adverse and beneficial magnitudes of impact. These definitions have been adapted from the DMRB. Topic-specific definitions for each of these categories, where different, will be provided in each of the EIA topic chapters. The definition of these topic specific scales will draw upon relevant external policy, guidance, standards and other material, including specialist knowledge, as relevant to that topic.



Table 4.2: Criteria for the magnitude of environmental impact

Magnitude	Description of criteria
Major	<p>Adverse: loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.</p> <p>Beneficial: large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.</p>
Moderate	<p>Adverse: loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.</p> <p>Beneficial: benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.</p>
Minor	<p>Adverse: some measurable change in attributes, quality or vulnerability, minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.</p> <p>Beneficial: minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.</p>
Negligible	<p>Adverse: very minor loss or detrimental alteration to one or more characteristics, features or elements.</p> <p>Beneficial: very minor benefit to, or positive addition of one or more characteristics, features or elements.</p>
No change	<p>No loss or alternation of characteristics, features or elements; no observable impact in either direction.</p>

Significance of effect

- 4.2.18 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'). This is identified by considering the magnitude of the impact and the sensitivity or value of the Receptor.
- 4.2.19 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise as a result of a relatively modest impact on a Receptor of national value, or a large impact on a Receptor of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the Receptor.
- 4.2.20 The standard matrix set out in **Table 4.3** will be used as a guide to indicate the predicted level of effect, ranging from neutral to substantial. This has been adapted from the DMRB. There is, however, latitude for professional judgement where deemed appropriate in the application of the matrix. Where the matrix offers a choice of significance levels, professional judgement will be used to determine the most likely outcome.
- 4.2.21 Unless specifically defined otherwise in an ES chapter, effects of moderate and higher are considered to be significant effects.



Table 4.3: Framework for characterising environmental effects

Receptor Sensitivity	Magnitude of impact				
	No change	Negligible	Minor	Moderate	Major
Negligible	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible	Negligible or minor	Minor	Moderate	Moderate or major
High	Negligible	Minor	Minor or moderate	Moderate or major	Major or substantial
Very high	Negligible	Minor	Moderate or major	Major or substantial	Substantial

4.2.22 Whilst the levels of effect will be defined within each chapter of the ES, the general definitions shown in **Table 4.4** can be used for topics where specific EIA guidance is not available.

Table 4.4: Broad definition of effect significance

Effect	Definition
Substantial	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human Receptors may also be attributed this level of significance.
Major	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Moderate	These beneficial or adverse effects have the potential to be important and may influence the decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or Receptor.
Minor	These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process, but can be important in enhancing the subsequent design of the project.
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.



4.2.23 The likely effects of the Proposed Development will be described (where applicable for the environmental topic) as:

- Adverse/beneficial;
- Direct/indirect;
- Temporary/permanent; and
- Reversible/irreversible.

Mitigation and enhancement

4.2.24 Having identified Receptors that are likely be affected (taking into account inherent mitigation that forms part of the Proposed Development), the assessments will describe the potential impacts that could arise prior to any further mitigation. Where significant adverse effects are identified, the ES will set out the further mitigation measures considered necessary to minimise the potential effect. Residual effects will be evaluated and their significance will be reported based upon the magnitude of impact against the sensitivity of the Receptor.

4.2.25 An iterative approach will be taken to mitigation and enhancement. This involves a feedback loop during the design and impact assessment process. A specific impact and the significance of the resulting effect will be initially assessed and, if this is predicted to be a significant adverse effect, changes will be made (where practicable) to relevant parameters or design of the Proposed Development in order to avoid, reduce or offset the impact. The assessment will then be repeated and the process continues until the EIA practitioner is satisfied that:

- the effect has been reduced to a level that is not likely to be significant; or
- having regard to other constraints, no further changes can reasonably be made to design parameters in order to reduce the magnitude of impact (and hence significance of effect) – in such cases, an overall effect that is still significant would be reported as the residual effect in the ES.

4.2.26 Where there are beneficial effects, these will also be iterated with a view to enhancement where possible.

4.2.27 A register of enhancement, mitigation and monitoring commitments will be provided in the ES.

Limitations and uncertainties

4.2.28 Each topic chapter will identify any limitations identified in the available baseline data and whether there were any difficulties encountered in compiling the information required to predict environmental effects. Uncertainty in assessments will be discussed, and a conservative (reasonable maximum case) approach will be taken to reporting effects where there is uncertainty. The approach to defining design parameters for the Proposed Development is discussed further below.



4.3 Design parameters

- 4.3.1 To manage uncertainty in the EIA process and ensure that likely significant environmental effects are assessed on a reasonable 'maximum case', a Rochdale envelope¹⁴ of development parameters will be defined for the EIA. This approach allows for a proposed development to be assessed on the basis of maximum project design parameters in order to provide flexibility, while ensuring all potentially significant effects (adverse or beneficial) are reported.
- 4.3.2 For each of the topic chapters in the ES, the maximum design scenario for each impact pathway will be identified from the range of potential options for each parameter to be set out in the ES Project Description chapter. The maximum design scenario assessed is therefore the scenario which would give rise to the greatest potential impact for that specific pathway. This may vary from topic to topic: for example, a minimum-length construction programme and minimum daily working hours might be the maximum impact scenario for traffic effects (concentrating the HGV numbers required into the highest number per day or hour) whereas a maximum-length construction programme might be the maximum impact scenario for noise effects, due to the greater duration of impacts.

4.4 Reasonable alternatives

- 4.4.1 The EIA Regulations require the Applicant to provide "*an outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects*".
- 4.4.2 This will be set out in a specific ES chapter, drawing from the iterative design, assessment and mitigation process as described above. A key aspect is expected to be consideration of alternative site layouts, optimising the design based on the Proposed Development Site's environmental constraints, topography, and sensitivities.

4.5 Assessment of cumulative effects

- 4.5.1 The requirement for cumulative effects assessment is set out in Schedule 4 of the EIA Regulations: '*A description of the likely significant effects of the development on the environment resulting from, inter alia: ...(e) 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*'.
- 4.5.2 A cumulative effects assessment (CEA) will be undertaken for each topic area in the ES and these will be brought together in a CEA summary chapter. The assessment will consider the effects of the Proposed Development in combination with other developments, and the effects of the Proposed Development on any new sensitive Receptors (likely to experience greater effects than existing Receptors) introduced by other developments.
- 4.5.3 The following categories of other developments will be considered:
- approved developments that have not yet been implemented;
 - applications for development that are under consideration;
 - those for which an EIA scoping request has been made; and

¹⁴ See PINS Advice Note 9 Rochdale Envelope: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/>



- development plan allocations.

- 4.5.4 The other developments will be categorised according to the level of detail that is available and therefore the certainty that can be attributed to potential effects. For other developments where less detail is available to make a judgement, the consideration of cumulative effects in the ES will be of a qualitative nature. Where this is the case, it is not proposed to attribute levels of effect or significance in the assessment.
- 4.5.5 Consideration of the potential for cumulative effects will have regard to specific environmental Receptors. This requires a judgement to be made on which other developments have the potential for cumulative effects with the Proposed Development via each relevant impact pathway, and where there are sensitive Receptors common to both developments within a defined geographical area described as the Zone of Influence (Zol).
- 4.5.6 The approach taken for the CEA will have two stages. The first stage is a search exercise to create a longlist of developments with the possibility of cumulative effects in the largest Zol and then to screen this to a shortlist, removing developments where on review of the available information, no cumulative effects in any EIA topic area are considered likely.
- 4.5.7 In the second stage, the short-list is refined on a topic-by-topic basis with consideration to the topic-specific Zol, impact pathways, and the nature of the other development, to identify whether potential cumulative effects are considered likely for that topic. The predicted cumulative effects on the applicable sensitive Receptors are then assessed for all cumulative developments (where sufficient information is available) relevant to that topic area.
- 4.5.8 An initial desk-based search has been undertaken for other developments that may be relevant to include in the CEA. This has been based on initial EIA topic Zols, with the overall search area defined by the current largest Zol of 5km. Further detail and a shortlist of the other developments provisionally identified for inclusion in the CEA is given at **Chapter 17** of this Scoping Report and **Table 17.1**.

4.6 Inter-related effects assessment

- 4.6.1 The EIA Regulations require the consideration of the inter-relationships between impact pathways and phases of development that could lead to greater environmental effects. For example, the separate impacts of noise disturbance and habitat loss may have a combined effect on a sensitive ecological Receptor.
- 4.6.2 The inter-related effects assessment will consider the following two types of effect.
- Project lifetime effects: where impacts from the construction and operational phases of the Proposed Development overlap or where the extended duration of an impact (from construction into operation) potentially creates a more significant effect upon a Receptor than if assessed in isolation for a single phase.
 - Receptor-led effects: those where multiple different types of impact interact spatially and/or temporally to potentially result in greater combined effects upon a particular sensitive Receptor than if considered in isolation. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.
- 4.6.3 This will be via a qualitative assessment which does not assign significance levels. The assessment will be used to identify where there is the potential for inter-related effects, and then to comment on whether the inter-related effects would be greater or lesser than the effects considered alone, and if so, whether this would be combined effect would be adverse or beneficial. Receptor groups (e.g. watercourses, heritage assets, residents, road users) will be used for the assessment rather than specific individual Receptors.



- 4.6.4 The potential for Receptor-led effects will be scoped initially through consideration of the Zols for each topic area. Outside of areas where these overlap, there would be no potential for inter-related effects. In some cases, inter-related effects may already have been fully assessed through the topic area methodology. For example, effects on each sensitive ecological Receptor arising from pathways such as noise, visual/lighting disturbance, air quality impacts and water quality impacts (as applicable) would typically already be considered within the ecology assessment. Where this is the case, further inter-related effects assessment will not be required; the focus will be on identifying any potential additional inter-related effects not already reported in each topic chapter.
- 4.6.5 The potential inter-related effects will be identified and reported within the ES by reviewing the conclusions of the technical topics and their effects on common sensitive Receptors. This will be presented in each of the environmental topic chapters.

Inter-related effects with climate change

- 4.6.6 Climatic change will affect the future baseline and has the potential to cause inter-related effects with other environmental impact pathways, for example by increasing the sensitivity of ecological Receptors to impacts due to the stresses of climate change, or by affecting the sensitivity of the hydrological environment to impacts due to increased frequency of low-flow and drought conditions.
- 4.6.7 IEMA has published an ‘EIA Guide to Climate Change Resilience and Adaptation’ which provides a framework for the effective consideration of climate change resilience and adaption in the EIA process. This guidance states that the scoping of a project, taking into account climate change, should focus on general considerations rather than detailed, quantitative analysis. This is because EIAs consider proposals for specific sites, whereas climate change models are prepared at a regional or national-level model.
- 4.6.8 It is proposed that the inter-related effects of climate change, and how this may alter the future environmental baseline or sensitivity of Receptors, are covered in the inter-related effects section in each topic chapter, where relevant. The in-combination effects will be considered using the UKCP18 climate change projections for a high emissions scenario (RCP8.5), in line with Appendix 4 of the 2020 IEMA guidance.

4.7 Environmental Statement Structure

- 4.7.1 The EIA will be compiled into an ES document which will be produced in accordance with the EIA Regulations, and will be organised into volumes along the lines shown in **Table 4.5**.

Table 4.5: Proposed ES structure

Volume	Chapter no.	Chapter title
Volume 1	n/a	Non-Technical Summary
	n/a	Glossary, acronyms and units
Volume 2	1	Introduction



Volume	Chapter no.	Chapter title
	2	Site and Local Context
	3	Proposed Development
	4	Alternatives and Design Iterations
	5	Approach to Assessment
	6 to 15	Chapters 6 to 15 will provide technical assessments. This includes a review of the relevant baseline, description of the potential environmental effects, mitigation and residual effects.
	16	Summary of Cumulative and Inter-related Effects
	17	Assessment Summary and Mitigation Implementation
Volume 3	n/a	Appendices
	n/a	Figures



5. Summary of the Proposed EIA Scope

5.1 Introduction

- 5.1.1 The following sections of the Scoping Report set out the scoping stage assessment undertaken for the Proposed Development. As part of the EIA Scoping Process impact pathways are identified. Those impact pathways that are identified as being unlikely to give rise to significant environmental effects can be scoped out from the EIA. In the interests of proportionate assessment and reporting, it is reasonable where justified to propose a limited scope of assessment where initial consideration at the Scoping Stage indicates that significant effects are unlikely.
- 5.1.2 **Table 5.1** provides a summary of the topics proposed to be scoped in or out of the EIA, with further detail provided in the subsequent sections.



Table 5.1: Summary of the proposed scope of the EIA

Impact	Phase	Scoped in or out?	Justification
Traffic and Transport			
Severance	Construction	In	It is anticipated that during construction the total increase in trips on some of the highway network may exceed 10% increase. Therefore, it is expected that these impacts will need to be scoped into the assessment. The extent to which they will need to be assessed will be confirmed in the EIA when traffic generation figures are established.
Driver Delay	Construction	In	
Pedestrian Delay	Construction	In	
Non-motorised User Amenity	Construction	In	
Fear and Intimidation	Construction	In	
Accidents and Safety	Construction	In	
Severance	Operation	Out	In contrast to the construction period, although the removal of CO ₂ has not yet been defined, it is considered very unlikely removal will be by road. Therefore, it is expected that operational traffic will be very low. Therefore, it is not expected that the 10% increase thresholds will be met and therefore the operational impacts will not require assessment as part of the EIA.
Driver Delay	Operation	Out	
Pedestrian Delay	Operation	Out	
Non-motorised User Amenity	Operation	Out	
Fear and Intimidation	Operation	Out	
Accidents and Safety	Operation	Out	
Noise and Vibration			
Proposed Development Site activity noise	Construction	In	Potential for high levels of construction activity noise to affect medium or high sensitivity NSRs.



Impact	Phase	Scoped in or out?	Justification
Road traffic noise	Construction	In	If construction flows greater than 10% of baseline road traffic flows, potential for high levels of noise to affect medium or high sensitivity NSRs.
Proposed Development Site activity noise	Operation	In	Potential for high levels of operational activity noise to affect medium or high sensitivity NSRs.
Proposed Development Site activity vibration	Construction	Out	Not significantly high vibration levels at source and relatively large distance between vibration activity and NSRs; low risk for adverse vibration impacts.
Proposed Development Site activity vibration	Operation	Out	No operational vibration sources.
Road traffic noise	Operation	Out	Negligible operational road traffic flows, less than 10% of baseline.
Air Quality			
Dust emissions from construction activities and site/delivery traffic movements	Construction	In	Scale of development is such that there is potential for nuisance dust impacts and mitigation measures should be identified.
Traffic-related air quality impacts	Operation	In	Where traffic movements exceed the IAQM criteria for a detailed assessment, a traffic-related air quality assessment will be provided. This will assess impacts on human health and habitat sites.
Chimney emissions and impact on human health	Operation	In	Emissions to air from the CC Facility have the potential to affect human health.
Chimney emissions and impact on habitat sites	Operation	In	Emissions to air from the CC Facility have the potential to affect sensitive habitat sites and features from airborne emissions, nutrient nitrogen deposition and acidification.
Complex air quality dispersion modelling of traffic-source air pollutants	Construction	Out	Construction traffic movements are expected to fall below thresholds for assessment set out in the applicable guidance.



Impact	Phase	Scoped in or out?	Justification
Odour impact on local amenity	Operation	Out	The Combined Facility has been designed with embedded environmental measures to minimise the release of odours. An odour management plan approved by the Environment Agency will be a requirement of the Environmental Permit.
Landscape and Visual			
Landscape elements on the Proposed Development Site	Construction	In	Potential landscape effects resulting from the removal or modification of existing landform, swale, and planting. Realignment of around 300m of PRow.
Construction activity on the Proposed Development Site	Construction	In	Visibility of ground works, movement of plant, storage of materials, built structures under construction including the use of mobile and tower cranes.
Traffic movements beyond the Proposed Development Site	Construction	In	Potential for indirect effects from increased traffic on the local road network, including HGVs upon visual Receptors close to the route and upon landscape character (tranquillity).
Landscape elements on the Proposed Development Site	Operation	In	Potential effects upon landscape character and visual amenity including the visual effects resulting from the growth of any proposed tree/shrub planting.
Visibility of new built structures and potentially activity on the Proposed Development Site	Operation	In	Potential effects upon landscape character and visual amenity within the LVIA Study Area and ZTV.
Cumulative landscape and visual effects	Operation	In	Subject to further details of proposed developments within the Zol and the potential for significant cumulative landscape and/or visual effects.
Lighting effects	Construction	Out	Temporary lighting required for short periods and controlled by the CEMP. No potential for a significant contribution to landscape character or visual amenity effects.
Visibility of periodic plume	Operation	Out	In addition to the plume being periodic, it is only likely to occur in certain climatic conditions. The plume would be perceived in conjunction with the existing power station plume and there is no potential for a significant contribution to landscape or visual effects.



Impact	Phase	Scoped in or out?	Justification
Residential Visual Amenity Assessment	Operation	Out	There are no properties within 1km of the proposed development and consequently there is no potential for any overbearing effects on private views.
Nighttime views and external lighting effects	Operation	Out	An Outline Lighting Strategy (OLS) will be prepared, and the external lighting effects are predicted to be similar to the existing Ridham Dock Biomass Facility operation. The OLS will describe the measures to ensure that lighting impacts would be minimised such that they are not predicted to have a significant contribution to the landscape and visual effects upon nearby sensitive Receptors.
Historic Environment			
Archaeology	Construction	In	Potential for archaeological assets to remain within the Proposed Development Site. Anticipated degree of groundworks required as part of the Proposed Development Site.
Built heritage	Construction	Out	Limited known built heritage assets in 2km Study Area. Scale, including chimney, of the existing Ridham Dock Biomass Facility within the Proposed Development Site.
Archaeology	Operation	Out	Loss of archaeological resource of the Proposed Development Site during construction phase.
Built heritage	Operation	Out	Limited known built heritage assets in 2km Study Area. Scale, including chimney, of the existing Ridham Dock Biomass Facility within the Proposed Development Site.
Ecology and Nature Conservation			
Habitat loss	Construction	In	Loss of vegetation/habitats and potentially species supported by them to the footprint of the Proposed Development.
Habitat degradation	Construction	In	Potential for degradation of adjacent habitats and associated designations due to risks including physical damage, dust and pollution.
Disturbance (visual, noise)	Construction	In	Temporary visual and noise disturbance to species using the surrounding habitats as a result of construction activities.



Impact	Phase	Scoped in or out?	Justification
Lighting (construction)	Construction	In	Temporary disturbance and/or effective loss of habitat for light-adverse nocturnal species using surrounding habitats.
Killing/injury of animals	Construction	In	Habitat clearance, groundworks, vehicle movements and features presenting hazards to resident and mobile species that may enter the construction area.
Impacts from changes in air quality	Operation	In	Changes to emissions as a result of operation of the Proposed Development may have associated impacts on off-site designated sites, habitats and species.
Hydrology and water quality	Operation	In	Changes to surface water runoff, pollution accidents and discharge of wastewater from the Proposed Development may impact hydrology and water quality, thereby affecting certain habitats and species.
Risk of bird collision with the proposed chimney	Operation	In	Risk of increased bird collision due to the construction of a tall structure within a landscape of importance for birds.
Lighting (operation)	Operation	In	Permanent disturbance and/or effective loss of habitat for light-adverse nocturnal species using surrounding habitats.
Disturbance (visual, noise)	Operation	In	Permanent disturbance to species using the surrounding habitats as a result of the Proposed Development Site.
Impacts on dormouse	Construction	Out	Due to absence of suitable habitat within the Proposed Development Site and surrounding area, in addition to a lack of local records, this species is considered to be absent from the Proposed Development Site and adjacent habitats.
Impacts on dormouse	Operation	Out	
Hydrology and Flood Risk			
Increased flood risk and changes to the hydrological regime, particularly from the temporary works for the Ditch Realignment and proposed Staff Pedestrian Bridge	Construction	In	Potential to increase flood risk during temporary Ditch Realignment works.



Impact	Phase	Scoped in or out?	Justification
Contamination of watercourses (from sediment and dust mobilisation; wheel washing of vehicles, temporary works for the Ditch Realignment)	Construction	In	The Proposed Development Site is in close proximity to watercourses and a main river, which a designated SSSI/SPA/Ramsar Site.
Increase in water demand during construction	Construction	In	An increase in water demand could have an effect on aquifers.
Development in a Flood Zone 3 area	Operation	In	The Proposed Development Site is in an area classified as having a 'High' risk of tidal flooding. This classification does not account for the presence of flood defences, nor does it account for the effects of climate change. The 'with defences' risk will need to be determined, as well as the residual risk from a breach of overtopping of the defences.
Increased flood risk as a result of the proposed Ditch Realignment and Staff Pedestrian Bridge	Operation	In	The potential for these changes to affect local flood risk should be assessed.
Increase in water demand	Operation	In	An increase in water demand could have an effect on aquifers.
Contamination of watercourses from in-situ materials and proposed on-site uses	Operation	In	The Proposed Development Site is in close proximity to watercourses and a main river, which a designated SSSI/SPA/Ramsar Site.
Increase in wastewater demand	Construction	Out	Increase in wastewater demand during construction will be temporary and not significant.
Risk of flooding from artificial sources and surface water flooding	Operation	Out	Low risk of flooding from artificial sources. Increase in permeable areas will be relatively minor and mitigated through the proposed Drainage Strategy.
Geology, Hydrogeology and Contaminated Land			
Land contamination	Construction	Out	
Hydrogeology	Construction	Out	



Impact	Phase	Scoped in or out?	Justification
Soil resources and geology	Construction	Out	No existing sources of contamination have been identified and the construction process will be managed to prevent the formation of new pathways of the fugitive release of emissions.
Land contamination	Operation	Out	The Proposed Development will be operated under and Environmental Permit, which will set operating procedures to prevent environmental harm.
Hydrogeology	Operation	Out	
Soil resources and geology	Operation	Out	
Population, Health and Socio-economics			
Changes in local air quality	Construction	In	Construction activities and transport movements will change the air quality environment.
Changes in noise exposure	Construction	In	Construction activities and transport movements will change the noise environment.
Changes in transport nature and flow rate	Construction	In	The delivery of construction materials and worker travel to/from the CC Facility Site will generate transport movements.
Changes in socio-economic factors	Construction	In	There will be construction jobs associated with the build out of the CC Facility.
Changes in local air quality	Operation	In	The addition of a CC Facility may change the air quality environment.
Changes in noise exposure	Operation	In	The addition of a CC Facility may change the noise environment.
Changes in socio-economic factors	Operation	In	The addition of a CC Facility would generate long-term employment opportunities.
Changes in access to opportunities for recreation and physical activity	Construction	Out	Any temporary disruption during realignment works to the Saxon Shore PRoW is not anticipated to have any material impact on access to opportunities for recreation and physical activity.
Changes in transport nature and flow rate	Operation	Out	Changes in operational traffic are expected to be minor, with no potential for significant population and health effects.



Impact	Phase	Scoped in or out?	Justification
Changes in access to opportunities for recreation and physical activity	Operation	Out	Once completed, the permanent realignment of a section of the Saxon Shore PRoW would not materially alter the attractiveness, length and directness of the PRoW.
Climate Change			
Embodied carbon of construction materials	Construction	In	Likely to be minimal compared to operational emission benefits, but will be estimated and screened for significance, and will inform construction-stage mitigation proposals.
GHG emissions from plant operation, including capture of CO ₂ from Ridham Dock Biomass Facility and its transport and sequestration	Operation	In	A likely significant beneficial effect.
Transport and site plant use	Construction	Out	Expected to make non-material contribution to overall lifecycle impacts of the CC Facility.
Climate risks	Construction	Out	No significant change in baseline risks from variable weather conditions (to which construction processes and contractors' working methods are adapted) are expected during the likely construction phasing in the mid-late 2020s.
Climate risks	Operation	Out	Significant change to the climate risk profile of the existing Ridham Dock Biomass Facility operation with the addition of the CC Facility operation is not considered likely. Flood risk will be assessed in the Hydrology and Flood Risk ES chapter.



6. Traffic and Transport

6.1 Introduction

6.1.1 This chapter of the ES Scoping Report has been produced by Paul Basham Associates in relation to transport matters pertaining to the Proposed Development. The approach proposed in this Scoping Report has been informed by ongoing desk studies and reference to published best practice guidance and professional judgement. An assessment of construction traffic impacts is proposed to be scoped into the EIA.

6.2 Consultation to date

6.2.1 Consultation with respect to transport has not been undertaken prior to the submission of this EIA Scoping Report.

6.3 Legislative or policy requirements and technical guidance

6.3.1 The assessment will be carried out with reference to national and local policy including:

- Design Manual for Roads and Bridges (DMRB);
- Institute of Environmental Assessment Guidelines: Environmental Assessment of Traffic and Movement (2023);
- Manual for Streets, Department for Transport (2007);
- Manual for Streets 2, Chartered Institution of Highways & Transportation (2010); and
- National Planning Policy Framework (2023).

6.4 Baseline

Baseline environment

6.4.1 No site-specific surveys have yet been undertaken in regard to existing traffic flows. Department for Transport (DfT) produces road traffic statistics for roads across the country, derived from monitoring equipment and/or manual traffic counts. However, in this location there are no data collection points in the vicinity of the Proposed Development Site or local highway network.

6.4.2 However, as part of the NW Sittingbourne application (REF: 18/502190/EIHYB) a series of traffic surveys were undertaken in 2015 for the Grovehurst Road/A249/Swale Way junction which are publicly available within the accompanying Transport Assessment (TA). In the interim, whilst traffic surveys are being undertaken this data has been utilised accordingly to provide an indication of baseline flows along Swale Way.

6.4.3 Utilising a combination of the turning count data for the Grovehurst Roundabout and the Automatic Traffic Count (ATC) data along Grovehurst Road a peak hour to Annual Average Daily Traffic (AADT) growth factor has been derived. When applying this factor to the flows on the Swale Way arm of the Grovehurst Road roundabout it is calculated that Swale Way currently accommodates an AADT of c. 22,400 vehicles. Of those 22,400 vehicles, c. 14% are HGVs, which demonstrates that the road is already well utilised by high proportions of HGVs.



Proposed approach to surveys and further data collection

- 6.4.4 It is proposed that data collection will comprise 7-day ATC surveys along Swale Way to capture both speed and volumetric vehicle traffic data. This will enable an up-to-date assessment of the baseline traffic and enable a percentage impact assessment of the increase in construction traffic to be undertaken.
- 6.4.5 It is proposed that the traffic surveys will comprise two ATC surveys, one on Swale Way within the vicinity of the Grovehurst Roundabout, and one on Barge Way on the approach to the Proposed Development Site, noting potential constraints in surveyable areas due to the approach being a private road.
- 6.4.6 Information on the net impact of the Proposed Development upon vehicular traffic generation during both the construction period and operational period will be provided by the Applicant, MVV. This is considered the most accurate approach given the specialist nature of the Proposed Development Site.

6.5 Approach to Assessment

- 6.5.1 The proposed methodology would follow the guidelines issued by the Institute of Environmental Management and Assessment (IEMA). Typically, this would require links to be assessed where traffic flows increase by 30% or any sensitive areas where flows increase by 10%. The nature of the development means that most inputs are already present on site. As detailed in **Chapter 3** of this Scoping Report, options for the exporting of CO₂ are being explored and include tanker, rail, pipeline and ship. The exact method of removal of CO₂ will be secured through a Grampian style planning condition.
- 6.5.2 As set out in **Chapter 3** of this Scoping Report, were the export of CO₂ to be via tanker it is forecast that these trips would amount to 15 HGVs per day which would have a negligible impact on the highway network.
- 6.5.3 However, it is pertinent to note that it is highly unlikely that exports will be by road. As such the road traffic generated by the development will primarily consist of staffing and delivery of consumables by light goods vehicles (LGVs) during the operational period, and construction vehicles, which will include HGV traffic during the construction process.
- 6.5.4 As outlined above, the existing highway network already accommodates large numbers of daily traffic of which a reasonable proportion of HGVs. During the operational phase of the development the increase in vehicular trips are anticipated to be negligible to operation of the highway network. The construction phase is more likely to experience increases in trips which may have an impact on the network and so the assessment is expected to focus on the construction phase.

Assessment criteria

- 6.5.5 The IEMA Guidelines suggest in paragraph 2.16 that two broad rules-of-thumb could be used as a screening process to delimit the scale and extent of the assessment. These are:
- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%).
 - Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 6.5.6 These rules-of-thumb form the starting point for the assessment of effects. The significance of the effects of the Proposed Development will be considered with respect to the following subject areas based on the IEMA Guidelines:



- Severance of communities;
- Road vehicle driver and passenger delay;
- Non-motorised user delay;
- Non-motorised user amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous/large loads.

Magnitude of impact

6.5.7 A Magnitude of Change Scale with respect to each of the IEMA guideline subject areas is defined in **Table 6.1**. The thresholds have been derived with reference to the IEMA Guidelines, best practice, and professional judgment.

Table 6.1: Magnitude of Impact (Based on IEMA Guidelines)

Subject	Magnitude of Effect			
	Substantial	Moderate	Slight	Negligible
Severance	Change in highway link traffic flow of over 90%	Change in highway link traffic flow of 60% to less than 90%	Change in highway link traffic flow of 30% to less than 60%	Change in highway link traffic flow of less than 30%
Driver Delay	Increase in driver delay by over 90 seconds	Increase in driver delay by 30-90 seconds	Increase in driver delay by 10-30 seconds	Increase in driver delay by less than 10 seconds
Pedestrian Delay	Change in highway link traffic flow of over 60%	Change in highway link traffic flow of 30% to less than 60%	Change in highway link traffic flow of 10% to less than 30%	Change in highway link traffic flow of less than 10%
Non-motorised User Amenity	Change in highway link traffic flow of over 60%	Change in highway link traffic flow of 30% to less than 60%	Change in highway link traffic flow of 10% to less than 30%	Change in highway link traffic flow of less than 10%
Fear and Intimidation	Two step change in level	One step change in level with, >400 vehicle 19hr increase, or >500 HGV increase	One step change in level with, <400 vehicle 19hr increase, or <500 HGV increase	No step change
Accidents and Safety	Change in highway link/junction traffic flow of over 30%	Change in highway link/junction traffic flow of 10% to less than 30%	Change in traffic flow through junction of 5% to less than 10%	Change in traffic flow through junction of less than 5%



Sensitivity of receptors

6.5.8 A scale for sensitivity of the relevant Receptors is identified in **Table 6.2**. The thresholds have been derived with reference to the IEMA Guidelines, best practice, and professional judgment.

Table 6.2: Value/sensitivity assessment

Receptor Value/Sensitivity	Magnitude of Effects
High	Sensitive groups such as children and elderly Accident 'hot spots' Schools and town centres
Medium	Pedestrians on roads with no footways Pedestrians on roads with footways Cyclists Highway junctions operating close or over capacity Parks and recreational areas Retail areas
Low	Roads with active frontages Distributor roads
Negligible	Open space (agricultural land)

Significance of effect

6.5.9 The predicted level of effect is based on the consideration of magnitude of impact and sensitivity of the resource/Receptor (as shown within **Table 6.3**) to come to a professional judgement as to how important this effect is.

Table 6.3: Magnitude/Significance of effect (Based on IEMA Guidelines)

Subject	Magnitude of Effect			
	Substantial	Moderate	Slight	Negligible
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

6.5.10 For the purposes of this assessment the level of impact is considered significant in circumstances when the overall magnitude of effect is moderate or above. In addition to the significance of the impact, the nature of the impact, being either beneficial, negligible, or adverse, has also been considered accordingly.

6.5.11 The above tables have been derived with reference to the IEMA Guidelines, such that locations in the Study Area that would experience an increase in traffic flow of 30% or more are considered in respect of severance, and 10% or more are considered in respect of non-motorised user delay and amenity. With regards to fear and intimidation, areas which would



result in a step change in level in accordance with IEMA calculations are considered. In respect of accidents and safety, locations with a poor collision record are considered where they would experience an increase in traffic flow of 5% or more. In respect of driver delay, the corresponding figure is also >5%. Professional judgement has been exercised in determining the degree of the effect and whether or not mitigation in the form of an improvement to the existing road layout is required and, if required, what that improvement should comprise.

Geographical scope

- 6.5.12 The proposed Study Area has not yet been confirmed and is subject to discussions with Kent County Council (KCC) once vehicle trip generation estimates are confirmed. However, based on local knowledge of the highway network, the Study Area will likely comprise Lord Nelson Road west up to the Grovehurst Road Junctions with the A249. Beyond this, vehicle trips will be on the strategic highway network, which is designed to accommodate a large volume of vehicle traffic and so the impact is considered to be negligible given the anticipated vehicle trip generation of the Proposed Development.

