

# Shadow Habitat Regulations Assessment Technical Note



**Allhallows Swimming Pool**

**22 May 2023**



**Tyler  
Grange**

15114\_R02\_C01\_C02\_C03\_C04\_C05\_C06\_C07\_C08\_C09\_C10\_C11\_C12\_C13\_C14\_C15\_C16\_C17\_C18\_C19\_C20\_C21\_C22\_C23\_C24\_C25\_C26\_C27\_C28\_C29\_C30\_C31\_C32\_C33\_C34\_C35\_C36\_C37\_C38\_C39\_C40\_C41\_C42\_C43\_C44\_C45\_C46\_C47\_C48\_C49\_C50\_C51\_C52\_C53\_C54\_C55\_C56\_C57\_C58\_C59\_C60\_C61\_C62\_C63\_C64\_C65\_C66\_C67\_C68\_C69\_C70\_C71\_C72\_C73\_C74\_C75\_C76\_C77\_C78\_C79\_C80\_C81\_C82\_C83\_C84\_C85\_C86\_C87\_C88\_C89\_C90\_C91\_C92\_C93\_C94\_C95\_C96\_C97\_C98\_C99\_C100\_C101\_C102\_C103\_C104\_C105\_C106\_C107\_C108\_C109\_C110\_C111\_C112\_C113\_C114\_C115\_C116\_C117\_C118\_C119\_C120\_C121\_C122\_C123\_C124\_C125\_C126\_C127\_C128\_C129\_C130\_C131\_C132\_C133\_C134\_C135\_C136\_C137\_C138\_C139\_C140\_C141\_C142\_C143\_C144\_C145\_C146\_C147\_C148\_C149\_C150\_C151\_C152\_C153\_C154\_C155\_C156\_C157\_C158\_C159\_C160\_C161\_C162\_C163\_C164\_C165\_C166\_C167\_C168\_C169\_C170\_C171\_C172\_C173\_C174\_C175\_C176\_C177\_C178\_C179\_C180\_C181\_C182\_C183\_C184\_C185\_C186\_C187\_C188\_C189\_C190\_C191\_C192\_C193\_C194\_C195\_C196\_C197\_C198\_C199\_C200\_C201\_C202\_C203\_C204\_C205\_C206\_C207\_C208\_C209\_C210\_C211\_C212\_C213\_C214\_C215\_C216\_C217\_C218\_C219\_C220\_C221\_C222\_C223\_C224\_C225\_C226\_C227\_C228\_C229\_C230\_C231\_C232\_C233\_C234\_C235\_C236\_C237\_C238\_C239\_C240\_C241\_C242\_C243\_C244\_C245\_C246\_C247\_C248\_C249\_C250\_C251\_C252\_C253\_C254\_C255\_C256\_C257\_C258\_C259\_C260\_C261\_C262\_C263\_C264\_C265\_C266\_C267\_C268\_C269\_C270\_C271\_C272\_C273\_C274\_C275\_C276\_C277\_C278\_C279\_C280\_C281\_C282\_C283\_C284\_C285\_C286\_C287\_C288\_C289\_C290\_C291\_C292\_C293\_C294\_C295\_C296\_C297\_C298\_C299\_C300\_C301\_C302\_C303\_C304\_C305\_C306\_C307\_C308\_C309\_C310\_C311\_C312\_C313\_C314\_C315\_C316\_C317\_C318\_C319\_C320\_C321\_C322\_C323\_C324\_C325\_C326\_C327\_C328\_C329\_C330\_C331\_C332\_C333\_C334\_C335\_C336\_C337\_C338\_C339\_C340\_C341\_C342\_C343\_C344\_C345\_C346\_C347\_C348\_C349\_C350\_C351\_C352\_C353\_C354\_C355\_C356\_C357\_C358\_C359\_C360\_C361\_C362\_C363\_C364\_C365\_C366\_C367\_C368\_C369\_C370\_C371\_C372\_C373\_C374\_C375\_C376\_C377\_C378\_C379\_C380\_C381\_C382\_C383\_C384\_C385\_C386\_C387\_C388\_C389\_C390\_C391\_C392\_C393\_C394\_C395\_C396\_C397\_C398\_C399\_C400\_C401\_C402\_C403\_C404\_C405\_C406\_C407\_C408\_C409\_C410\_C411\_C412\_C413\_C414\_C415\_C416\_C417\_C418\_C419\_C420\_C421\_C422\_C423\_C424\_C425\_C426\_C427\_C428\_C429\_C430\_C431\_C432\_C433\_C434\_C435\_C436\_C437\_C438\_C439\_C440\_C441\_C442\_C443\_C444\_C445\_C446\_C447\_C448\_C449\_C450\_C451\_C452\_C453\_C454\_C455\_C456\_C457\_C458\_C459\_C460\_C461\_C462\_C463\_C464\_C465\_C466\_C467\_C468\_C469\_C470\_C471\_C472\_C473\_C474\_C475\_C476\_C477\_C478\_C479\_C480\_C481\_C482\_C483\_C484\_C485\_C486\_C487\_C488\_C489\_C490\_C491\_C492\_C493\_C494\_C495\_C496\_C497\_C498\_C499\_C500\_C501\_C502\_C503\_C504\_C505\_C506\_C507\_C508\_C509\_C510\_C511\_C512\_C513\_C514\_C515\_C516\_C517\_C518\_C519\_C520\_C521\_C522\_C523\_C524\_C525\_C526\_C527\_C528\_C529\_C530\_C531\_C532\_C533\_C534\_C535\_C536\_C537\_C538\_C539\_C540\_C541\_C542\_C543\_C544\_C545\_C546\_C547\_C548\_C549\_C550\_C551\_C552\_C553\_C554\_C555\_C556\_C557\_C558\_C559\_C560\_C561\_C562\_C563\_C564\_C565\_C566\_C567\_C568\_C569\_C570\_C571\_C572\_C573\_C574\_C575\_C576\_C577\_C578\_C579\_C580\_C581\_C582\_C583\_C584\_C585\_C586\_C587\_C588\_C589\_C590\_C591\_C592\_C593\_C594\_C595\_C596\_C597\_C598\_C599\_C600\_C601\_C602\_C603\_C604\_C605\_C606\_C607\_C608\_C609\_C610\_C611\_C612\_C613\_C614\_C615\_C616\_C617\_C618\_C619\_C620\_C621\_C622\_C623\_C624\_C625\_C626\_C627\_C628\_C629\_C630\_C631\_C632\_C633\_C634\_C635\_C636\_C637\_C638\_C639\_C640\_C641\_C642\_C643\_C644\_C645\_C646\_C647\_C648\_C649\_C650\_C651\_C652\_C653\_C654\_C655\_C656\_C657\_C658\_C659\_C660\_C661\_C662\_C663\_C664\_C665\_C666\_C667\_C668\_C669\_C670\_C671\_C672\_C673\_C674\_C675\_C676\_C677\_C678\_C679\_C680\_C681\_C682\_C683\_C684\_C685\_C686\_C687\_C688\_C689\_C690\_C691\_C692\_C693\_C694\_C695\_C696\_C697\_C698\_C699\_C700\_C701\_C702\_C703\_C704\_C705\_C706\_C707\_C708\_C709\_C710\_C711\_C712\_C713\_C714\_C715\_C716\_C717\_C718\_C719\_C720\_C721\_C722\_C723\_C724\_C725\_C726\_C727\_C728\_C729\_C730\_C731\_C732\_C733\_C734\_C735\_C736\_C737\_C738\_C739\_C740\_C741\_C742\_C743\_C744\_C745\_C746\_C747\_C748\_C749\_C750\_C751\_C752\_C753\_C754\_C755\_C756\_C757\_C758\_C759\_C760\_C761\_C762\_C763\_C764\_C765\_C766\_C767\_C768\_C769\_C770\_C771\_C772\_C773\_C774\_C775\_C776\_C777\_C778\_C779\_C780\_C781\_C782\_C783\_C784\_C785\_C786\_C787\_C788\_C789\_C790\_C791\_C792\_C793\_C794\_C795\_C796\_C797\_C798\_C799\_C800\_C801\_C802\_C803\_C804\_C805\_C806\_C807\_C808\_C809\_C810\_C811\_C812\_C813\_C814\_C815\_C816\_C817\_C818\_C819\_C820\_C821\_C822\_C823\_C824\_C825\_C826\_C827\_C828\_C829\_C830\_C831\_C832\_C833\_C834\_C835\_C836\_C837\_C838\_C839\_C840\_C841\_C842\_C843\_C844\_C845\_C846\_C847\_C848\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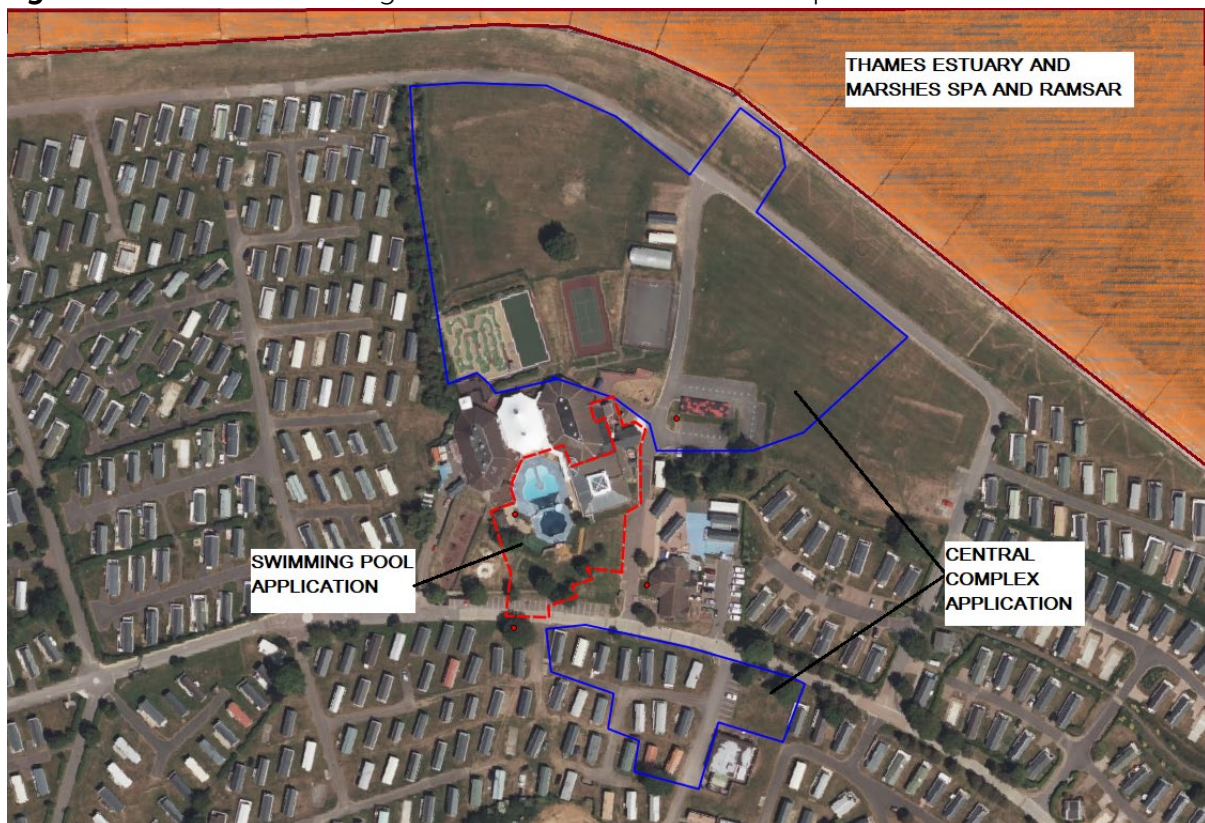
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## Section 1: Introduction