Temporal scope

- 6.5.13 The temporal scope is anticipated to cover the period of construction and then the general period of operation. For the purposes of assessment, the construction year is anticipated to commence in Q2 2027 and take approximately 36 months to complete, and therefore could be operational Q2 2030.

6.6 Embedded mitigation and enhancement measures

- 6.6.1 As part of the design process a number of embedded mitigation measures and additional mitigation measures have been included within the development to reduce the overall impact of the scheme.
- 6.6.2 The exportation of captured carbon material from the Proposed Development Site via alternative means to road (with possible options including rail, pipeline or ship and exact method of export secured through a Grampian style planning condition) will minimise the impact of the scheme on road transport.
- 6.6.3 With regard to additional mitigation to reduce the impacts of the development, a comprehensive Construction Traffic Management Plan (CTMP) will be implemented. This will help manage and mitigate construction highway impacts and subsequently reduce the overall impact of the Proposed Development.

6.7 Scope of environmental impacts and effects

- 6.7.1 At this stage the exact quantum of traffic generated by the Proposed Development during both construction and operational periods is not yet confirmed. It will therefore be quantified in due course; however, given the high flow of vehicles along the nearby A548 it is considered that trips will not exceed 10% of daily vehicle trips along this route (equating to 1,372 vehicle trips daily) during either the construction or operational period. It is however recognised that, particularly during construction, the links between the Proposed Development Site and the A548 may experience percentage increases to trigger certain IEMA thresholds. This will be confirmed through further assessment.



- 6.7.2 The assumptions underpinning the estimates of operational vehicle trip generation will be agreed upon with KCC, but on this basis, the environmental impacts of the scheme are not expected to meet the requirements for link assessment set out by IEMA.

Construction

- 6.7.3 For the construction phase, there will be a moderate increase in vehicle trips to/from the Proposed Development Site. It is expected that HGV trips will be spread evenly throughout the day to minimise focused times of increase. However, due to the nature of construction shift work it is expected there will be a larger percentage increase in vehicular trips in/around the highway network peaks when construction staff arrive/depart the Proposed Development Site, during which time the 10% threshold for sensitive locations set out by IEMA may be exceeded.
- 6.7.4 Although temporary, these construction staff vehicle trips in combination with construction HGV movements may particularly impact upon driver delay. The extent of this will not be known until further assessment is undertaken, but at the time of writing it is considered there will likely be an adverse impact upon driver delay at peak times during the construction period and so this is proposed to be scoped into the EIA.

Operation

- 6.7.5 During operation, given the low number of vehicle trips anticipated and the existing flows on the surrounding network, it is anticipated that the impact will be negligible. Notwithstanding this, of all impacts experienced, the greatest impact is likely to be on driver delay, by virtue of increased vehicle movements on a busy local road network. However, highway capacity modelling is not expected to be required as part of the accompanying TA, given the low percentage impact of such flow increases on the local network.
- 6.7.6 At the present time it is considered that there is unlikely to be significant impacts from the development on non-motorised user delay/amenity, or fear/intimidation given the minor percentage increase in traffic flows during operation. It should be noted that the Proposed Development intends to divert the Saxon Shore Way Public Right of Way (PRoW) (reference 0139/ZR88/7) which routes along the southern boundary of the Proposed Development Site by less than 20m as part of the proposals. The attractiveness, length and directness of the PRoW will not be materially affected and so no associated impact on pedestrian amenity or delay will be experienced.
- 6.7.7 The TA undertaken as part of the planning application will assess the road safety record and ensure that the access is safe and suitable for the vehicles it will serve. On this basis, the impact on accidents or safety is also anticipated to be negligible at this stage.
- 6.7.8 It is therefore suggested that the transport impacts of the scheme during the operational phase are scoped out of the EIA.

6.8 Limitations and uncertainties

- 6.8.1 Limitations in the study include the forecasting of likely vehicle trip generation, with this undertaken using a First Principles approach and informed by the end user, the Applicant. Whilst this represents an area of uncertainty given the potential fluctuation in vehicle trips during the course of the construction phase, the potential impact of this will be moderated through the adoption of conservative estimates to ensure a robust assessment.



6.9 Inter-related effects

- 6.9.1 The main inter-related effect of transport typically relates to air quality, with air quality being dependent upon the transport data and any substantial air quality effects could have a negative impact on pedestrian amenity. There can also be inter-relationships with road noise and with socio-economic or population and health impacts. However, given the highway impact is expected to be minor it is not envisaged that there will be any impacts upon the transport assessment criteria. The vehicle flows and transport assessment data will be provided to inform the air quality, noise, socio-economic and population and health topics in the EIA.

6.10 Cumulative effects

- 6.10.1 From a transport perspective, the operational impacts of the development will be negligible, therefore any cumulative effects will be experienced over a short-term period whilst construction is ongoing. Within the wider vicinity of the Proposed Development Site developments such as the North West Sittingbourne allocation and other developments may have a future impact on the road network. However, noting the Proposed Development's impact will be experienced over a short-term period (36 months) the potential for substantial cumulative impacts on the road network are low. This is particularly the case noting that the Proposed Development Site is in close proximity to the strategic road network and so any proportional increase in trips will be negligible. In order to mitigate against any cumulative effects a CTMP will be produced to ensure construction traffic impacts are mitigated and managed in a way that minimises impact on the network, with such measures including the potential for shift patterns that are offset for the highway peaks.



7. Noise and Vibration

7.1 Introduction

7.1.1 This chapter of the Environmental Impact Assessment (EIA) Scoping Report has been produced by the Savills Acoustics, Noise & Vibration team, all of whom are corporate (MIOA or FIOA) or associate (AMIOA) members of the Institute of Acoustics (IOA) (the UK's professional body for those working in acoustics, noise and vibration). The team is also a member of the Association of Noise Consultants (ANC).

7.1.2 Generally, and dependent upon the specific circumstances, an assessment of noise and vibration effects associated with the construction and operation of this type of development is not scoped out of the EIA process. However, for this Proposed Development, the following aspects could potentially be scoped out as they are unlikely to result in significant effects:

- depending on the construction methodology, an assessment of construction vibration effects may reasonably be scoped out, particularly if percussive/impact piling will not be required;
- an assessment of operational road traffic noise effects, on the basis that there would be only negligible road traffic movements; and
- an assessment of operational vibration effects, on the basis that there would no, or only negligible, vibration sources.

7.1.3 Further justification for the aspects proposed to be scoped out is provided in **Section 7.7** below.

7.2 Consultation to date

7.2.1 Consultation with respect to noise and vibration has not been undertaken prior to submission of this EIA Scoping Report.

7.3 Legislative or policy requirements and technical guidance

7.3.1 Section 60, Part III of the Control of Pollution Act 1974 (CoPA) refers to the control of noise (including vibration) on construction sites. It provides legislation by which local planning authorities can control noise from construction sites, by stopping activities if necessary, to prevent noise disturbance occurring. In addition, it recommends that guidance provided by British Standard (BS) BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1 Noise & Part 2 Vibration', is implemented to ensure compliance with Section 60. BS 5228 is an approved Code of Practice under the Act.

7.3.2 Section 61, Part III of the CoPA refers to prior consent for work on construction sites. It provides a method by which a contractor can apply for consent to undertake construction works in advance. If consent is given, and the stated method and hours of work are complied with, then the local authority cannot take action under Section 60.

7.3.3 Section 72, Part III of the CoPA refers to 'best practicable means' (BPM), which is defined as:

“reasonably practicable, having regards among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications”.



While 'Means' includes 'the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and acoustic structures.'

- 7.3.4 If BPM is applied, then it can provide a defence against prosecution by the consenting body, usually the local authority.
- 7.3.5 Part 3 of the Environmental Protection Act 1990 (the EPA) contains the main legislation relating to statutory nuisance. A statutory nuisance is 'an unlawful interference with a person's use or enjoyment of land or some right over, or in connection with it'. Noise emitted from premises so as to be prejudicial to health or a nuisance constitutes a statutory nuisance.
- 7.3.6 The following is a list of relevant BSs and other documents which, as far as practicable, the noise and vibration assessment will be undertaken in accordance with:
- BS 7445-2:1991 'Description and measurement of environmental noise — Part 2: Guide to the acquisition of data pertinent to land use';
 - BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' – Part 1: Noise;
 - BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' – Part 2: Vibration;
 - BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'; and
 - Design Manual for Roads and Bridges, LA111 'Noise and Vibration' (DMRB).

7.4 Baseline

Baseline environment

- 7.4.1 The Proposed Development would be located at the established MVV Ridham Dock Biomass Facility within the administrative area of Kent County Council (KCC). The Proposed Development Site is approximately 2km to the north-east of Iwade, approximately 3km to the north of Sittingbourne and 1.2km to the east of the A249.
- 7.4.2 The nearest residential noise sensitive receptors (NSRs) are located approximately 2km to the southwest of the Proposed Development Site in Iwade Village.
- 7.4.3 Ecological NSRs in the vicinity of the Proposed Development Site include:
- the 'Swale' Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site immediately east and south of the Proposed Development Site;
 - 'Elmley' National Nature Reserve (NNR) approximately 500m east of the Proposed Development Site, across the Swale; and
 - 'Medway Estuary and Marshes' SSSI, SPA and Ramsar Site approximately 1.5km north-west of the Proposed Development Site.
- 7.4.4 No baseline noise studies have been undertaken as of the date of issue of this Scoping Report.
- 7.4.5 However, based on a desktop review of the Proposed Development Site and previous experience of assessing other developments in this area, it is considered that road traffic movements on the local road network would be the primary source of noise affecting the



baseline acoustic environment at residential NSRs, with existing commercial and industrial activity also affecting the baseline acoustic environment, particularly closer to the Proposed Development Site and at the ecological NSRs.

Proposed approach to surveys and further baseline data collection

- 7.4.6 In order to quantify baseline sound levels at the nearest residential and ecological NSRs to the Proposed Development, a sound level survey will be undertaken that will comprise deployment of up to two unattended sound level surveys over a period of up to 7-days, covering at least one weekend period.
- 7.4.7 Measured data will take account of weather conditions during the survey to obtain a dataset from which representative baseline environmental noise levels for the assessment will be derived, commensurate with BS 7445-2.
- 7.4.8 Proposed survey locations will include dwellings, or areas, representative of the nearest residential NSRs to the west of the Proposed Development and at the nearest ecological NSRs to the east.
- 7.4.9 Preferably access to identified survey locations for the deployment of the survey equipment will be agreed in advance of the survey work commencing. If this cannot be facilitated, then the 'fall back' option would be to arrive on the day of survey deployment and attempt to agree access in person. If access cannot be agreed on the day, a series of attended short-term surveys would be undertaken during the daytime (07:00 to 19:00 hours), evening (19:00 to 23:00 hours) and nighttime (23:00 to 07:00 hours) periods.

7.5 Approach to the assessment

Assessment criteria

- 7.5.1 The significance of an effect is determined based on the magnitude of an impact and the sensitivity of the Receptor affected by the impact. This section describes the proposed criteria that will be applied in the noise and vibration assessment to characterise the magnitude of potential impacts and sensitivity of Receptors.

Magnitude of impact

Construction noise

- 7.5.2 The magnitude of construction noise impacts at residential NSRs will be determined in accordance with Annex E of BS 5228 1:2009+A1:2014. The criteria for assessing noise impact from construction works will be based on Example Method 2 contained within Annex E.3.3 of BS 5228-1:2009+A1:2014.
- 7.5.3 The magnitude of construction noise impacts at ecological NSRs will be assessed following guidance in the 'Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance' report, which summarises the findings of several studies undertaken by the 'Institute of Estuarine & Coastal Studies' (IECS) regarding the disturbance of birds in response to construction works.
- 7.5.4 It should be noted that, whilst the IECS report is primarily focussed on disturbance associated with construction activity, regular and steady state noise effects are also considered.



Construction traffic

7.5.5 The magnitude of construction road traffic noise impacts will be determined in accordance with the DMRB classification of magnitude of noise impacts in the short-term. These DMRB criteria best reflect the temporary nature of the construction impacts and allow for a robust, worst-case assessment of response to construction traffic noise albeit the DMRB mostly relates to traffic on new trunk roads and motorways rather than increases in traffic on existing roads.

Operational noise

7.5.6 The calculation of specific sound levels at the nearest residential NSRs, associated with the operation of the Proposed Development, will be made using the methodology in BS ISO 9613-2:2024 ‘Acoustics - Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors’.

7.5.7 The calculations will be based on information provided regarding the Proposed Development. Where acoustic data for specific proposed plant and/or activity is unknown, the assessment will include assumptions based on professional judgement and experience of assessing the operational of similar projects.

7.5.8 The magnitude of impact of the noise effects associated with the operation of the Proposed Development will be determined based upon the general methodology contained within BS 4141:2014+A1:2019.

7.5.9 The magnitude of operational noise impacts at ecological NSRs will be assessed following guidance in the IECS document. It should be noted that, whilst the report is primarily focussed on disturbance associated with construction activity, regular and steady state noise effects are also considered, i.e. broadly that same as regular/steady operational noise.

Sensitivity of receptors

7.5.10 There is no nationally adopted guidance on how the sensitivities of NSRs should be determined. Therefore, for this assessment, the sensitivity of classes of Receptor is defined through consideration of the vulnerability, recoverability and value/importance of that Receptor class. The criteria for defining noise sensitivity are outlined in **Table 7.1**.

Table 7.1: Criteria for Receptor Sensitivity

Sensitivity	Typical NSRs identified
Very High	Subject to particular circumstances.
High	Schools, churches and concert halls etc. Designated sites of ecological significance (SPA/SSSI/Ramsar etc.).
Medium	Residential properties, hotels, hospitals, nursing homes and care homes and sites of historic or cultural importance.
Low	Area used primarily for leisure, including Public Rights of Way (PRoW), sports facilities, offices and retail businesses.
Negligible	All other areas such as those used primarily for industrial or agricultural purposes.



Significance of effect

- 7.5.11 The significance of the effect with regards to noise will be determined by correlating the magnitude of the impact and the sensitivity of the Receptor.
- 7.5.12 A significance of no change is considered to be below the 'no observed effect level' (NOEL). A significance of negligible or minor is considered to be below the 'lowest observed adverse effect level' (LOAEL). A significance of moderate is considered to be between the LOAEL and the 'significant observed adverse effect level' (SOAEL). A significance of major or substantial is considered to be above the SOAEL.
- 7.5.13 For the purpose of the assessment, any effects with a significance level of minor or less will be considered to be not significant in EIA terms. Effects with a significance level of moderate will not automatically be considered to be significant. Further consideration of the assessment outcome will be given where a moderate effect is predicted before a determination of whether an effect is significant/not significant in EIA terms. Effects with a significance level of major will be considered to be significant in EIA terms.

Geographical scope

- 7.5.14 Noise and vibration levels decrease over distance. As the design of the Proposed Development will include mitigation measures to avoid significant effects at the nearest NSRs, the geographic scope of the noise and vibration assessment, for Proposed Development Site based activity, will be limited to an area up to and including the nearest NSRs.
- 7.5.15 With regard to off-site activity, i.e. construction traffic movements on the local road network, the geographic scope of the noise and vibration assessment will include sections of road for which road traffic movements are anticipated to increase by at least 10% above baseline. This is on the basis that an increase of less than 10% would result in a negligible increase in noise.

Temporal scope

- 7.5.16 The temporal scope of the noise and vibration assessment will include the construction and operational phases of the Proposed Development.
- 7.5.17 At this stage the consent is not expected to be time-limited. As such, a decommissioning/demolition assessment is proposed to be scoped out.

7.6 Embedded mitigation and enhancement measures

- 7.6.1 The likelihood for adverse noise and/or vibration effects associated with the construction and operation of the Proposed Development will be minimised through the implementation of embedded mitigation.
- 7.6.2 At the construction stage, activities will be undertaken in following BPM, with modern and well maintained plant utilised. A CEMP will be drafted in advance of works commencing.
- 7.6.3 In the event that significant noise and/or vibration effects are predicted to occur with the embedded mitigation, the requirement for further mitigation measures will be considered.
- 7.6.4 This may include measures such as temporary barriers during the construction phase and attenuated stacks, or installation of permanent barriers or plant enclosures during the operational phase.



7.7 Scope of environmental impacts and effects

Construction

- 7.7.1 During construction of the Proposed Development, both on-site activity and off-site road traffic movements have the potential to result in high levels of noise and/or vibration at NSRs, resulting in adverse effects. As such, an assessment of construction noise effects will be scoped into the assessment.
- 7.7.2 However, depending on the proposed construction methodology, significant vibration effects are considered unlikely. This is particularly the case if percussive/impact piling is not required (type to be confirmed in the ES), as the nearest residential NSRs are at least 2km from the Proposed Development Site. Assuming that percussive/impact piling is not required, a construction vibration assessment is proposed to be scoped out of the assessment.
- 7.7.3 Where construction road traffic movements are anticipated to increase the total flow by at least 10%, a construction road traffic noise assessment will be scoped in and undertaken.

Operation

- 7.7.4 During operation of the Proposed Development, both on-site activity and off-site road traffic movements have the potential to result in high levels of noise and/or vibration at NSRs, resulting in adverse effects. As such, an assessment of operational noise effects will be scoped into the assessment.
- 7.7.5 However, significant vibration effects are considered very unlikely, as no/negligible vibration sources are proposed and the residential nearest NSRs are at least 2km from the Proposed Development Boundary/Site. On this basis, an assessment of operational vibration effects is proposed to be scoped out of the assessment.
- 7.7.6 Furthermore, on the basis that there would be negligible operational road traffic movements, an assessment of operational road traffic noise effects is proposed to be scoped out of the assessment.

7.8 Limitations and uncertainties

- 7.8.1 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

Construction methodology

- 7.8.2 Depending on the availability of the proposed construction methodology and acoustic data of proposed noise generating plant, the assessment may be undertaken based on assumed data, informed through professional judgement and experience. If this is necessary, assumptions will err on the side of caution, to allow for a robust assessment.

Operational sound source data

- 7.8.3 A quantitative assessment will be undertaken based on source levels provided by the plant manufacturer and measurement data on similar types of equipment. Where necessary, assumptions will be made based on the maximum design envelope parameters.



Prediction methods and assessment

- 7.8.4 There are uncertainties in any prediction methodology. ISO 9613 Part 2 provides a method for predicting acoustic propagation outdoors. The method is applicable in practice to a great variety of sound sources and environments. It is applicable (directly or indirectly) to most situations including industrial sound sources, construction activities and many other ground-based sound sources. The estimated accuracy for values of the average downwind sound pressure level is stated as +/-3dB for a mean source/Receptor height of up to five metres and source/propagation separation distance of up to 1km. For a mean source height between 5 and 30m, the estimated accuracy is given as +/-1dB for a source/propagation separation distance of 0 to 100m and +/-3dB for a source/propagation separation distance of >100m. This is a standard approach and is considered to be an acceptable prediction methodology.
- 7.8.5 With regard to subjective response, the noise standards adopted for the assessment will have been based upon the subjective response of the majority of the population or will be based upon the most likely response of the majority of the population. This is considered to be the best that can be achieved in a population of varying subjective response which will vary dependent upon a wide range of factors.
- 7.8.6 In lieu of explicit operational noise impacts on birds, it is considered that the threshold for impacts due to steady state or regular noise associated with construction activity (50dBA) for regular noise as outlined in Table 3 of the IECS report would be equivalent for steady state and/or regular noise from operational industrial facilities, such as the CC Facility.

7.9 Inter-related effects

- 7.9.1 No inter-related effects including noise and/or vibration are considered to occur.
- 7.9.2 Nevertheless, the assessment will be completed through communication with stakeholders to identify any potential for inter-related effects and an assessment included if required.

7.10 Cumulative effects

- 7.10.1 Intra-Project cumulative effects will be considered within the EIA. The assessment will be completed through communication with stakeholders to identify relevant projects and between the environmental topic teams to identify shared Receptors.



8. Air Quality

8.1 Introduction

- 8.1.1 The assessment of operational air quality impacts will be led by Gair Consulting Limited. Amanda has over 30 years' experience in environmental consultancy specialising in air quality, odour and human health risk assessments (HHRA).
- 8.1.2 The Savills Air Quality team will assist Gair Consulting Limited with the assessment of construction air quality impacts.

8.2 Consultation to date

- 8.2.1 Consultation with respect to air quality has not been undertaken prior to submission of this EIA Scoping Report. Scoping is the process through which consultation is intended to be commenced.

8.3 Legislative or policy requirements and technical guidance

- 8.3.1 Air Quality Standards and Objectives are established through a range of legislation and policy guidelines as set out below.

European Union

- 8.3.2 The United Kingdom (UK), is required to report air quality data under European Directives, as transposed into UK legislation following Brexit. The current air quality directive is the Council Directive on ambient air quality and cleaner air for Europe (2008/50/EC). The Directive streamlines the European Union's air quality legislation by replacing four of the five existing Air Quality Directives within a single, integrated instrument.
- 8.3.3 The pollutants included are sulphur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter of less than 10 micrometres (µm) in aerodynamic diameter (PM₁₀), particulate matter of less than 2.5 µm in aerodynamic diameter (PM_{2.5}), lead (Pb), carbon monoxide (CO), benzene, ozone (O₃), polycyclic aromatic hydrocarbons (PAHs), cadmium (Cd), arsenic (As), nickel (Ni) and mercury (Hg). Following Brexit, Defra published The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2018, which retained law derived from the EU Air Quality Directive and transposed it into domestic law; ensuring the legislation was operable after the EU Exit.

National Level

- 8.3.4 Under Part IV of the 1995 Environment Act, the UK government was required to publish a National Air Quality Strategy (NAQS) to establish a Local Air Quality Management (LAQMs) system for the designation of AQMAs. The 2022 technical guidance by Defra highlights that LAQM is a statutory process by which local authorities address air quality identify areas of non-compliance with the national air quality objectives and then declare AQMAs, if national air quality objectives are not likely to be achieved by the relevant deadlines. For areas designated as AQMAs, an Air Quality Action Plan (AQAP) is produced by the local authority that sets out actions designed to help achieve compliance with the objectives.
- 8.3.5 The National Planning Policy Framework (NPPF) sets out the planning policies for England whereby conserving and enhancing the natural environment is a central theme.



8.3.6 Paragraph 180 of the NPPF states that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by: ... 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.”

8.3.7 Paragraph 192 of 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.”

8.3.8 The National Planning Practice Guidance (NPPG) supports the NPPF and guides a range of topic areas, including air quality. Paragraph 005 of the NPPG states:

“Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.”

8.3.9 Additionally, it is recognised in the NPPG that the UK has legally binding limits for ambient air concentrations of major air pollutants (e.g. NO₂, PM₁₀ and PM_{2.5}). An annual national assessment of air quality, through modelling and monitoring, is conducted by Defra to determine compliance with relevant European Directive Limit Values.

8.4 Baseline

Baseline environment

8.4.1 Local authorities are required to periodically review and assess the current and future quality of air in their areas. Where it is determined that an air quality objective is not likely to be met within the relevant time period, the authority must designate an AQMA and produce a local action plan.

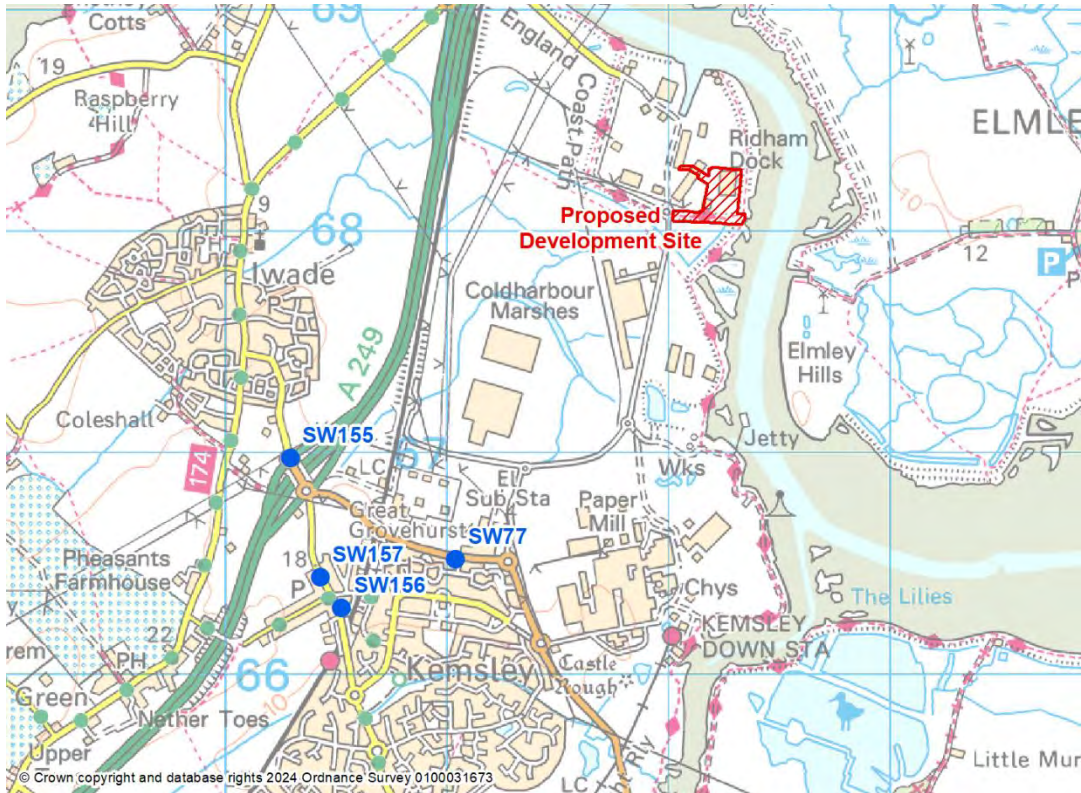
8.4.2 Swale Borough Council (SBC) has declared six AQMAs all for exceedance of the annual mean air quality objective for nitrogen dioxide (NO₂) and for 24-hour mean PM₁₀ concentrations for one of the six sites. These are all located some distance from the Proposed Development Site (in excess of 4km).

8.4.3 SBC carries out automatic monitoring of NO₂ and fine particles (PM₁₀ and/or PM_{2.5}) at three locations within its administrative area. These are located within the more urban areas of the borough and would not be representative of air quality at the Proposed Development Site. In addition, SBC measured concentrations of NO₂ at 86 monitoring sites in 2022 using passive diffusion tubes. Within 3km of the Proposed Development Site there are four monitoring sites for NO₂ as illustrated in **Figure 8.1**. These are located in Kemsley to the



north of Sittingbourne, and all are classed as kerbside monitoring sites and concentrations at these locations would be expected to be higher than at the Proposed Development Site. Nevertheless, at these locations, measured concentrations are less than $30\mu\text{g}/\text{m}^3$ and well below the annual mean air quality objective of $40\mu\text{g}/\text{m}^3$.

Figure 8.1: Location of Monitoring Sites within 3km of the Proposed Development Site



8.4.4 Monitoring of fine particles (PM_{10} and $\text{PM}_{2.5}$) is only carried out by SBC within the AQMAs where air quality would be poor. Therefore, measured concentrations would not be characteristic of air quality at the Proposed Development Site. Ambient background concentrations of PM_{10} and $\text{PM}_{2.5}$ for 2024 have been obtained from the Defra UK Background Air Pollution Maps. These 1km grid resolution maps are derived from a complex modelling exercise that takes into account emissions inventories and measurements of ambient air pollution from both automated and non-automated sites. For the nine grid squares surrounding the Proposed Development Site, the maximum mapped 2024 background concentrations are $15.1\mu\text{g}/\text{m}^3$ and $10.7\mu\text{g}/\text{m}^3$ for PM_{10} and $\text{PM}_{2.5}$, respectively. These are well below the air quality objectives of $40\mu\text{g}/\text{m}^3$ and $20\mu\text{g}/\text{m}^3$.

8.4.5 Therefore, it is concluded that air quality around the Proposed Development Site is relatively good.

Proposed approach to surveys and further baseline data collection

8.4.6 Air quality at the Proposed Development Site will be characterised based on monitoring data and modelled data obtained from national and local sources and will include the following:

- SBC’s Annual Status Report;
- Defra UK Background Air Pollution Maps;



- Defra Acid Gases & Aerosol Network;
- UK Urban and Rural Heavy Metals Monitoring Networks;
- National Ammonia Monitoring Network; and
- Toxic Organic Micropollutants (TOMPs) Network.

8.4.7 Therefore, it is concluded that there are sufficient national and local monitoring data to characterise air quality at the Proposed Development Site and its surroundings. No further site surveys are considered necessary.

8.5 Approach to assessment

Assessment criteria

Construction

8.5.1 For the construction phase, the IAQM guidance on impacts from dust emissions has been considered. The Proposed Development would cause dust impacts during construction with the potential for significant effects requiring mitigation, so a dust risk assessment and mitigation via a Dust Management Plan, a matter to be addressed in the Outline CEMP, are proposed to be scoped in.

Operation

8.5.2 The impact of emissions from the CC Facility on local air quality will be assessed against UK air quality standards and objectives for the protection of human health and critical levels and critical loads for the protection of habitat sites.

Magnitude of impact

8.5.3 The impact descriptions set out in **Table 8.1** incorporate 1) the magnitude of the impact, expressed as the percentage change in air quality relative to the Air Quality Assessment Level (AQAL) and 2) the severity of the impact, which assist the assessor in determining the significance of the effect. The magnitude of the impact will be determined using dispersion modelling techniques, as set out in subsequent sections. Determining the significance of the effect is a matter for professional judgement, as set out in the EPUK & IAQM 2017 guidance.

Construction

8.5.4 The assessment will refer to the 2024 IAQM Dust Guidance. As outlined in the guidance, there can be four types of activities on construction sites:

- demolition;
- earthworks;
- construction; and
- trackout.

8.5.5 The potential impact on dust soiling and human health are proposed to be treated as being 'high risk' in order to obtain mitigation measures for the worst-case scenario in which the measures which constitute good or best practice would be applied. As such, the general



measures applicable to a high-risk site would be proposed to be applied, adjusted as necessary to ensure that the controls proposed are proportionate to the location.

Operation

8.5.6 The EPUK & IAQM 2017 guidance has been used to determine the significance of any air quality impacts. The impact descriptors for individual Receptors are presented in **Table 8.1**. Impacts can be described as being ‘adverse’ or ‘beneficial’ depending on whether the operation of the Proposed Development results in an increase or decrease in pollutant concentrations.

Table 8.1: Impact Description for Individual Receptors

Concentration with Development	Percentage Change in Air Quality Relative to the Air Quality Assessment Level (AQAL)			
	1%	1 to 5%	6 to 10%	>10%
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 to 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 to 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 to 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

8.5.7 The change in percentage pollutant concentration figures are rounded to whole numbers; making it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0% (i.e. less than 0.5%) will be described as ‘negligible’.

8.5.8 In relation to short-term impacts, the EPUK & IAQM guidance states:

“Where such peak short-term concentrations from an elevated source are in the range 11-20% of the relevant AQAL, then their magnitude can be described as small, those in the range 21-50% medium and those above 51% as large. These are the maximum concentrations experienced in any year and the severity of this impact can be described as slight, moderate and substantial respectively, without the need to reference background or baseline concentrations. That is not to say that background concentrations are unimportant, but they will, on an annual average basis, be a much smaller quantity than the peak concentration caused by a substantial plume and it is the contribution that is used as a measure of the impact, not the overall concentration at a Receptor. This approach is intended to be a streamlined and pragmatic assessment procedure that avoids undue complexity.”

8.5.9 Therefore, the following descriptors for assessing the impact magnitude resulting from short term impacts will be applied in this assessment:

- 10% or less: negligible;
- 11-20%: slight;
- 21-50%: moderate; and
- 51% or greater: substantial.



Sensitivity of receptors

Construction

- 8.5.10 A desk study has been carried out to identify Receptors that may be sensitive to the construction effects of the Proposed Development.
- 8.5.11 The Proposed Development is located within a relatively industrial environment, located close to the banks of the Medway Estuary and Marshes. The nearest sensitive human Receptor is located approximately 1.7km to the southwest along the eastern periphery of Iwade Village. The more densely populated areas of Sittingbourne lie approximately 1.8km to the south of the Proposed Development.
- 8.5.12 There are no Local Nature Reserves within 2km of the Proposed Development. However, the Elmley National Nature Reserve lies approximately 300m to the north-east of the Proposed Development. The Proposed Development is almost completely surrounded by the Swale Ramsar Site, the Swale SSSI and the Swale SPA. These geographically overlapping, land-based statutory designations almost completely surround the Proposed Development apart from the access road to the south of the Proposed Development Site. The Swale Estuary Marine Conservation Zone is also located approximately 75m to the east of the Proposed Development.