- 1.1. This technical note has been prepared by Tyler Grange Group Ltd on behalf of Bourne Leisure. It provides a succinct Shadow Habitat Regulation Assessment (HRA) of the proposed Swimming Pool Application (the site) on Statutory designated sites. It is based on an existing HRA completed for Central Complex Redevelopment (Planning application number: MC/19/1820). Figure 1 shows the extent of the current planning application (Swimming Pool) in relation to the approved application (Central Complex).
- 1.2. Although a HRA screening is still required the information obtained from the previous assessment is still relevant for several reasons:
  - 1) The central complex redevelopment is closer to the statutory designated sites (Thames Estuary and Marshes SPA and Ramsar) than the swimming pool development.
  - 2) The swimming pool development will not further increase recreational pressure on the statutory designated sites as it will not increase the number of caravans/accommodation.

**Figure 1:** Extent of the Swimming Pool Site in relation to Central Complex Site.



## Context and Purpose

- 1.3. The proposals are for the partial demolition works and erection of an extension to the existing swimming pool building, new plant and equipment, landscaping, and associated works (See proposed Site Plan: **Appendix 4**).
- 1.4. The Central Complex application was a much larger planning application and included upgrading of existing central facilities complex. It included the provision of a new marina, stage bar building, activity hub and outdoor activity centre, creation of a replacement car park and associated access, hard and soft landscaping, and associated works/infrastructure.
- 1.5. Detailed information on Legislation is provided in **Appendix 1** and Methodologies are provided in **Appendix 2**.
- 1.6. This assessment has been informed by a suit of ecological surveys and reporting as well environment assessment by other disciplines, as follows:
  - 15114\_Allhallows Swimming Pool\_R01\_ECIA\_GS (Current application).
  - 12486\_R01\_PEAPBRA\_CC\_MM\_100719 (MC/19/1820 application).
  - 12486\_R02\_Bat Survey Report\_RB\_MM\_280819 (MC/19/1820 application).
  - 12486\_R03a\_Shadow HRA\_NJ\_MM\_310120. (Including consultation with Natural England) (MC/19/1820 application).
  - 19/0584/R01\_Cole Jarman\_Construction Noise Assessment (MC/19/1820 application).
  - 2348-DES-ZZ-EX-SK-E-6300, Desco, Electrical Services Proposed External Lighting Scheme (**Appendix 5**).
  - 22362G-CWP-DS-RP-0001, Crouch Waterfall Outline Flood Risk Assessment and Drainage (**Appendix 6**).
- 1.7. This report will address the potential impacts of the proposed development on the SPA.



## Section 2: Summary of Habitat Regulations Assessment Screening Assessment (Stage 1)

### European Designated Sites

- 2.1. Four European designated sites are not located directly adjacent to the site:
- **Thames Estuary and Marshes, Ramsar and SPA:** Located 0.14km north of the site, it is designated for its wetland / tidal habitats which are used by large numbers of resident and migratory waterfowl including Avocet *Recurvirostra avosetta*, Hen Harrier *Circus cyaneus* and Ringed Plover *Charadrius hiaticula*.
  - **Medway Estuary and Marshes, Ramsar and SPA** located 3.3km south of the site, which is designated for its important wetland / tidal habitats which supports species such as Dark-bellied Brent Goose *Branta bernicla bernicla*, Redshank *Tringa tetanus* and, Shelduck *Tadorna tadorna*
  - **Benfleet and Southend, Ramsar and SPA**, located 3.8km north which is designated for its wetland / tidal habitats which supports important populations of resident and migratory bird species which include Ringed Plover *Charadrius hiaticula* and Dark-bellied Brent Goose *Branta bernicla bernicla*
  - **Foulness (Mid-Essex Coast Phase 5), Ramsar and SPA**, located 8.3km north of the site and designated for its wetland / tidal habitats which support important bird assemblages such as avocet *Recurvirostra avosetta*, oystercatcher *Haematopus ostralegus* and grey plover *Pluvialis squatarola*.

### Assessment of Likely Significant Effects

- 2.2. Three European designated sites not located directly adjacent to site, Benfleet and Southend, Ramsar and Special Protection Area (SPA), Foulness (Mid-Essex Coast Phase 5) Ramsar and SPA and Medway Estuary and Marshes SPA are considered to be far enough away that significant effects are highly unlikely. These SPAs/Ramsars are therefore scoped out of this shadow HRA.
- 2.3. The Thames Estuary and Marshes Ramsar and SPA, and the Medway Estuary and Marshes Ramsar are scoped in; their qualifying features and conservation objectives are set out in **Appendix 3**.

### Shadow Habitats Regulations Assessment (HRA) (12486/R03a)

- 2.4. Consultation with LPA and Natural England for the Central Complex Application identified several likely significant effects (LSEs) that needed to be considered.
- 2.5. The key constraint to the proposals in ecology terms is the proximity of the site to the Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar. The potential impact pathways at the construction phase and operation phase of the development, along with mitigation measures approved under consent MC/19/1820, are set out in full in the shadow HRA report **(12486/R03a)** and summarised below.





2.6. It should be noted that given the habitats present within the sites (predominantly amenity grassland building, and hardstanding) the sites are not considered to be functionally linked to the Thames Estuary and Marshes SPA.

**Table 2.1: Potential LSEs on the qualifying features of the Thames Estuary and Marshes SPA and Ramsar at the Construction Phase**

<b>LSE Pathway</b>	<b>Potential for LSE on Qualifying Features of Thames Estuary and Marshes SPA</b>	<b>Potential for LSE on Qualifying Features of Thames Estuary and Marshes Ramsar</b>
<b>Light</b>	Strong light sources can disorientate birds and, under certain conditions, can cause high levels of mortality. Such mortality may have a significant impact in locations where nationally or internationally important populations concentrate along flyways or on regular feeding and roosting areas (adapted from internal Natural England guidance document; see advice from Natural England)	Additional lighting may result in an LSE on invertebrates for which the Ramsar is designated (Criterion 2); (Davies et al, 2012). It is considered that artificial lighting would be unlikely to impact flora species. Potential for LSE on bird species is as described for the SPA
<b>Noise</b>	Ambient construction noise levels above 70dB(A) may cause an LSE on the qualifying bird species through disturbance, for example a temporary reduction in foraging activity (Institute of Estuarine and Coastal Studies University of Hull, 2009) Sudden irregular noise above 50 dB(A), such as the tipping of rubble and piling, may cause an LSE on the qualifying bird species through disturbance	Noise is considered unlikely to cause an LSE to flora and invertebrates (Criterion 2) Potential for LSE on bird species is covered by the information in the SPA column
<b>Dust (Air Quality)</b>	Dust deposition is considered unlikely to have an LSE on the qualifying species of the SPA directly, but it may have an LSE on the plant species (within tens of metres of the site) as set out in the Ramsar column	With respect to plants, dust deposition upon adjacent sensitive habitats (likely only within tens of metres of the site boundaries) could result a LSE as a result of smothering, and concomitant effects on the ability to photosynthesise. Dust deposition is considered unlikely to result in an LSE on invertebrates Potential for LSE on bird species is covered by the information in the SPA column
<b>Water</b>	A deterioration in water quality is considered unlikely to have an LSE on the qualifying species of the SPA directly, but it may have an LSE through the potential for construction activities to result in polluting surface water run-off, resulting in adverse effects to the sensitive wetland communities on which the qualifying species rely	With respect to plants, a deterioration in water quality could lead to a LSE through changing the composition of local plant communities. With respect to invertebrates, a deterioration in water quality could have a LSE on those that rely on the plants within the Ramsar or those whose lifecycle involves aquatic life stages, which may be directly affected Potential for LSE on bird species is covered by the information in the SPA column



## Conclusion

### *Thames Estuary and Marshes SPA and Ramsar*

- 2.7. In the absence of avoidance or mitigation a LSE on the Thames Estuary and Marshes SPA and Ramsar could occur during the construction phase with increases in light and noise as well as deterioration in water quality
- 2.8. In respect to the operational phase a LSE on the Thame Estuary and Marshes SPA and Ramsar could occur during the operational phase witch increases in lighting and noise.
- 2.9. The Judgement of 12.4.2018 - Case C-323/17 People Over Wind and Sweetman (CJEU, 2018) concludes that specific mitigation measures that are not part of a project could not be screened out at the HRA stage and therefore it cannot be concluded that there will be no likely LSE due to potential impacts from LSE from light, noise, dust (air quality) and/or a deterioration in water quality at the construction stage and from light at the operation phase. As such, an AA is required for the Thames Estuary and Marshes SPA and Ramsar and is set out below.

### *Medway Estuary and Marshes SPA*

- 2.10. As no LSE on the Medway Estuary and Marshes SPA is anticipated because of the proposed development, the Medway Estuary and Marshes SPA is screened out and is not subject of AA.



## Section 3: Summary of Shadow Appropriate Assessment (Stage 2)

- 3.1. Where LSEs are likely, or it is uncertain if there would be significant effects an Appropriate Assessment is required (AA) is required.
- 3.2. For an AA, the implication of the plan/project on each site to potentially be affected must be assessed in light of its conservation objectives. The development of conservation objectives is required by the 1992 Habitats' Directive (92/43/EEC); an objective of this legislation is to achieve 'favourable conservation status' (see below) of the habitats and / or species features for which the site is designated.

### **Favourable conservation status, as defined in the Habitats Directive**

Conservation status for habitats is defined in Article 1(e) as:

*"[The] conservation status of natural habitats [is] the sum of influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species... The conservation status of natural habitats will be taken as 'favourable' when:*

- *its natural range and areas it covers within that range are stable or increasing.*
- *the species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.*
- *the conservation status of its typical species is favourable.*

Conservation status for species is defined in Article 1(i) as:

*"[The] conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within [its] territory...The conservation status of species will be taken as 'favourable' when:*

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.*
- *the natural range of the species is neither being reduced for the foreseeable future.*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

### **Impact assessment**

- 3.3. Following the screening described in **Section 3**, the need for an AA has been identified for the Thames Estuary and Marshes SPA and Ramsar for impacts at the construction and operational phase of the proposed development from noise (construction only), and light pollution and water pollution (both construction and operational phase). In this section, an assessment of the impacts for the site in view of its conservation objective is made, in terms of the magnitude, duration, location and extent of the effects.