Operation

- 8.5.13 Locations 'where members of the public are regularly present' will be considered. At such locations, members of the public will be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes. For instance, on a footpath, where exposure will be transient (for the duration of passage along that path) comparison with short-term standards (i.e. 15-minute mean or 1-hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term (such as 24-hour mean or annual mean) standards may be most appropriate.
- 8.5.14 For habitat sites, the sensitivity is dependent on whether habitats are of international, national or local importance and habitats will be scoped in or out of the assessment using the following criteria:
- 15km for international habitat sites (SAC, SPA or Ramsar site);
 - 5km for national habitat sites (SSSIs and NNR); and
 - 2km for locally designated sites (Local Wildlife Sites).

Significance of effect

- 8.5.15 For construction and operational changes in air quality, the assessment of significance is principally left to professional opinion and guidance is provided by the IAQM planning guidance on the factors that need to be considered when judging significance and include the following:
- the magnitude of impact at sensitive Receptor locations;
 - the existing and future air quality in the absence of a proposed development;
 - the extent of current and future population exposure to impacts;
 - the worst-case assumptions adopted when undertaking the prediction of impacts; and



- the extent to which a proposed development has adopted best practice to eliminate and minimise emissions.

Geographical scope

- 8.5.16 Emissions from the Proposed Development during construction will be assessed on a spatial scale of a 350m radius from the Proposed Development Site, the maximum distance for dust effects as set out in the IAQM guidance.
- 8.5.17 The impact of operational emissions will be assessed over a 15km by 15km grid centred on the Proposed Development Site and with a grid resolution of 150m. This is to ensure that the extent of any air quality impacts is identified, including impacts on habitat sites.

Temporal scope

- 8.5.18 The assessment will assess the impact of the Proposed Development on air quality during the construction phase from dust emissions.
- 8.5.19 The operational impact assessment will provide predicted concentrations for varying averaging periods. These range between 15-minute averages to annual means. The averaging periods are selected such that they are consistent with the relevant air quality objectives, air quality standards, critical levels and critical loads. Air quality is improving over time. Information on existing air quality will use monitoring data collected over several years.

8.6 Embedded mitigation and enhancement measures

Construction

- 8.6.1 The proposed Dust Assessment and draft Dust Management Plan (DMP) will identify potential measures to mitigate dust from affecting air quality.
- 8.6.2 The IAQM's 2024 Construction Dust Guidance provides an evaluation matrix which allows for the identification of potential risks of dust generation and associated levels of mitigation which will be required. As set out above, good practice dust management measures will be provided, where proportionate to the Proposed Development Site, for a 'high risk' type development. The guidance indicates that this will typically reduce dust effects to a non-significant level.
- 8.6.3 A comprehensive CEMP and CTMP will be in place for the construction phase of the Proposed Development.

Operation

- 8.6.4 The Combined Facility has been designed with embedded environmental measures to minimise the release of odours. Furthermore, the Combined Facility will be regulated by the Environment Agency and as part of the permitting process it will be necessary for the operator to provide and maintain an Odour Management Plan (OMP) prior to operation.
- 8.6.5 During operation, chimney emissions from the Combined Facility will continue to be regulated by the Environment Agency and a variation to the Environmental Permit will be required. The Environmental Permit will specify emission limit values (ELVs) that must be met.



8.7 Scope of environmental impacts and effects

Construction

- 8.7.1 Construction activities and traffic movements have the potential to result in emissions of exhaust gases and dust, resulting in adverse effects.
- 8.7.2 The assessment will rely on the 2024 IAQM Dust Guidance to assess the potential impacts of dust during the construction phase. As a result of the high-sensitivity Receptors, appropriate measures applicable to a high-risk site would be proposed. Following the implementation of these mitigation measures, no significant effects resulting from the construction phase are expected.
- 8.7.3 Additionally, traffic generation will be considered along with the 7 indicative criteria outlined in the 2017 guidance by Environmental Protection UK (EPUK) in partnership with the IAQM, for the construction phase. Based on the reasonable worst-case assumption it is assumed that operational traffic movements would exceed construction traffic movements. As such, it is not anticipated that the Proposed Development will cause a significant change in heavy-duty vehicles (HDVs) and, therefore, the indicative criteria to proceed to a detailed air quality assessment will not be exceeded. On this basis, a detailed air quality assessment relating to construction phase traffic flows is scoped out.

Operation

Traffic-related air quality impacts

- 8.7.4 Following the availability of the operational traffic distribution on the local road network, a screening assessment will be carried out to determine any road links where the IAQM criteria for requiring a detailed assessment are exceeded. Where they are exceeded, a detailed traffic-related air quality assessment will be required and will consider emissions of NO_x, PM₁₀ and PM_{2.5}.

Odour

- 8.7.5 The Combined Facility has been designed with embedded environmental measures to minimise the release of odours, for example, the reception hall will be maintained at a negative pressure to minimise fugitive releases from the building and air will be extracted from odorous areas and used as combustion air to destroy odours generated within the buildings.
- 8.7.6 Therefore, it is concluded that the potential for odour impacts is unlikely. Furthermore, the Combined Facility will be regulated by the Environment Agency and as part of the permitting process it will be necessary for the operator to provide and maintain an Odour Management Plan (OMP) prior to operation.

Chimney emissions

- 8.7.7 Chimney emissions from the Proposed Development have the potential to effect human health and the integrity of habitat sites. The impact of emissions on human health will be assessed by comparison of predicted exposures with air quality standards set for the protection of human health. For habitat sites, the assessment will need to consider airborne exposure to air pollutants as well as nutrient nitrogen deposition and acidification impacts.
- 8.7.8 The main focus of the assessment will be the additional emissions to air as a result of the CC Facility and the change in emissions compared to the operation of the Ridham Dock



Biomass Facility. The CC Facility emissions will be different to the Ridham Dock Biomass Facility emission (e.g. changes to temperature, volume flow rates etc.) and emissions will likely be discharged from a separate chimney of height to be determined as part of the assessment. This has the potential to affect the dispersion of emissions and the potential for greater impacts than without the CC Facility. Therefore, it will be necessary to consider the change in impact of emissions from the Ridham Dock Biomass Facility and the CC Facility.

8.7.9 The CC Facility will utilise an amine solvent-based post combustion carbon capture solution. This has the potential to give rise to additional ammonia emissions and nitramines and nitrosamines. Ammonia emissions have the potential to affect human health but more importantly habitat sites from airborne exposure, acidification and nutrient nitrogen deposition. Nitrosamine and other potential amine emissions are known carcinogens, and it will also be necessary to assess the carcinogenic risk of emissions from the Proposed Development in the HHRA. In addition to amines and ammonia, emissions will include pollutants whose emissions are currently regulated by the Environment Agency.

8.7.10 Detailed dispersion modelling of the chimney emissions from the CC Facility and the Ridham Dock Biomass Facility without the CC Facility will be undertaken. This will include the full suite of pollutant emissions including identified amine emissions. Dispersion modelling would be undertaken for a minimum of five years meteorological data. The averaging period for the dispersion model results would be selected to enable comparison with relevant UK air quality standards and would include hourly, daily and annual mean concentrations.

8.7.11 The air quality assessment for the Proposed Development only considers the direct impact of exposure to airborne concentrations of pollutants from emissions to atmosphere on public health and nature conservation sites. However, indirect effects can occur following deposition of the emissions onto soil, water, etc and uptake into plants and animals. Therefore, a HHRA (food chain model) would be provided to include emissions of dioxins, furans and dioxin-like PCBs and other pollutants. The assessment would be based on the US EPA HHRAP using a commercially available model produced by Lakes Environmental Software. In addition, the model would be used to determine the carcinogenic risk of nitrosamine and other amine emissions arising from the CC Facility.

8.8 Limitations and uncertainties

8.8.1 The construction activities will be variable over the phases of construction. When assessing dust impacts, a maximum-case scenario for dust generation will be assumed, to identify proportionate mitigation strategies proposed will be suitable for all potential activities.

8.8.2 Due to the semi-rural nature of the location of the Proposed Development, information on baseline conditions is likely to be limited as background air quality is generally good in the local area. Generally, monitoring is only carried out in areas of poor air quality. Therefore, measured background concentrations for some pollutants may not be available locally and may be obtained from more distant monitoring locations. However, worst-case assumptions will be adopted to avoid underestimating background pollutant concentrations.

8.8.3 To avoid underestimating predicted concentrations, worst-case assumptions will be adopted and include:

- the Combined Facility will be assumed to operate continuously at full load;
- emissions will be at the maximum ELVs;
- the maximum predicted concentration (anywhere within the model domain) will be presented; and



- results will be presented for the worst-case meteorological year of the five years considered.

8.9 Inter-related effects

- 8.9.1 There is potential for inter-related effects between air quality and ecology and nature conservation. The outputs of the air quality assessment will be used to inform the ecology and nature conservation assessment in the ES.

8.10 Cumulative effects

Construction

- 8.10.1 Beyond 350m impacts from dust are considered to be negligible. There could theoretically be cumulative effects for sites that are in construction at the same time within 700m of the CC Facility. As the maximum effects are in closer proximity to the source, it is unlikely that cumulative effects will be more significant than the individual project effects. However, other projects within this distance will be identified and assessed cumulatively with construction of the CC Facility using the same assessment methodology.

Operation

- 8.10.2 The assessment would present the change in impact compared to the existing Ridham Dock Biomass Facility as well as the impact of the combined emissions from the CC Facility and the Ridham Dock Biomass Facility. The significance of the impacts would be assessed using the Institute of Air Quality Management's planning guidance and the Environment Agency's risk assessment guidance.
- 8.10.3 An assessment of cumulative and in combination impacts with other permitted developments would be provided following a review of schemes identified as having a potential for cumulative air quality impacts. The assessment would include combined impacts associated with the off-site transportation (road, rail or sea) and storage of the carbon dioxide and emissions to air from the CC Facility.



9. Landscape and Visual

9.1 Introduction

- 9.1.1 Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.
- 9.1.2 This section was authored by a Chartered Landscape Architect from Pegasus Group with over 25 years' experience of similar energy and infrastructure projects across the UK.

9.2 Legislative or policy requirements and technical guidance

- 9.2.1 The National Planning Policy Framework (NPPF) sets out the three overarching objectives to achieve sustainable development at paragraph 8. The environmental objective states: *'to protect and enhance our natural, built and historic environment, including making effective use of land, improving biodiversity, using natural resources prudently, minimizing waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'*
- 9.2.2 Paragraph 9 of the NPPF states that planning decisions should *'take local circumstances into account, to reflect the character, needs and opportunities of each area'*.
- 9.2.3 Paragraph 180 of the NPPF states that planning decisions should contribute to and enhance the natural and local environment by:
- 'a) protecting and enhancing valued landscapes commerce sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in their development plan)...*
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; and*
- 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...'*
- 9.2.4 The LVIA will be undertaken in accordance with the following technical guidance and any updated versions available at the time of preparing the ES:
- Landscape Institute (2023) Draft Technical Guidance Note 05/23 - Notes and Clarifications on aspects of GLVIA3. This is currently a consultation draft and the final version is predicted to be issued in the Spring of 2024;
 - Landscape Institute (2021), Technical Guidance Note (TGN) 2/21 Assessing landscape value outside national designations;
 - Landscape Institute (2019), TGN 06/19 Visual Representation of Development Proposals;
 - Landscape Institute / Institute of Environmental Management and Assessment (2013), Guidelines for Landscape and Visual Impact Assessment - 3rd Edition;
 - Natural England (2019), An Approach to Landscape Sensitivity Assessment - To Inform Spatial Planning and Land Management; and
 - Natural England (2014), An Approach to Landscape Character Assessment.



9.3 Baseline

Baseline environment

- 9.3.1 The majority of the Proposed Development Site is contained within the existing Ridham Dock Biomass Facility and comprises large scale buildings, associated structures, an electricity sub-station and Wood Storage Bays, surrounded by hardstanding as illustrated on **Figure 1.1**. The southern edge of the Proposed Development Site, beyond the existing Ridham Dock Biomass Facility boundary comprises rough grassland with scrub. Within this strip of man-modified land, there is a swale close to the Red Line Boundary and along the top of a bund to the south of the swale is a public footpath which accommodates a 300m long section of the Saxon Shore Way (reference 0139/ZR88/7). The Staff Pedestrian Bridge across the swale links the Ridham Dock Biomass Facility to the public footpath and adjacent SuDS pond.
- 9.3.2 The LVIA Study Area is not located within any statutory landscape designation, with the closest designation being the Kent Downs Area of Outstanding Natural Beauty, approximately 8.5km south of the Proposed Development Site.
- 9.3.3 The Swale Borough Local Plan (Adopted July 2017) identifies much of the undeveloped land within the LVIA Study Area, including the southern part of the Proposed Development Site beyond the current extent of the Ridham Dock Biomass Facility, as lying within the Kent Level Area of High Landscape Value (AHLV). The Kent Level AHLV is a non-statutory landscape designation covered by Policy DM24 of the Adopted Local Plan.
- 9.3.4 The Swale Local Landscape Designations Review and Recommendations for Swale Borough Council was prepared by LUC in 2018. The Study identified the southern part of the Proposed Development Site beyond the current extent of the Ridham Dock Biomass Facility, as lying within the 'Medway Marshes' Local Landscape Designation (LLD) which is assumed to be part of the wider Kent Level AHLV. The Proposed Development Site is in a peripheral location within the extensive LLD, being located in the southeastern end of the LLD, beyond the A249 where the local landscape is heavily influenced by large scale industrial buildings and pylons.
- 9.3.5 The LVIA Study Area falls within National Character Area 81: Greater Thames Estuary published by Natural England. The key characteristics contained in the published assessment of most relevance are:
- *Predominantly flat, low-lying coastal landscape where extensive open spaces are dominated by the sky, and the pervasive presence of water and numerous coastal estuaries extend the maritime influence far inland.*
 - *Geological contrast and variety along the coastline provided by Sheppey, a long, low island rising from a stretch of very flat marsh along the Swale Estuary in Kent with low, steep clay cliffs facing towards Essex, and Mersea Island in the Blackwater Estuary in Essex.*
 - *Highly urbanised areas within London and on marsh edges subject to chaotic activity of various major developments including ports, waste disposal, marine dredging, housing regeneration, mineral extraction, and prominent power stations plus numerous other industry-related activities.*
 - *Increasing development pressures around major settlements and especially towards London, with urban, industrial, and recreational sites often highly visible within the low-lying marshes.*



- *Major historical and current transport link to Inner London provided by the River Thames, with an extensive network of road and rail bridges spanning its reaches within the city.*

9.3.6 The Landscape Assessment of Kent (2004) identifies the Proposed Development Site and the majority of the LVIA Study Area as lying within the Swale Marshes and the characteristics features are recorded as:

- *Coastal marsh with isolated low hilly outcrops;*
- *Remote, wild, and isolated;*
- *Fleet, creeks, and marshland vegetation;*
- *Grazing animals and birds;*
- *Extensive areas of cultivated marsh, few features; and*
- *Intrusive buildings and industry, infilling of creeks/ditches.*

9.3.7 The Swale Landscape Character Assessment (2004) identifies the Proposed Development Site as lying within Landscape Character Area 11: Chetney Marshes. The key characteristics are described as:

- *An area of traditional coastal marsh;*
- *Flat grazing marsh, saltmarsh, and mudflats. Natural and man-made features include ditches, fleets and counterwalls;*
- *Scattered isolated patches of scrub;*
- *Major transport routes and power lines cut across the marsh;*
- *Large areas designated for the protection of its ecologically valuable habitats; and*
- *Atmospheric and tranquil landscape with large open and often dramatic skies.*

9.3.8 The landscape guidelines state that: *"New development should be carefully sited and integrated so that it does not intrude upon areas of tranquil unspoilt marshland or significantly expand or exacerbate existing visual impacts."*

Proposed approach to surveys and further baseline data collection

9.3.9 The baseline will be progressed with reference to the following:

- Field surveys to assess site conditions, obtain photography, and assess perceptual aspects within the LVIA Study Area including tranquillity;
- Review of topographical surveys of the Proposed Development Site; and
- Detailed review of published national, county, and local landscape character assessments as listed above, including all landscape character areas that fall within the LVIA Study Area and ZTV.

9.3.10 A field survey will be undertaken in good weather conditions to capture photography from a range of representative and publicly accessible locations.

9.3.11 **Table 9.1** below contains suggested locations for visualisations that have been selected at a range of distances and directions from the Proposed Development Site following the review of a Zone of Theoretical Visibility plan (**Figure 9.1: Screened Zone of Theoretical Visibility**). The selection of viewpoints was also informed by the selection agreed in the LVIA produced for the adjacent Ridham Dock Biomass Facility (planning application



reference: SW/10/774) that has the same maximum chimney height. Precise viewpoint locations would be micro-sited in the field to minimise foreground clutter and obtain views where the greatest extent of the proposed development would be visible.

9.3.12 It is not possible, or necessary, to include viewpoints from every possible location where the proposals may be visible, however the selection has included a range of representative views that focus upon settlements and public rights of way, as these Receptors typically fall into the highest category of sensitivity and are more likely to experience significant effects.

Table 9.1: Proposed Visualisations (see Figure 9.1)

No.	Location	Receptors	Proposed Format ¹⁵
1	England Coast Path/Saxon Shore Way	Public footpath users	Photomontage
2	England Coast Path/Saxon Shore Way	Public footpath users	Photomontage
3	Public footpath, Elmley Island	Public footpath users	Photomontage
4	England Coast Path/Saxon Shore Way	Public footpath users	Photowire
5	B2005, Kemsley	Road users/settlement edge	Photowire
6	England Coast Path/Saxon Shore Way	Public footpath users	Photomontage
7	Northern edge of Iwade	Public footpath users	Photowire
8	Cheyney Marshes	Public footpath users	Photomontage
9	Southern edge of Rushenden	Public footpath users	Photowire
10	A2500, Minster	Road users/settlement edge	Photowire

9.4 Approach to assessment

Assessment criteria

9.4.1 Landscape and visual effects are assessed through professional judgements on the sensitivity of landscape elements, character and visual Receptors combined with the predicted magnitude of change arising from the Proposed Development. The landscape and visual effects have been assessed in the following categories:

- Effects on landscape elements (landform, watercourses, trees/shrubs, grassland, and public rights of way);
- Effects on landscape character at the level of the Proposed Development Site and immediate context, and also from the landscape character areas within the LVIA Study Area; and
- Effects on visual amenity as experienced from key Receptors including settlements, public rights of way and main transport routes.

¹⁵ To accord with Type 3 Photowire and Photomontage as set out in TGN 06/19 published by the Landscape Institute (2019)



Sensitivity of receptors

- 9.4.2 Sensitivity is a term applied to specific landscape and visual Receptors, combining judgments of the susceptibility of the Receptor to a specific type of change or development proposed and the value related to that Receptor.
- 9.4.3 Sensitivity is recorded on a three point scale (High/Medium/Low) determined from transparent consideration of susceptibility and value. Full definitions of each term and how they are combined will be set out in a detailed methodology that will accompany the ES.

Magnitude of change

- 9.4.4 The maximum height and massing of all proposed built structures (the 'Rochdale envelope') will be defined and adopted in the assessment of effects.
- 9.4.5 Magnitude of change combines judgements about the size and scale of the effect, the extent over which it occurs, whether it is reversible or irreversible, and whether it is short or long term in duration.
- 9.4.6 Magnitude of change is recorded on a four point scale (High/Medium/Low/Very Low) determined from consideration of the aforementioned judgements. Full definitions of each term and how they are combined will be set out in a detailed methodology that will accompany the ES.

Nature of effect

- 9.4.7 Informed professional judgement will determine whether effects are categorised as positive or negative (or in some cases neutral) in their consequences for both landscape and visual effects.

Significance of effect

- 9.4.8 With reference to **Table 9.2** below, adverse, and beneficial effects that are major, are deemed to be significant. In exceptional cases, moderate effects may also be considered significant and when this occurs, a clear explanation is provided to explain the rationale behind this professional judgement. All neutral, minor, and negligible effects are deemed to be not significant. Full definitions of each effect will be set out in a detailed methodology that will accompany the ES.

Table 9.2: Significance of Landscape and Visual Effects

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



Geographical scope

- 9.4.9 Based on the experience of similar projects, no significant landscape or visual effects are likely to occur beyond approximately 3km from the Proposed Development Site. Consequently, in order to incorporate a suitable margin to cover all potentially significant effects, a 5km radius from the Proposed Development Site is proposed as the LVIA Study Area. The proposed LVIA Study Area reflects the study area adopted for the LVIA produced for the existing Ridham Dock Biomass Facility (planning application reference: SW/10/774) that has the same chimney height.
- 9.4.10 Within the LVIA Study Area, all landscape and visual Receptors falling within the ZTV will be scoped into the assessment as follows:
- Landscape elements within the Proposed Development Site (landform, swale, and vegetation);
 - The Landscape Character Areas within the LVIA Study Area as defined by The Swale Landscape Character Assessment (2004). The landscape character context will also be informed by the Natural England Landscape National Landscape Character Areas and The Landscape Assessment of Kent (2004);
 - The Kent Level AHLV, a non-statutory landscape designation;
 - People living in settlements within the LVIA Study Area and ZTV including parts of the northern edge of Sittingbourne at Kemsley and Milton Regis, and parts of the settlements of Iwade, Rushenden, Queenborough and Minster;
 - Users of Public Rights of Way within the LVIA Study Area and ZTV including the Saxon Way long distance footpath, the King Charles III England Coast Path, and the local public rights of way network;
 - Users of National Cycle Routes 1 and 174;
 - Users of public roads within the LVIA Study Area and ZTV including the A249, A2500, B2231, and B2007; and
 - Passengers on trains using the Sheerness Branch Line Railway.

Temporal scope

- 9.4.11 The assessment will cover both construction and operational phases. If relevant, the operational phase assessment will be split into Year 1 and Year 15 following construction for specific Receptors, should the growth of mitigation planting have the potential to reduce the degree of effects identified at Year 1 following construction.
- 9.4.12 The Proposed Development is not seeking a time-limited planning application. Decommissioning effects are likely to be similar to construction effects and would be no greater in terms of magnitude or duration. Consequently, decommissioning has been scoped out of the assessment.

9.5 Embedded mitigation and enhancement measures

- 9.5.1 The Saxon Shore Way Public Right of Way (PRoW) (reference 0139/ZR88/7), which is part of the King Charles III England Coast Path, passes through the southern end of the Proposed Development Site for approximately 300m. The Storage Yard Extension and associated Ditch Realignment works require this 300m section of the coast path to be permanently realigned, approximately 25m south of the current route. As part of these



proposed works, enhancements to the realigned footpath route in terms of surfacing, landform screening, and new planting where appropriate, will be considered.

- 9.5.2 External materials would be agreed by condition, however for the purposes of the photomontages and the LVIA, the colour palette for external cladding/structures will be based on the approved scheme, agreed for the adjacent Ridham Dock Biomass Facility. This approach will minimise the visual impact of the Proposed Development.
- 9.5.3 The boundary treatment and planting design will incorporate consideration of the visual amenity of nearby users of the public rights of way network, biodiversity net gain, and potential screening views of the lower parts of proposed built structures and associated activity within the Proposed Development Site, where possible.
- 9.5.4 An OLS will be prepared that will set out the approach to minimising the effects of external lighting upon landscape character and visual amenity. In principle the lighting will be similar to that already in operation for the existing Ridham Dock Biomass Facility.

9.6 Scope of environmental impacts and effects

- 9.6.1 The landscape and visual Receptor groups that are proposed to be scoped into the assessment are set out under the geographical scope within **Section 9.5** above. The section below focusses on the key impact pathways that may lead to significant effects (scoped in) or are unlikely to result in significant effects (scoped out).

Construction

- 9.6.2 With the exception of the works required for the Storage Yard Extension, construction activity on the Proposed Development Site would be confined within the boundary of the existing Ridham Dock Biomass Facility. There is potential for significant effects upon users of the local PRoW network, although it is likely these effects would be minimised by an early diversion of the 300m section of the Saxon Way long distance footpath by approximately 25m south of its current position. This realignment has the potential to reduce the visibility of construction activity by the creation of an earth bund and potentially advanced planting along the northern edge of the realigned route.
- 9.6.3 Potentially significant views of construction activity from the surrounding landscape would include ground works, movement of plant, storage, and materials, built structures under construction, including the use of mobile and tower cranes. Measures to reduce visual impact would be included in the CEMP and in addition to the mounding and advance planting mentioned above, may include the installation of solid hoarding. In addition to the assessment of visual impact the effects of the construction phase upon landscape character including consideration of tranquility would be undertaken. The potential for significant landscape character effects is predicted to be confined to the local PRoW network in relatively close proximity to the Proposed Development Site, given the baseline context is the operational Ridham Dock Biomass Facility.
- 9.6.4 An assessment of the impact of the construction phase upon landscape elements on the Proposed Development Site include the removal of vegetation, modification of existing landform, realignment of the Swale and approximately 300m of PRoW.
- 9.6.5 The potential for indirect effects from increased construction traffic on the local road network including HGV's will be assessed in relation to visual Receptors close to the routes, only where any significant increase in traffic volume is assessed as part of a future transport assessment. Effects upon landscape character, including tranquility, will also be considered from this impact pathway.



- 9.6.6 Temporary construction lighting required for short periods and controlled by the CEMP is predicted to result in no potential for significant effects upon baseline landscape character or visual amenity given the current context of the operational Ridham Dock Biomass Facility.

Operation

- 9.6.7 The effects upon landscape elements on the Proposed Development Site includes any changes in vegetation cover relative to the baseline and the visual effects resulting from the growth of any proposed tree/shrub planting will be assessed.
- 9.6.8 The visibility of the new built structures and potentially activity on the Proposed Development Site from some Receptors, will form the primary change that would be experienced by people. These changes will be recorded for each landscape and visual Receptor group to identify where potentially significant changes to baseline landscape character and/or visual amenity, could occur.
- 9.6.9 Visibility of a periodic plume has been scoped out of the assessment as it is only likely to occur in certain climatic conditions and the plume would be perceived in conjunction with the existing power station plume. Consequently, it is assessed that the periodic plume has no potential for a significant contribution to any landscape or visual effects resulting from the Proposed Development.
- 9.6.10 It is an established planning principle that there is no private right to a view. There are no residential properties within 1km of the Proposed Development and consequently it is assessed that there is no potential for overbearing effects upon private views and therefore no requirement for a Residential Visual Amenity Assessment.
- 9.6.11 An OLS will be prepared, and the external lighting effects are predicted to be similar to those created by the existing Ridham Dock Biomass Facility. The OLS will describe the measures to ensure that lighting impacts will be minimised such that they are not predicted to have a significant contribution to the landscape and visual effects upon nearby sensitive Receptors, likely be confined to small numbers of people that may use the PRow network close to the Proposed Development Site at dusk/night.

9.7 Limitations and uncertainties

- 9.7.1 Given the limited tree and hedgerow vegetation in the surrounding landscape, should photography and field assessment be undertaken when vegetation is in leaf, then professional judgement would be applied to assess the effects during the period of maximum visibility in winter.

9.8 Inter-related effects

- 9.8.1 The key inter-related effects with landscape and visual typically comprise noise and transport for landscape character effects and the overall assessment of the impact upon the visual amenity of high sensitivity Receptors including residents and users of public rights of way.
- 9.8.2 Other inter-related effects include ecology where changes in habitats can be considered in combination with changes in landscape elements and public access under Green Infrastructure (GI).
- 9.8.3 The potential for inter-related effects will be considered in the LVIA of the ES.



9.9 Cumulative effects

- 9.9.1 Potentially significant cumulative effects arise where the study area/s for other proposed development/s, overlap with the Proposed Development and from where the cumulative schemes may be experienced at proximity that in combination with the Proposed Development may result in significant effects that may not occur with the developments in isolation. This means that the addition of the Proposed Development to a situation where other built developments, or infrastructure, is apparent may result in a greater effect than where the Proposed Development is seen by itself.
- 9.9.2 As with the assessment of effects of the Proposed Development in isolation, the significance of cumulative effects is determined through a combination of the sensitivity of the landscape Receptor or visual Receptor and the magnitude of change upon it that occurs from the addition of the Proposed Development to a scenario that includes one or more cumulative schemes.
- 9.9.3 In addition, cumulative landscape and visual effects can arise in four main ways:
- Simultaneously / in combination, where two or more developments are seen together at the same viewpoint in the same field of view. The effects of an extension of an existing development or the positioning of a new development such that it would give rise to an extended or/and intensified impression of the development in the landscape as seen from fixed locations;
 - In succession – where two or more developments are present in views from the same location but cannot be seen in the same field of view and the observer has to turn to see them;
 - In sequence – where two or more developments are not seen from the same viewpoint, even if the observer turns around to extend his/her perception of the surrounding landscape. The observer has to move to another location to see cumulative developments. The frequency of occurrence greatly depends on factors like distance to developments, distance to another viewpoint and speed of travel; and
 - Perceived – where the observer is unable or unwilling to gain a view of another development but is aware of its presence.
- 9.9.4 The proposed Zol is proposed to extend double the distance of the extent of potentially significant landscape and visual effects from any proposed developments that include tall vertical elements and/or large scale built form. Significant effects as a result of the Proposed Development are not predicted more than 3km from Proposed Development the Proposed Development Site. A 6km radius Zol from the Proposed Development Site is therefore considered appropriate to cover projects that may have the potential to contribute to significant cumulative landscape and visual effects with the Proposed Development.



10. Historic Environment

10.1 Introduction

- 10.1.1 The Savills Heritage and Townscape team has experience in a wide range of archaeology and built heritage-related planning processes for large scale major projects and development schemes. These include undertaking built heritage and archaeological assessments and evaluations for large scale infrastructure projects; designing and managing large scale archaeological fieldwork both in pre-construction evaluation and mitigation during the construction phase; and producing archaeology and built heritage reports for new developments in complex settings.
- 10.1.2 The team includes members of the Chartered Institute for Archaeologists and the Institute of Historic Building Conservation and provides historic environment consultancy, undertakes liaison with the Local Planning Authority (LPA) Officers, statutory consultees including Conservation Officers, County Archaeologists, and Historic England where required.
- 10.1.3 Recent projects that the team has provided built heritage and archaeology advice and assessment on include a proposed Energy from Waste site in Dorset (including the production of an ES Chapter on the Historic Environment), historic environment appraisals and archaeological management for residential development near West Malling, Kent, and a proposed pipeline adjacent to the River Severn, north-west of Bristol.

10.2 Consultation to date

- 10.2.1 Consultation with respect to the historic environment has not been undertaken prior to submission of this EIA Scoping Report. It is anticipated that consultation with relevant local authority and LPA officers, including the County Archaeologist, and other statutory consultees, such as Historic England, where relevant would be undertaken when undertaking any additional assessment.

10.3 Legislative or policy requirements and technical guidance

Legislative Context and Planning policy

- 10.3.1 The Historic Environment ES Chapter will consider heritage assets which may be sensitive to the proposals.
- 10.3.2 In terms of designated heritage assets, the following legislative context is of relevance:
- The Planning (Listed Buildings and Conservation Areas) Act 1990:
 - ▶ s16(2): 'In considering whether to grant listed building consent for any works the local planning authority or the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.'
 - ▶ s66(1): 'In considering whether to grant planning permission [or permission in principle] for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State, shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.'



- ▶ s72(1) 'In considering development which affects a Conservation Area or its setting, the LPA shall pay special attention to the desirability of preserving or enhancing the character or appearance of the Conservation Area.'
- The Ancient Monuments and Archaeological Areas Act 1979 relates to the protection of nationally important archaeological sites. It is important to note that there is no duty within the Ancient Monuments and Archaeological Areas Act 1979 to have regard to the desirability of preservation of the setting of a Scheduled Monument.

10.3.3 Potential impacts on the settings of Conservation Areas and Scheduled Monuments, other designated heritage assets and on non-designated heritage assets are considerations under Section 16 of the National Planning Policy Framework (NPPF, 2023) and local planning policy.

10.3.4 Section 16 of the NPPF, entitled 'Conserving and Enhancing the Historic Environment' provides policy on the conservation and investigation of heritage assets within the planning process.

10.3.5 The Kent Minerals and Waste Local Plan 2013-30 (adopted 2020) includes Policy DM 5 (Heritage assets) and Policy DM 6 (Historic Environment Assessment) which are relevant to the Proposed Development. Policy DM 19 (Restoration, Aftercare and After-use) is also relevant in the context of the longer-term management of the Proposed Development Site.

10.3.6 The Swale Borough Local Plan (adopted 2017) includes Policy DM 32 (Development involving listed buildings), Policy DM 33 (Development affecting a conservation area), Policy DM 34 (Scheduled Monument and archaeological sites), and Policy DM 35 (Historic parks and gardens).

Guidance and Best Practice

10.3.7 There is no specific heritage guidance or prescribed heritage methodology for undertaking an EIA. Relevant national and local guidance on the assessment of historic environment assets will be considered, including the following documents:

- Chartered Institute for Archaeologists (CIfA, updated 2020) Standard and guidance for historic environment desk-based assessment;
- Chartered Institute for archaeologists (CIfA, 2014) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment;
- Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets: Historic England Advice Note 12;
- Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning 2;
- Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning 3;
- Historic England (2022) Planning and Archaeology: Historic England Advice Note 17; and
- Department for Levelling Up, Housing and Communities (DLUHC, revised 2019) Planning Practice Guidance: Historic Environment (PPG).

10.3.8 Annex 2: Glossary to the NPPF (2023) includes a number of definitions for terms related to the historic environment. These definitions will be used in the assessment of both the baseline environment and the impact of the proposals.



10.4 Baseline

Baseline environment

10.4.1 The known baseline environment is informed by:

- A review of the Kent Historic Environment Record (HER), available via Kent County Council's online mapping service which records Listed Buildings, Conservation Areas, Scheduled Monuments, Historic Parks and Gardens, and Archaeological Sites and Buildings (which includes buildings, findspots, landscapes, maritime, farmsteads, hedgerows, places, and monuments). The mapping also includes historic maps;
- A review of the National Heritage List for England (NHLE) which records designated heritage assets (except Conservation Areas) in England;
- A search of information held on the Heritage Gateway which records HER datasets, NHLE data, Historic England Research Records, National Trust Historic Buildings Sites and Monuments Records, the National Monument Record Excavation Index, information on historic parks, gardens and historic landscapes, and designation decision records;
- Review of online mapping and aerial imagery, including Google Earth;
- A brief search of the Archaeology Data Service (ADS), the digital repository for archaeology and heritage data collections, reports, publications and metadata records; and
- A high-level review of the planning history of the Ridham Dock area, including documents and details forming part of Planning Application and approval (LPA reference SW/10/774 (KCC/SW/0051/2010)) for development to the immediate north of the Proposed Development Site. That proposed development was for the construction and operation of a Biomass Combined Heat and Power Plant including external and covered waste wood storage, associated weighbridge, parking and underground pipework to pumping station on Ridham Dock.
 - ▶ ES Chapter 13 Cultural Heritage of the above planning application (reference SW/10/774 (KCC/SW/0051/2010), produced by SLR Consulting Limited (SLR Consulting Limited report reference 402.2732.0001, January 2010);
 - ▶ A Planning Condition was attached to the permission (Condition 16, LPA reference SW/10/774/R16(i) (KCC/SW/0370/2012)) to enable any archaeological interest to be adequately investigated and recorded. A geoarchaeological test pit survey and borehole investigation were undertaken by way of seven test pits and one borehole, with results reported by Archaeology South-East (Report Number 2012264, November 2021, report filed on the ADS catalogue).

10.4.2 As shown in **Figure 10.1**, there are no designated heritage assets within the Proposed Development Site and no designated heritage assets within a 1km Study Area of the Proposed Development. There are five Listed Buildings within a 2km Study Area and no further designated heritage assets. Two Scheduled Monuments are located c.2.1km from the Proposed Development Site.



Figure 10.1: Designated heritage assets in the vicinity of the Proposed Development Site

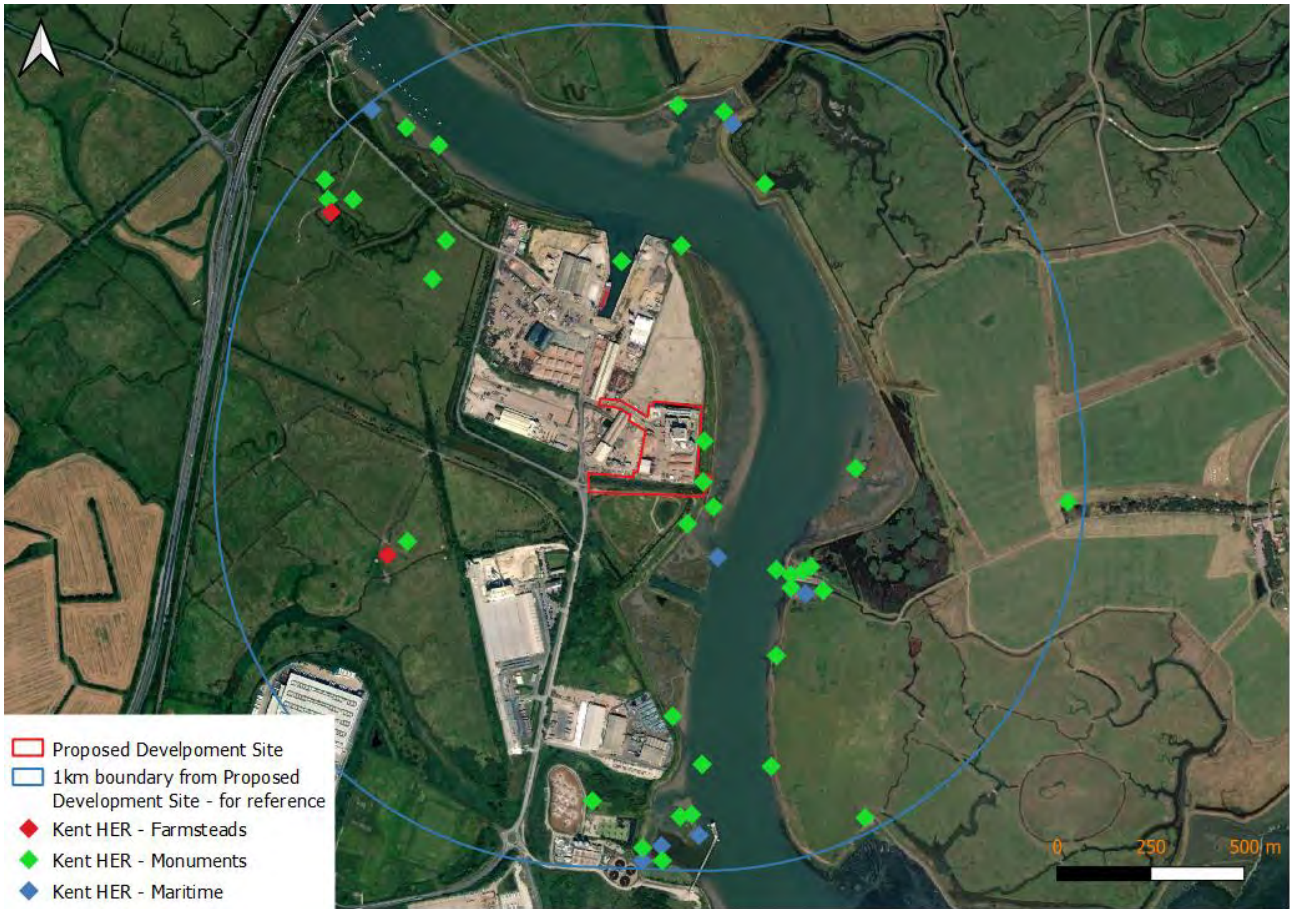


10.4.3

As shown in **Figure 10.2**, the Proposed Development Site contains one asset noted in the Kent HER; the location of anti-tank cubes at Clay Reach (Kent HER number TQ 95 NW 1139) is recorded at the south-east of the Proposed Development Site. There are a further 44 assets within 1km of the Proposed Development Site recorded in the Kent HER; 34 are monument sites of structures, seven are maritime sites, and two are records of farmsteads.



Figure 10.2: Kent HER Archaeological Sites and Buildings in the vicinity of the Proposed Development Site



10.4.4

As shown in **Figure 10.3** and **Figure 10.4**, historic mapping and aerial imagery illustrate the nature of the land within the Proposed Development Site and wider area since the 19th century. This provides an indication of the potential ground conditions within the Proposed Development Site.

Figure 10.3: Aerial imagery of the Proposed Development Site and vicinity, 1940 (Google Earth)



Figure 10.4: Aerial imagery of the Proposed Development Site and vicinity, 1990 (Google Earth)



Proposed approach to surveys and further baseline data collection

10.4.5

A review of the Proposed Development Site in its historic environment context would be undertaken through the production of a Historic Environment Desk-Based Assessment which would include, but may not be limited to:

- An assessment of the historic development and archaeological background of the Proposed Development Site and wider vicinity to understand the historic context;
- The identification and assessment of heritage assets (heritage Receptors) including archaeological and palaeoenvironmental remains, structures, monuments and landscapes of heritage interest both within the Proposed Development Site and within a 2km wider Study Area. The Study Area would be refined in response to any comments from the LPA, County Archaeologist or Historic England;
- Consultation with relevant local authority and LPA officers, including the County Archaeologist, and other statutory consultees, such as Historic England, where relevant;
- Review of the planning history of the Proposed Development Site and wider Ridham Dock area, where relevant. To include understanding additional details regarding archaeological investigation undertaken in the vicinity of the Proposed Development Site and results/conclusions reached;
- Review of the NHLE and data from the Heritage Gateway; the ADS, relevant grey literature, and LiDAR mapping;
- Results of any archaeological field evaluation works undertaken in relation to the previously approved planning application reference SW/10/774 (KCC/SW/0051/2010);
- An evaluation of the North Kent Coast Rapid Coastal Zone Assessment Survey: Phase II unpublished report produced by Wessex Archaeology in 2005, if possible;
- Reviewing any Zone of Theoretical Visibility (ZTV) mapping produced in relation to the Proposed Development Site and Proposed Development may be of use;



- Review of any locally listed buildings or list of non-designated heritage assets that is maintained by Swale Borough Council, which may identify further heritage assets that may be sensitive to the Proposed Development;
- Evaluation of archival, historic mapping and photography and documentary research would be undertaken, as would a review of any relevant planning history for the Proposed Development Site. This would include a review of resources held at the Historic England Archive, the Kent Archives and Kent History and Library Centre, and the National Archives where relevant;
- The initial assessment of designated and non-designated heritage assets, their significance and setting, including views to and from their locations;
- Obtaining the full dataset from the Kent HER for a 2km Study Area; and including details of previous archaeological assessment, fieldwork or survey; and
- Observations from a site walkover, including an understanding of the setting of heritage assets, their relationship with the Proposed Development Site (including existing built form) and views within the Study Area as well as assessment of ground conditions, and locations of HER monument points.

10.4.6 Scrutinising and interpreting the historic environment baseline data set out above will allow heritage assets (heritage Receptors) to be identified, and for it to be understood how sensitive they may be to the Proposed Development.

10.5 Approach to assessment

Assessment criteria

10.5.1 The significance of an effect is informed by assessing the sensitivity of a Receptor and the magnitude of an impact. This section describes the criteria applied to characterise the sensitivity of Receptors and the magnitude of potential impacts for the proposed assessment of effects on the historic environment.

10.5.2 The significance of the resultant environmental effect of the Proposed Development is determined by combining the assigned sensitivity to change of the Receptor (dictated by the importance of the heritage asset) with the predicted magnitude of change (impact) on that Receptor:

Sensitivity to Change (of Receptor) + Magnitude of Change (impact) = Level of Effect

Sensitivity of receptors

10.5.3 Following the characterisation of the baseline environment, the methodology used to assess the likely environmental effects on potential heritage assets (Receptors) within the Proposed Development Site and wider Study Area includes evaluating the significance/importance of heritage assets (sensitivity of heritage Receptors). This is based on existing designations as well as professional judgment where such resources have no formal designation, and considering historic, archaeological, architectural/artistic interest, as outlined in the NPPF, PPG and Historic England's Guidance.

10.5.4 The NPPF defines significance as *“the value of a heritage asset to this and future generations because of its heritage interest. Such interest may be archaeological, architectural, artistic or historic and it may derive not only from a heritage asset’s physical presence, but also from its setting”*. The determination of the significance of a heritage asset is based on statutory designation and/or professional judgement against these values:



- **Historic Interest:** the ways in which the asset can illustrate the story of past events, people and aspects of life (illustrative value, or interest). It can be said to hold communal value when associated with the identity of a community. Historical interest considers whether the asset is the first, only, or best surviving example of an innovation of consequence, whether related to design, artistry, technology or social organisation. It also considers an asset’s integrity (completeness), current use/original purpose, significance in place making, associative value with a notable person, event, or movement;
- **Archaeological Interest:** the potential of the physical remains of an asset to yield evidence of past human activity that could be revealed through future archaeological investigation. This includes above-ground structures and landscapes, earthworks and buried or submerged remains, palaeoenvironmental deposits, and considers date, rarity, state of preservation, diversity/complexity, contribution to published priorities (research value), supporting documentation, collective value and comparative potential, and sensitivity to change; and
- **Architectural and Artistic Interest:** derive from a contemporary appreciation of an asset’s aesthetics. Architectural interest can include the design, construction, craftsmanship and decoration of buildings and structures. Artistic interest can include the use, representation or influence of historic places or buildings in artwork. It can also include the skill and emotional impact of works of art that are part of heritage assets or assets in their own right.

10.5.5 Criteria for assessing the degree of heritage significance/importance are set out in **Table 10.1** below. This importance, or significance, then translates into the ‘sensitivity to change’ of the Receptor (heritage asset).

Table 10.1: Heritage Significance/Importance

Heritage Significance/Importance	Criteria
<p>Very High</p> <p>Of International Importance</p>	<ul style="list-style-type: none"> • World Heritage Sites and the individual attributes that convey their Outstanding Universal Value. • Areas associated with intangible historic activities as evidenced by the register and areas with associations with particular innovations, scientific developments, movements or individuals of global importance.
<p>High</p> <p>Of National Importance</p>	<ul style="list-style-type: none"> • Scheduled Monuments • Listed Buildings (Grade I, II*) • Registered Historic Parks and Gardens (Grade I, II*). • Grade II Listed Buildings which can be shown to have exceptional qualities in their fabric or historic associations • Registered Battlefields. • Non-designated sites and monuments of schedulable quality and/or importance discovered through the course of assessment, evaluation or mitigation. • Unlisted assets that can be shown to have exceptional qualities or historic association and may be worthy of listing at Grade II* or above.



Heritage Significance/ Importance	Criteria
	<ul style="list-style-type: none"> • Designated and undesignated historic landscapes of outstanding interest, or high quality and importance and of demonstrable national value. • Well-preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.
<p>Medium</p> <p>Of Regional Importance</p>	<ul style="list-style-type: none"> • Conservation Areas • Grade II Listed Buildings • Grade II Registered Historic Parks and Gardens • Historic townscapes and landscapes with reasonable coherence, time-depth and other critical factor(s). • Unlisted assets that can be shown to have exceptional qualities or historic association and may be worthy of Grade II listing. • Designated special historic landscapes. • Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value. • Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors. • Archaeological features and deposits of regional importance.
<p>Low</p> <p>Of Local Importance</p>	<ul style="list-style-type: none"> • Locally Listed Buildings • Sites of Importance within a district level. • Heritage Assets with importance to local interest groups or that contributes to local research objectives • Robust undesignated assets compromised by poor preservation and/or poor contextual associations. • Robust undesignated historic landscapes. • Historic landscapes with importance to local interest groups. • Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
<p>Negligible</p>	<ul style="list-style-type: none"> • Assets with little or no archaeological, architectural or historical interest

10.5.6 An advice note published in 2017 by Historic England provides guidance on managing change within the settings of heritage assets. It gives advice on understanding setting in relation to significance in NPPF terms (or ‘sensitivity to change’ in EIA terms), and how views may contribute to setting. The advice note sets out a recommended approach (reformulated here in context of the EIA), including:

- setting is the surroundings in which an asset is experienced and may therefore be more than its curtilage; that it may be affected by a range of factors beyond visual, including historical relationships between assets; it may extend beyond Public Rights of Way (PRoW);
- provide a historic evidence assessment to understand the historical background to the Proposed Development Site;
- the extent of setting is not fixed and may change as the asset and its surroundings evolve; heritage assets within extensive landscapes may have nested or overlapping settings;



- where the setting of a heritage asset has been compromised, consideration needs to be given to whether additional change will further detract from, or can enhance the importance of the asset;
- importance of setting in relation to designed landscapes can extend beyond the designated area and may not necessarily be confined to land visible from the Proposed Development Site, but may have historic or other associations with the asset; and
- the contribution of views to setting can be assessed in relation to static, dynamic, long, short or laterally spreading views, and include a variety of views of, from, across or including that asset.

10.5.7 Once the sensitivity to change of Receptors is assessed, an assessment of the impact ('magnitude of change' in EIA terms) of the Proposed Development is undertaken. Effects on built heritage may relate to impacts of setting and/or visual changes and the effect of the scale of the Proposed Development on views potentially to and from built heritage assets.

Magnitude of impact

10.5.8 The assessment of the magnitude of change resulting from the Proposed Development upon the heritage Receptors is summarised in **Table 10.2**.

Table 10.2: Magnitude of Change

Magnitude of Change	Criteria
High	<ul style="list-style-type: none"> • Complete removal of asset. • Changes such that the significance (importance) of the asset is totally altered or destroyed. • Comprehensive change to, or total loss of, elements of setting that would result in harm to the asset and our ability to understand and appreciate its significance (importance). • The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Medium	<ul style="list-style-type: none"> • Change such that the significance to the asset is significantly altered or modified. • Changes such that the setting of the asset is noticeably different, affecting significance and resulting in changes in our ability to understand and appreciate the significance of the asset.
Low	<ul style="list-style-type: none"> • Changes such that the significance of the asset is slightly affected. • Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the significance of the asset.
Negligible	<ul style="list-style-type: none"> • Changes to the asset that hardly affect significance. • Changes to the setting of an asset that have little effect on significance and no real change in our ability to understand and appreciate the significance of the asset, its historical context or character.



Significance of effect

10.5.9 **Table 10.3** illustrates how information on the sensitivity to change of the asset and the magnitude of change arising from the Proposed Development has been combined to arrive at an assessment of the level of the effect. The matrix is not intended to ‘mechanise’ judgment of the significance of the effect, but to act as a check to ensure that judgements regarding heritage importance and the asset’s sensitivity to change and magnitude of change arrive at a level of effect that is reasonable and balanced.

10.5.10 Where information is insufficient to be able to quantify either the Receptor’s sensitivity to change or the magnitude of change arising from the Proposed Development with any degree of certainty, the effect is given as 'uncertain'.

10.5.11 In terms of an EIA, only the Major and Moderate effects would be considered ‘significant’.

Table 10.3: Heritage Criteria – level of effect

		Magnitude of change (impact of the development)			
		High	Medium	Low	Negligible
Sensitivity to change of the Receptor (depending on its heritage significance)	Very High	Major	Major	Moderate	Minor
	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

10.5.12 The following terms are used to define the effects identified:

- Major effect: where the Proposed Development could be expected to have a considerable effect (either adverse or beneficial) on heritage Receptors (assets). For the historic environment, if the effect is adverse in nature, this equates to ‘substantial harm’ to, or total loss of, importance (or significance in terms of the NPPF), or equates to a high degree of 'less than substantial harm' (in NPPF terms) of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting;
- Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either adverse or beneficial) on heritage assets (Receptors). For the historic environment, if the effect is adverse in nature, this equates to 'less than substantial harm' (in NPPF terms) to the importance (or significance) of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting;
- Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either adverse or beneficial) on heritage assets (Receptors). For the historic environment, if the effect is adverse in nature, this equates to a low degree of ‘less than substantial harm’ (in NPPF terms) to the importance of an asset of very high, high or medium heritage importance, as a result of changes to its physical form or setting, or ‘substantial harm’ to, or the loss of, importance of an asset of low heritage importance; and



- Negligible: where very minor or no discernible effect is expected as a result of the Proposed Development on heritage Receptors (assets), i.e. the effect is insignificant.

10.5.13 Once the level of the effect has been established, the next step is to assess the nature (or direction) of the effect, which can be 'beneficial' or 'adverse'. If the Proposed Development would enhance heritage values or the ability to appreciate them, as expressed in the first stage of the assessment, then the impact on heritage importance would be deemed to be positive, therefore the nature of the effect is attributed as 'beneficial'. However, if the Proposed Development would fail to preserve heritage values, or impairs their appreciation by affecting the Receptor's heritage importance negatively, then the nature of the effect would be deemed to be 'adverse'.

Geographical scope

10.5.14 A Study Area of 2km from the Proposed Development Site will be used to establish the heritage baseline information, although background information outside this Study Area will also be considered on a case-by-case basis where this may have a bearing on the assessment of the Proposed Development Site. The Study Area will be agreed in consultation with Kent County Council's County Archaeologist and Swale Borough Council's Conservation Officer where relevant.

Temporal scope

10.5.15 The temporal scope will assess the likely impacts (and the magnitude of change arising from these impacts) that the proposals will have on built heritage assets during the construction and occupational stages, along with the resultant environmental effects on the significance of these assets. It would assess the likely impacts (and the magnitude of change arising from these impacts) that the proposals will have on archaeological assets at construction phase only as it is not anticipated at this stage that there would be any operational impacts on archaeological assets due to the nature of any archaeological assets.

10.6 Embedded mitigation and enhancement measures

10.6.1 The design of the built form of the Proposed Development echoes that of the existing Ridham Dock Biomass Facility to the north in terms of scale, including the height of the proposed chimney.

10.7 Scope of environmental impacts and effects

Construction

10.7.1 Impacts and effects upon the sensitive heritage assets (heritage Receptors) during the construction phase could result due to the impact on the settings of the heritage assets in the vicinity of the Proposed Development Site, or as a direct result of Proposed Development.

10.7.2 Development work, such as demolition of existing structures, construction of the CC Facility, associated drainage, Storage Yard Extension, or alterations to existing landscaping has the potential to impact below ground heritage assets by way of removal or disturbance without record.

10.7.3 Historic imagery of the Proposed Development Site, and results of archaeological investigations to the north, indicate that the immediate area comprises a degree of made



ground, and that the Proposed Development Site, notably its northern portion which comprises an existing storage yard used in relation to the existing Ridham Dock Biomass Facility, has experienced disturbance and potential truncation as a result of 20th and 21st century use.

- 10.7.4 It is therefore probable that the archaeological potential of the Proposed Development Site has been eroded. Archaeological assessment and investigation undertaken to the north of the Proposed Development Site, by way of a desk-based assessment followed by geoarchaeological test pitting and borehole investigation, concluded that that Proposed Development Site had a high palaeoenvironmental potential and that the possibility of preserved land surfaces with associated archaeological remains was considered possible within the upper parts of the alluvial sequence. As such, based on the currently consulted known baseline, a similar conclusion may be reached in relation to the Proposed Development Site. The Proposed Development, including Ditch Realignment to the south of the Proposed Development Site, and groundworks associated with the construction of the CC Facility have potential to impact the potential archaeological deposits.
- 10.7.5 All impacts and subsequent effects upon buried archaeological assets will take place within the construction phase and comprises any intrusive groundworks associated with the Proposed Development.
- 10.7.6 The existing industrial context of the Proposed Development Site characterises the wider area. No known built heritage assets are located in close proximity of the Proposed Development Site; as such, any contribution that the existing Ridham Dock Biomass Facility, including existing chimney, makes to the significance of any built heritage assets already exists. It is not deemed that the setting or significance of any built heritage assets would be affected as a result of the Proposed Development due to the scale and nature of the Proposed Development, in addition to the intervening distance and existing built form between the Proposed Development Site and built heritage assets.

Operation

- 10.7.7 Impacts and effects upon the sensitive heritage assets (heritage Receptors) during the operational phase could result due to the impact on the settings of the heritage assets. Due to the existing industrial context of the Proposed Development Site, and the proximity of built heritage assets, it is not deemed that the setting of any such known heritage assets would be altered as a result of the Proposed Development.
- 10.7.8 There will be no operational effects on archaeology as all remains will have been preserved in situ or preserved by record (by process of archaeological fieldwork mitigation) before this stage of the Proposed Development.

10.8 Limitations and uncertainties

- 10.8.1 Additional details relating to the existing ground conditions of the Proposed Development Site would be sought through a more detailed review of the planning history of the area, and consultation with relevant specialists forming part of the project team.
- 10.8.2 There is potential for overlap in assessment and imaging used to inform the Landscape and Visual Impact Assessment; it is assumed that where this is the case, appropriate information and imagery would be available.
- 10.8.3 Assessments would be undertaken using primary and secondary information derived from a variety of sources. The assumption would be that this data, including information held in the Kent HER, is reasonably accurate.



- 10.8.4 The survival of archaeological remains is often uncertain without archaeological evaluation and in these circumstances the magnitude of impact can only be estimated or stated as unknown.

10.9 Inter-related effects

- 10.9.1 There is potential for overlap in terms of Receptors considered and assessment undertaken with any Landscape Visual Impact. It is not anticipated however that this would result in any inter-related effects.

10.10 Cumulative effects

- 10.10.1 Cumulative effects may result where changes resulting from proposed or approved developments in the vicinity of any heritage assets would impact the significance of a heritage asset. This may be through changes to the setting of heritage assets, or loss of archaeological remains.
- 10.10.2 A review of the shortlisted cumulative developments set out in **Table 17.1** has been undertaken.
- 10.10.3 Based on current knowledge, no committed schemes set out in the shortlist are considered relevant due to distance, intervening built form, and their limited contribution to, or absence of being part of, the setting of any built heritage assets considered relevant in assessing the current Proposed Development.
- 10.10.4 It is not likely that cumulative effects will be created as a result of the various schemes on any of the archaeological assets as there is no overlap in effects due to the distance from the Proposed Development Site.



11. Ecology and Nature Conservation

11.1 Introduction

- 11.1.1 This chapter of the ES will present an Ecological Impact Assessment (EclA) of the potential effects of the Proposed Development on ecological Receptors and will be undertaken by the Environmental Dimension Partnership Limited (EDP). The approach proposed in this Scoping Report has been informed by a desk study, reference to published best practice guidance and professional judgement.

11.2 Consultation to date

- 11.2.1 Consultation with respect to ecology and nature conservation has not been undertaken prior to submission of this EIA Scoping Report. Due to the ecologically sensitive location of the Proposed Development Site and potential for impacts on the adjacent nature conservation designations, Natural England and the Local Planning Authority will be contacted for detailed discussions of the potential impacts and agreement of optimal avoidance and mitigation solutions.

11.3 Legislative or policy requirements and technical guidance

- 11.3.1 The following is a summary of legislation, planning policies and technical guidance relevant to ecology and nature conservation both at national and local levels.

Legislative Context

The Conservation of Habitats and Species Regulations 2017 (as amended)

- 11.3.2 The Conservation of Habitats and Species Regulations 2017 (as amended) provide for the designation and protection of statutorily designated wildlife sites of European importance ('European sites'), and the protection of a number of rare and vulnerable species in a European context ('European Protected Species' (EPS)). European sites, including Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites are recommended for designation in the UK by the Joint Nature Conservation Committee (JNCC).

The Environment Act 2021

- 11.3.3 The Environment Act 2021 was passed into law in November 2021. Its overall aims are to strengthen environmental protection and deliver the UK Government's 25-year environment plan following the UK's exit from the European Union. Of greatest relevance to ecology and biodiversity are provisions within the Act for Biodiversity Net Gain (BNG) to be a condition of planning permission in England. As such, delivery of a net gain in biodiversity of 10% (as measured by the statutory biodiversity metric) became a legal requirement of planning permission for development from February 2024.

The Wildlife and Countryside Act 1981 (as amended)

- 11.3.4 The Wildlife and Countryside Act 1981 (as amended) enshrines the protection of statutory designated wildlife sites of national importance (Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)) in England and Wales. The Act also sets out varying



degrees of protection and offences with regards to native species and their habitats that are rare and vulnerable in a national context. The Act also provides for the control, management and offences in respect of invasive non-native species. Sites of national importance (SSSIs and NNRs) are designated by Natural England under the Act and are protected from any development that may destroy or negatively affect them, either directly or indirectly.

Protection of Badgers Act 1992

- 11.3.5 The Protection of Badgers Act 1992 (as amended) affords protection specifically to badgers (*Meles meles*) and their setts.

Natural Environment and Rural Communities (NERC) Act 2006

- 11.3.6 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a statutory duty on Local Planning Authorities (LPAs) to consider the effects upon biodiversity when exercising their functions in England and Wales. In addition, Section 41 of the Act makes for the provision of a list of habitats and species of principal importance for the conservation of biodiversity.

Biodiversity 2020

- 11.3.7 In 2013, the UKBAP Priority Habitats and Priority Species, and the Section 41 Species and Habitats of Principal Importance for Conservation under the NERC Act 2006, were rationalised. This rationalisation occurred under the 'Post-2010 Biodiversity Framework'. As a result, a new list of Priority Species and Priority Habitats is now in operation at the UK level. These new lists supersede the former UKBAP; they are the new 'Biodiversity Indicators' that are used to monitor the status of biodiversity at the UK level. Each of the four devolved countries of the UK also has a similar list. Within England, the new rationalised lists of 24 Priority Habitats and 213 Priority Species are provided in Biodiversity 2020 which is the national biodiversity policy for England.

Planning Policy Context

National Planning Policy Framework (NPPF)

- 11.3.8 The Government published a revised version of the National Planning Policy Framework (NPPF) in December 2023. Paragraph 174 of the NPPF states that:

'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.'*

- 11.3.9 Paragraph 174 of the NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by:

- 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.'*



11.3.10 With regard to planning applications and biodiversity, Paragraph 180 of the NPPF states that:

'When determining planning applications, local planning authorities should apply the following principles:

- a) *If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) *Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the Application Site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) *Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- d) *Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged especially where this can secure measurable net gains for biodiversity.'*

[National Planning Practice Guidance \(NPPG\)](#)

11.3.11 Further guidance on the NPPF with respect to ecology is described within the Planning Practice Guidance on the Natural Environment under 'Biodiversity, geodiversity and ecosystems'.

[Local Planning Policy](#)

11.3.12 Relevant policies within The Swale Borough Local Plan (adopted July 2017) include Policy DM 28 Biodiversity and Geological Conservation; Policy DM 29 Woodlands, Trees and Hedges; and Policy ST 1 Delivering Sustainable Development in Swale.

[Technical Guidance](#)

11.3.13 The EclA of the potential effects of the Proposed Development on ecological Receptors will be undertaken following the principles set out in the industry's recognised guidelines published by the Chartered Institute for Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the UK and Ireland' Version 1.2 (CIEEM, 2018), hereafter referred to as the 'CIEEM Guidelines'.

11.3.14 In addition, various adopted best practice and guidance documents relating to survey, assessment and mitigation for relevant habitats and protected species will be used.

11.4 Baseline

[Baseline environment](#)

11.4.1 The Proposed Development Site is located at the existing Ridham Dock Biomass Facility located off Lord Nelson Road, Ridham Docks, Iwade, Kent. The British National Grid coordinates for the Proposed Development Site are TQ 92235 68178. Habitats within the



Proposed Development Site predominantly comprise hardstanding, industrial buildings and Wood Storage Bays, along with a section of surface water swale and associated scrub, tall ruderal and grassland along the southern boundary. Ridham Dock – surrounding the Proposed Development Site to the north and west – is a long-established industrial dock supporting numerous concrete, aggregate, waste management and energy businesses and is situated immediately adjacent to the Swale, which flows into the Thames estuary.

11.4.2 Surrounding the industrial areas of Ridham Dock, including to the immediate south of the Proposed Development Site, the land predominantly comprises low-lying grazing, agricultural and marshland areas; much of which is designated as The Swale SPA and Ramsar Site. The Swale tidal channel, associated mudflats and saltmarsh bound the Proposed Development Site’s eastern boundary.

11.4.3 To date, baseline information for the Proposed Development Site has been informed by a desk-based study, which included a detailed review of habitat and bird assemblage information available for the surrounding statutory designated sites in addition to survey information from previous applications at the Proposed Development Site and the ecological management plan for the habitat immediately to the south. As described further below, a suite of ecological investigations is proposed to be undertaken during the appropriate survey seasons in order to establish a robust baseline for the EIA.