### **In-combination impacts**

- 3.4. It is standard practice to carry out an in-combination assessment of impacts considering the development and other relevant plans / projects. As such, the potential for in-combination impacts are discussed below.

### **Mitigation measures**

- 3.5. The AA also looks at any potential mitigation measures which would be required to determine if the magnitude, duration, location, and extent of effects can be reduced / removed. These mitigation measures would form part of the planning consent, controlled by planning conditions, for the proposed development, if approved. Mitigation measures can include both avoidance measures and reduction measures, but the former approach is preferred.

### **Integrity test**

- 3.6. The integrity test requires the competent authority to ascertain if the development (alone and in-combination with other plans / projects) will not have a significant adverse effect on a site's integrity, which is defined as:

*“the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the level of populations for the species for which it was classified”.*

### **Monitoring**

- 3.7. Details of any required monitoring are described, either for the purposes of validating the findings of the AA, or as an early warning which would enable any actions resulting in an unexpected adverse impact to be stopped, paused, reduced, altered or removed.

### **Information to Inform and Appropriate Assessment**

- 3.8. Relevant information to inform an AA for the potential LSE from light, noise, and/or a deterioration in water quality at the construction stage and from light and water quality at the operation phase as a result of development at the site on the Thames Estuary and Marshes SPA and Ramsar is given below. This information includes an impact assessment, both alone and in-combination with other developments, considering descriptions of the site's qualifying features and its conservation objectives (as set out in Section 3), as well as appropriate mitigation measures.
- 3.9. As defined in Section 3 and presented here for reference, the conservation objectives for the Thames Estuary and Marshes SPA are as follows:

*“Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:*

- *The extent and distribution of the habitats of the qualifying features.*
- *The structure and function of the habitats of the qualifying features.*
- *The supporting processes on which the habitats of the qualifying features rely.*
- *The population of each of the qualifying features.*



- *The distribution of the qualifying features within the site.”*

## Impact Assessment - Alone

3.10. As described in **Section 3**, the proposed development was identified as having a potential standalone LSE on the aforementioned statutory designated site at both the construction and operation phases.

### Construction phase

3.11. The construction phase LSEs in the absence of avoidance/mitigation and subject of AA are set out in the table 3.1:

- *Light pollution.*
- *Noise pollution.*
- *Water pollution.*

### Operational phase

3.12. In the absence of appropriate avoidance/mitigation, LSE pathways identified during the operational phase are follows, with further detail provided in Table 3.1:

- *Light pollution.*
- *Water pollution.*

3.13. With respect for the LSE on noise it should be noted that elements of the Construction Noise Assessment from Cole Jarman (2019) are still applicable from previous application.

**Table 3.1: LSEs (including Magnitude, Location, Extent and Duration) on the qualifying features of the Thames Estuary and Marshes SPA and Ramsar in the absence of appropriate avoidance/mitigation measures.**

LSE Pathway	Magnitude, Location, Extent and Duration of LSE(s)
<b>Light pollution</b>	<p>The Thames Estuary and Marshes SPA and Ramsar lies 0.14km of the site and supports bird assemblages that may be sensitive to light spill. Given the swimming pool application boundary is separated from the SPA by the built scheme to the north this is likely to act as a buffer screen to any light spillage onto the SPA as such no adverse effect on site integrity of the SPA/Ramsar are considered likely.</p> <p>The location of the LSE would be focused on the areas of the site nearest to the SPA and the extent has potential to be several hundred metres, depending on the strength of the light source.</p> <p>The duration of the LSE would be for the duration of the construction phase, during times where daylight was low enough to warrant the use of artificial light, should the working hours for construction works be unrestricted.</p> <p>Light pollution will be addressed through sensitive lighting design (see Desco, 2023). Lighting at the site is being designed iteratively through collaboration between the lighting engineers for the scheme, and the project ecologist, and in line with relevant guidance</p>



LSE Pathway	Magnitude, Location, Extent and Duration of LSE(s)
<b>Noise pollution</b>	<p>Noise pollution is likely to be of a low magnitude given the distance from SPA (circa 0.14km) and that several buildings and planting would likely provide a screen between the source of noise and the SPA however if unmanaged there is still a risk that of a low magnitude LSE.</p> <p>The location of the LSE would be focused on the areas of the site nearest to the SPA. The duration of the of the greatest LSE is however likely to be limited to the construction phase rather than the operational.</p>
<b>Water</b>	<p>Given the site is circa 0.14km away from the SPA any water pollution from construction works are likely to be of a low magnitude LSE as well as the small footprint on the site, however pollution of ground water would likely lead to a higher magnitude impact. The location of the LSE would be focused on the areas of the site nearest to the SPA. The duration of the LSE would be at least for the duration of the construction phase, but would likely extend into the operation phase as the pollutant(s) from construction activities would remain in situ once the works were complete. Additionally, surface water runoff associated with the operational scheme could cause a deterioration in water quality in perpetuity.</p> <p>Water pollution will likely be of low magnitude LSE due to the distance from the site and the SPA (circa 0.14km) with any residual LSEs to be addressed through the inclusion of SuDS treatment chain and attenuation to ensure the quality of the discharge as well as appropriately worded CEMP condition.</p>

## Mitigation Measures

### Construction phase

3.14. To mitigate for the potential impact at the construction phase through lighting, noise, and water pollution because of construction on nearby Thames Estuary and Marshes SPA and Ramsar a suitably worded Construction and Environmental Management Plan (CEMP) condition confirming to standards will be produced based on the same principles as the previous application and as per wording in **Table 3.2**.

- Construction and Environment Management Plan (CEMP; Lichfields, 2019), conforming to standards BS42020 and CIRIA; and
- Construction Noise Assessment (Cole Jarman, 2019).

The CEMP will include the following:

- Measures to avoid and mitigate against pollution (e.g. dust, spills, contaminated water)
- Accident and emergency plan to include risk of flooding
- The timing of sensitive work to avoid harm to biodiversity features (e.g. wintering, breeding bird)
- Responsible persons
- Protective barriers and warning signs.



- Lighting – avoid dusk and dawn.

- 3.15. **Table 3.2** out in detail what the proposed avoidance/mitigation measures are for the construction phase LSEs, and the magnitude, location, extent and duration of each LSE once avoidance/mitigation measures are considered.
- 3.16. The mitigation measures outlined will be set out in the CEMP and communicated to the construction team by an Ecological Clerk of Works (ECoW) prior to the commencement of works. These measures must be secured as planning conditions or obligations to ensure their strict implementation for the full duration of the development.

**Table 3.2: LSEs (including Magnitude, Location, Extent and Duration) on the qualifying features of the Thames Estuary and Marshes SPA and Ramsar with appropriate avoidance/mitigation measures considered.**

<b>LSE Pathway</b>	<b>Avoidance/Mitigation Measures</b>
<b>Light</b>	<p>Avoidance measures are controlled through the aforementioned CEMP, namely under Section 5 'Lighting, Noise and Vibration', paragraph 5.2 which states: <i>'In order to prevent disturbance to birds and invertebrates during construction through increased lighting at the sites, no works will occur after dusk with working hours during the summer to be 07:30 – 17:30. Shorter hours will be undertaken during other times of year, due to less daylight hours, with working hours still finishing prior to dusk. No works outside these times are anticipated. More broadly, the adjacent Thames Estuary and Marshes SPA should not be directly illuminated as a result of works activities. This will ensure the protection of species using the SPA habitats, with particular reference to birds and invertebrates'</i></p>
<b>Water</b>	<p>Avoidance measures are to be controlled through the aforementioned CEMP, which will state:</p> <p><b>Water Management</b></p> <p><i>Works will be undertaken in accordance with approvals from the Environment Agency where appropriate and will adhere to Environment Agency Pollution Prevention Guidelines.</i></p> <p><i>All hazardous substances (including fuel, oil, liquids and solids) will be stored within impermeable, bunded areas, to minimise the risk of migration to groundwater or a nearby watercourse to the satisfaction of the Environment Agency. The measures proposed will assist in avoiding or minimising the potential for contaminants and suspended solids to migrate to surface and groundwater, reduce localised flood risk and protect water quality and the ecosystems the water resources support.</i></p> <p><i>The following list shows measures that should be put in place to prevent pollution:</i></p> <ul style="list-style-type: none"> <li><i>a) The handling, use and storage of hazardous materials to be undertaken in line with the EA's Pollution Presentation Guidelines;</i></li> <li><i>b) Adequately bunded and secure areas with impervious walls and floor for the temporary storage of fuel, oil and chemicals on site during construction;</i></li> <li><i>c) Drip trays to collect leaks from standing plant;</i></li> <li><i>d) Provision of spill containment equipment such as absorbent material on site;</i></li> </ul>



- e) *Wheel wash facilities should be provided for vehicles moving to and from the Site at all entry and exit points. Wheel wash facilities should not be located too close to surface waters;*
- f) *The early re-seeding or planting of cleared land, where practicable, to minimise exposed land and the entrainment of sediment by overland flow; and this can be managed by ensuring construction plant/materials are stored on hardstanding surfaces where possible. Where this is unavoidable, the Contractor will ensure any compacted topsoil is loosened as soon as possible following completion of the works;*
- g) *Appropriate training for all construction staff;*

#### **Protection of Watercourses**

*During construction, protection measures to control the risk of pollution to surface water will be adopted. These will include:*

- a) *Any containers of contaminating substances on site will be leak proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers will be protected by temporary impermeable bunds with a capacity of 110% of the maximum stored volume.*
- b) *Areas for transfer of contaminating substances will be similarly protected.*
- c) *All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling.*
- d) *Only construction equipment and vehicles free of oil/fuel leaks which could cause material contamination will be permitted on site. Drip trays will be placed below static mechanical plant.*
- e) *Appropriate measures to be taken to protect erodible earthwork surfaces.*

#### **Control of Pollution to Groundwater**

*The Pollution Prevention Measures and good construction practices will ensure that any oils, hydrocarbons or hazardous materials stored on site will not leak onto the ground surface and thereby ensure that there is no pathway for contaminants to affect the Site. These techniques will also ensure that surface water bodies and associated ecosystems are protected as there is a hydraulic connectivity between these bodies and the groundwater.*

*Protection measures to control the risk of pollution to groundwater will be consistent with the Groundwater Regulations 2009.*

*Where reasonably practicable, the use of materials that could pollute groundwater will be avoided.*

## **Operation phase**

- 3.17. As the site is approx. 0.14km from the SPA boundary and is separated by buildings and landscaping there will be no additional light spillage into the estuary as demonstrated by the



Proposed External Lighting Scheme (**Appendix 5**). additional measure can however be secured as a planning condition or obligation to ensure that the lighting strategy is adhered to. These should include (but not limited to):

- All luminaires are flat orientated and low power LED and kept as low as possible to exclude any upward or side spill of lights.
  - There will be lighting controls to lights with photocell and time clocks, to be set from dusk till 11pm, leaving a minimum security/safety lighting in place from 11pm – dawn; and
  - Limit directly lighting any retained or planted trees or hedgerows on or adjacent to the site.
- 3.18. To avoid LSE on water quality during the operational phase a drainage plan has been prepared that includes SuDS treatment where surface water will be discharged into a Swale feature and other wetland features. These features can be secured through appropriately worded planning condition for provision of SuDS<sup>1</sup>
- 3.19. Taking account of the above, it is considered that the proposed lighting strategy and drainage strategy at the operational phase have been designed to avoid any LSE on the Thames Estuary and Marshes SPA.

## Integrity Test and Conclusion

### Construction Phase

- 3.20. It is considered that with the above measures incorporated in a CEMP LSEs from lightning, noise and water pollution on the Thames Estuary and Marshes SPA and Ramsar could be reduced to insignificant levels.

### Operational Phase

- 3.21. It is considered that with the above measures incorporated in a lighting strategy and SUDS strategy LSEs from lighting, and water pollution on the Thames Estuary and Marshes SPA and Ramsar could be reduced to insignificant levels.

### Impact Assessment - In Combination

- 3.22. As discussed above, the potential LSEs for the proposed development are limited to impacts at the construction phase through light, noise, and water pollution as a result of construction activities, and at the operational phase through increased artificial lighting or a deterioration in water quality affecting the SPA. Given that the above impact pathways are to be dealt with through avoidance measures (as set out below), it is considered that any other developments that could have similar LSEs on the Thames Estuary and Marshes SPA would have to provide the same avoidance measures and therefore it is unlikely that any of the identified impact pathways could result in an in-combination LSE.

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<sup>1</sup> Crouch Waterfall (2023) *Outline Flood Risk Assessment and Drainage Strategy: Haven Allhallows Holiday Park (22362G-CWP-DS-RP-0001)*





## Monitoring

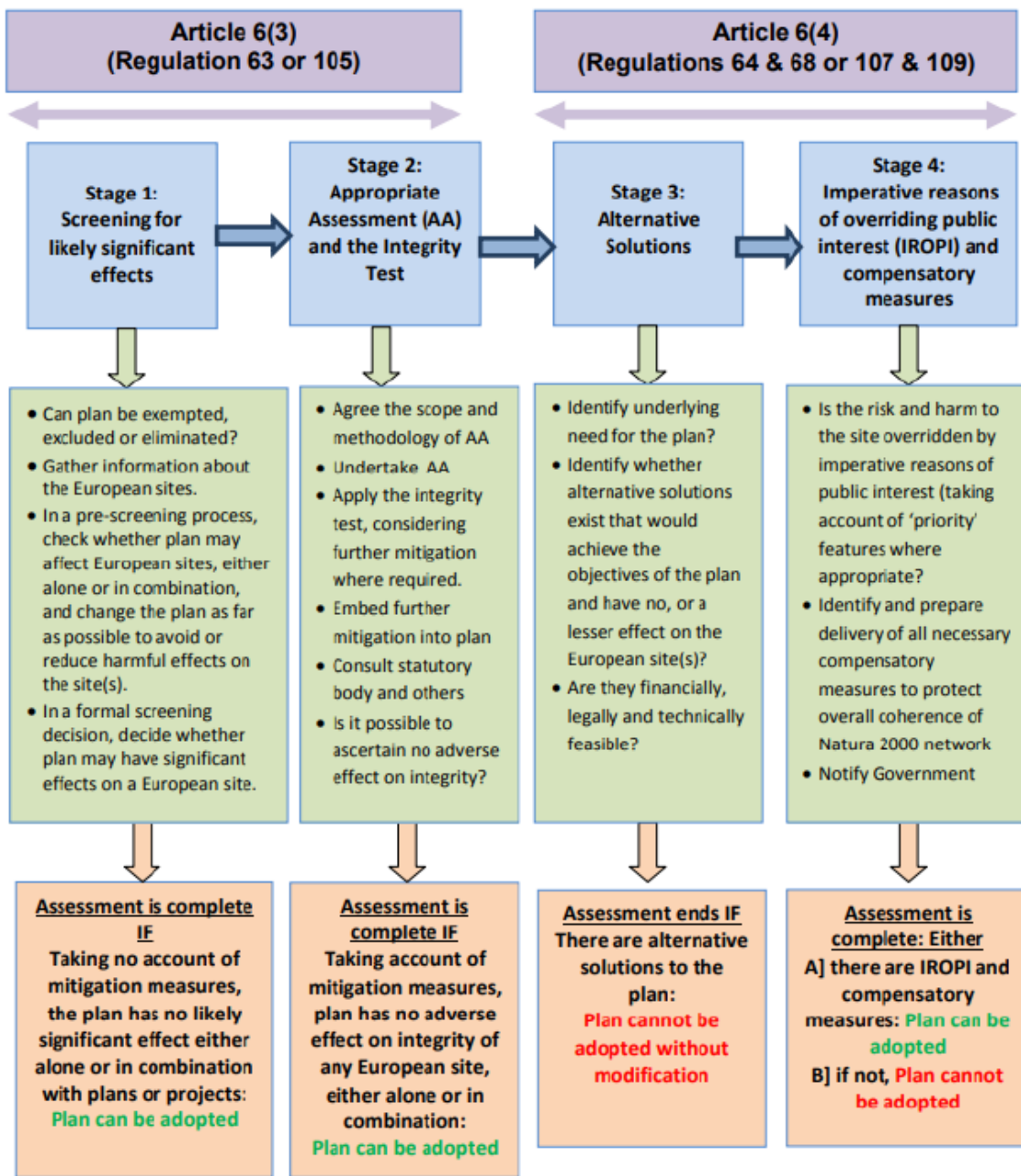
- 3.23. At the construction phase the site manager will be responsible that the CEMP is always adhered to and should be monitoring at least twice per week.
- 3.24. During consultation with Natural England on the adjacent approved scheme the requirement for monitoring at operational phase was no considered to be required and as this development is further from the designated site and is smaller in extent it has been assessed that it will not be required for the development either.
- 3.25. The information provided in this report as well as the other reports referenced and previous consultation with Natural England should provide Medway Council, the competent authority, with sufficient information to carry out an Appropriate Assessment.



# Appendix 1: Legislation and Planning Policy

- A1.1 Specific habitats, species and European designated sites receive legal protection in the UK under various pieces of legislation, including The Conservation of Habitats and Species Regulations 2017, hereinafter referred to as the 'Habitats Regulations'.
- A1.2 European designated sites comprise:
- Special Areas of Conservation (SACs) and candidate SACs (cSACs) designated under the Habitats Directive;
  - Special Protection Areas (SPAs) and potential SPAs (pSPAs), designated under the Birds Directive;
  - Ramsar sites, designated under the Convention on Wetlands of International Importance; and
  - European Marine Sites (EMS).
- A1.3 Under the Habitats Regulations, competent authorities are required to consider impacts of any plans / projects which are likely to have LSEs on European designated sites – either alone or in combination with other plans / projects. The assessment of the potential effects is termed an HRA, which is split into four stages, as described below:
- Stage 1 is a screening stage to determine if the development is likely to have a LSE on a European site, and therefore if an Appropriate Assessment (AA) is required;
  - If required, Stage 2 refers to an AA which is used to determine whether the project will adversely affect the integrity of any given European site(s) (through also considering proposed avoidance and mitigation measures), in view of their conservation objectives. Conservation objectives specify the overall target for a site's qualifying features (habitats and species/populations listed in Annex I and II) in order for that feature to be maintained or restored, to reach favourable conservation status;
  - Stage 3 is triggered if significant adverse effects are identified in stage 2 that cannot be avoided or mitigated. This stage requires alternative options to be examined to avoid significant impacts on European sites; and
  - If it is deemed that the project should proceed for Imperative Reasons of Overriding Public Interest (IROPI), Stage 4 comprises an assessment of compensatory measures which would be required.
- A1.4 The above stages are set out in **Figure 2.1** below.





Extract from *The Habitats Regulations Assessment Handbook*, [www.dtapublications.co.uk](http://www.dtapublications.co.uk)  
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**Figure 2.1. HRA Stages (reproduced from NE, June 2018)**

A1.5 The responsibility of undertaking an HRA lies with the competent authority who is responsible for granting consent for the scheme – in this case, this will be Medway Council. However, it is the applicant’s obligation to provide information to the competent authority to enable them to undertake the assessment. In this case, the applicant is Bourne Leisure Ltd.

A1.6 Under the Habitats Regulations, the competent authority also has an obligation to consult with statutory nature conservation organisations – in this case Natural England.



## A1.7 Local Planning Policy

### *Medway Local Plan (2003)*

The Medway Local Plan (2003) sets out the long-term spatial vision for the District and contains policies to help deliver that vision.

Policy ED15 states that:

*“Proposals for new facilities will be permitted provided it can be demonstrated that:*

- *the scale of development would not adversely affect local amenity, nature conservation interests or be an intrusive element in the surrounding landscape;*
- the local highway network can support the scale of development proposed; and
- the facilities associated with the development are of a design and scale in keeping with the locality.”

Policy BNE38: Wildlife Corridors and Stepping Stones states:

*“Development should, wherever practical, make provision for wildlife habitats, as part of a network of wildlife corridors or stepping stones.”*

Policy BNE39: Protected Species states:

*“Development will not be permitted if statutorily protected species and/or their habitat will be harmed. Conditions will be attached, and/or obligations sought, to ensure that protected species and/or their habitats are safeguarded and maintained.”*



# Appendix 2: Methodology

## Methodology

A2.1 This report provides information relevant to HRA Screening (Stage 1) and Appropriate Assessment (Stage 2).

### HRA Stage 1: Screening

A2.2 Screening aims to determine if the proposed development is likely to have an LSE on a European site. An effect is considered 'likely significant' if, in the absence of mitigation, it cannot be excluded based on objective information and it might undermine a European site's conservation objectives.

A2.3 The scope of the assessment was determined by undertaking a desk-based assessment, including review of the following resources:

- The Habitats Regulations 2017;
- UK government guidance on the use of Habitats Regulations Assessment and AA (GOV.UK 2021 and Ministry of Housing, Communities and Local Government 2019);
- Joint Nature Conservation Committee (JNCC) for citations of internationally designated sites (JNCC 2022);
- Natural England's web resources for citations of European sites and associated conservation objective and site improvement plan documents (Natural England [2018]);
- Multi-Agency Geographic Information for the Countryside (MAGIC) Interactive Maps for locations of statutory sites (DEFRA 2022); and
- Ecological Impact Assessment (TG Report No. 15514\_R01), Tyler Grange 2023;
- Natural England's Discretionary Advice Service (DAS) on the requirement for a site-level HRA (response received 26th September 2019);
- Medway Council for advice about the requirement for a site-level HRA (post-submission response received 17th August 2019 from case officer, Majid Haroun
- Medway Local Plan 2003: Core Strategy and Policies ([www.medway.gov.uk](http://www.medway.gov.uk)) for details of relevant local planning policies, namely:
  - Policy ED15;
  - Policy BNE38: Wildlife Corridors and Stepping Stones;
  - Policy BNE39: Protected Species; and
  - Policy H6: Mobile Home Parks of the Medway Habitat Regulation Assessment.