Designated Sites

Statutory Designations

11.4.4 Immediately adjacent to the Proposed Development Site’s eastern and southern boundaries lies The Swale SPA and Ramsar Site. The Swale separates the Isle of Sheppey from mainland Kent, and comprises extensive intertidal mudflats bordered by areas of saltmarsh. The SPA and Ramsar Site designation covers these habitats, in addition to the surrounding land which is the largest expanse of grazing marsh in Kent. Qualifying features for the SPA designation are dark-bellied Brent goose (*Branta bernicla bernicla*), Dunlin (*Calidris alpina alpina*), the breeding bird assemblage and the waterbird assemblage. The Ramsar Site is designated for the extensive complex of estuarine habitats which support a diversity of plants and invertebrates, along with various breeding, passage and wintering ducks and waders, and internationally important numbers of wintering waterbirds.

11.4.5 There are a total of 12 international statutory designations within 15km of the Proposed Development Site, and four national statutory designations within 7.5km. A summary of these internationally designated sites is provided below in **Table 11.1** and a summary of the nationally designated sites is provided in **Table 11.2**. There are no local statutory designations within 4km of the Proposed Development Site.

Table 11.1: International Statutory Designations within 15km

Site Name	Location/ Distance	Interest Feature(s)
The Swale SPA and Ramsar	Adjacent to Proposed Development Site	Extensive complex of brackish and freshwater, mudflats, saltmarsh and floodplain grazing marsh supporting internationally important breeding bird and waterbird assemblages, in addition to dark-bellied Brent goose and Dunlin. The saltmarsh and grazing marsh are also of importance for their diverse assemblages of wetland plants and invertebrates.



Site Name	Location/ Distance	Interest Feature(s)
Medway Estuary and Marshes SPA and Ramsar	1.3km north-west	The designation has a complex arrangement of tidal channels, which drain around large islands of salt marsh and peninsulas of grazing marsh. There are also large areas of mudflat and small shell beaches. It supports a diverse assemblage of wetland plants and invertebrates. Qualifying features for the SPA are the breeding bird and water bird assemblages in addition to avocet (<i>Recurvirostra avosetta</i>), dark-bellied Brent goose, dunlin, grey plover (<i>Pluvialis squatarola</i>), knot (<i>Calidris canutus</i>), little tern (<i>Sterna albifrons</i>), pintail (<i>Anas acuta</i>), redshank (<i>Tringa tetanus</i>), ringed plover (<i>Charadrius hiaticula</i>) and shelduck (<i>Tadorna tadorna</i>).
Thames Estuary and Marshes SPA and Ramsar	8.0km north-west	The Proposed Development Site is predominantly characterised by extensive intertidal mudflats that are visible at low tide. Additionally there is saltmarsh, complex channel systems, and a series of disused quarry pits transformed to create an extensive series of ponds and lakes. The intertidal areas are bound mostly by levees and seawalls, occasionally featuring small beaches. There are also important habitats that lie above the highest astronomical tide, such as flooded mineral works and large areas of grazing marsh. Qualifying features for the SPA are the waterbird assemblage in addition to avocet, black-tailed godwit (<i>Limosa limosa islandica</i>), dunlin, grey plover, hen harrier (<i>Circus cyaneus</i>), knot, redshank and ringed plover.
Queendown Warren SAC	10.1km south-west	This designation covers grassland on the south-facing slope of a dry chalk valley. Among the more interesting plant species supported are chalk milkwort (<i>Polygala calcarean</i>), squinancywort (<i>Asperula cynanchica</i>), horseshoe vetch (<i>Hippocrepis comosa</i>) and the nationally rare meadow clary (<i>Salvia pratensis</i>). The Proposed Development Site contains an important assemblage of rare and scarce orchids, including early spider-orchid (<i>Ophrys sphegodes</i>), burnt orchid (<i>Orchis ustulate</i>) and man orchid (<i>Aceras anthropophorum</i>). It is also rich entomologically and two characteristic species, the adonis blue butterfly (<i>Lysandra bellargus</i>) and the rufous grasshopper (<i>Gomphocerippus rufus</i>) occur here. This SAC supports the Annex I habitat H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>), which includes the priority feature "important orchid rich sites".
Essex Estuaries SAC	13.8km north	This designation lies on the north shore of the Thames Estuary and is a relatively undeveloped estuary complex supporting a wide range of estuarine and marine communities on sediments ranging from the finer estuarine muds and muddy sands to coarser sands and gravels. Annex I habitats that are a primary reason for selection of the Proposed Development Site comprise H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, H1310 Salicornia and other annuals colonising mud and sand, H1320 Spartina swards (<i>Spartinion maritimae</i>), H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) and H1420 Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>). An Annex I habitat present as a qualifying feature, but not a primary reason for selection of this site is H1110 Sandbanks which are slightly covered by sea water all the time.
Foulness (Mid-Essex Coast	13.9km north	This designation lies on the north shore of the Thames Estuary, covering much of the same area as the above described Essex Estuaries SAC, and is one of five ecologically linked Mid-Essex Coast



Site Name	Location/ Distance	Interest Feature(s)
Phase 5) SPA and Ramsar		SPAs. It is made up of extensive intertidal sand silt flats, saltmarsh, beaches, grazing marshes, rough grass and scrubland. The complex matrix of habitats supports a diverse range of plants and invertebrates. Qualifying features for the SPA are the waterbird assemblage in addition to avocet, bar-tailed godwit (<i>Limosa lapponica</i>), common tern (<i>Sterna hirundo</i>), dark-bellied Brent goose, grey plover, hen harrier, knot, little tern (<i>Sterna albifrons</i>), oystercatcher (<i>Haematopus ostralegus</i>), redshank, ringed plover and sandwich tern (<i>Thalasseus sandvicensis</i>).
Benfleet and Southend Marshes SPA and Ramsar	14.0km north	This designation lies on the north shore of the Thames Estuary and is made up of several intertidal, subtidal and terrestrial habitat types that birds rely upon for loafing, roosting and foraging. In many locations a seawall separates the terrestrial parts of the Proposed Development Site (such as freshwater and coastal grazing marsh) from the intertidal and marine zones (mixed and coarse sediments, saltmarsh, sand and mud flats, shell banks and seagrass beds). Qualifying features for the SPA are the waterbird assemblage in addition to dark-bellied Brent goose, dunlin, grey plover, knot and ringed plover.

Table 11.2: National Statutory Designations within 7.5km

Site Name	Location/ Distance	Interest Feature(s)
The Swale SSSI	Adjacent to Proposed Development Site	Most of this site is also designated as The Swale SPA and Ramsar Site, described above. The Swale SSSI includes the largest remaining areas of freshwater grazing marsh in Kent and is representative of the estuarine habitats found on the north Kent coast. The Proposed Development Site is particularly notable for the internationally important numbers of wintering and passage wildfowl and waders, and there are also important breeding populations of a number of bird species. Important assemblages of plants and invertebrates are also supported by the various habitats.
Elmley NNR	0.3km east	Most of this site is also designated as The Swale SPA, Ramsar and SSSI. It is a farmer owned and managed grazing marsh of importance for a range of wildlife including birds, brown hare (<i>Lepus europaeus</i>), water vole (<i>Arvicola amphibius</i>) and grass snake (<i>Natrix helvetica</i>).
Medway Estuary and Marshes SSSI	1.3km north-west	Most of this site is also designated as Medway Estuary and Marshes SPA and Ramsar Site. The Medway Estuary and Marshes SSSI forms the largest area of intertidal habitats which have been identified as of value for nature conservation in Kent. The area holds internationally important populations of wintering and passage birds and is also of importance for its breeding birds. An important assemblage of plant species is also supported by the Proposed Development Site.
Sheppey Cliffs and Foreshore SSSI	6.3km north-east	This SSSI is designated for its geological and ecological interest. The ecological interest is within the flora supported by the cliffs, which includes a good population of the nationally rare plant dragon's teeth (<i>Tetragonolobus maritimus</i>) and other uncommon species including the nationally scarce bithynian vetch (<i>Vicia bithynica</i>).



Non-Statutory Designations

- 11.4.6 With respect to non-statutory designations, there are two Local Wildlife Sites (LWS) located within 4km of the Proposed Development Site. These comprise Milton Creek, Sittingbourne LWS (1.3km south of the Proposed Development Site) and Village Park, Iwade LWS (1.6km west of the Proposed Development Site). There is no ancient woodland within 4km of the Proposed Development Site.

Habitats

- 11.4.7 The majority of the area within the Proposed Development Site is of negligible ecological importance, comprising hardstanding, industrial buildings and Wood Storage Bays associated with the operational Ridham Dock Biomass Facility.
- 11.4.8 Habitats of some intrinsic importance within the Proposed Development Site are constrained to a strip along the southern boundary, which includes a section of surface water swale and associated scrub, scattered trees, tall ruderal and grassland habitats. Albeit, the ecological value of these habitats is somewhat limited due to the regular disturbance from the operations of the adjacent Biomass Facility and wider industrial area.
- 11.4.9 Habitats of greater intrinsic ecological importance, including saltmarsh, mudflats, river and grazing marsh, are located adjacent to the eastern and southern Proposed Development Site boundaries. These are covered by The Swale SPA, Ramsar Site and SSSI, and have therefore been described in more detail in the previous section.

Species

Notable Plants

- 11.4.10 The designated land to the south of the Proposed Development Site is known to support nationally scarce plants including annual beard-grass (*Polypogon monspeliensis*), sea clover (*Trifolium Squamosum*), golden samphire (*Limbarda crithmoides*) and divided sedge (*Carex divisa*). Although the Proposed Development Site only supports a small area of natural habitat along its southern boundary, given their presence in the surrounding habitat, occurrences of notable plants within the Proposed Development Site boundary cannot be ruled out.

Breeding Birds

- 11.4.11 The Proposed Development Site itself only supports a small area of habitat potentially suitable for breeding birds, this suitability is limited by the regular disturbance from the operations of the adjacent Biomass Facility. Nonetheless, the surrounding designated area has good suitability, and is known to support important assemblages of breeding birds. Species known to breed on land adjacent to the Proposed Development Site include Cetti's warbler (*Cettia cetti*), redshank, reed bunting (*Emberiza schoeniclus*), reed warbler (*Acrocephalus scirpaceus*), linnet (*Linaria cannabina*) and cuckoo (*Cuculus canorus*).
- 11.4.12 As such, there is some potential for an important assemblage of breeding birds to be utilising the small area of suitable habitat within the Proposed Development Site, and those habitats immediately adjacent.

Wintering Birds

- 11.4.13 The Proposed Development Site itself supports no habitat potentially suitable for wintering birds. Nonetheless, the surrounding designated area has good suitability for wintering bird species, and is known to support important assemblages of wintering birds. As such, there



is potential for an important assemblage of wintering birds to be utilising the suitable habitat immediately adjacent to the Proposed Development Site, and to potentially be commuting over the Proposed Development Site itself.

Bats

11.4.14 In relation to roosting, the Proposed Development Site contains a number of industrial buildings and structures which, due to their construction, materials and use, are unlikely to be suitable for roosting bats. However, there are also a number of scattered trees along the southern boundary of the Proposed Development Site, these may support Potential Roost Features (PRF) that could be used by bats.

11.4.15 Regarding bat foraging and commuting, the Proposed Development Site itself only supports a small area of potentially suitable habitat, located along the southern boundary, with the surrounding habitats offering much higher suitability. As such, there is potential for foraging and commuting bats to be utilising the small area of suitable habitat within the Proposed Development Site, in addition to those habitats immediately adjacent.

Badger

11.4.16 Due to much of the natural habitats around the Proposed Development Site being floodplain grazing marsh subject to occasional tidal inundation, there is limited suitability for badger (*Meles meles*) setts. Previous surveys at the Proposed Development Site and land to the south in 2019 recorded no evidence of this species. Nonetheless, there are opportunities for foraging and commuting badger, and this species is known to be mobile and present in the wider area. As such, presence or potential future presence of this species cannot be ruled out.

Dormouse

11.4.17 Given the lack of suitable habitat (namely woodland and dense hedgerows/scrub) within the Proposed Development Site and surrounding area, in addition to a lack of local records for dormouse (*Muscardinus avellanarius*) and paucity of records across Kent, this species is considered highly likely to be absent from the Proposed Development Site and adjacent habitats. Dormouse will therefore be scoped out of the EclA.

Otter

11.4.18 The Proposed Development Site itself only supports a small area of habitat potentially suitable for commuting otter (*Lutra lutra*), along the surface water swale near the southern boundary. Although otter are not known to be present in the wider area, the habitats surrounding the Proposed Development Site have good suitability for this widespread and mobile species. As such, there is some potential for otter to be utilising the small area of suitable habitat within the Proposed Development Site, and those habitats immediately adjacent.

Water Vole

11.4.19 The surface water swale along the southern Proposed Development Site boundary is known to support water vole (*Arvicola amphibius*) from previous surveys in 2014 and 2019. This species is therefore anticipated to still be present onsite and within the surrounding suitable habitats.



Great Crested Newt

- 11.4.20 Great crested newt (*Triturus cristatus*) are known to be present in the wider area, with populations present at Iwade, and a European Protected Species mitigation licence for great crested newts obtained for a development 0.7km south of the Proposed Development Site in 2018. There is one occasionally wet ditch within the Proposed Development Site and a further five waterbodies/ditches within 250m of its boundaries. However, many of these waterbodies are likely to be brackish and therefore unsuitable for the species. Previous eDNA surveys undertaken of these waterbodies in 2016 did not find any evidence of great crested newt.
- 11.4.21 Given the age of this survey data and their known presence in the wider area, current presence of great crested newt within and adjacent to the Proposed Development Site cannot be ruled out at this stage.

Reptiles

- 11.4.22 The Proposed Development Site itself only supports a small area of habitat potentially suitable for common reptile species, located along the southern boundary. The adjacent designated habitat immediately south of the Proposed Development Site provides optimal habitat, and is known to support slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and grass snake (*Natrix helvetica*). As such, there is potential for populations of these reptile species to be present within suitable habitats in the southern portion of the Proposed Development Site.

Notable Invertebrates

- 11.4.23 The Proposed Development Site itself only supports a small area of habitat potentially suitable for notable terrestrial invertebrate species, located along the southern boundary. The adjacent designated habitat immediately south of the Proposed Development Site provides optimal habitat, and is known to support numerous notable terrestrial invertebrate species. As such, there is some potential for notable terrestrial invertebrate species to be present within suitable habitats in the southern portion of the Proposed Development Site.

Proposed approach to surveys and further baseline data collection

- 11.4.24 Although the majority of the land within the Proposed Development Site is hardstanding and structures of negligible ecological value, a small portion of the Proposed Development Site contains habitats that are known to support certain protected species, with potential for supporting other protected species, and the surrounding landscape is ecologically rich. As such, a suite of ecological investigations is proposed to be undertaken during the appropriate survey seasons in order to establish a robust baseline for the EclA. The scope of these investigations is outlined below.
- 11.4.25 The local environmental records centre (Kent and Medway Biological Records Centre) will be contacted to obtain the most recent records for protected and notable species within the Proposed Development Site's potential zone of influence. This data will be reviewed alongside the data available from previous surveys and ecological work undertaken at and around the Proposed Development Site.
- 11.4.26 An extended Phase 1 Habitat Survey will be undertaken of the Proposed Development Site to assess the main habitat types and dominant species present. Habitats would also be mapped according to UK Habs methodology, and a detailed condition assessment undertaken, in order to obtain data for the completion of the statutory Biodiversity Net Gain metric.



- 11.4.27 The following detailed (Phase 2) species surveys are also proposed:
- Botanical survey to identify presence of or potential for notable plant species within the Proposed Development Site;
 - Breeding bird survey comprising three visits to determine the assemblage of breeding birds using suitable habitats within and immediately adjacent to the Proposed Development Site;
 - Wintering bird survey to determine the assemblage of wintering birds using suitable habitats immediately adjacent to the Proposed Development Site. Surveys will include both vantage point surveys over the Proposed Development Site to assess potential collision risk and surveys of the adjacent estuary habitats, including at high and low tide, to assess disturbance risk. The detailed scope of these surveys will be informed through consultation with Natural England;
 - All trees and buildings within the Proposed Development Site will be subject to a Ground Level Tree Assessment (GLTA) and Preliminary Roost Assessment (PRA) to determine suitability for roosting bats. Further surveys to determine presence or absence of roosts within any buildings or trees potentially impacted will be undertaken as required;
 - Badger walkover survey to search for any evidence of this species within or adjacent to the Proposed Development Site;
 - Great crested newt eDNA survey of the waterbody within the Proposed Development Site and other suitable waterbodies within 250m of the boundaries to determine if this species is still absent from the locality; and
 - Water vole walkover survey to obtain an up-to-date understanding of their current usage of the Proposed Development Site. During this survey, a detailed search for any evidence of otter presence and assessment of habitat suitability will also be undertaken.

11.5 Approach to assessment

Assessment criteria

- 11.5.1 A qualitative and quantitative ecological impact assessment will be undertaken, following the principles set out in the CIEEM Guidelines, and will include an assessment of cumulative effects, details of appropriate mitigation measures and details of any residual effects (should any exist following mitigation).
- 11.5.2 The assessment will start with an evaluation of Important Ecological Features (IEFs) made with reference to the CIEEM Guidelines. The guidelines recommend that the value, or potential value, of an ecological resource or feature should be determined within a defined geographical context. For the purposes of this assessment, the following adapted geographic frame of reference will therefore be used:
- International;
 - National (England);
 - Regional (South East England);
 - County (Kent);
 - District (Swale Borough); and
 - Local (Ridham).



- 11.5.3 Any feature of less than Local level importance are considered to be of Site level or Negligible importance.

Characterisation of impact

- 11.5.4 The assessment of the potential impacts of the Proposed Development will consider both on-site impacts and those that may occur at adjacent and more distant IEFs. Impacts can be beneficial or adverse. Adverse impacts can include:

- Direct loss of wildlife habitats;
- Degradation, isolation and fragmentation of habitats;
- Disturbance to species from noise, light, or other visual stimuli;
- Changes to key habitat features; and
- Changes to the local hydrology, water quality and/or air quality.

- 11.5.5 Direct, indirect, secondary, and cumulative adverse and beneficial impacts on nature conservation features will be characterised based on predicted changes as a result of the proposed activities.

- 11.5.6 In order to characterise the impacts on each feature, the following parameters will be considered:

- The magnitude of the impact (i.e. the size, amount, intensity or volume);
- The extent over which the impact would occur (i.e. the spatial or geographical area over which the impact may occur during a representative range of conditions);
- The temporal duration of the impact (which is defined in relation to ecological characteristics such as the lifecycle of a species as well as human timeframes);
- Whether the impact is reversible and over what timeframe (an effect is considered reversible if it can be counteracted by mitigation or if spontaneous recovery is possible); and
- The timing and frequency of the impact (timing may change the result of an impact if it coincides with sensitive life-stages or seasons, and the number of times an activity occurs will influence the resulting effect).

Significance of effect

- 11.5.7 The assessment will identify those beneficial and adverse impacts which would be 'significant', based on effects that either support or undermine the conservation objectives of the ecological feature or biodiversity in general. Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems, and the conservation status of habitats and species (including extent of abundance and distribution). Such significant effects will be qualified with reference to an appropriate geographic scale and based on the best available scientific evidence. Where it is not possible to robustly justify that no significant effect will occur, a significant effect will be assumed.

- 11.5.8 On the basis of the above, and within the assessment, ecological effects will be described as:

- Significant or not significant;
- Significance of effect based on the likely potential impacts and the geographic value of the Receptor;



- Direct and/or indirect;
- Permanent or temporary; and
- Adverse or beneficial.

11.5.9 Mitigation measures will be incorporated into the assessment plans and considered during the assessment of effects, so that the residual impact assessment reflects the completed development. These measures include those required to achieve the minimum standard of established practice, plus additional measures to further reduce the effects of the Proposed Development. The assessment will also consider the likely success of the mitigation.

Geographical scope

11.5.10 The extended Phase 1 Habitat Survey and subsequent Phase 2 surveys will be used to identify the IEFs present within the Zone of Influence (Zoi). For the purposes of the desk study and field work the Zoi has been considered as follows:

- International statutory designations (15km radius around the Proposed Development Site);
- National statutory designations (7.5km);
- Local statutory designations (4km);
- Non-statutory local sites (4km);
- Protected/notable species records (2km);
- Extended Phase 1 Habitat Survey (Site boundary and immediately adjacent habitats);
- All protected species surveys (Site boundary and immediately adjacent habitats); and
- Great crested newts (ponds within 250m).

Temporal scope

11.5.11 The temporal scope will consider the construction phase and the phase when the Proposed Development is completed and operational.

11.5.12 Assessment of decommissioning effects is proposed to be scoped out on the basis that the Applicant does not intend to seek a time-limited planning permission and that any future decommissioning effects would be no greater than construction, so are sufficiently represented by the construction assessment. It is understood that in the event of decommissioning, the Ditch Realignment would remain in situ.

11.6 Embedded mitigation and enhancement measures

11.6.1 To compensate for the small loss of habitat that will be required to facilitate the Proposed Development, and in accordance with the requirements of the Environment Act, the Applicant shall provide a minimum of 10% net gain in biodiversity as measured with the BNG statutory metric. The delivery of this BNG may be via a mixture of on- and off-site habitat creation and enhancement.

11.6.2 Prior to any works for the Proposed Development commencing, a comprehensive Ecological Mitigation Strategy (EMS) will be prepared alongside a Construction Environmental Management Plan (CEMP), setting out industry standard best practice techniques for construction that will allow all legislative requirements to be met. This will



include measures such as necessary pre-works update surveys and tool-box talks, protective fencing, timing of works, methods of habitat clearance and sensitive temporary lighting.

11.6.3 Works associated with the swale and Public Right of Way (PRoW) Realignment offer potential habitat creation and enhancement opportunities which will be explored as the ecological survey work and Proposed Development design progress.

11.6.4 Certain potential pollutants within emissions to air after the carbon capture process will be controlled as far as possible via interventions such as water washing. Any water effluent from the process will be treated prior to discharge from the Proposed Development Site.

11.7 Scope of environmental impacts and effects

Construction

11.7.1 Consideration will be given to the following potential impacts and effects during construction of the Proposed Development:

- Habitat loss: small-scale loss of vegetation and habitats, and thereby potentially species supported by them, to the footprint of the Proposed Development is anticipated;
- Habitat degradation: potential for degradation of adjacent habitats and associated designations due to risks including physical damage from movements of machinery/vehicles, dust generation, air pollution from construction traffic, and pollution of aquatic habitats;
- Disturbance (visual, noise): temporary visual and noise disturbance to species using the surrounding habitats as a result of construction activities at the Proposed Development Site;
- Lighting (construction): temporary disturbance and/or effective loss of habitat for light-adverse nocturnal species using surrounding habitats as a result of construction lighting within the Proposed Development Site; and
- Killing/injury of animals: habitat clearance, groundworks and vehicle movements may result in harm to resident animals, in addition to construction site features such as stockpiled materials and open trenches that may present a hazard to mobile species from the surrounding habitats that may enter the construction area.

Operation

11.7.2 Consideration will be given to the following potential impacts and effects during operation of the Proposed Development:

- Impacts from changes in air quality: changes to emissions from the Combined Facility and additional other pollutants as a result of operation of the Proposed Development may have associated impacts on designated sites, habitats and species located adjacent and further afield from the Proposed Development Site;
- Hydrology and water quality: changes to surface water runoff, discharge of treated wastewater effluent and accidental release of pollutants from the Proposed Development may impact hydrology and water quality, thereby affecting certain habitats and species;



- Risk of commuting bird collision with the proposed chimney: risk of increased bird collision due to the construction of a tall structure within a landscape of importance for breeding and wintering birds;
- Lighting (operation): permanent disturbance and/or effective loss of habitat for light-adverse nocturnal species using surrounding habitats as a result of permanent lighting within the Proposed Development Site; and
- Disturbance (visual, noise): permanent disturbance to species using the surrounding habitats as a result of proposed vehicle movements at the Proposed Development Site and operation of the CC Facility.

11.8 Limitations and uncertainties

11.8.1 Given the nature of ecology work, limitations or uncertainties within the assessment or the baseline surveys which underpin the assessment may be encountered. Should any such limitations or the requirement for assumptions arise, they will be clearly identified within the EclA along with an explanation of any implications. The precautionary principle will be adopted in such situations, in accordance with the CIEEM Guidance.

11.9 Inter-related effects

11.9.1 Inter-related effects on each IEF arising from other topic area pathways such as noise, traffic, visual/lighting disturbance, air quality impacts and water quality impacts will be considered within the EclA where applicable. No potential for any further inter-related effects warranting assessment within a separate chapter of the ES is anticipated.

11.10 Cumulative effects

11.10.1 When the IEFs and all potential impacts from the Proposed Development have been ascertained and characterised, other projects that could result in cumulative effects will be identified. Assessment of any potential cumulative impacts and effects will be undertaken in accordance with the CIEEM Guidance.



12. Hydrology and Flood Risk

12.1 Introduction

- 12.1.1 This chapter of the EIA Scoping Report has been produced by Ardent Consulting Engineers on behalf of The Applicant.
- 12.1.2 This chapter sets out the proposed scope of works for assessing the potential effects of the proposed development on the water environment, water resources, drainage and flood risk.
- 12.1.3 As part of the EIA, a site-specific Flood Risk Assessment (FRA) and Conceptual Drainage Strategy will be produced and appended to the Environmental Statement (ES).

12.2 Consultation to date

- 12.2.1 Preliminary liaison with the Environment Agency (EA) has been undertaken to request site-specific flood risk data, specifically Product 4 (Detailed Flood Risk Assessment Maps) and Product 8 (Breach Hazard Maps) data. In their response, the EA stated that processed flood risk data in the form of Products 4 and 8 was not available, and instead provided the equivalent raw data. These models will be reviewed as part of the EIA.
- 12.2.2 No further consultation with statutory/non-statutory bodies has taken place to date.

12.3 Legislative or policy requirements and technical guidance

National and Local Policy, Guidance and Legislation

- 12.3.1 Current national legislation including the NPPF, retains a risk-based approach to prevent inappropriate development in areas at risk of flooding.
- 12.3.2 The NPPF requires that the Sequential Test is used to guide the decision-making process. The accompanying National Planning Practice Guidance (PPG) defines three Flood Zones to be used as the basis for applying the Sequential Test and the Flood Risk Vulnerability Classification, which defines the type of development that is considered appropriate within each flood zone. The requirements of the Sequential and Exception Tests in relation to the proposed development will be reviewed and addressed in the FRA.
- 12.3.3 The PPG also establishes climate change allowances to be used in Flood Risk Assessments. Climate change allowances are predictions of anticipated change for peak river flows, peak rainfall intensity and sea level rise.
- 12.3.4 In addition to the NPPF and PPG, the assessment of potential effects will be undertaken with due regard to the following planning policy, guidance and legislation:
- The Flood and Water Management Act (2010);
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017);
 - Swale Borough Local Plan, Adopted July 2017;
 - Swale Borough Council Level 1 Strategic Flood Risk Assessment (SFRA) v.6, November 2020;



- Lower Medway Internal Drainage Board Planning and Byelaw Strategy, November, 2022;
- Kent Local Flood Risk Management Plan 2017-2023 and associated documents;
- Sustainable Drainage Systems – Non-statutory technical standards for sustainable drainage systems, March 2015, which sets out non-statutory technical standards for sustainable drainage systems; and
- CIRIA C753 – SuDS Manual, November 2015, which sets out the very latest research, industry practice and guidance in delivering SuDS.

12.4 Baseline

Baseline environment

Hydrology

- 12.4.1 There are two EA designated Main Rivers in the vicinity of the Proposed Development Site: the Swale and the Ridham Fleet.
- 12.4.2 A corridor, approximately 50m wide, separates the Proposed Development Site's eastern boundary from the western bank of the Swale, which flows in a southerly direction. The Swale is tidally influenced by the North Sea at this location. The Swale is an EA designated Main River, as well as a Site of Special Scientific Interest (SSSI)/ Special Protection Area (SPA)/Ramsar Site.
- 12.4.3 A second Main River, the Ridham Fleet, flows in a south-east direction, approximately 250m to the south of the Proposed Development Site, before its confluence with the Swale.
- 12.4.4 A land drain/ordinary watercourse runs along the eastern boundary of the Proposed Development Site. The southern perimeter is bound by a surface water watercourse/swale which is part of the surface water drainage system for the Proposed Development Site and discharges into the Swale. It is proposed to realign this swale 15m to the south as part of the Proposed Development.

Topography

- 12.4.5 LiDAR topographical data was obtained from DEFRA's open source mapping. The Digital Terrain Model (DTM) shows the Proposed Development Site to be flat, with an average made-ground level of 2.5m AOD. Levels along the adjacent tidal defences are noted at 5.47m AOD.

Ground Conditions

- 12.4.6 British Geological Survey (BGS) mapping indicates the Proposed Development Site is underlain with Alluvium superficial deposits (Clay, silt, sand and peat). The underlying bedrock is formed of London Clay (Clay and silt). BGS borehole records (TQ96NW155, TQ96NW156, TQ96NW157) located approximately 1km to the west of the Proposed Development Site and dug to depths between 7m and 16m, indicate no groundwater was encountered in these locations. The Proposed Development Site is adjacent to the Swale and docks and therefore groundwater levels within the Proposed Development Site may be higher.
- 12.4.7 The Proposed Development Site is not within a groundwater Source Protection Zone (SPZ).



Flood Risk

Fluvial/Tidal Flood Risk

- 12.4.8 Based on the EA's Flood Mapping, the Proposed Development Site is entirely within Flood Zone 3, corresponding to land assessed as having an Annual Exceedance Probability (AEP) of river flooding greater than 1%, or an AEP of flooding from the sea greater than a 0.5% AEP.
- 12.4.9 Swale Borough Council's SFRA online mapping confirms the Proposed Development Site is not within Flood Zone 3b (functional floodplain). The mapping also indicates the Proposed Development Site was affected by a historic flood event in 1953.
- 12.4.10 It should be noted that open source flood mapping does not account for the presence of river/tidal defences. The actual risk of flooding will be assessed as part of the FRA. A 'future baseline' will also be determined based on the appropriate climate change allowance.
- 12.4.11 The EA's Flood Map for Planning indicates the presence of tidal defences between the Proposed Development Site and the Swale. Correspondence with the EA has confirmed these defences are in the form of earth embankments and provide a standard of protection of 1 in 1000 years. The defences are currently classified as being in a 'Fair' Condition (Condition Grade 3 - Defects that could reduce performance of the asset). A Breach and Overtopping assessment will be carried out as part of the FRA to understand the risk of flooding to the Proposed Development Site.

Surface Water Flood Risk

- 12.4.12 Based on the EA's surface water flood maps, the majority of the Proposed Development Site is at 'very low' risk of surface water flooding, with the north-eastern corner of the Proposed Development Site being at 'low' risk (with an associated chance of flooding of between 0.1% and 1% each year). Small, localised areas across the Proposed Development Site are shown to be at 'medium' risk (with an associated chance of flooding of between 1% and 3.3% each year) and 'high' risk (has a chance of flooding of greater than 3.3% each year).

Other sources of Flood Risk

- 12.4.13 According to the Level 1 SFRA, the Proposed Development Site is not at risk of groundwater flooding.
- 12.4.14 The EA's flood maps indicate site is not at risk of flooding from artificial sources.

Wastewater and Water Supply

- 12.4.15 The Proposed Development Site is in an area served by Thames Water Utilities for potable water and wastewater services.

Proposed approach to surveys and further baseline data collection

- 12.4.16 The EIA baseline will be further informed by the following sources:
- Topographical survey of the Proposed Development Site and adjacent ordinary watercourses;
 - An intrusive ground investigation;
 - Liaison with the EA, Lead Local Flood Authority (LLFA) and Internal Drainage Board;



- Interrogation of the EA’s flood modelling; and
- Thames Water Utilities Limited Asset Plans.

12.5 Approach to assessment

Assessment criteria

- 12.5.1 The assessment of flood risk and hydrology will follow the guidance given in the Department for Transport (DfT) document ‘Environmental Impact Appraisal’ TAG UNIT A3 (2022), which is in line with the general approach to the EIA detailed in **Chapter 4** of the Scoping Report.
- 12.5.2 The Hydrology and Flood Risk ES Chapter will be informed by a site-specific Flood Risk Assessment (FRA) and a Conceptual Drainage Strategy. This will consider risk of flooding to and from the development, from fluvial, surface water, groundwater and artificial sources, during construction and operation phases.
- 12.5.3 The ES Chapter will identify the hydrological characteristics of the existing site and its environs and will consider any impacts that the development’s construction and operational phases may have on groundwater, nearby watercourses, water resources and flood risk. The assessment will take into account any embedded mitigation measures. Recommendations for any additional mitigation measures required to minimise the potential environmental impacts of the proposed development will be made.