A2.4 To assess whether LSEs may occur, the following information is provided:



- Identification of European sites and their respective qualifying features (presented in Section 4, Table 4.1);
- Identification and understanding of the conservation objectives the identified sites (presented in Section 4);
- Estimation of the likely magnitude, duration, location and extent of effects on European sites if any are anticipated in the absence of mitigation (presented in Section 5); and
- Identification of whether any element of the proposed development will have an LSE on any qualifying feature, either alone or in-combination with other projects and plans (presented in Section 5).

## HRA Stage 2: Appropriate Assessment

A2.5 Where LSEs are likely, or it is uncertain if there would be significant effects following HRA Stage 1 (Screening) in the absence of mitigation HRA stage 2 (AA) is required. This report provides information to inform AA and the integrity test, to be completed by LPA as the competent authorities. AA must demonstrate whether an adverse effect on the integrity of relevant European sites can be ruled out or not, following inclusion of mitigation measures. Natural England must also be consulted at the AA stage. In this case, Natural England were consulted through the Discretionary Advice Service (DAS) by Tyler Grange Group Ltd on behalf of the applicant to advise on the scope of the required AA, and this communication is located in **Appendix 1**.

A2.6 For an AA, the implication of a plan or project to have an adverse effect on the integrity of European sites must be assessed in light of each European site's conservation objectives. The development of conservation objectives is required by the 1992 Habitats' Directive (92/43/EEC); an objective of this legislation is to achieve 'favourable conservation status' (see below) of the habitats and / or species features for which the site is designated.

A2.7 Favourable conservation status in the Habitats Directive Conservation status for habitats is defined in Article 1(e) as:

*"[The] conservation status of natural habitats [is] the sum of influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species... The conservation status of natural habitats will be taken as 'favourable' when:*

- its natural range and areas it covers within that range are stable or increasing; and
- the species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable."

Conservation status for species is defined in Article 1(i) as:

*"[The] conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within [its] territory... The conservation status of species will be taken as 'favourable' when:*

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- the natural range of the species is neither being reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."





### **Mitigation Measures**

- A2.8 Where an impact is identified, the AA is required to consider potential mitigation measures which would be required to determine if the magnitude, duration, location and extent of effects can be reduced / removed. These mitigation measures would form part of the planning consent, controlled by planning conditions, for the proposed development, if approved. Mitigation measures can include both avoidance measures and reduction measures, but the former approach is preferred.

### **Integrity test**

- A2.9 The integrity test requires the competent authority, when completing HRA Stage 2 (AA), to ascertain if the development (alone and in-combination with other plans / projects) will not have a significant adverse effect on a European site's integrity, which is defined in England and Wales under the 2018 EC guidance as:

*"The coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated."*

### **Monitoring**

- A2.10 Details of any required monitoring are described, either for the purposes of validating the findings of the AA, or as an early warning which would enable any actions resulting in an unexpected adverse impact to be stopped, paused, reduced, altered, or removed.

### **Consultation**

- A2.11 Natural England (NE) also have the responsibility to provide statutory advice and were consulted during the preparation of this 'shadow' HRA report. NE initially objected to the proposals at the planning application consultation in June 2022 due to the potential for significant effects on the designated site related to both air quality and recreational pressure. NE requested further information to determine the significance of these impacts.



## Appendix 3: European Sites



**European Designated Sites within 10km of the sites, with qualifying features and potential impact pathways. European designated sites are listed in order from closest to furthest from the site**

Site Name (Distance and Direction from the Site)	Relevant Legislative Protection	Reason for Designation/Conservation Objectives
<p><b>Thames Estuary and Marshes Ramsar and SPA</b></p>	<p>Habitats Regulations 2017 Ramsar Convention</p>	<p><b>SPA</b> Interest features for the Thames Estuary and Marshes SPA (JNCC, 2001) are as follows: <i>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:</i> <u>Over winter</u></p> <ul style="list-style-type: none"> <li>• <i>Hen Harrier Circus cyaneus: 7 individuals representing at least 0.9% of the wintering population in Great Britain (5 year mean 93/4-97/8)</i></li> <li>• <i>Avocet Recurvirostra avosetta: 276 individuals representing at least 21.7% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)</i></li> </ul> <p><i>This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:</i> <u>Over winter:</u> <i>Ringed Plover Charadrius hiaticula, 541 individuals representing at least 1.1% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)</i> <u>On Passage:</u> <i>Ringed Plover Charadrius hiaticula, 559 individuals representing at least 1.1% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)</i> <i>The area qualifies under <b>Article 4.2</b> of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl Over winter, the area regularly supports 33,433 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Redshank Tringa totanus, Black-tailed Godwit Limosa limosa islandica, Dunlin Calidris alpina alpina, Lapwing Vanellus vanellus, Grey Plover Pluvialis squatarola, Shoveler Anas clypeata, Pintail Anas acuta, Gadwall Anas strepera, Shelduck Tadorna tadorna, White-fronted Goose Anser albifrons albifrons, Little Grebe Tachybaptus ruficollis, Ringed Plover Charadrius hiaticula, Avocet Recurvirostra avosetta, Whimbrel Numenius phaeopus.</i> The Conservation Objectives for the SPA are as follows (Natural England, 2019a): <i>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</i></p> <ul style="list-style-type: none"> <li>• <i>The extent and distribution of the habitats of the qualifying features</i></li> </ul>



		<ul style="list-style-type: none"> <li>• <i>The structure and function of the habitats of the qualifying features</i></li> <li>• <i>The supporting processes on which the habitats of the qualifying features rely</i></li> <li>• <i>The population of each of the qualifying features</i></li> <li>• <i>The distribution of the qualifying features within the site</i></li> </ul> <p><b>Ramsar</b> The criterion for selection of the Ramsar (JNCC, 2008a) are as follows:</p> <ul style="list-style-type: none"> <li>• <i>Ramsar criterion 2: The site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates</i></li> <li>• <i>Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 45118 water-fowl (5 year peak mean 1998/99-2002/2003)</i></li> <li>• <i>Ramsar criterion 6 – bird species/populations in spring/autumn and winter occurring at levels of international importance</i></li> </ul>
<p><b>Medway Estuary and Marshes Ramsar and SPA</b></p>	<p>Habitats Regulations 2017 Ramsar Convention</p>	<p><b>SPA</b> Interest features for the Medway Estuary and Marshes SPA (JNCC, 2015) are as follows: <i>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:</i></p> <p><u>Breeding Season:</u></p> <ul style="list-style-type: none"> <li>• <i>Avocet <i>Recurvirostra avosetta</i>, 28 pairs representing at least 4.7% of the breeding population in Great Britain (5 year mean, 1988-1992)</i></li> <li>• <i>Little Tern <i>Sterna albifrons</i>, 28 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean, 1991-1995)</i></li> </ul> <p><u>Over winter</u></p> <ul style="list-style-type: none"> <li>• <i>Avocet <i>Recurvirostra avosetta</i>, 314 individuals representing at least 24.7% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)</i></li> </ul> <p><i>This site also qualifies under <b>Article 4.2</b> of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:</i></p> <p><u>On passage</u></p> <ul style="list-style-type: none"> <li>• <i>Ringed Plover <i>Charadrius hiaticula</i>, 1,337 individuals representing at least 2.7% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)</i></li> </ul> <p><u>Over winter</u></p> <ul style="list-style-type: none"> <li>• <i>Black-tailed Godwit <i>Limosa limosa islandica</i>, 957 individuals representing at least 1.4% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6)</i></li> <li>• <i>Dark-bellied Brent Goose <i>Branta bernicla bernicla</i>, 3,205 individuals representing at least 1.1% of the wintering</i></li> </ul>



*Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6)*

- *Dunlin Calidris alpina alpina, 25,936 individuals representing at least 1.9% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)*
- *Grey Plover Pluvialis squatarola, 3,406 individuals representing at least 2.3% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)*
- *Pintail Anas acuta, 697 individuals representing at least 1.2% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)*
- *Redshank Tringa totanus, 3,690 individuals representing at least 2.5% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)*
- *Ringed Plover Charadrius hiaticula, 768 individuals representing at least 1.5% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)*
- *Shelduck Tadorna tadorna, 4,465 individuals representing at least 1.5% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)*

*The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 65,274 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Little Grebe Tachybaptus ruficollis, Dark-bellied Brent Goose Branta bernicla bernicla, Shelduck Tadorna tadorna, Pintail Anas acuta, Ringed Plover Charadrius hiaticula, Grey Plover Pluvialis squatarola, Dunlin Calidris alpina alpina, Avocet Recurvirostra avosetta, Redshank Tringa totanus, Curlew Numenius arquata, Great Crested Grebe Podiceps cristatus, Cormorant Phalacrocorax carbo, Wigeon Anas penelope, Teal Anas crecca, Oystercatcher Haematopus ostralegus, Lapwing Vanellus vanellus, Black-tailed Godwit Limosa limosa islandica, Whimbrel Numenius phaeopus*

*The Conservation Objectives for the SPA are as follows (Natural England, 2019b):*

*Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;*

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features*
- *The distribution of the qualifying features within the site*

### **Ramsar**

*The criterion for selection of the Ramsar (JNCC, 2008b) are as follows:*

- *Ramsar criterion 2: The site supports a number of species of rare plants and animals. The site holds several nationally scarce plants, including sea barley Hordeum marinum, curved hard-grass Parapholis incurva, annual beard-grass Polypogon monspeliensis, Borrer's saltmarsh-grass Puccinellia fasciculata, slender hare`s-*



ear *Bupleurum tenuissimum*, sea clover *Trifolium squamosum*, saltmarsh goose-foot *Chenopodium chenopodioides*, golden samphire *Inula crithmoides*, perennial glasswort *Sarcocornia perennis* and one-flowered glasswort *Salicornia pusilla*. A total of at least twelve British Red Data Book species of wetland invertebrates have been recorded on the site. These include a ground beetle *Polistichus connexus*, a fly *Cephalops perspicuus*, a dancefly *Poecilobothrus ducalis*, a fly *Anagnota collini*, a weevil *Baris scolopacea*, a water beetle *Berosus spinosus*, a beetle *Malachius vulneratus*, a rove beetle *Philonthus punctus*, the ground lackey moth *Malacosoma castrensis*, a horsefly *Atylotus latistriatus*, a fly *Campsicnemus magius*, a soldier beetle, *Cantharis fusca*, and a crane fly *Limonia danica*. A significant number of non-wetland British Red Data Book species also occur.

- Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 47637 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – bird species/populations in spring/autumn and winter occurring at levels of international importance

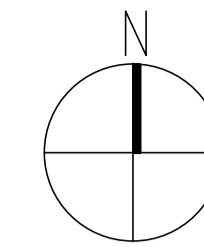
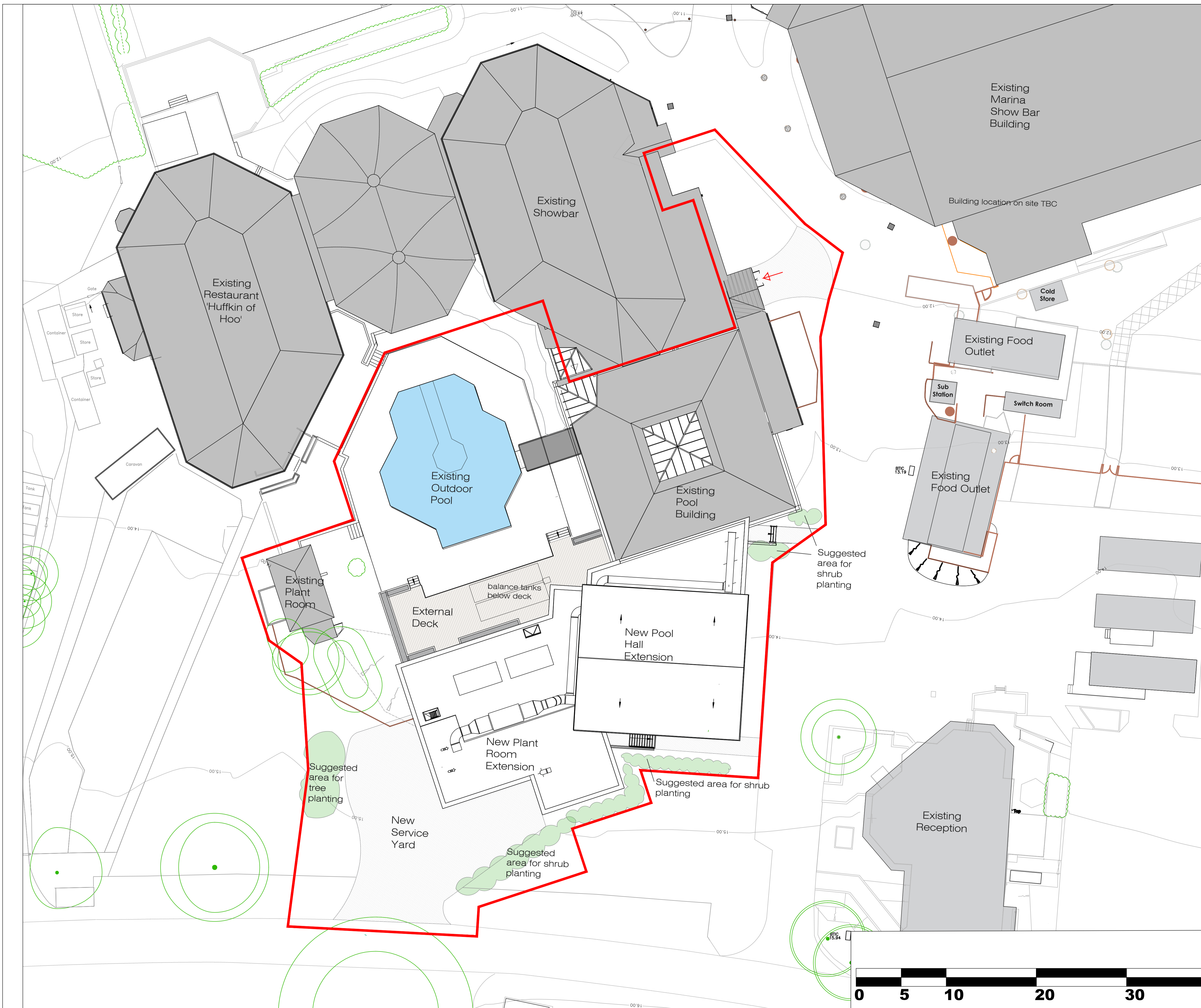




# Appendix 4: Proposed Site Plan







NOTE

— Planning Boundary Line

Revision	Date	Description	By/Ch
P01	11.05.23	Issued for Planning	SG

CLIENT  
Haven Leisure Ltd



+44 800 900 8008    [enquiries@space-place.com](mailto:enquiries@space-place.com)    [www.space-place.com](http://www.space-place.com)

STATUS: Issued for Planning

PROJECT  
Haven Holiday Parks  
Allhallows

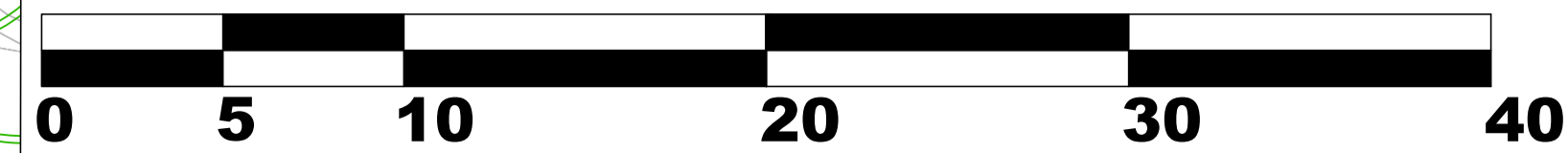
DRAWING

Site Plan As Proposed

SCALE 1:200    SHEET SIZE A1    DRAWN BY GM    CHECKED BY SP    DATE 10.10.2022

PROJECT NO. 3893-ASP-ZZ-XX-DR-A-0823-P01    DRAWING NO.    REVISION

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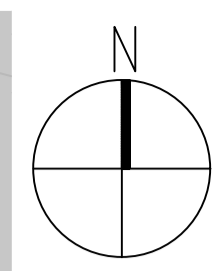




# Appendix 5: Proposed Lighting Plan







Original drawing size A1  
Original line length 50mm

— Planning Boundary Line

PO1	APR 23	PM	PLANNING	RB
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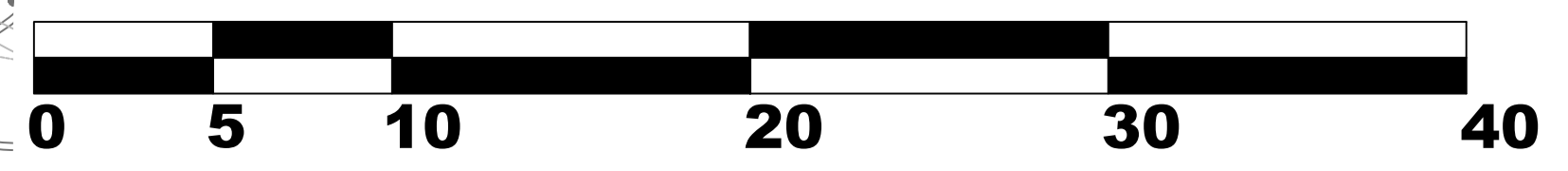
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CLIENT	HAVEN
ARCHITECT	SPACE-PLACE
PROJECT	HAVEN ALLHALLOWS

TITLE  
ELECTRICAL SERVICES  
PROPOSED EXTERNAL LIGHTING  
SCHEME

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# Appendix 6: Proposed Drainage Plan





CROUCH  
WATERFALL

# Outline Flood Risk Assessment & Drainage Strategy

## Haven Allhallows Holiday Park

**CLIENT:** Haven

**PREPARED BY:** Rob Jones

**CHECKED BY:** Martin Baker

**APPROVED BY:** Martin Baker

**DOCUMENT REFERENCE:** 22362G-CWP-DS-RP-0001

**REVISION:** A02

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PROJECT TITLE: Haven Allhallows

DOCUMENT TITLE: Outline Flood Risk Assessment &amp; Drainage Strategy

DATE: 12-05-23

## Document Control Sheet

**Issued by:** Crouch Waterfall and Partners Limited  
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Issue Number:	A02	Name	Signature
Prepared		Rob Jones	
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### Document Revision Record

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A01	11 <sup>th</sup> May 2023	First issue.
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PROJECT TITLE: Haven Allhallows

DOCUMENT TITLE: Outline Flood Risk Assessment &amp; Drainage Strategy

DATE: 12-05-23

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# 1. Introduction

## 1.1. Scope of Works

Crouch Waterfall has been commissioned by Haven to compile an outline drainage strategy for the proposed development at Haven All Hallows.

The proposed works are to extend the existing pool facilities, which includes the following items:

- An extension on the Southside of the existing indoor pool to contain a splash pad, confidence pool and enlarged plant room.
- Alternatives to the existing external pool to make it beach entry and allow for a new external terrace surrounding the pool on the north side.

## 1.2. Source of Information

A review of the relevant information from a range of sources has used to compile this report:

- Digital Terrain Surveys LLP – DTS290419-35A
- Select Surveys – 19-AMA-2231
- Southern Water Records
- EA flood Maps
- LFA Flood Maps

## 1.3. Proposed Development

The site that is to be developed is adjacent to the main complex at Allhallows which is solely used for leisure purposes of the Haven guests and the proposed development extends these facilities.

The proposed development is to extend and upgrade the existing pool facilities, to include a new splash pad and confidence pool and additional plant room to serve the increased pool requirements.

The proposed masterplan is provided in Appendix A.

## 2. The Site

### 2.1. Site Location

The proposed development can be found along the East Coast of England, Kent within the county of Medway, on the Haven Allhallows leisure park. This site contains a central complex, which is to be extended, that currently contains entertainment, leisure and dining facilities for the holiday park guests. The accommodation provided is typically in static caravans.

The Ordnance Survey (OS) grid reference for the Application Site is 583748, 178695 and the postcode is ME3 9QD.

Figure 2.1: Site Location



### 2.2. Site Description

The area surrounding the existing pool, which is to be redeveloped is primarily used as soft landscaping. Several areas on the proposed site are currently impermeable that include the existing pool, the pool surround and an isolated footpath. It is believed that the pool surround has its own surface water drainage that will be retained, with some minor rerouting of pipe work. The footpaths are believed to drain into the soft areas for the surface water to infiltrate into the ground or runoff toward the road's drainage system.

The Application Site has a gross area of 3338m<sup>2</sup> Approx. which contains the proposed development extensions and development to the external pool.

Adjacent to the site a recent development has taken place to create a new Show bar, car park and an external activity equipment area. This has had new below ground drainage infrastructure which our proposed scheme will connect into.

### 2.3. Topography

Locally to the site the footprint of the building lies on a slope between 15m and 12.30m above the AoD. For the proposal the ground level will be lower than the existing ground profile, and several retaining walls will be used to create the structure.