Magnitude of impact

- 12.5.4 The magnitude of the potential impact (classed as Major, Moderate, Minor, Negligible or No Change) will be determined based on the assessor’s professional judgement based upon the criteria in **Table 12.1** below.

Table 12.1: Impact Magnitude

Receptor	Magnitude			
	Major	Moderate	Minor	Negligible
Runoff Regime	Long term irreversible change in overall volume of runoff from the whole site and changes to flow paths and rates resulting in increase in flood risk and erosion potential.	Temporary change in overall volume of runoff from the whole site and changes to flow paths and rates resulting in increase in flood risk and erosion potential.	Short term change in volume of runoff and changes to flow paths and rates in localised areas of the Proposed Development Site resulting in increase in flood risk and erosion potential to localised areas only.	No measurable change in site runoff regime.
Surface water quality	Measurable change in water quality status with respect to	Measurable change in water quality status with respect to EQS for less than	Measurable deterioration in water quality but no change with respect to EQS. No significant	No measurable deterioration in surface water quality.



Receptor	Magnitude			
	Major	Moderate	Minor	Negligible
	EQS for more than one month; long term irreversible impact on aquatic ecosystems.	one month; temporary impact on aquatic ecosystems in the medium term.	impact on aquatic ecosystems.	
Water Supply	Measurable change in the quality or volume of the supply with respect to The Water Supply Regulations; change in the flow of supply leading to reduction change in water pressure and/or in supply volume.	Measurable change in the quality or volume of the supply for less than 1% of samples with respect to The Water Supply Regulations; temporary visual colouration change and alteration to sediment content.	Measurable change in the quality or volume of the supply, but no change with respect to The Water Supply Regulations. No change in pressure or flow.	No measurable deterioration in water supply quality, volume or pressure.
Riverine regime flow	Measurable change in riverine flows which is likely to alter WFD status or result in increase in flood risk for watercourses or water bodies directly monitored under the WFD.	Measurable change in riverine flows resulting in a change in dilution capacity or change in flood risk for smaller watercourses or water bodies, not directly monitored under the WFD.	Detectable change in river flows but no measurable change in dilution capacity or flood risk	No measurable change in riverine flow regime.
Geo-morphology	Permanent change to geomorphology over a large scale including large changes in erosion and deposition regimes.	Permanent change in geomorphology over a limited area including some changes in erosion and deposition regimes.	Temporary change in geomorphology over a limited area including slight changes in bed morphology, sedimentation patterns and erosion rates.	No change in geomorphology.
Groundwater flow regime	Irreversible or permanent	Measurable change to recharge or	Short term reversible change to recharge or	No measurable change in



Receptor	Magnitude			
	Major	Moderate	Minor	Negligible
	change to recharge or groundwater flow regime resulting in long term decline of abstraction volumes; total loss of supply to or deterioration of quality of groundwater dependent habitats or groundwater base flow to a watercourse such that it impacts on WFD criteria or standards..	groundwater flow regime resulting in medium term decline of abstraction volumes or partial loss of supply to or deterioration of quality of groundwater dependent habitats or groundwater base flow to a watercourse but with no impact on WFD standards.	groundwater flow regime resulting in short term change of abstraction volumes or small loss of groundwater dependent habitats.	recharge or groundwater flow regime.
Groundwater Quality	Permanent or long term change in groundwater quality with respect to EQS for more than one month.	Temporary change in groundwater quality, changing site quality with respect to EQS for less than one month.	Measurable but temporary change in groundwater quality, but not changing status with respect to EQS.	No measurable change in groundwater quality.

Sensitivity of receptors

12.5.5 The importance and sensitivity of Receptors (classified as Very high, High, Medium, Low or Negligible) will be determined in accordance with **Table 4.1** of this Scoping Report, aided by the 'Indicators of quality' given in TAG UNIT A3 (2022) Table 12.

Significance of effect

12.5.6 The significance of a potential effect (classified as Substantial, Moderate, Minor or Negligible) will be determined by the interaction of the Sensitivity of Receptors and the Magnitude of Impact, as determined by the matrix in **Table 4.3** of this Scoping Report. Effect significance will take into account any embedded mitigation measures.

Geographical scope

12.5.7 The Study Area will comprise the area within the Red Line Boundary, and a radius of 250m around the Proposed Development Site. This is to ensure that all potential surface water and ground water Receptors within the vicinity of the Proposed Development Site that could



be impacted by increased flood risk or by the potential mobilisation and transition of sediments/other particles are taken into consideration.

Temporal scope

12.5.8 The temporal scope of the assessment generally refers to the time periods over which effects may be experienced (i.e. construction and operation). In general, the following terms will be considered:

- Short-term when the impact or effect is temporary and lasts for up to 12 months;
- Medium-term when the impact or effect lasts for up to 9 years; and
- Long-term when the effect remains for a substantial time (2033 onwards for at least 100 years).

12.6 Embedded mitigation and enhancement measures

12.6.1 Due to the presence of tidal defences, it is not anticipated that any further mitigation measures will be required; however, this will be confirmed in the FRA and, where necessary, through liaison with the Environment Agency. If the FRA determines that there is a residual risk of flooding from a breach or overtopping of the defences, a Flood Response Plan will be provided and presented to the LPA for approval. This risk would be residual only.

12.6.2 It is anticipated that the existing surface water drainage infrastructure at Ridham Dock Biomass Facility will be used to manage any additional runoff from new impermeable areas. The proposals will result in an increase in impermeable areas from the accommodate the Storage Yard Extension. A Conceptual Drainage Strategy will be produced as part of the application, which will detail the required level of surface water attenuation storage. The Conceptual Drainage Strategy will be designed to cater for all storm events up to a 1 in 100 year event including an allowance for climate change.

12.6.3 The proposed Ditch Realignment, which includes the repositioning of an existing staff pedestrian bridge will be designed to ensure there is no loss of conveyance or capacity as a result of the works. Evidence and calculations will be presented to the LPA in support of the planning application. Nonetheless, the risk of increasing flood risk as a result of this activity will be considered further as part of the ES.

12.6.4 Potential impacts related to the construction phase will be mitigated through the implementation of a CEMP, to be agreed with the Local Planning Authority prior to the commencement of the relevant construction activities. Construction contractors will be required to implement the construction environmental management measures as set out in the ES and confirmed in the CEMP.

12.7 Scope of environmental impacts and effects

Construction

12.7.1 The following potential effects associated to the construction phase have been identified as requiring further assessment within the ES:

- Potential adverse effects as a result of increased flood risk and changes to hydrological regime, particularly from the temporary works for the Ditch Realignment and Staff Pedestrian Bridge;



- Potential adverse effects as a result of contamination of watercourses (from sediment and dust mobilisation; wheel washing of vehicles and the Ditch Realignment temporary works);
- Potential adverse effects as a result of release of oils and hydrocarbons through spillage; and
- Potential adverse effects as a result of an increase in water supply and demand.

Operation

12.7.2 The following potential effects associated to the operational phase have been identified as requiring further assessment within the ES:

- Potential adverse effects from development in a Flood Zone 3 area;
- Potential adverse effects on flood risk as a result of the Ditch Realignment and Staff Pedestrian Bridge;
- Potential adverse effects as a result of increase in water supply and demand;
- Potential adverse effects as a result of contamination from in-situ materials; and
- Potential adverse effects as a result of pollution from proposed on-site uses.

12.8 Limitations and uncertainties

12.8.1 There is inherent uncertainty in the assessment of long-term flood risk, and particularly accounting for the effects of climate change. The assessment of flood risk will be based on mapping and modelling obtained from the Environment Agency, and the latest guidance regarding climate change allowances will be adopted. National guidance retains a risk-based approach to flood risk assessment which is considered conservative.

12.9 Inter-related effects

12.9.1 Potential adverse effects as a result of contamination of watercourses from sediment and dust mobilisation during construction will take into account the findings of the Air Quality Assessment, and will be assessed as part of the EIA.

12.10 Cumulative effects

12.10.1 The following potential cumulative effects will be considered:

- Cumulative flood risk (schemes with land drainage changes which could increase the potential for surface water runoff or Schemes that are planned on land at considerable risk of surface water flooding);
- Cumulative water supply and demand of clean water; and
- Cumulative risk of pollution to watercourses.



13. Geology, Hydrogeology and Contaminated Land

13.1 Introduction

- 13.1.1 This chapter has been produced by IDOM Merebrook Ltd. IDOM Merebrook Ltd are specialists in assessing ground conditions and have worked on significant contaminated land, environmental and energy production projects across the UK.
- 13.1.2 The current operations are managed under an Environmental Permit, this places strict controls over emissions to air, land and water. The Proposed Development will also be managed under and Environmental Permit and will not introduce new sensitive Receptors. The construction and operational process will be controlled and managed to prevent harm to the environment. Furthermore, any requirements in relation to the potential for ground contamination can be managed through the provision of standard planning conditions and through the Environmental Permitting process. As a result, it is considered that the Geology, Hydrogeology and Contaminated Land topic can be scoped out of the ES.

13.2 Consultation to date

- 13.2.1 No formal consultation has been undertaken to inform this Scoping Report chapter. On the basis that it is proposed to scope out the Geology, Hydrogeology and Contaminated Land topic out of the ES, no further consultation is proposed.

13.3 Legislative or policy requirements and technical guidance

National policy

- 13.3.1 Part IIA of The Environmental Protection Act (1990) provides the legislative framework for dealing with contaminated land outside of the planning regime. Section 78(2) of The Environmental Protection Act 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 there is a significant possibility of such harm being caused; or,*
 - *Pollution of controlled waters is being or there is significant possibility of such pollution being caused.*
 - *The term “harm” is used in Part IIA to describe damage to the following types of receptor:*
 - *Human beings;*
 - *Ecological systems; and*
 - *Property in the form of crops, produce, livestock, and property in the form of buildings.”*
- 13.3.2 Pollution of controlled waters means the entry into controlled waters of any poisonous, noxious or polluting matter of any solid waste matter. Controlled waters include groundwater (water contained in underground strata and soils), rivers, lakes, ponds, streams, canals, coastal waters and estuaries.
- 13.3.3 The potential sources of contamination at the Proposed Development Site and the implications with respect to Proposed Development have been interpreted in accordance



with the current government guidance on source-pathway-receptor risk assessment. This approach assesses whether there is the potential for any link between a source of contamination and a sensitive receptor(s), resulting in a significant adverse environmental effect.

- 13.3.4 The National Planning Policy Framework (NPPF), December 23, contains policy objectives relating to ground conditions and contamination.
- 13.3.5 Paragraph 124 states that *“Planning policies and decisions should ... 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 land, degraded, derelict, contaminated or unstable land”*.
- 13.3.6 Paragraph 180 states that *“Planning policies and decisions should contribute to and enhance the natural and local environment by: ... remediating and mitigating despoiled, degraded, derelict contaminated and unstable land, where appropriate”*.
- 13.3.7 Paragraph 189 relates specifically to ground conditions and contamination and states:
- 13.3.8 *“Planning policies and decisions should ensure that:*
- *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);*
 - *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*
 - *adequate site investigation information, prepared by a competent person, is available to inform these assessments”*.
- 13.3.9 Planning Practice Guidance (PPG) on ‘Land affected by contamination’ provides further guiding principles on how authorities should deal with land contamination in the context of planning policy preparation and implementation. In the latest version, updated 22 July 2019, the following is set out: *“To ensure a site is suitable for its new use and to prevent unacceptable risk from pollution, the implications of contamination for development should be considered through the planning process to the extent that it is not addressed by other regimes.”*
- 13.3.10 The PPG refers to the technical guidance pages at Land Contamination Risk Management (LCRM) which provides the technical assessment guidance. The LCRM pages specify three stages that should be adopted as follows:
- Stage 1 Risk Assessment;
 - Stage 2 Options Appraisal; and
 - Stage 3 Remediation and Verification.
- 13.3.11 The PPG also sets out the principle of granting planning permission subject to conditions which secure the investigation and assessment of land contamination, and which prevent development occurring until appropriate remediation has been implemented.
- 13.3.12 This assessment has been carried out in line with the approach set out in the PPG.



Local planning policy

- 13.3.13 The Swale Borough Local Plan 2017 requires the investigation and remediation of potentially contaminated sites to render them suitable for their proposed use.

Technical standards and guidance

- 13.3.14 The following key legislative/guidance standards are applicable to the assessment of land contamination:

- DEFRA/Environment Agency (EA) 'Model Procedures for the Management of Land Contamination';
- CLR11, 2004 (and updated online guidance Land Contamination: risk management);
- CIRIA 552: Contaminated Land Assessment: A guide to good practice;
- BS 5930:2015 Code of Practice for Ground Investigations;
- BS8485 :2015 +A1:2019 Guidance for the design of protective measures for methane and carbon dioxide ground gases for new buildings;
- BS 10175:2011 +A2:2017 Investigation of Potentially Contaminative Sites – Code of Practice; and
- EA. Land Contamination Risk Management (LCRM). October 2020.

- 13.3.15 The guidance documents necessitate a phased assessment process for land contamination, typically comprising three principal stages:

- Phase I Non-Intrusive Assessment (Desk Study);
- Phase II Site Investigation; and
- Phase III Remediation and Validation Works.

- 13.3.16 These can be achieved through standard planning conditions.

13.4 Baseline

Baseline environment

- 13.4.1 Baseline conditions have been considered from the following sources of information:

- Historical maps and plans;
- British Geological Survey (BGS) for published geological records;
- EA for details of any licensed landfill sites in the vicinity, recorded significant pollution incidents, groundwater/surface water quality in the area and points of water abstraction;
- Natural England (NE) for details of any sensitive ecosystems/protected areas;
- EA for permitting records for the Proposed Development Site;
- The requirements of the existing Environmental Permit; and
- Monitoring data supplied under the Environmental Permit.



- 13.4.2 Historical maps indicate that the Proposed Development Site was undeveloped land until the existing Ridham Dock Biomass Facility was established in *circa* 2010. As a result, the potential for historical sources of contamination is considered to be low.
- 13.4.3 According to the BGS website, the Proposed Development Site is underlain by superficial deposits of Alluvium. The Alluvium is underlain by bedrock of the London Clay Formation.
- 13.4.4 The EA divides geological units into three categories: Principal Aquifer; Secondary Aquifer and Unproductive Strata.
- 13.4.5 The Alluvium is classed by the EA as a Secondary Undifferentiated Aquifer. These are typically rocks for which it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question is variable and has previously been designated as both minor and non-aquifer in different locations.
- 13.4.6 The London Clay is classed as Unproductive Stratum. These are rock layers with low permeability that have negligible significance for water supply or river base flow.
- 13.4.7 The Proposed Development Site is not located within a groundwater Source Protection Zone (SPZ).
- 13.4.8 Local environmentally significant features include:
- Medway Estuary and Marshes: a Site of Special Scientific Interest, Special Protected Area and Ramsar Site;
 - The Swale: a Site of Special Scientific Interest, Special Protected Area and Ramsar Site;
 - Thames Estuary and Marshes: a Special Protected Area and Ramsar Site;
 - Elmley National Nature Reserve; and
 - Milton Creek, Sittingbourne: a Local Wildlife Site.
- 13.4.9 Current operations include the combustion of shredded wood to generate power. The Ridham Dock Biomass Facility is operated under an Environmental Permit (EPR/TP3536CL/V012). The Proposed Development will also require an Environmental Permit, which may be implemented as a variation to the existing Permit.
- 13.4.10 The Environmental Permit places requirements for the management of emissions to water, air and land such that there can be no adverse impact over the life of the permit. This requires ongoing air quality and dust monitoring against pre-defined thresholds as well as the inspection of any waters discharged to surface water.
- 13.4.11 The existing Environmental Permit and variation required some upgrades to the facility and placed emission limits on dust, gases and water. A programme of emissions monitoring is in place with thresholds set by the permit. This includes continuous air quality monitoring, point source emission to land and water and testing of bottom ash.
- 13.4.12 Data relevant to air quality are not considered as part of this chapter. However, the thresholds set are such that any emissions would be unlikely to result in harm to land or the water environment.
- 13.4.13 Point source discharges include the following:
- Discharge to the Swale: this is limited to 20l/s and tested for pH and flow rates;
 - Waste water discharge to the north side ditch: this is limited to 5m³ per day subject to visual inspection; and



- Surface water discharge to east side ditch: this is limited to uncontaminated surface water run-off and subject to visual inspections.

13.4.14 The bottom ash and residues from the combustion process are tested for both soluble and total metals, as well as dioxins/furans and dioxin-like PCBs. The bottom ash and residuals are removed from the Proposed Development Site.

13.4.15 Monitoring data supplied by MVV indicate that emissions levels are typically within the constraints set by the Environmental Permit.

Proposed approach to surveys and further baseline data collection

13.4.16 On the basis that it is proposed to scope out the topic of Geology, Hydrogeology and Contaminated Land from the ES, no further baseline data collection would be undertaken.

13.5 Approach to assessment

Assessment criteria

13.5.1 The assessment methodology adopted to scope out the potential construction and operational phase impacts of the Proposed Development in relation to Geology, Hydrogeology and Contaminated Land in this Scoping Report may be summarised as:

- Establish the baseline conditions;
- Determine the potential impacts on identified sensitive Receptors of the proposed construction works;
- Assess any potential for the Proposed Development to alter or affect ground conditions or contamination; and
- Determine if any mitigation measures are required either in short, medium or long-term.

13.5.2 Risk from contamination was assessed by considering the source-pathway-receptor relationships (pollutant linkages) for the Proposed Development Site. Under the assessment framework, a risk can only exist if the following three components of a pollutant linkage are present:

- A source of contamination or a substance capable of causing harm;
- A pathway by which the contaminant can reach the receptor; and
- A receptor that could be adversely affected by the contaminant.

13.5.3 When assessing the potential risks, the construction and operation of the Proposed Development have been considered in the context of these linkages.

13.5.4 In this instance, the absence an identified source or viable pathway has limited the extent of assessment and the potential for environmental harm. This is the basis for scoping out the Geology, Hydrogeology and Contaminated Land topic and as a result, the criteria relating to magnitude of impact, sensitivity of Receptor and significance of effect have not been considered further.

Geographical scope

13.5.5 The geographical scope has been based upon the Proposed Development Boundary/Site and the adjacent land uses.



Temporal scope

- 13.5.6 The temporal scope has been based upon the construction and operational phases of the Proposed Development.

13.6 Embedded mitigation and enhancement measures

- 13.6.1 Significant ground contamination is not anticipated. However, during the construction phase, a Construction Environmental Management Plan (CEMP) will be in place.

- 13.6.2 The CEMP will include precautions to minimise the exposure of workers and the general public to potentially harmful substances, including:

- Good housekeeping measures including regular cleaning of site and access roads;
- Use of applicable personal protective equipment (PPE) and if necessary, respiratory protective equipment (RPE);
- Following appropriate personal hygiene protocols;
- The adoption of spill protocols and best practice construction procedures;
- If evidence of previously unidentified contamination is encountered during groundworks (including piling), the nature and extent of the contamination will be fully investigated by a suitable professional, a risk assessment will be carried out to identify any potential risks to sensitive receptors during and following construction and, if necessary, these risks will be mitigated to the satisfaction of the Local Authority and the EA;
- Measures to avoid surface water ponding and the management of surface water run off; and
- Dust suppression methods as required, this could include wheel washing, covering stockpiles and materials transported to and from the Proposed Development Site.

- 13.6.3 In order to minimise the potential exposure of construction workers (and off-site human health receptors) to contaminants associated with dust. Control measures would include the implementation of a DMP and the following mitigation:

- Ensuring an adequate water supply on the Proposed Development Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible;
- Use of enclosed chutes, conveyors and covered skips, where practicable;
- Minimising drop heights from loading equipment and use of fine water sprays on such equipment wherever appropriate;
- Avoiding dry sweeping of large areas; and
- Installation of hard surfaced haul routes where appropriate, which are regularly damped down and regularly cleaned.

- 13.6.4 The Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended) and the Construction (Design and Management) (CDM) Regulations, 2015. These regulations set out requirements for the control risk and protection of construction workers and stress the importance of appropriate procedures in the event of the workforce encountering unexpected contamination.

- 13.6.5 These are standard construction related processes that will be in place as part of the Proposed Development.



- 13.6.6 During the operational phase, the controls required by the Environmental Permit, which include the minimisation of dust, the suppression of emissions to air and strict controls over releases to land and water will be in place. These measures will prevent harm to the environment, with monitoring in place to demonstrate that harm has not occurred.

13.7 Scope of environmental impacts and effects

Construction

- 13.7.1 The potential impacts from the Proposed Development have been assessed in the context of the current and proposed conditions. Prior to the construction of the existing Ridham Dock Biomass Facility, the Proposed Development Site was undeveloped marshland and the potential for a pre-existing source of contamination is considered to be low.
- 13.7.2 Given the proposed mitigation measures to be implemented during the construction phase, the potential impacts/risks during this phase are also considered to be low. As a result, it is proposed to scope out the potential effects on geology, hydrogeology and contaminated land from the Proposed Development during the construction phase.

Operation

- 13.7.3 The current operation is managed under an Environmental Permit, which places strict controls upon the operation of the existing Ridham Dock Biomass Facility and requires ongoing monitoring to demonstrate that contamination is not occurring. As a result, the potential for an ongoing source of ground contamination is also considered to be low.
- 13.7.4 The Combined Facility will also be managed under and Environmental Permit and will be subject to the same strict regulatory regime. As a result, the potential for a newly introduced source of ground contamination is also considered to be low.
- 13.7.5 In addition, management of the Proposed Development Site, which includes hard-standing and containment systems means that any potential pathways, such as infiltration, run off or fugitive emissions are managed and restricted.
- 13.7.6 Therefore, in the context of the source-pathway-receptor linkages, in the absence of a source or viable unmanaged pathways, the environmental risk is considered to be low and further mitigation measures are not required. The assessment is unlikely to be impacted by the effects of climate change.
- 13.7.7 As a result, it is proposed to scope out the potential effects on geology, hydrogeology and contaminated land from the Proposed Development during the operation phase.

13.8 Limitations and uncertainties

- 13.8.1 The assessment presented within this Scoping Report has been based upon desk-based assessment and no intrusive site investigation has been provided. IDOM Merebrook Ltd have not undertaken a site audit or inspection.

13.9 Inter-related effects

- 13.9.1 No significant inter-related effects are anticipated.



13.10 Cumulative effects

- 13.10.1 On the basis that no significant ground contamination is anticipated, there is no potential for cumulative effects.

13.11 Summary of proposed EIA scope

- 13.11.1 Prior to the construction of the Ridham Dock Biomass Facility, the Proposed Development Site was undeveloped. The Ridham Dock Biomass Facility is operated under an Environmental Permit, which places strict controls and testing requirements on emissions to air water and land. The Combined Facility will also be operated under an Environmental Permit and the same controls and procedures will remain in place. These measures will prevent harm to the environment over the operational life of the Permit.
- 13.11.2 As a result, it is considered that the topic of Geology, Hydrogeology and Contaminated Land can be scoped out of the ES. Any requirements in relation to the potential for ground contamination can be managed through the provision of standard planning conditions and through the Environmental Permitting process.



14. Population, Health and Socio-economics

14.1 Introduction

- 14.1.1 This chapter of the EIA Scoping Report has been produced by the Savills (UK) Health and Social Impact Assessment Team (HSIA).
- 14.1.2 It is proposed that the topic “population, health, socio-economics” is scoped in. As such, this chapter outlines the proposed scope for assessing the potential population, health and socio-economic impacts of the proposed post-combustion Carbon Capture Facility (CCF) at Ridham Dock Biomass Facility (hereafter referred to as the ‘Proposed Development’) within the ES.
- 14.1.3 While the potential hazards associated with Proposed Development are well known, understood and addressed through the regulatory planning and permitting process protective of health, there can remain residual perceptions of risk, which if left unaddressed can lead to unnecessary community stress and anxiety during the planning process.
- 14.1.4 The population, health and socio-economics chapter will signpost to, and provide additional narrative on, all of the health determinants already addressed and assessed within the ES. The chapter will be concise and public facing, offering both a proportionate assessment and means to more effectively respond to community and stakeholder health concerns.

14.2 Consultation to date

- 14.2.1 Consultation with respect to population, health and socio-economics has not been undertaken prior to submission of this EIA Scoping Report. Beyond the consultation process undertaken as part of EIA, no health-specific consultation is proposed.

14.3 Legislative or policy requirements and technical guidance

- 14.3.1 This subsection summarises relevant national and local legislation and policy requirements that are directly pertinent to population, health and socio-economic issues.

National policy

- 14.3.2 The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023) sets out the planning policies for England.
- 14.3.3 Promoting healthy and safe communities is a central theme, whereby the NPPF states that planning policies and decisions should aim to achieve healthy, inclusive and safe places and beautiful buildings which promote social interaction (including opportunities for meetings between people who might not otherwise come into contact with each other), are safe and accessible, and enable and support healthy lifestyles (paragraph 96).
- 14.3.4 Furthermore, the NPPF (paragraph 97) states that to provide the social, recreational and cultural facilities and services that communities need, planning policies and decisions should:
- plan positively for the provision and use of shared spaces, community facilities and other local services;
 - take into account and support the delivery of local strategies to improve health, social and cultural wellbeing;



- guard against the unnecessary loss of valued facilities and services;
- ensure that established shops, facilities and services are able to develop and modernise, and are retained for the benefit of the community; and
- ensure an integrated approach to considering the location of housing, economic uses and community facilities and services.

Local policy

- 14.3.5 The Swale Borough Local Plan (Adopted July 2017) provides a comprehensive set of policies which will provide the basis for determining detailed issues when dealing with planning applications (Swale Borough Council, 2017).
- 14.3.6 Policy ST1 (Delivering sustainable development in Swale) states that all development proposals will, as appropriate, promote healthy communities through: location of development to achieve safe, mixed uses and shared spaces; rejuvenation of deprived communities; the Local Plan implementation and delivery plan and schedule; safeguarding services and facilities that do or could support communities; maintaining the individual character, integrity, identities and settings of settlements; protecting, managing, providing and enhancing open spaces and facilities for sport and recreation; and implementing the Swale natural assets green infrastructure strategy (amongst other factors).
- 14.3.7 Policy CP5 (Health and wellbeing) states that development proposals will, as appropriate: bring forward accessible new community services and facilities, including health facilities; safeguard existing community services and facilities where they are viable or can be made so, or where replacement facilities can be provided without leading to any shortfall in provision, or where a need for health facilities has been indicated; safeguard or provide as appropriate, open space, sport and recreation; promote healthier options for transport, including cycling and walking; improve or increase access to a healthy food supply such as allotments, markets and farm shops; create social interaction and safe environments through mixed uses and in the design and layout of new development; create a healthy environment that regulates local climate by providing open space and greenery to achieve shading and cooling; and undertake and implement a HIA for relevant proposals that are required to undertake EIA, or within Swale's most deprived wards, or identified as required by the Local Plan.
- 14.3.8 Policy CP7 (Conserving and enhancing the natural environment – providing for green infrastructure) states that development proposals will, as appropriate: recognise and value ecosystems for the wider services they provide, such as for food, water, flood mitigation, disease control, recreation, health and well-being; and promote the expansion of Swale's natural assets and green infrastructure, including within new and existing developments, by delivering a high standard of design quality to maximise the social, economic, health and environmental benefits of green infrastructure (amongst other factors).

Guidance and best practice

- 14.3.9 The following guidance is proposed to be followed for the assessment of population, health and socio-economics.
- National Planning Practice Guidance;
 - IEMA Guide to Effective Scoping of Human Health in EIA; and
 - IEMA Guide to Determining Significance of Human Health in EIA.
- 14.3.10 The National Planning Practice Guidance (NPPG) (DLUHC & MHCLG, 2022) supports the NPPF and provides guidance across a range of topic areas, including 'healthy and safe



communities’. It is recognised in the NPPG that the design and use of the built and natural environments, including green infrastructure are major determinants of health and wellbeing, whereby a “healthy place” is one which:

- supports and promotes healthy behaviours and environments and a reduction in health inequalities for people of all ages;
- will provide the community with opportunities to improve their physical and mental health, and support community engagement and wellbeing;
- is inclusive and promotes social interaction; and
- meets the needs of children and young people to grow and develop, as well as being adaptable to the needs of an increasingly elderly population and those with dementia and other sensory or mobility impairments.

14.3.11 As stated in the NPPG, planning and health need to be considered firstly in terms of creating environments that support and encourage healthy lifestyles, and secondly in terms of healthcare capacity. In addition, engagement with individuals and/or organisations, such as the relevant Director(s) of Public Health, will help ensure local public health strategies and any inequalities are considered appropriately.

14.3.12 The IEMA guidance on ‘Effective Scoping of Human Health in EIA’ (IEMA, 2022) defines the approach for scoping wider determinants of health in or out of an EIA, and is derived from EU EIA Directive 2014/52/EU.

14.3.13 Furthermore, the IEMA guidance on ‘Determining Significance for Human Health in EIA’ (IEMA, 2022) responds to gaps and inconsistencies across existing guidance as to how health, particularly regarding significance (including sensitivity and magnitude classifications), is assessed in EIA. This promotes greater consistency in the assessment process; particularly in how EIA health conclusions are reached, interpreted, defended and applied to the greatest positive effect.

14.4 Baseline

Baseline environment

14.4.1 Different communities have varying circumstance and sensitivity to population, health, and socio-economic changes (both adverse and beneficial) as a result of social and demographic structure, behaviour and relative economic circumstances.

14.4.2 For the purpose of informing this Scoping Report, a high-level baseline has been created and presented in **Table 14.1**.

14.4.3 As shown, health and socio-economic circumstance in the ward Study Area is better than the national average for the majority of indicators. The burden of poor health and deprivation within the population living within the Study Area is therefore considered to be low compared to the national average, and thus less sensitive to changes in environmental and socio-economic conditions.



Table 14.1: Health baseline for Bobbing, Iwade and Lower Halstow ward

Indicator	Ward Study Area	Swale	Kent	England
Life expectancy				



Indicator	Ward Study Area	Swale	Kent	England
Life expectancy at birth for males (years)	82.3	78.8	79.7	79.5
Life expectancy at birth for females (years)	87.3	82.5	83.3	83.2
Physical health				
Emergency hospital admissions for all causes (Standardised admissions ratio (SAR))	84.6	94.1	95.5	100
Emergency hospital admissions for coronary heart disease (SAR)	73.2	96.2	76.7	100
Emergency hospital admissions for stroke (SAR)	56.5	83.3	89.7	100
Emergency hospital admissions for Myocardial Infarction (heart attack) (SAR)	69.6	94.1	86.2	100
Emergency hospital admissions for Chronic Obstructive Pulmonary Disease (COPD) (SAR)	94.6	106	86.5	100
Incidence of all cancer (Standardised incidence ratio (SIR))	97.4	102.1	101.1	100
Deaths from all causes all ages (Standardised mortality ratio (SMR))	73	105.8	98.9	100
Deaths from all cancer all ages (SMR)	77.5	106.6	101.4	100
Deaths from circulatory disease all ages (SMR)	58.3	98.8	94.2	100
Deaths from coronary heart disease all ages (SMR)	57.3	93.9	86	100
Deaths from stroke all ages (SMR)	30.9	85.9	101.6	100
Deaths from respiratory diseases all ages (Standardised mortality ratio (SMR))	98.3	117	102.3	100
Deaths from causes considered preventable under 75 years (SMR)	83.9	105.8	94.1	100
Mental health and behavioural risk factors				
Emergency hospital admissions for intentional self harm (SAR)	44.4	85.4	105.4	100
Hospital admissions for alcohol attributable conditions (Narrow definition) (SAR)	71.5	72.6	80.8	100
Smoking prevalence at 15 years, Regular (%)	11.3	7.3	7.3	5.4
Reception: Prevalence of overweight (including obesity) (%)	21.6	25.7	23.8	22.6
Reception: Prevalence of obesity (including severe obesity) (%)	9.8	11.2	10.1	9.9



Indicator	Ward Study Area	Swale	Kent	England
Year 6: Prevalence of overweight (including obesity) (%)	28.9	36.4	34.2	35.8
Year 6: Prevalence of obesity (including severe obesity) (%)	17.8	23.1	20.1	21.6
Deprivation and socio-economic circumstance				
Index of Multiple Deprivation (IMD) Score	10.3	27.1	19.5	21.7
Income deprivation (%)	7	14.9	11.4	12.9
Child Poverty Income Deprivation Affecting Children (%)	9.4	21.2	15.8	17.1
Older People in poverty Income deprivation affecting older people (%)	8.9	13.6	11.6	14.2
Households in fuel poverty (%)	5.6	10.1	9.8	13.2
Unemployment (%)	2.6	5.2	4.5	5
Long term unemployment (Crude rate per 1,000)	0.1	1.8	1.6	1.9
Key:				
	Better than the England average			
	Worse than the England average			

Source: OHID Local Health (OHID, n.d.)

Proposed approach to surveys and further baseline data collection

14.4.4 Building on the above information, a desktop study will be undertaken to establish the local population, health, and socio-economic context for the ES. This will involve the collection and interpretation of published demographic, socio-economic data, contrasted against county and national data. The following open-source websites and datasets are anticipated to be used to develop the population, health and socio-economic baseline:

- Office for Health Improvement and Disparities (OHID) Local Health tool (OHID, n.d.);
- OHID Fingertips (OHID, n.d.);
- Office for National Statistics; and
- NOMIS.

14.5 Approach to assessment

Assessment criteria

14.5.1 The significance of an effect is typically determined based on the sensitivity of a Receptor and the magnitude of an impact. This section describes the criteria applied to characterise



the sensitivity of Receptors and the magnitude of potential impacts for the proposed assessment of health-related effects.

Magnitude of impact

14.5.2 The health magnitude methodology criteria shown in **Table 14.2** are proposed to be used to inform the assessment of significance.

Table 14.2: Health magnitude methodology criteria

Category/level	Indicative criteria
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Very low	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Sensitivity of receptors

14.5.3 Within a defined population, individuals will range in level of sensitivity due to a series of factors such as age, socio-economic deprivation and the prevalence of any pre-existing health conditions which could become exacerbated. These individuals can be considered particularly vulnerable to changes in environmental and socio-economic factors (both adversely and beneficially), whereby they could experience disproportionate effects when compared to the general population.

14.5.4 As an example, the elderly, young children and individuals with chronic pre-existing respiratory conditions would be more sensitive to adverse changes to air quality, with the potential for emergency admission to hospital more likely than for someone of working age who has good respiratory health. On the other hand, an individual who has been unemployed for a long period of time would benefit more from employment opportunities generated by the Proposed Development in comparison to an individual who is already employed.

14.5.5 The health sensitivity methodology criteria shown in **Table 14.3** are proposed to be used to inform the assessment of significance.



Table 14.3: Health sensitivity methodology criteria

Category/level	Indicative criteria
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Negligible	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

Significance of effect

14.5.6 The significance of an effect is determined based on the sensitivity of a Receptor and the magnitude of an impact. The method employed for this assessment is presented in **Table 14.4**. Where a range of significance levels are presented, the final assessment for each effect is based upon evidence based expert judgment.

14.5.7 In all cases, the evaluation of Receptor sensitivity, impact magnitude and significance of effect will be informed by professional judgment and underpinned by a narrative to explain the conclusions reached.

Table 14.4: Significance matrix

		Sensitivity			
		High	Medium	Low	Very low
Magnitude of impact	High	Major	Major/moderate	Moderate/minor	Minor/negligible
	Medium	Major/moderate	Moderate	Minor	Minor/negligible
	Low	Moderate/minor	Minor	Minor	Negligible
	Negligible	Minor/negligible	Minor/negligible	Negligible	Negligible



14.5.8 **Table 14.5** provides a description of each significance level. For this assessment, any effects with a significance level of minor or less are not considered to be significant in terms of the EIA Regulations.

Table 14.5: Significance conclusion and reasoning related to public health

Category/level	Indicative criteria
Major (significant)	<p>The narrative explains that this is significant for public health because:</p> <ul style="list-style-type: none"> • Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect. • Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable). • There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant Study Area are of specific relevance to the determinant of health or population group affected by the project.
Moderate (significant)	<p>The narrative explains that this is significant for public health because:</p> <ul style="list-style-type: none"> • Changes, due to the project, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. • Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable). • There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant Study Area are of general relevance to the determinant of health or population group affected by the project.
Minor (not significant)	<p>The narrative explains that this is not significant for public health because:</p> <ul style="list-style-type: none"> • Changes, due to the project, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders. • Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). • There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the project and changes to health outcomes. • In addition, health priorities for the relevant Study Area are of low relevance to the determinant of health or population group affected by the project.
Negligible (not significant)	<p>The narrative explains that this is not significant for public health because:</p> <ul style="list-style-type: none"> • Changes, due to the project, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the project having no responses on this issue among stakeholders.



Category/level **Indicative criteria**

- Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable).
- There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the project and changes to health outcomes.
- In addition, health priorities for the relevant Study Area are not relevant to the determinant of health or population group affected by the project.

Geographical scope

- 14.5.9 The Proposed Development would be within Bobbing, Iwade and Lower Halstow ward.
- 14.5.10 The geographical scope for the population, health and socio-economics chapter is two-fold: firstly in relation to baseline data collection; and secondly in relation to identification of sensitive Receptors.
- 14.5.11 In relation to baseline data collection, environmental health determinants (such as changes to air quality and noise exposure) are likely to have a local impact where the potential change in hazard exposure is limited by physical dispersion characteristics. As a result, the Study Area for health-specific baseline data is proposed to focus on Bobbing, Iwade and Lower Halstow ward, using the district (Swale), county (Kent) and national (England) average as a comparator.
- 14.5.12 Wider socio-economic health determinants (such as employment and related income generation) have a wider geographic scope of influence than environmental health determinants, due to the willingness to commute significant distances to work. While data is presented at lower geographic levels for context, the socio-economic baseline data is proposed to focus on Swale district with county and national averages used as comparators.
- 14.5.13 The Study Area defining the relevant sensitive Receptors identified for assessment purposes is proposed to remain consistent with the inter-related technical disciplines assessed within the ES, which the population, health and socio-economic topic relies upon such as air quality, noise and traffic.

Temporal scope

- 14.5.14 The chapter will assess potential effects across a range of health determinants during both the construction and operation phases of the Proposed Development.

14.6 Embedded mitigation and enhancement measures

- 14.6.1 Public health is by definition preventative in nature. Therefore, mitigation measures adopted as part of the construction and operation of the Proposed Development will focus on precursors to health and wellbeing outcomes, thereby providing an opportunity for intervention to prevent any adverse health outcome.
- 14.6.2 During construction, best practice measures detailed within a dedicated CEMP will control the generation or release of environmental pollutants with the potential to cause adverse health and wellbeing outcomes. During operation, mitigation measures protective of population and health would be embedded within the design of the CC Facility itself e.g. through the application of specific abatement technology and will be controlled by the Environmental Permit.



- 14.6.3 Socio-economic impacts associated with the Proposed Development are anticipated to be beneficial in nature, whereby enhancement measures will be explored during the ES process.

14.7 Scope of environmental impacts and effects

- 14.7.1 The aim of the assessment stage of the chapter is to draw from and build upon appropriate technical topic areas within the EIA and will seek to establish the distribution, significance and likelihood of worst-case potential health outcomes in a concise matter. Hazards with the potential to impact population and human health (physical, social and mental) directly attributable to the Proposed Development include:
- changes in local air quality;
 - changes in noise exposure;
 - changes in transport nature and flow rate;
 - changes in access to opportunities for recreation and physical activity; and
 - changes in socio-economic factors (income and employment).
- 14.7.2 The scoping in or out of these specific health determinants during the construction and operational phases are discussed in more detail below.
- 14.7.3 An additional section on “risk perception” is proposed to be included outside of the main assessment to address specific areas of community concern raised during the consultation process. At this stage it is anticipated that the novel nature of the technology and how the process works (e.g. use of amine scrubbers, storage of CO₂) will give rise to adverse perceptions of risk.

Construction

Changes in local air quality

- 14.7.4 Construction of the Proposed Development is anticipated to contribute to local and temporary changes in air quality (dust, particulate matter and nitrogen dioxide) due to on-site construction activities and additional traffic movements required for the delivery of construction materials and worker travel to/from the CC Facility Site.
- 14.7.5 While it is assumed that embedded mitigation measures would be implemented in order to reduce the generation of dust and release of air pollutants. This topic will be scoped into the ES to further communicate how potential changes in air quality would be addressed to prevent any material risk to population and human health.
- 14.7.6 The assessment would draw from and build upon key outputs from the air quality technical discipline to reach a conclusion regarding the significance of effect. At this stage, it is assumed that the assessment relating to the population and health effects of changes in local air quality during construction would be qualitative in nature.

Changes in noise exposure

- 14.7.7 Similar to the above, construction of the Proposed Development is anticipated to contribute to local and temporary changes in noise exposure due to on-site construction activities and additional traffic movements required for the delivery of construction materials and worker travel to/from the CC Facility Site.



14.7.8 It is also assumed that embedded mitigation measures would be implemented to reduce the magnitude of noise impacts. This topic will be scoped into the ES to further communicate the magnitude and distribution of potential changes in noise exposure, and the resultant significance of effect on population and health, if any.

14.7.9 The assessment would draw from and build upon key outputs from the noise and vibration technical discipline to reach a conclusion regarding the significance of effect. While the change in noise at Noise Sensitive Receptors (NSRs) would be presented within, and analysed as part of, the population, health and socio-economic assessment, it is assumed that the assessment relating to the population and health effects of changes in noise exposure during construction would be qualitative in nature.

Changes in transport nature and flow rate

14.7.10 Construction of the Proposed Development would generate changes in transport nature and flow rate associated with the delivery of construction materials and worker travel to/from the CC Facility Site, which could have resultant effects on community severance, pedestrian amenity and risk of road traffic accidents/injury.

14.7.11 As such, changes in transport nature and flow rate during the construction phase would be scoped into the ES to more effectively communicate the resultant impact on population and health.

14.7.12 The assessment would draw from and build upon key outputs from the transport technical discipline to reach a conclusion regarding the significance of effect. While the change in transport nature and flow rate would be presented within, and analysed as part of, the population, health and socio-economic assessment, it is assumed that the assessment relating to the population and health effects of changes in transport nature and flow rate during construction would be qualitative in nature.

Changes in access to opportunities for recreation and physical activity

14.7.13 The Proposed Development will permanently realign a section of the Saxon Shore Public Right of Way (PRoW) (reference 0139/ZR88/7) to accommodate the Storage Yard Extension.

14.7.14 Any temporary disruption during the construction phase is not anticipated to have any material impact on access to opportunities for recreation and physical activity. No significant effects on population and health are therefore likely, and therefore, potential impacts on access to opportunities for recreation and physical activity is proposed to be scoped out of the population, health and socio-economics ES chapter.

Changes in socio-economic factors

14.7.15 Construction of the Proposed Development would generate temporary direct employment opportunities (primarily for construction workers), with associated indirect employment opportunities from supply chain activity (indirect) and local spending on goods and services by employees (induced).

14.7.16 Having a consistent income and being in long-term employment are two of the most important wider determinants of health. As a result, an assessment of socio-economic factors during the construction phase would be scoped in and would be twofold. Firstly, understand the magnitude and distribution of socio-economic benefits; and secondly, understand the population and health benefits associated with the reported changes in socio-economic factors.



- 14.7.17 Only one significance conclusion will be presented, which focusses on the resultant population and health effects of any socio-economic changes.
- 14.7.18 The assessment would draw from and build upon key project information in order reach a conclusion regarding the significance of effect. At this stage, it is assumed that the assessment relating to the population and health effects of changes in socio-economic factors during construction would be qualitative in nature.

Operation

Changes in local air quality

- 14.7.19 The operational phase would influence existing infrastructure, modifying existing emissions to air and associated dispersion rates. However, embedded mitigation measures would be implemented to control emissions and be protective of the environment and health.
- 14.7.20 Population and health effects associated with changes to air quality during the operation phase would be scoped into the ES to assess these changes and the resultant significance of effect.
- 14.7.21 The assessment would draw from and build upon key outputs from the air quality technical discipline in order to reach a conclusion regarding the significance of effect. At this stage, it is assumed that the assessment relating to the population and health effects of changes in local air quality during operation would be quantitative in nature.

Changes in noise exposure

- 14.7.22 Similar to the above, the operational phase would influence existing infrastructure, with the potential to alter the distribution of noise impacts.
- 14.7.23 Population and health effects associated with changes in noise exposure during the operational phase would be scoped into the ES to assess these changes and the resultant significance of effect.
- 14.7.24 The assessment would draw from and build upon key outputs from the noise and vibration technical discipline in order to reach a conclusion regarding the significance of effect. While the change in noise at NSRs would be presented within and analysed as part of the population, health and socio-economic assessment, it is expected that the assessment relating to the population and health effects of changes in noise exposure during operation would be qualitative in nature.

Changes in transport nature and flow rate

- 14.7.25 The relevant traffic and transport impacts to the population, health and socio-economics assessment comprise severance, non-motorised user delay/amenity, non-motorised user fear/intimidation and risk of accidents/injury.
- 14.7.26 **Chapter 6: Traffic and Transport** states that the operational impacts are likely to be negligible due to the low number of vehicle trips anticipated and the existing flows on the surrounding network. Furthermore, it is anticipated that impacts from the Proposed Development on non-motorised user delay/amenity, or fear/intimidation given the minor percentage increase in traffic flows during operation are unlikely to be significant.
- 14.7.27 On the basis that **Chapter 6: Traffic and Transport** proposes to scope out transport impacts during operation, it can be assumed that no significant effects on population and health are likely either and can be scoped of the population, health and socio-economics ES chapter.



Changes in access to opportunities for recreation and physical activity

- 14.7.28 Once completed, the permanent realignment of a section of the Saxon Shore PRoW (reference 0139/ZR88/7) would not materially alter the attractiveness, length and directness of the PRoW.
- 14.7.29 No significant effects on population and health are therefore likely, and therefore, potential impacts on access to opportunities for recreation and physical activity is proposed to be scoped out of the population, health and socio-economics ES chapter.

Changes in socio-economic factors

- 14.7.30 Operation of the Proposed Development has the potential to generate long-term employment opportunities, with associated income generation.
- 14.7.31 The net increase in direct operational jobs at the CC Facility Site would be explored, along with any indirect and induced effects. As a result, an assessment of socio-economic factors during the construction phase would be scoped in. As described above, the assessment of socio-economic effects would be twofold and only one significance conclusion will be presented which focusses on the resultant population and health effects of any socio-economic changes.
- 14.7.32 The assessment would draw from and build upon key project information in order to reach a conclusion regarding the significance of effect.

Risk perception

- 14.7.33 Amine scrubbing has been used to separate CO₂ from natural gas and hydrogen since 1930, and is a robust technology. The use of amine scrubbers as part of the carbon capture process has the potential to release amines into the atmosphere. These amines by themselves are not very harmful at typical concentrations that might occur. However, the amines could take part in complex chemical reactions and form new compounds such as nitrosamines and nitramines, which can affect health and the environment.
- 14.7.34 However, applying the source-pathway-receptor concept, the resultant health risk is dependent firstly upon the concentration of any emissions released, and secondly upon the magnitude of any exposure to humans.
- 14.7.35 It is anticipated that the use of such technology would be a community concern, likely attributed to a lack of understanding. As a result, we propose a risk perception section (which would sit outside of the main assessment due to not being a credible health risk) to explain how and why amine emissions would not result in any credible risk to health.
- 14.7.36 Any other specific population, health and socio-economic concerns raised during the consultation process would also be included within this section.

14.8 Limitations and uncertainties

- 14.8.1 The technical assessments above are reliant on key outputs of the inter-related topics. As a consequence, the limitations and uncertainties of those assessments also apply to any information used in the population, health and socio-economic chapter (e.g. for modelling work undertaken). It is, however, considered that the information available will provide a suitable basis for the assessment of population, health and socio-economics.



14.9 Inter-related effects

- 14.9.1 As outlined in the above sections, the population, health and socio-economic topic has a number of inter-relations. The combination of these effects on any one Receptor will be considered as part of the inter-related effects section.

14.10 Cumulative effects

- 14.10.1 The cumulative assessment would consider all relevant developments in the wider area that either introduces new Receptors and/or contribute to environmental impact pathways relevant to the assessment of population, health and socio-economics.



15. Climate Change

15.1 Introduction

- 15.1.1 This chapter of the ES Scoping Report has been produced by Savills and presents the proposed scope of assessment for climate change effects.
- 15.1.2 Climate change in the context of EIA can be considered broadly in two parts:
- the impact of greenhouse gas emissions (GHGs) caused directly or indirectly by the Proposed Development, which contribute to climate change; and
 - the potential impact of changes in climate on the Proposed Development, which could affect it directly or could modify its other environmental impacts.
- 15.1.3 Assessment of GHG emission impacts is proposed to be scoped in.
- 15.1.4 Assessment of climate risks to the Proposed Development is proposed to be scoped out, with the exception of flood risk which will be assessed including a climate change allowance in the Hydrology and Flood Risk ES chapter.
- 15.1.5 Assessment of inter-related effects due to climate change in the future baseline is proposed to be scoped in, and assessed where relevant in each environmental topic chapter as discussed in **Section 4.6**.

15.2 Consultation to date

- 15.2.1 Consultation with respect to climate change has not been undertaken prior to submission of this EIA Scoping Report.

15.3 Legislative or policy requirements and technical guidance

- 15.3.1 In 2019, the UK government declared a 'climate emergency', and with the Climate Change Act 2008 (2050 Target Amendment) Order 2019, the government committed to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050.
- 15.3.2 Related legislation and policy concerns the necessary steps and infrastructure investment required to achieve this, in the areas of energy generation decarbonisation, circular economy and sustainable resource management, transport decarbonisation and carbon capture and sequestration. The UK government has a range of policies aimed at reducing GHG emissions. The main climate change policy document is the 2021 Net Zero Strategy: Build Back Greener, which sets out policies and proposals for decarbonising the UK economy, building on the government's ten-point plan for a green industrial revolution. One of the relevant policy measures for industry in the Net Zero Strategy was a commitment to deliver four carbon capture, usage and storage (CCUS) clusters by 2030. The clusters are to be selected through the Cluster Sequencing process, with the HyNet and East Coast Clusters confirmed as Track 1 clusters.
- 15.3.3 The policies contained within the 2021 Net Zero Strategy were updated in March 2023 in the Powering Up Britain: Net Zero Growth Plan, which outlined the government's commitment to have a fully low-carbon power sector by 2035. The Net Zero Growth Plan highlights that the UK continental shelf has the potential to store an estimated 78 billion tonnes of CO₂, and confirmed that delivery of CCUS is a key policy measure to the UK's net zero transition. It stated that beyond the HyNet and East Coast Clusters, an expansion



of Track-1 clusters and a Track-2 cluster will be launched in late-2023, which is presently ongoing in 2024.

- 15.3.4 The Net Zero Growth Plan includes noted that *“greenhouse gas removals (GGRs) will also play a critical role in balancing residual emissions from the hardest to decarbonise sectors such as aviation, agriculture, and heavy industry.”* with *“An ambition to deploy at least 5 MtCO₂ /year of engineered GGRs by 2030 ... and to around 23 MtCO₂ by 2035”*
- 15.3.5 The Net Zero Growth Plan noted that *“the UK ETS [Emissions Trading Scheme] could unlock investment at scale in the UK’s greenhouse gas removal (GGR) sector by providing an integrated market where businesses can make economically efficient choices on how to decarbonise or remove their emissions.”* Subsequently, a consultation response on amendments to the UK ETS has confirmed that it will be extended to cover the waste sector from 2028 and the emissions cap will be adjusted to be in line with the 2050 net zero goal.
- 15.3.6 As well as these policy documents, the Industrial Decarbonisation Strategy (2021) sets out how the UK will decarbonise its industrial sector, noting that 3MtCO₂ is the volume of capture required in industry by 2030 to be on track to deliver net zero by 2050; the Energy White Paper: Powering our Net Zero Future (2021) notes the government’s ambition to capture 10MtCO₂ per year by 2030; and the Biomass Strategy (2023) sets out how well-regulated Bioenergy with Carbon Capture and Storage (BECCS) can achieve its objective to deliver negative emissions and ensure positive outcomes for people, the environment, and the climate.
- 15.3.7 While not itself policy, the recommendations to government made by the Climate Change Committee (CCC) are also very relevant and will be considered in the ES, including the recommendations of the Sixth Carbon Budget, progress reports for the UK and the UK climate change risk assessment, the latest of which was published in June 2023.
- 15.3.8 In October 2023, the government responded to the CCC’s annual progress report. In their response, the government reiterated the government’s priorities and noted that they are partly or fully acting upon 85% of the CCC’s priority recommendations. With that being said, the government also highlighted that they will not be taking forward CCC recommendations on certain policies that they consider burdensome to the public, such as rejecting the CCC recommendation of no airport expansions until a UK-wide capacity management framework is in place; this will place an even greater burden on achieving greenhouse gas emission reductions in other sectors such as energy and waste.
- 15.3.9 Climate change mitigation and adaptation is a key theme in National Planning Policy Framework (NPPF), which notes for example on page 45 that *“The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change.”* It also notes that the planning system should *“shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the use of existing resources, including the conversion of existing building; and support renewable and low carbon energy and associated infrastructure.”*
- 15.3.10 The main guidance used for the assessment of GHG emissions will be the Institute of Environmental Management and Assessment (IEMA) guide ‘Assessing Greenhouse Gas Emissions and Evaluating their Significance’.



15.4 Baseline

Baseline environment

- 15.4.1 The current climatic baseline is the regional climate and weather patterns, recorded in Met Office data, in the context however of trends in global climate changes affecting the UK climate, which are sufficiently well understood to be considered part of the known baseline. The future baseline with climate change will be assessed where relevant in each environmental topic chapter as discussed in **Section 4.6**.
- 15.4.2 The current baseline of GHG emissions is the existing operation of the Ridham Dock Biomass Facility without carbon capture, including both its direct emissions (primarily from biomass combustion and on-site fuel handling plant) and indirect effects on GHG emissions, for example due to the energy it exports and from transport of fuel to the Proposed Development Site.
- 15.4.3 Aside from land comprising the existing Ridham Dock Biomass Facility, the additional land expected to be required for the CC Facility would extend across the southern drainage ditch and a small distance into the adjacent SSSI. The SSSI and ditch at this location comprise grass and scrub habitats, without significant carbon stocks or fluxes.
- 15.4.4 The Ridham Dock Biomass Facility has been subject to previous EIA and predictive GHG emissions assessments, and also undertakes verified annual monitoring of GHG emissions. Existing plant energy recovery performance, emissions, and expected CC Facility performance and emissions data are all therefore available to inform the assessment.

Proposed approach to surveys and further baseline data collection

- 15.4.5 Baseline data collection will be from published documents and operator information. No field survey is required.

15.5 Approach to assessment

Assessment criteria

- 15.5.1 Direct and indirect GHG emissions will be calculated for construction and operation of the Proposed Development by applying published emissions factors that relate a given level of activity, a physical or chemical process, or amount of fuel, energy or materials used to the mass of GHGs released as a consequence.
- 15.5.2 This will comprise (a) the GHG emissions arising from the Proposed Development, (b) GHG emissions that it displaces or avoids, compared to the current or future baseline, and hence (c) the net impact on climate change due to these changes in GHG emissions overall. The Proposed Development cannot operate in isolation and would be functionally linked to the Ridham Dock Biomass Facility, so the boundary for the assessment of GHG emissions will be on that basis (i.e. including the reduction in GHGs released to atmosphere by the biomass facility and, qualitatively, including the options for onward transport and sequestration).
- 15.5.3 At this stage, details of the CO₂ export route are yet to be finalised; export could be achieved via connection to a future pipeline, tankered via road or rail, or shipped from the nearby Ridham Dock. These options will be assessed qualitatively to determine any likely material difference in the conclusion regarding significance of effects in operation.



- 15.5.4 Annual operational GHG emissions over the proposed operating lifetime (taking into account changes in the future baseline such as grid electricity generation decarbonisation, where feasible) will be presented in the ES. Emissions factors and projections published by DESNZ and Defra or other literature sources will be used as required.
- 15.5.5 The GHGs considered in this assessment will be those in the 'Kyoto basket' of global warming gases expressed as tonnes of CO₂-equivalent global warming potential (GWP) in units of tCO₂e. GWPs used will be typically the 100-year factors in the Intergovernmental Panel on Climate Change Sixth Assessment Report or as otherwise defined in emissions factors and for national reporting under the United Nations Framework Convention on Climate Change (UNFCCC).
- 15.5.6 The main guidance used for the assessment of GHG emissions will be the Institute of Environmental Management and Assessment (IEMA) guide 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'.
- 15.5.7 The principles of PAS2080 Section 7 are also relevant to defining the potentially relevant lifecycle stages to assess.

Magnitude of impact

- 15.5.8 As GHG emissions can be quantified directly and expressed based on their GWP, the magnitude of impact will be reported numerically as tCO₂e rather than requiring a descriptive scale.

Sensitivity of receptors

- 15.5.9 GHG emissions have a global effect rather than directly affecting any specific local Receptor to which a level of sensitivity can be assigned. The global atmospheric mass of the relevant GHGs and consequent warming potential, expressed in tCO₂e, will therefore be treated as a single Receptor of high sensitivity. It is considered to be of high sensitivity given the importance of the global climate as a Receptor, the limited and decreasing capacity to absorb further GHG emissions without severe climate change resulting, and the cumulative contribution of GHG emission sources.

Significance of effect

- 15.5.10 The IEMA assessment guidance for GHG emissions describes five levels of significance for emissions resulting from a development, each based on whether the GHG emission impact of the development will support or undermine a science-based, 1.5°C-compatible trajectory towards net zero. To aid in considering whether effects are significant, the guidance recommends that GHG emissions should be contextualised against pre-determined carbon budgets or applicable existing and emerging policy and performance standards where a budget is not available or not meaningfully applicable at the scale of development assessed. It is a matter of professional judgement to integrate these sources of evidence and evaluate them in the context of significance.
- 15.5.11 Taking the guidance into account, the following will be considered in contextualising the Proposed Development's GHG emissions:
- The magnitude of gross and net GHG emissions as a percentage of national and local carbon budgets (where feasible);
 - The GHG emissions intensity of the Proposed Development against the baseline emissions intensity energy production and use, and projections or policy goals for future changes in that baseline; and



- Whether the Proposed Development contributes to, and is in line with, the applicable UK policy for GHG emissions reductions, where this policy is consistent with science-based commitments to limit global climate change to an internationally-agreed level (as determined by the UK's current NDC to the UNFCCC).

15.5.12 Effects from GHG emissions will be described as adverse, negligible or beneficial based on the following definitions, which closely follow the examples in Box 3 of the IEMA guidance.

- **Major adverse:** the Proposed Development's GHG impacts would not be compatible with the UK's 1.5°C-aligned net zero trajectory. Its GHG impacts would not be mitigated, or would be compliant only with do-minimum standards set through regulation. The proposed development would not provide further emissions reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
- **Moderate adverse:** the Proposed Development's GHG impacts would not be fully compatible with the UK's 1.5°C-aligned net zero trajectory. Its GHG impacts would be partially mitigated and may partially meet the applicable existing and emerging policy requirements, but it would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
- **Minor adverse:** the Proposed Development's GHG impacts would be compatible with the UK's 1.5°C-aligned net zero trajectory and would be fully consistent with up-to-date policy and good practice emissions reduction measures. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
- **Negligible:** the Proposed Development would achieve emissions mitigation that goes well beyond existing and emerging policy compatible with the 1.5°C-aligned net zero trajectory, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
- **Beneficial:** the Proposed Development would result in emissions reductions from the atmosphere, whether directly or indirectly, compared to the without-project baseline. As such, the net GHG emissions would be below zero. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

15.5.13 **Major and moderate adverse** effects and beneficial effects will be defined as **significant**.

15.5.14 **Minor adverse** and **negligible** effects will be defined as **not significant**.

Geographical scope

15.5.15 GHG emissions have a global effect rather than directly affecting any specific local Receptor. The impact of GHG emissions occurring due to the Proposed Development on the global atmospheric concentration of the relevant GHGs, expressed in tCO₂e, will be considered in the assessment. As GHG impacts are global and cumulative with all other sources, no specific geographical Study Area is defined for the identification of Receptors or assessment of effects.

15.5.16 However, GHG emissions caused by an activity are often categorised into 'scope 1', 'scope 2' or 'scope 3' emissions, following the guidance of the WRI and the WBCSD Greenhouse Gas Protocol suite of guidance documents.



- Scope 1 emissions: released directly by the entity being assessed, e.g. from combustion of fuel at an installation;
- Scope 2 emissions: caused indirectly by consumption of imported energy, e.g. from generating electricity supplied through the national grid to an installation; and
- Scope 3 emissions: caused indirectly in the wider supply chain, e.g. in the upstream extraction, processing and transport of materials consumed or the downstream use of products from an installation.

15.5.17 This assessment will seek to include emissions from all three scopes, where this is material and where it is reasonably possible from the information and emissions factors available.

15.5.18 The majority of GHG emissions are likely to occur within the territorial boundary of the UK and hence within the scope of the UK's national carbon budgets. However, in recognition of the climate change effect of GHG emissions (wherever occurring) and the need, as identified in national policy, to avoid carbon leakage overseas when reducing UK emissions, potential scope 3 GHG emissions that may physically occur outside the UK will be considered where relevant.

Temporal scope

15.5.19 GHG emissions from construction and from operation over the expected operating lifetime of the Proposed Development will be assessed.

15.5.20 The varying atmospheric residence time of GHGs once emitted, and their differing climate impact, will be considered through the use of 100-year GWP factors to express these in a common tCO₂e metric.

15.6 Embedded mitigation and enhancement measures

15.6.1 The purpose of the Proposed Development is to provide post-combustion carbon capture and to condition the captured CO₂ for onward transportation and sequestration, which is part of national policy to support net zero emission goals. Its operation is therefore inherently intended to achieve mitigation of GHG emissions from waste combustion at a local and national level.

15.6.2 Operationally, a further key embedded mitigation measure is the intended design of the CC Facility and its integration with the Ridham Dock Biomass Facility to minimise energy generation losses from the latter, which could include measures such as providing a backpressure steam turbine.

15.6.3 Embedded mitigation for the construction phase is expected to include transport, energy and fuel efficiency measures in a CEMP and a commitment to incorporate lifecycle-based carbon measurement at the detailed design stage, in decision-making about design and materials choices. Landscape planting and improvements to management of the Swale SSSI may also offer a minor opportunity for further carbon sequestration.

15.7 Scope of environmental impacts and effects

15.7.1 At this stage the CC Facility consent is not expected to be time-limited, so a decommissioning assessment is proposed to be scoped out of the EIA overall, on the basis that impacts are unlikely to be greater than construction and there will be some good-practice measures taken in the design to facilitate dismantling/re-use in future if required.



Construction

- 15.7.2 The main construction-stage impact would be the ‘embodied carbon’ in construction materials used, i.e. the indirect GHG emissions from the supply chain for those materials, particularly for concrete, metals and the major engineered components of the development. These are expected to be relatively minor compared to operational emissions benefits from carbon capture, but will be estimated to consider whether effects may be significant, based on available published life cycle assessment studies or environmental product declarations for key materials and components.
- 15.7.3 Opportunities to use recycled steel and low carbon concrete will be explored with the design team. Direct GHG emissions from construction activities (e.g. fuel consumption by construction plant) are judged to be non-material to the assessment, regulated by other legislation and are not proposed to be assessed quantitatively but will be reported qualitatively and mitigated via measures in the CEMP.
- 15.7.4 Climatic changes over the expected circa three-year construction and commissioning programme during the mid-late 2020s are not considered likely to be significant or to introduce climate extremes at a higher risk level than construction contractors are adapted to, within the baseline variability of weather in the south-east of England. Assessment of construction-stage climate change risks other than flood risk is therefore proposed to be scoped out.

Operation

- 15.7.5 The purpose of the Proposed Development is to capture CO₂ emissions from the Ridham Dock Biomass Facility, to be transported for offshore sequestration. This capture of emissions will be the primary GHG impact. However, operation of the Proposed Development will require steam and electrical power which may indirectly affect net GHG emissions from the Ridham Dock Biomass Facility or other grid-connected generation sources, and this will also be assessed. The boundary of the assessment will include operation of the CC Facility and associated changes in the operation of Ridham Dock Biomass Facility.
- 15.7.6 There are several options for transport and long-term sequestration of the captured CO₂ off-site. These lie outside the Proposed Development Boundary/Site that is the subject of this planning application and EIA, but are a functional part of the lifecycle effects of the development and form part of the assessment of cumulative effects. These options will be assessed qualitatively, to identify any material difference in the net GHG emissions impact which could alter the conclusion regarding significance of effects due to operation of the CC Facility.
- 15.7.7 The main risk to the Proposed Development from climate change over its operating life is expected to be flooding, including coastal flooding, which will be assessed with climate change allowances in the Hydrology and Flood Risk ES chapter. As an extension to the ongoing operation of Ridham Dock Biomass Facility, the Proposed Development is not expected to change the climate risk profile of the CC Facility as a whole and no new significant climate risks from potential increased summer heatwave/drought events or severe winter weather are considered likely. Further climate risk assessment is therefore proposed to be scoped out.