Generally, the Haven Allhallows site slopes towards to sea/ Thames Estuary at the north with the level appearing to varying between 23m and 4m above Ordnance survey level.

Away from the site the slope continues the southwest and south, with marsh land the east which appears to be below 5 AoD.

Figure 2.3.1: OS Levels

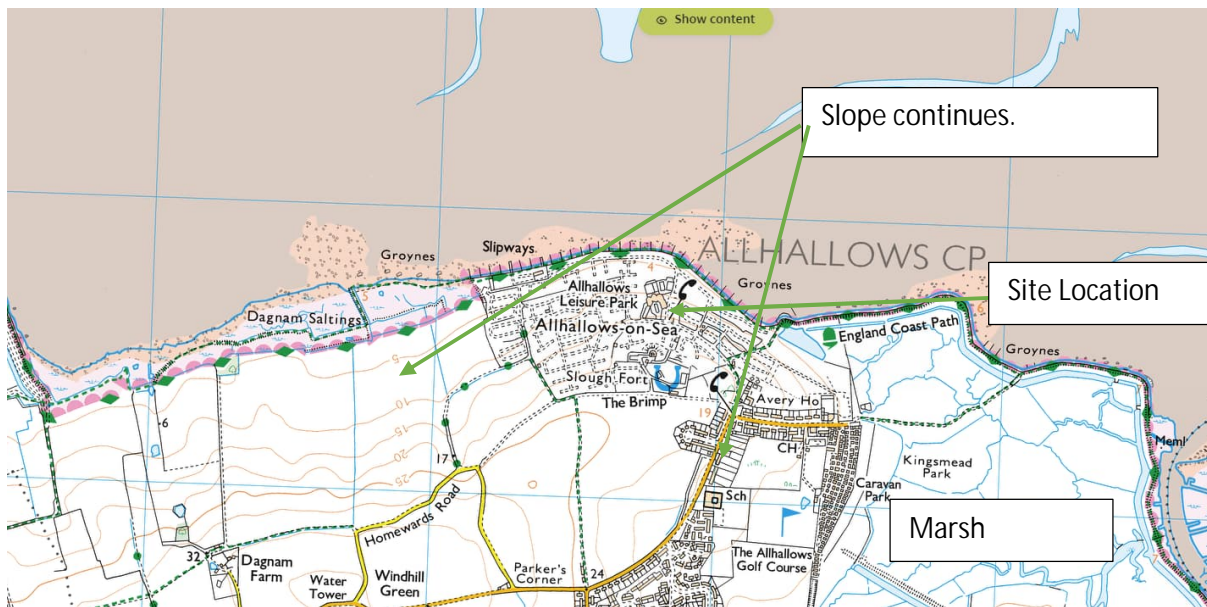
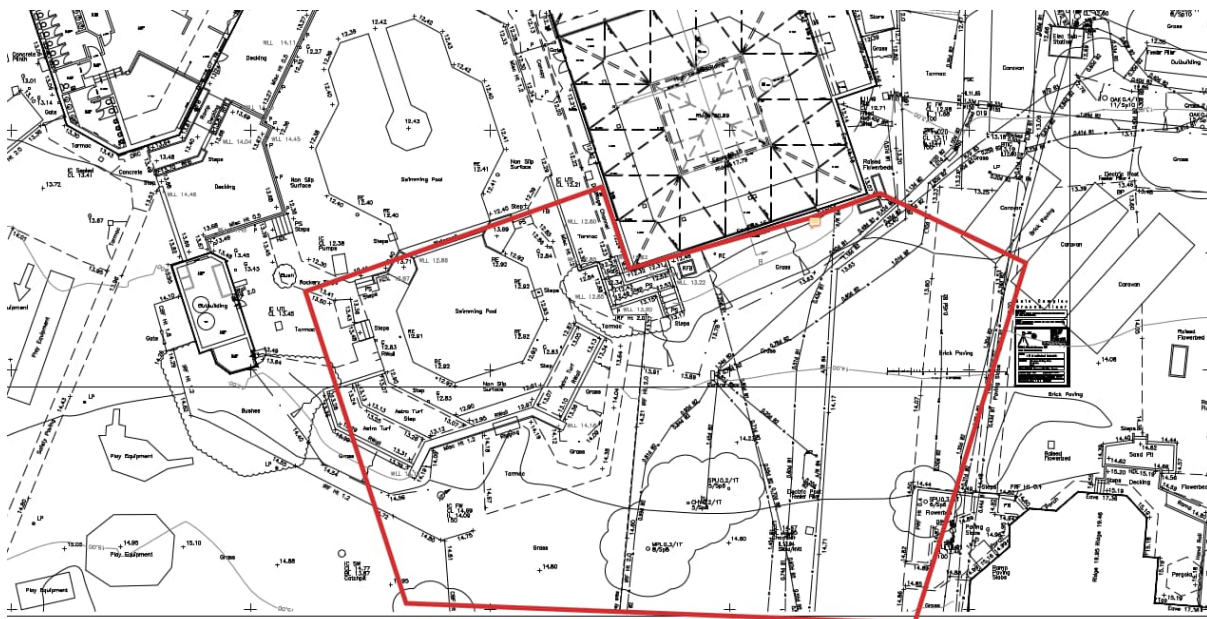


Figure 2.3.2: Local Site Levels





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## 2.4. Watercourses

From the information on the OS maps and from site observations, there appears to be no watercourses on site. However, the does sit to the south of the Thames Estuary

Figure 2.4.1: Water Course



## 2.5. Geology

Based on the British geological survey (BGS) maps, it indicates that the superficial deposits beneath the site potentially comprise of Head or River Deposits. The site appears to sit on the boundary between the two different deposits.

From ground investigations carried out for the proposed development, several boreholes were carried out indicating made ground for 1.8m, Head deposits 0.5m thick then changing into weathered London clay which extended to the London clay.

With the clay material it is assumed that there will be limited potential for infiltration for the proposed development.

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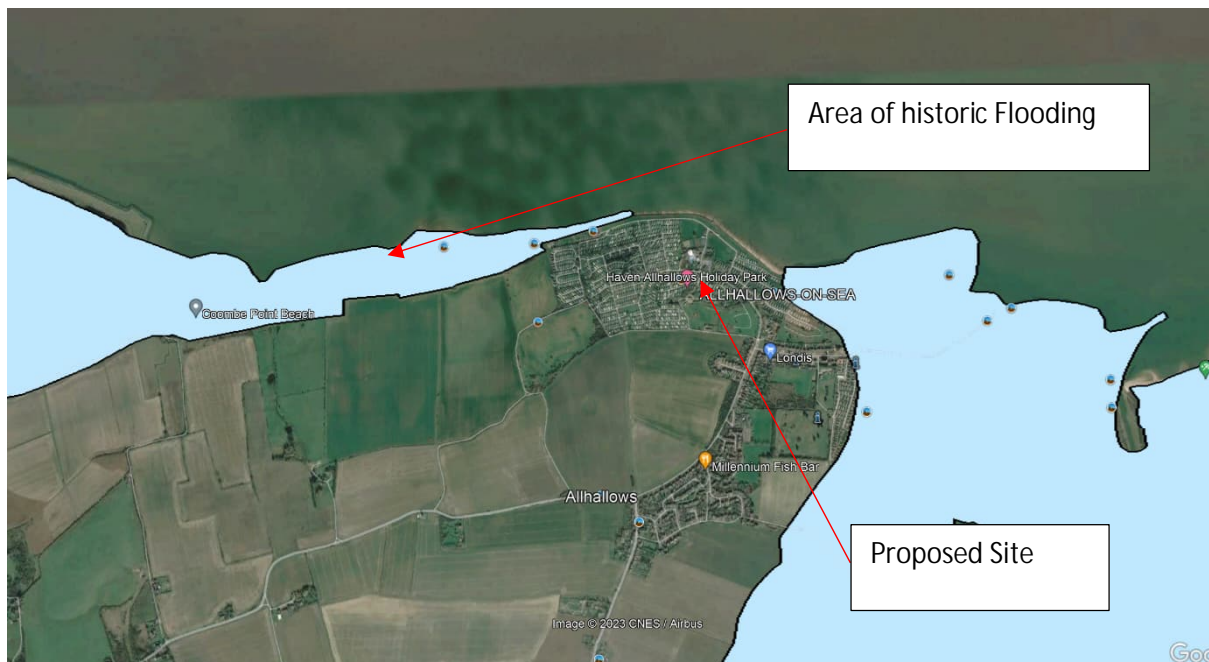
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## 2.6. Historic Records of Flooding

Based on the historical flooding maps supplied by the Environment Agency last updated on the 17th of February 2023, the figure below shows the flooding vicinity of the proposed development. This appears to show the site is not affected from flooding.

The site is protected from the Thames defences which were completed in the 1950's, preventing the flooding of the site.

Figure 2.6.1 – Historic Flooding



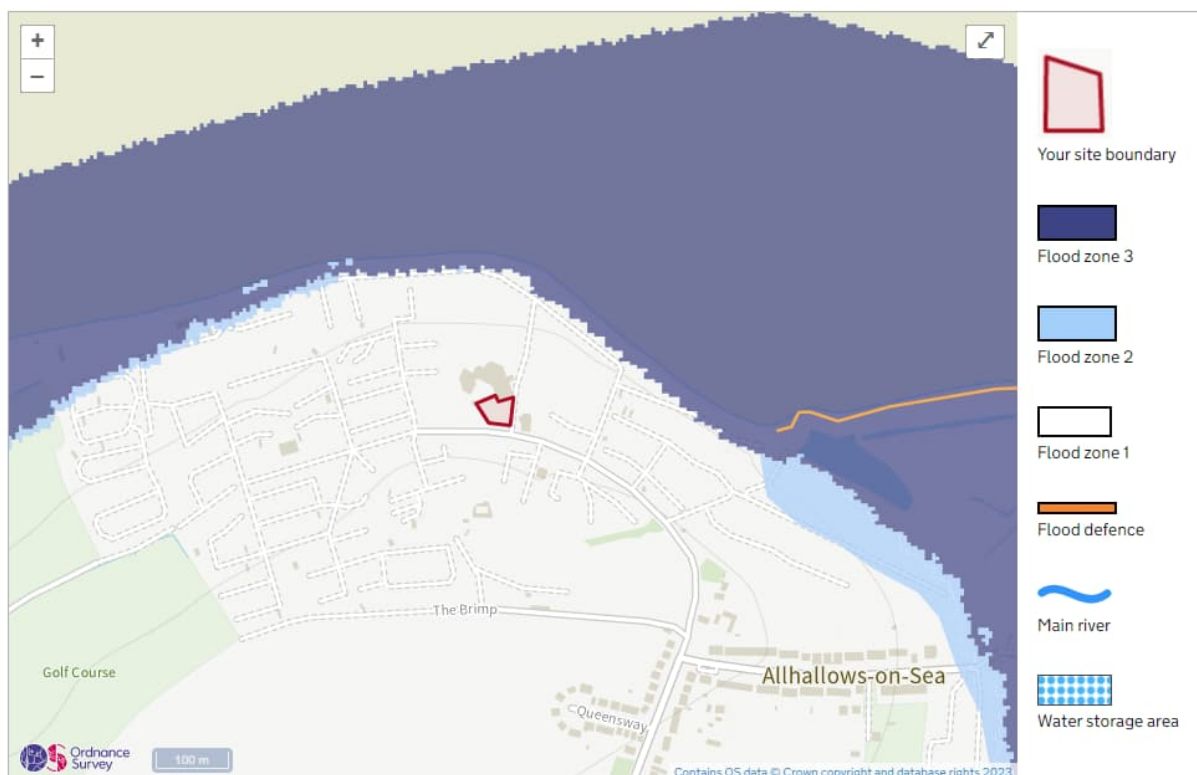


### 3. Preliminary Existing Flood Risk Assessment

#### 3.1. Fluvial and Tidal Flood Risk

Based on the Environment Agency flood risk data, the proposed site falls within flood zone 1 which has a probability of flooding of 0.1% due to fluvial or tidal flooding, or a very low risk of flooding.,

Figure 3.1.1 – Surface Water Flooding



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### 3.2. Surface Water Flood Risk

Based on information from the lead local authorities who are responsible for managing the flood records of surface water, and from the records that are readily available, the proposed extension would fall into a very low risk zone as shown on the image below.