15.8 Limitations and uncertainties

- 15.8.1 The main limitations and necessary assumptions are likely to be as follows:



- Use of emission factors to estimate Proposed Development GHG emissions, particularly where the carbon intensity is likely to change over time. To mitigate uncertainty, emission factors used in national GHG reporting and verified LCA studies will be used, and where necessary the assessment will consider scenarios or sensitivities to any material areas of uncertainty; and
- The early design stage of the CC Facility at the time of EIA, with consequentially limited data on construction materials/products and their carbon intensity. As discussed above, the construction stage impacts are not considered likely to be significant relative to the operational stage impacts but will be estimated and further screened in the assessment.

15.9 Inter-related effects

15.9.1 Inter-related effects with climate change and other topic areas arise primarily from the effect that climate change may have on Receptors and their sensitivity (including vulnerability and resilience), which could exacerbate effects via other impact pathways. The characterisation of future baseline conditions for each topic chapter in the ES will take into account the likely effects of climate change, as far as these are known at the time of undertaking the EIA. This will be based on information available from the Met Office Hadley Centre's UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK, and on published documents such as the UK Climate Change Risk Assessment published by the Climate Change Committee.

15.10 Cumulative effects

15.10.1 All developments that emit GHGs have the potential to impact the atmospheric mass of GHGs as a Receptor, and so may have a cumulative impact on climate change. Consequently, cumulative effects due to other specific local development projects will not be separately assessed but are already taken into account when considering the impact of the Proposed Development by defining the atmospheric mass of GHGs as a high sensitivity Receptor, in line with the IEMA GHG guidance.



16. Other Impact Pathways

16.1 Introduction

- 16.1.1 The aim of Scoping is to focus the EIA on those environmental aspects that may be significantly affected by the Proposed Development. Other impact pathways contemplated in the EIA Regulations should be scoped out where no significant effects are likely, in the interest of a proportionate assessment and ES.
- 16.1.2 The following sections provide a summary of those issues (as enumerated in Schedule 4 of the EIA Regulations), which have been considered as part of the scoping process and determined not to be relevant to the Proposed Development and/or to have no potential for likely significant effects, and which should therefore be scoped out.

16.2 Risk of major accidents and disasters

- 16.2.1 This section describes the control measures in place to ensure that the Proposed Development's risk of and vulnerability to accidents and disasters is as low as reasonably practicable (ALARP). It draws from the guidance in the Major Accidents and Disasters in EIA: An IEMA Primer.

Transport and storage

- 16.2.2 As detailed in **Section 3.3**, options for the export of CO₂ are being explored. A separate Transportation and Storage (T&S) project which will deliver one or more of the CO₂ transportation options will be advanced either by the Applicant or by a separate T&S company likely to be established to collect CO₂ from the Combined Facility as well as from other nearby CO₂ producing installations.
- 16.2.3 Once an export solution is confirmed, the potential for major accidents and disasters from transport and storage of CO₂ will be assessed comprehensively as part of the separate T&S project.

Industrial hazards and risks

- 16.2.4 The potentially relevant accidents or disasters are considered to be:
- fire risk from the existing Ridham Dock Biomass Facility causing damage to the CC Facility operation with consequent environmental effects (such as emissions to air or pollutants carried by firewater to surface or ground water);
 - failure of the flue gas treatment and air pollution control system leading to uncontained air pollutant releases;
 - spillage of stored solvent leading to soil, groundwater or surface water contamination;
 - flood risk from severe weather events; or
 - other building damage from severe weather events causing any of the impacts listed above.
- 16.2.5 The primary control of industrial hazards and risks is the regulation of the Proposed Development through the Environmental Permitting regime and the UK's health and safety legislation, regulated by the Environment Agency (EA) and the Health and Safety Executive (HSE) respectively.



- 16.2.6 Before an Environmental Permit to operate is granted, the operator must set out approved systems of control and monitoring, supported by a risk assessment, to address all relevant environmental risks and pathways for contamination. This includes, for example, continuous and periodic monitoring of air pollutant emissions; appropriately bunded storage and sealed drainage; and an Accident Management Plan with responses to take in the event of an emergency that has a risk of environmental impact, including fires.
- 16.2.7 The HSE is a consultee to the planning process and will comment on risk to the general public from industrial installations. The HSE also regulates worker safety, which includes environmental risks to workers on site from potential accidents.
- 16.2.8 The Applicant plans to arrange discussions with both the EA and HSE prior to submission of the planning application to discuss the carbon capture technology and any specific emerging risks with a regulatory impact. Hazards associated with the use of amine solvents are well understood and will be assessed as set out in **Chapters 8 and 14** of this Scoping Report. Hazards associated with potential ground, groundwater or surface water contamination will be assessed as set out in **Chapters 12 and 13** of this Scoping Report.
- 16.2.9 The existing Ridham Dock Biomass Facility is not a COMAH site and does not require a Hazardous Substances Consent (HSC). The COMAH status and any requirement for an HSC will be confirmed in the application, as detail emerges from the pre-FEED study and from engagement with HSE.

Transport accidents

- 16.2.10 Transport of solvent and spent solvent by road will be qualified contractors in accordance with The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. Certification of vehicles and storage containers for transport is managed by the Dangerous Goods Office of the Vehicle Certification Agency, ultimately regulated by the Department for Transport. As such, there is a well established regulatory regime to control the accident risk for transport of potentially hazardous substances by road in the UK.
- 16.2.11 Operational access to the Proposed Development would be taken from two single carriageway private roads suitable for use by HGVs. The primary access road (Lord Nelson Road) connects with Barge Road, which has been recently upgraded as part of a new high-capacity network which links to the A249 via the Grovehurst roundabout. Highway safety and junction capacity will be assessed as necessary as set out in **Chapter 6** of this Scoping Report.

Summary

- 16.2.12 In summary, the Applicant will ensure that hazards are managed, as required by its regulators, such that the risk is ALARP. No significant environmental effects from major accident or disaster vulnerability are therefore considered likely, and further assessment is proposed to be scoped out of the EIA.

16.3 Heat, light and radiation

Heat

- 16.3.1 The CC Facility will require several stages of heat exchange for heating and cooling, as set out in **Chapter 3** of this Scoping Report. This is expected to be a closed loop hybrid water-air cooling system, with no heat discharge to ground or water. Impacts of the cooling system, such as energy consumption, noise emissions and the visibility of cooling units, will be



assessed in the Climate Change, Noise and Vibration and Landscape and Visual chapters respectively.

- 16.3.2 No other significant effects from heat are considered likely and further separate assessment is proposed to be scoped out of the EIA.

Light

- 16.3.3 Potential for lighting impacts have been considered in the **Chapter 9** of this Scoping Report and is proposed to be scoped out during construction and operation. This is on the basis that during construction, temporary construction lighting would only be required for short periods and controlled by the CEMP. Similarly, during operation, an OLS will be prepared to minimise lighting impacts, and the external lighting effects are predicted to be similar to those created by the existing Ridham Dock Biomass Facility.

Radiation

- 16.3.4 The Proposed Development will not be a source of ionising radiation, nor have taller structures than the existing chimney or have radio infrastructure that could cause electromagnetic interference. It will comply with guidelines set to protect worker health from power-frequency electric and magnetic fields. It will not be a source of changes in public exposure to power-frequency electric and magnetic fields, nor a source of other non-ionising radiation.
- 16.3.5 No significant effects from radiation are considered likely and further assessment is proposed to be scoped out of the EIA.

16.4 Use of natural resources

- 16.4.1 The Proposed Development will not affect natural resources such as agricultural soils or mineral deposits. It has the potential to affect ecosystem services and the Swale SSSI/SPA/Ramsar site, which will be assessed in the Ecology chapter of the ES. Potable water consumption and any risk to aquifers will be assessed in the Hydrology and Flood Risk and Geology, Hydrogeology and Contaminated Land chapters of the ES.
- 16.4.2 No other significant effects from the use of natural resources are considered likely and further separate assessment is proposed to be scoped out of the EIA.

16.5 Disposal and recovery of waste

- 16.5.1 Waste management during construction will be controlled through measures set out in the CEMP¹⁶, with procedures to minimise waste generation and ensure it is managed in line with the waste hierarchy. During operation, the Proposed Development will have a minor quantity of waste solvent for disposal via a licensed hazardous waste contractor. Its major impacts on waste management will be to improve the sustainability of the Ridham Dock Biomass Facility and to capture 90-95% of the waste CO₂ stream.
- 16.5.2 No other significant effects from production of waste are considered likely and further separate assessment is proposed to be scoped out of the EIA.

¹⁶ The Outline CEMP will accompany the Planning Application for the Proposed Development



16.6 Pollution and nuisances

- 16.6.1 Effects relating to pollution and nuisances (including effects on water and soil resources and effects in relation to noise and air quality) will be assessed in the respective topic chapters where applicable. Further separate assessment is proposed to be scoped out of the EIA.

16.7 Risk to human health

- 16.7.1 Potential effects on population and human health are considered in **Chapter 14** of this Scoping Report.

16.8 Aviation

- 16.8.1 The Civil Aviation Authority (CAA) has a general interest in charting all known structures of 91.4 m (300 feet) or more above ground level. The Proposed Development will not have any permanent structures of this height. Depending on height, tower cranes used during construction would be notified to the CAA and lit for aviation safety as required.
- 16.8.2 Aerodrome operators are consultees to any planning application falling within a safeguarding zone. Any requirement to consider safeguarding impacts and aviation safety is therefore addressed routinely through the planning system, and is not within the scope of EIA.

16.9 Transboundary effects

- 16.9.1 Transboundary effects are those likely to have significant a significant effect on the environment of a European Economic Area (EEA) state other than the UK. The need to consider the potential for such transboundary effects is rooted in the United Nations Economic Commission for Europe (UNECE) Convention on EIA in a Transboundary Context, adopted in 1991 in the Finnish city of Espoo and commonly referred to as the 'Espoo Convention'. The Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts. The Espoo Convention has been implemented by the EIA Directive and transposed into law in Wales under the EIA Regulations, Part 12.
- 16.9.2 Having regard to all of the potential environmental impact pathways set out in the preceding sections of this Scoping Report, there is considered to be no potential for adverse transboundary effects.
- 16.9.3 Assessment of transboundary effects is therefore proposed to be scoped out of the EIA.



17. Cumulative Effects Assessment

17.1 Introduction

- 17.1.1 An initial search has been made as part of the scoping exercise for the Proposed Development for other developments and proposals that may be of relevance for the Cumulative Effects Assessment (CEA) to be undertaken in the EIA. The search will be updated over the course of the EIA.
- 17.1.2 Other developments that may be at the plan or policy stage, planning application stage, or may be consented or under construction, are collectively referred to as 'developments' in this section, regardless of their stage.
- 17.1.3 The results of the initial search are included here to request comment from the planning authority about the status of other developments listed and about any further developments (including those likely to be forthcoming during the EIA process but not yet listed on the planning register) that the planning authority would suggest for consideration in the CEA.

17.2 Overarching criteria

- 17.2.1 There are broadly two categories of development with the potential to give rise to likely significant cumulative effects:
- those that, due to their scale, location and/or nature of impact pathways, have the potential to add to the impacts of the Proposed Development such as to cause a likely significant effect at sensitive Receptors; and
 - those that introduce new sensitive Receptors at a location where they have the potential to experience a greater impact from the Proposed Development (and if applicable the combined impact with another development) than existing representative sensitive Receptors assessed in the EIA.
- 17.2.2 These overarching criteria generally exclude minor householder applications and business applications (such as building extensions or changes of use), of which there are very large numbers at any given time, unless these introduce new Receptors or new construction/land-uses outside existing developed areas that could be affected by the Proposed Development.
- 17.2.3 Examples of other developments with a potentially-significant combined effect might be those requiring large-scale construction with noise or traffic impact pathways, in sufficient proximity to the Proposed Development so as to affect the same sensitive Receptors. Construction, operation and demolition phases of other developments have been considered as there may be combined effects with the Proposed Development from different phases, for example an impact that is extended over time or a combined impact at one time, at a given sensitive Receptor.
- 17.2.4 Examples of new sensitive Receptors might be new residential properties or other land uses likely to be regarded as a sensitive for one or more EIA topics, that lie in closer proximity to the Proposed Development than existing Receptors or in an area where no existing Receptors would have been assessed in the EIA, or which significantly increase the number of sensitive Receptors affected at that location. This would not include every potential new sensitive Receptor individually, as representative Receptors are typically used to determine the greatest impacts at a given location or in a given direction from a proposed development. For example, the nearest residence in a south-westerly direction from particular noise sources in a proposed development would be representative of the greatest noise impact



at all residential Receptors in that direction, and a new residence in the same direction but lying further away would not usually require additional cumulative effects assessment; but a new housing estate where there was previously only a single property or small number of residences might be included due to the substantial increase in number of residents affected.

17.3 Search area and data sources

- 17.3.1 The search area for potential cumulative developments is based on the Zols predicted at this stage for the EIA topic areas. The largest Zols at this stage are 5km from the Proposed Development Site for landscape, visual and heritage impacts. Potential smaller Zols for other topics such as construction dust and noise at other areas of activity within the Proposed Development Site have also been considered, as have likely road access routes for construction and operational traffic.
- 17.3.2 Cumulative developments have been categorised as Tier 1, Tier 2 or Tier 3 to describe their level of maturity, certainty over delivery, and detail of information available. These tiers are taken from the Planning Inspectorate's Advice Note 17¹⁷ for nationally-significant infrastructure developments in England, which provides a helpful framework albeit not being required guidance for the Proposed Development.
- 17.3.3 Tier 1 developments are those with submitted applications, consents, or that are already under construction. Tier 2 developments are those at scoping stage for EIA. Tier 3 developments are those otherwise indicated as a possibility, e.g. through pre-application discussion with the LPA or at sites allocated for development in relevant local development plans. At tiers 2 and 3 there is typically only limited information available concerning a proposed development's design and potential environmental effects. Assessment of specific cumulative effects is therefore not always possible, but in such cases possible effects that are foreseeable will be discussed to the extent feasible in the CEA.
- 17.3.4 The following data sources have been searched:
- Savills' database of development proposals; and
 - Review of the LPA planning system.
- 17.3.5 The search of local authority planning applications has focused on those with a live application (at any stage of the process, including EIA screening and pre-application discussions) or with permission granted within the last three years, as this is the typical period for expiry of a planning consent if not implemented. Earlier consented developments would be expected to be under construction or completed and to be identified through baseline studies, or their planning permission is likely to have lapsed. However, where evidence such as condition discharge, variation applications or appeals within the time period searched suggests a development applied for or consented earlier is still 'live' but not yet constructed, this has also been included in the initial long-list.

17.4 Shortlisting

- 17.4.1 The initial search within the Zol returned a little over one thousand developments. The longlist was screened using the overarching criteria set out above and then further reviewed against the following criteria to provide an initial shortlist for CEA. These criteria were not exhaustive or wholly prescriptive: professional judgement by the EIA co-ordinator advised by topic specialists has also been applied throughout.

¹⁷ <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/>



17.4.2 Shortlist inclusion criteria were as follows:

- EIA developments or those where an EIA screening or scoping request indicated the possibility of significant environmental effects was foreseen;
- 'major developments' where identified as such in planning application or decision;
- developments whose scale, nature or location suggests potential for particular cumulative impacts – e.g. minerals and waste projects, an industrial or combustion process as a source of air or water pollutant or noise emissions, a potential large traffic generator such as distribution warehouse or retail park, or a development in proximity to designated site or other protected asset;
- completed developments with potential operational impacts that may not be captured in baseline studies (e.g. due to very recent start of operation); and/or
- developments that introduce sensitive Receptors for which the assessment of effects on existing sensitive Receptors identified through baseline study and included in the assessment of a particular environmental impact would not be representative.

17.4.3 Shortlist exclusion criteria were as follows:

- evidence such as aerial photography indicates that the development is completed and forms part of the existing baseline and Receptors;
- an application that was refused (with no appeal pending);
- developments for which existing sensitive Receptors are adequately representative for determining likely significant effects;
- judgement that due to factors including distance, scale or existing context of the development that no impact pathway with the potential for significant cumulative effects with the Proposed Development exists; and/or
- Strategic Housing Land Availability Assessment (SHLAA) and Reg 19 sites which have been withdrawn or deemed unsuitable.

17.4.4 From this EIA-wide shortlist (to be updated at EIA stage, including in response to any comment from the planning authority at the scoping stage) the individual Zols and details of impact pathways will be used by each topic author to determine a shortlist applicable to that topic for the CEA.

17.4.5 **Table 17.1**, at the end of this section, shows the shortlist at this stage. The developments are mapped in **Figure 17.1**. Comments on any additional known or forthcoming developments, proposals or allocations that should be considered would be welcomed.

17.5 CO₂ export options

17.5.1 As previously stated in **Section 3.3**, possible transport and storage options to be investigated include:

- liquification at Ridham Dock Biomass Facility and loading to cryogenic tanker lorries for transport to the Port of Sheerness for temporary buffer CO₂ storage and subsequent transportation as liquid CO₂ by rail and/or ship (approx. 40 lorries per day with 22 to 24 tonnes capacity each);
- reopening of the railway siding into Ridham Dock with provision of a purpose-built CO₂ gas pipeline to the railway siding and then subsequent liquification, buffer storage and transportation as liquid CO₂ by rail using cryogenic train wagons;



- provision of a purpose-built CO₂ gas pipeline and then subsequent liquification, buffer storage and transportation as liquid CO₂ by Ship from Ridham Dock, the Knauf Jetty, the Port of Sheerness or the Isle of Grain; and
- connection to a CO₂ gas pipeline provided by a storage cluster provider (for example the BTNZ initiative).

17.5.2 In EIA, broadly speaking, it is generally necessary to assess the impacts of a project as a whole, with those elements of new development required for it to be constructed and to operate included within the definition of the project assessed. This may on occasion not align precisely with the boundary of a particular consent application but is necessary to avoid 'salami slicing' of project impacts. A common example is the assessment of impacts from a generation project's grid connection, even where that connection may be delivered by the distribution network operator separately.

17.5.3 The off-site infrastructure requirements for CO₂ export from the Proposed Development are most closely akin to supporting infrastructure such as the wider gas, water, sewerage and electricity networks or the wider road network which are relied upon by most development projects. The provision of these at a local, regional or national scale would not form part of a project's EIA, save where a specific new connection into the development site is required.

17.5.4 In this case it is very likely that a T&S operator will come into being and that it will wish to connect the CC Facility to its system. The chosen export solution would be subject to a separate planning application, which would be subject to EIA and would consider in combination and cumulative effects in detail.

17.5.5 However, since it is foreseeable development and is specific to enabling the CC Facility to operate, it is considered that the potential impacts of each export option should be included in the Ridham Dock CC Facility EIA to the extent possible at this stage. Details will not be established until a separate consent application for it is prepared in due course. The potential impacts of it are therefore proposed to be assessed qualitatively as part of the CEA for the Ridham Dock CC Facility.

17.6 Existing Ridham Dock Biomass Facility

17.6.1 Continued operation of the existing Ridham Dock Biomass Facility is the future baseline for the Proposed Development Site. Its existing impacts, on- and off-site, form part of the current baseline as outlined in this Scoping Report and as will be further established through baseline surveys and information-gathering for the EIA.

17.6.2 As such, for the majority of EIA topics and impact pathways, the assessment of impacts from the CC Facility as an addition or modification to the existing Ridham Dock Biomass Facility baseline will inherently take into account the cumulative effects of both together. The incremental change of the CC Facility, additive with a baseline that includes the existing Ridham Dock Biomass Facility operation, will therefore show the combined impact and any resulting significant effects. However, where applicable, assessments will distinguish the incremental and total effects, for example where an environmental threshold may be approached or exceeded.

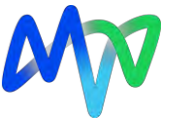


Table 17.1: Shortlisted cumulative developments

ID	Planning ref	Description	Address	Postcode	App. Date	Approval	Dist. to red line (m)	EIA?	Shortlist reason	Tier
1	23/502835/ FULL	Scheme comprises demolition of existing structures and construction of stock preparation facility and pipebridge, together with other tanks, structures and equipment, rearrangement of yard area together with associated dividing walls, plant and equipment, hard surfacing and other associated works. This project also includes associated infrastructure works and access roads.	Kemsley Paper Mill, Kemsley Mill, Kemsley, Sittingbourne, Kent	ME10 2TD	14/07/2023	N/A	1,870	No	Status unclear. Need to confirm whether cumulative effects can be expected	1
2	N/A	Scheme comprises refurbishment works to the roundabout (Archers Park - A249 roundabout S278 works). Please refer to 16264318 for civil development.	Archers Park - A249 Roundabout, Sittingbourne, Kent	ME10 5BW	N/A	N/A	4,850	No	Likely cumulative impacts, transport will need to assess any impact upon junction capacity	1
3	23/504290/ OUT	Scheme comprises outline application (with all matters reserved except for access) for the construction of 6,000sqm of class B2, B8 and class E(g) floor area, including sustainable drainage systems, landscaping and other associated works. This project also includes associated infrastructure works and access roads.	Sheppey Way, Sheerness, Sittingbourne, Kent, ME9 8GZ		21/09/2023	N/A	3,000	No	Possibility of cumulative LVIA effects	1
4	23/501017/ FULL	Scheme comprises construction of a three storey 66 number of bedroom care home for older people (use class C2) with associated access, parking and landscaping and ancillary facilities. The development has been designed to meet Secured by Design requirements. This project also includes associated infrastructure works and access roads. This project has been designed using Building Information Modelling (BIM).	Land west Of, Barton Hill Drive, Minster on Sea, Sheerness, Kent, ME12 3LY		07/03/2023	N/A	3,900	No	Introduces a higher sensitivity Receptor, in closer proximity than existing development	1, 3
5	19/501160/ REM	Scheme comprises reserved matters relating to layout, scale and appearance of the building and the landscaping of the site pursuant to outline application 16/505299/OUT for construction of a 60 bedroom care home (within class C2). This project has been designed using Building Information Modelling (BIM). Sustainable Information: This development has been designed to achieve BREEAM Very Good rating. The development has been designed to meet Secured by Design requirements. This project also includes associated infrastructure works and access roads.	Land at Coleshall Farm, Sheppey Way, Iwade, Sittingbourne, Kent, ME9 8QY		21/03/2019	22/07/2019	2,670	No	Carehome/elderly development. On the same site as 19/505215/FULL	1
6	KCC/SW/0 010/2015	Scheme comprises 4Evergreen Technologies is to install an advanced thermal conversion and energy facility at the Kemsley Fields Business Park to produce energy and heat a project known as the Garden of England Energy Project, the project will involve construction of buildings to house the thermal conversion and energy generation plant and equipment, construction of associated offices, external plant including storage tanks and a discharge stack with SuDS. The associated works include sewer systems, landscaping, infrastructure, enabling and access roads.	Land Off, Barge Way, Kemsley Fields Business Park, Sittingbourne, Kent, ME10 2FE		15/01/2015	28/01/2016	1,910	No	Need to confirm status of development as to whether it has been built and when to account for whether air quality impacts will already be included in baseline monitoring	1



ID	Planning ref	Description	Address	Postcode	App. Date	Approval	Dist. to red line (m)	EIA?	Shortlist reason	Tier
7	19/503974/ HYBRID	Scheme comprises hybrid application comprising of - outline application (all matter reserved except for access) for up to 466 residential units and a community hall, full planning application for access from Grovehurst Road and The Street and for a country park. This project also includes associated infrastructure works and access roads. Please note this site Swale SHLAA URN SLA18/219 has been identified through the Swale Borough Council Strategic Housing Land Availability Assessment (SHLAA).	Land to the east of Iwade, Doddington, Sittingbourne, Kent, ME9 8ST		16/08/2019	29/07/2022	1,790	No	New sensitive Receptors in closer proximity to the development	1, 3
8	17/503783/ FULL	Scheme comprises construction of a standby electricity generation plant to provide intermittent electricity generation from low carbon sources and supply energy from gas generation and energy stored in battery units. The associated works include sewer systems, landscaping, cable laying, infrastructure, enabling works and access roads.	Yard adj. Craft Marsh Trading E, Gas Road, Milton Regis, Sittingbourne, Kent, ME10 2QB		14/09/2017	06/12/2017	4,120	No	Need to confirm status of development as to whether it has been built and when to account for whether air quality impacts will already be included in baseline monitoring	1
9	22/503654/ EIOUT	Scheme comprises outline application (all matters reserved except for access) for a mixed used development comprising up to 2,500 residential units, a 4.99ha commercial employment zone including doctors surgery, a 4.2Ha sports hub, primary school, community facilities, local retail provision, public open space, children's play areas and associated parking, including sustainable urban drainage system, servicing, utilities, footpath and cycle links, drainage, ground and other infrastructure. This project also includes associated infrastructure works and access roads.	Bobbing Village, Sittingbourne, Kent, ME9 8QL		29/11/2022	N/A	4,060	No	Scale of development and potential of cumulative traffic impacts	1
10	18/502372/ EIOUT	Scheme comprises eia outline application for the development of up to 110 houses comprises of 98 market housing, 6 social rented housing and 6 intermediate housing includes sustainable drainage system and all necessary supporting infrastructure including emergency access, roads, footpath and cycle links, open space, play areas and landscaping, parking, drainage and all utilities and service infrastructure works. All detailed matters are reserved for subsequent approval except (a) mitigation of impacts on great crested newts, (b) vehicular access to grovehurst road and (c) extraction of brickearth. The associated works include sewer systems, landscaping, cable laying, infrastructure, enabling works and access roads.	Land At Great Grovehurst Farm, Grovehurst Road, Iwade, Sittingbourne, Kent, ME9 8RB		21/05/2018	02/07/2021	2,380	Yes	consented, not yet complete. Introduces closer resi Receptors, potential for cumulative highways impact	2
11	18/502190/ EIHYB	Scheme comprises Outline planning application - for up to 857 new residential units (including 10% affordable housing, subject to viability), a site of approximately 10 ha for a secondary and primary school, a mixed use local centre, including land for provision of a convenience store, public open and amenity space (including equipped children's play areas), together with associated landscaping and ecological enhancement works, acoustic barrier to the A249, internal access roads, footpaths, cycleways and parking, drainage (including a foul water pumping station and sustainable drainage systems), utilities and service infrastructure with sustainable drainage system. The associated works include enabling and landscaping.	Land north Quinton Road, Bramblefield Lane, and Pheasan, Sittingbourne, Kent, ME10 2DB		18/05/2018	N/A	3,260	No	Development status unclear, possibility of introducing new sensitive Receptors	1



ID	Planning ref	Description	Address	Postcode	App. Date	Approval	Dist. to red line (m)	EIA?	Shortlist reason	Tier
		Please refer PID 16268899 Masterlead PID 18189544 for Phase 1 - North & South & Outline PID 18398862 for Phase 1 North PID 18398863 for Phase 1 South PID 18398864 for Phase 1 Outline part.								
12	19/505215/ FULL	Scheme comprises construction of 14 bungalows and chalet bungalows, comprising of market housing - 8 one, 6 two-bedroom bungalows which will provide age-restricted general market accommodation for those over the age of 55, together with 21 communal car park spaces and amenity space. This project also includes associated infrastructure works and access roads.	Land Off, Sheppey Way, Iwade, Sittingbourne, Kent, ME9 8QY		29/10/2019	30/11/2020	3,560	No	Carehome/ elderly development. On same site as 19/501160/REM.	1
13	KCC/SW/0 213/2021	Scheme comprises construction of highway improvements to the A249 Grovehurst Road and Key Street junction to replace the existing 'Dumbell' junction arrangement with a new gyratory and ancillary works. This is funded through the Housing Infrastructure Fund which can be found on project ID 18038623.	Swale, Sittingbourne, Kent, ME10 3HT		19/10/2021	N/A	2,260	No	Status of junction works needs to be confirmed	1
14	20/500291/ COUNTY	Scheme comprises county application construction of and operation of an incinerator bottom ash (IBA) recycling facility.	Plot 6B, Ridham Dock, Iwade, Sittingbourne, Kent, ME9 8SR		22/01/2020	26/02/2020	180	No	To be confirmed upon site visit to assess progress of development	1
15	21/501043/ PNQCLA	Scheme comprises prior notification for the change of use of agricultural buildings and any land within their curtilage to 3 no. Houses and associated operation development. For it's prior approval to transport and highways impacts of the development, noise impacts of the development, contamination risks on the site, flooding risks on the site, whether the location or siting of the building makes it otherwise impractical or undesirable for the use of the building to change from agricultural use to C3 (houses), design and external appearance impacts on the building, provision of adequate natural light in all habitable rooms of the houses.	Land And Buildings Adj To Blac, Blacketts Road, Tonge, Sittingbourne, Kent, ME9 9AU		01/03/2021	N/A	3,870	No	To be confirmed on site visit whether the farm has changed to residential use	1
16	20/504392/ FULL	Scheme comprises change of use of land to gypsy/traveller site and stationing of up to 4 Caravans of which no more than 2 Mobile homes, including laying of hard standing and construction of 2 Ancillary amenity buildings.	The Brambles, Greyhound Road, Minster on Sea, Sheerness, Kent, ME12 3SP		08/10/2020	N/A	4,460	No	To be confirmed on site visit whether the caravan site is complete	1
17	SW/14/053 0	Scheme comprises siting of two mobile homes with associated utility blocks, with parking for cars and two touring caravans for gypsy family and construction of stables	The Barn Yard, Blackthorne Lod, Greyhound Road, Minster on Sea, Sheerness, Kent, ME12 3SP		06/05/2014	04/07/2017	4,530	No	To be confirmed on site visit whether the caravan site is complete	1
18	SW/14/022 4	Scheme comprises formation of 22MW solar farm, comprising the installation of solar arrays of photovoltaic panels, inverter and transformer sheds, fencing, site storage cabin, combined DNO and EPC switchgear housing, internal gravel access road, and associated equipment.	Land north and west Tonge Corner Farm, Tonge Corner, Tonge, Sittingbourne, Kent, ME9 9BA		11/03/2014	28/08/2015	3,110	No	Possibility of cumulative LVIA effects	1



ID	Planning ref	Description	Address	Postcode	App. Date	Approval	Dist. to red line (m)	EIA?	Shortlist reason	Tier
19	21/506720/ENVSCR	Scheme comprises installation and operation of a renewable energy generating station comprising ground-mounted photovoltaic solar arrays and battery-based electricity storage containers together with substation, switchgear container, inverter/transformer units, site access, internal access tracks, security measures, access gates, other ancillary infrastructure and landscaping and biodiversity enhancements.	Land west of Iwade, Iwade, Sittingbourne, Kent, ME9 8QE		16/12/2021	N/A	4,300	No	A large-scale energy development, planning decision yet to be made	1
20	SLA18/219	Currently agricultural use, site type greenfield. Gross site area 66.52ha, developable area not available.	Land east of Iwade		N/A	N/A	1,400	N/A	Potential significant increase in population of Iwade	3
21	SLA18/105	Site area: 2.93ha proposed for residential use.	Halway Egg Farm, Featherbed Lane		N/A	N/A	2,370	N/A	Potential significant increase in population of Iwade	3
22	SLA18/054	Currently agricultural use, site type greenfield. Gross site area 24.52ha, Developable area of 23.02ha	Land south and south-west of Iwade		N/A	N/A	2,560	N/A	Potential significant increase in population of Iwade	3
23	PS91	N/A	Land to the west of Coldharbour Marshes		N/A	N/A	1,570	N/A	Potential to introduce new closer Receptors to site	3
24	PS81, PS103	N/A	Land to the north of Iwade		N/A	N/A	2,600	N/A	Potential significant increase in population of Iwade	3
25	SLA18/038	Site area: 27.37ha proposed for residential use.	Land east of Scocles Road		N/A	N/A	4,330	N/A	Potential significant increase in population of Sheppey	3
26	PS116	N/A	Land to the west of Thistle Hill		N/A	N/A	3,400	N/A	Potential significant increase in population of Sheppey	3
27	SLA18/058	Site area: 31.06ha proposed for residential use.	Land at New Hook Farm, Lower Road		N/A	N/A	4,350	N/A	Potential significant increase in population of Sheppey	3
28	SLA18/165	Site area: 26.71ha proposed for residential use.	Land east of Queenborough		N/A	N/A	3,280	N/A	Potential significant increase in population of Sheppey	3