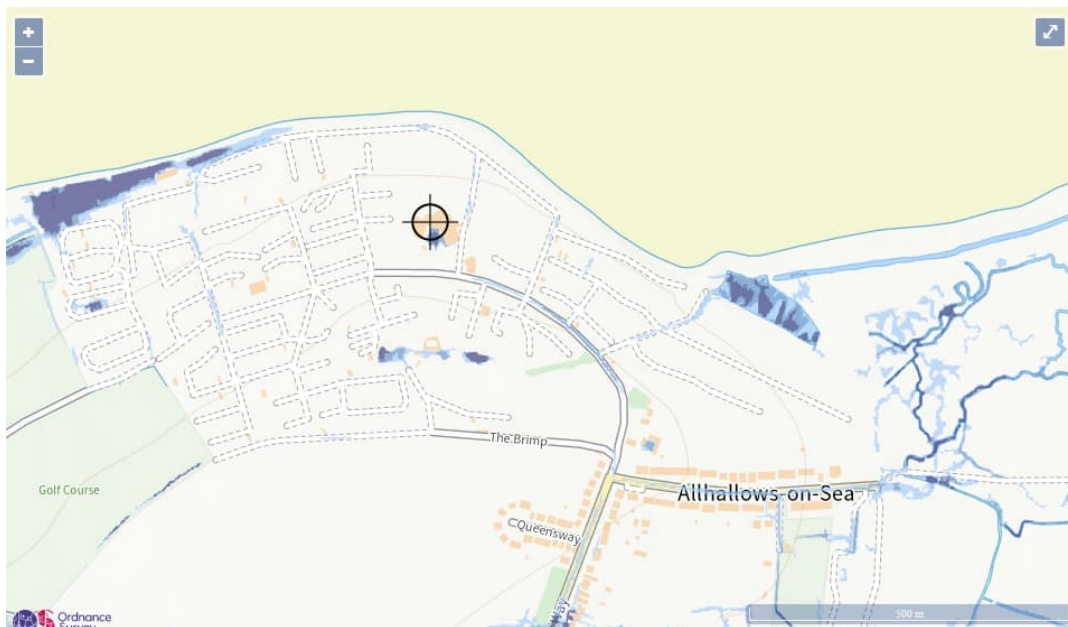
However immediately adjacent to the extension this is a pool area of medium risk this is at a lower level than the proposed development the ground in this area typically at 12.4m the proposed FFL is at 13.2m, there is a basement at 10.2m but this will have waterproofing up to the proposed FFL, so will not be at risk of flooding.

There is a small section of floor that will match the existing FFL at 12.2m, but no door thresholds are provided at this level, and this will have concrete upstands to prevent water ingress.

For this external area the area indicated as medium risk is currently impermeable area, and no major alterations in terms of changing falls or locations of outfalls will be made to the existing drainage infrastructure directly serving this area and the strategy of draining this area will may remain unchanged.

Generally, elsewhere around the site, the external levels fall to the north away from the building, towards The Thames, so it is unlikely that the building will be at risk for surface water flooding with water flowing overland will flow into the road drainage and avoid the proposed scheme.

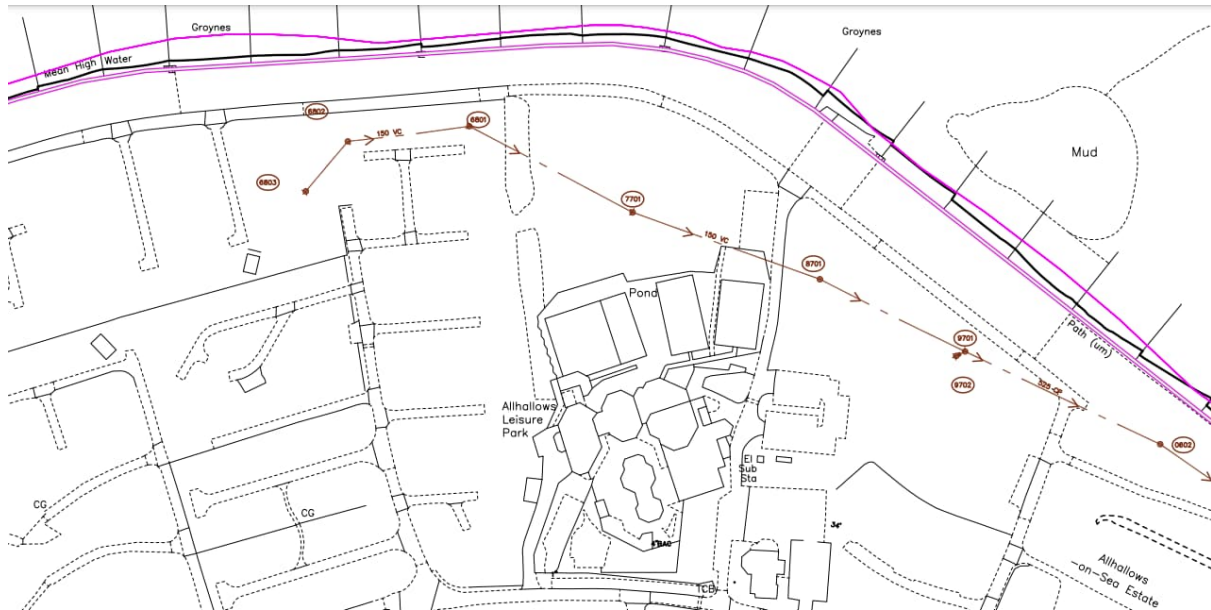
Figure 3.2.1 – Surface Water Flooding



### 3.3.Flood Risk from Sewers

The existing foul drains on site are believed to be private and connect to a public drain on the east of the site, as shown in the imagine below:

Figure 3.3.1 – Public Foul Drain



The extent and condition of these are currently unknown and they may need future investigation to confirm they are suitable for reuse and to design any improvements necessary.

The public drain is located at a lower level and not risk the proposed development. Any discharge from the public sewer would flow to the north and not impact the development. The drains will be located into the surrounding roads and any flooding will flow down the slope away from the proposed development, so there would be a low risk in flooding.

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### **3.4. Groundwater Flood Risk**

There are no significant local aquifers that could give rise to a risk from ground water flooding.

### **3.5. Reservoirs Flood Risk**

There are no significant local reservoirs that could give rise to a risk to flooding.

### **3.6. History of Flooding**

It has not been identified to CWP that there has been any historic flooding of the site around to proposed development.

## 4. Planning policy and guidance

### 4.1. National Planning Policy / Guidance

Under the town and county planning order a major development is defined as:

- The winning and working of minerals or the use of land for mineral-working deposits.
- Waste development.
- The provision of dwelling houses where:
  - o the number of dwellings to be provided is 10 or more; or
  - o the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within the above sub-paragraph.
- The provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more: or,
- Development carried out on a site having an area of 1 hectare or more.

Therefore, based on the red line boundary provided by Space & Place the development will be classed as a minor development due to the floor area is smaller than 1000m<sup>2</sup> squared and the site is under one hector.

### 4.2. National Planning policy framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are expected to be applied. This document replaces the previous national planning policy document relevant to flood risk 'Planning Policy Statement: Development and Flood Risk'.

The policy aims to avoid inappropriate development by directing it away from the areas that are at highest risk. Where development is necessary within the floodplain, it must be demonstrated to be safe without increasing flood risk elsewhere.

The NPPF requires that an FRA should be undertaken:

- o For all developments greater than 1 Hectare (ha) in size in Flood Zone 1.
- o All proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has a critical drainage problem.
- o Where proposed development or a change of use (e.g., from commercial to residential) to a more vulnerable class may be subject to other sources of flooding (e.g., surface water drains, reservoirs).

The site is located within Flood Zone 1 and a Minor development, an FRA is believed not to be required for the redevelopment and extension of the existing pool as the site area is 3482m<sup>2</sup>.

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### 4.3. Medway Council

The Medway County Council has published a local flood risk management strategy, dated at the July 2014. Which outlines the approach that should be taken to manage local flood risk.

Objectives:

1. Work with stakeholders to develop a collective understanding of local flood risk to enable successful local flood risk management.
2. Monitor flood risk.
3. Ensure local policy is consistent with wider flood risk management policies and legislation. Promote the use of Sustainable Drainage Systems SuDS in accordance with the forthcoming role as SuDS Advisory Body
4. Take account of the cumulative effect of development and climate change on the risk of flooding throughout Medway
5. Ensure that all development has a positive or nil effect on the risk of flooding to and arising from proposed development.
6. Use flood risk information to implement a risk-based approach to capital investment decisions and maintenance programmes and activities.
7. Consider how future infrastructure improvements (e.g., highways/rail/public realm works) and/or changes could be used to deliver local flood risk benefits.
8. Share flood risk information in Medway with all Risk Management Authorities and the public.
9. Increase public awareness with respect to flood risk and responsibility for flood risk management.
10. Use information on flood risk as a tool for flood prediction and warning.

### 4.4. North Kent Marshes Internal Drainage Boards

The North Kent Marshes Internal drainage boards who overseeing the management of water levels and flood risk within the North Kent Marshes district. The board will make an assessment for the proposed application to ensure no inappropriate development of the land and ensure the management of the surface water is carried out in a way that meets its objectives.

Based on the policy statement their main objectives are as follows:

1. Understand the risks of flooding and coastal erosion, working together to put in place long-term sustainable plans to manage these risks and making sure that other plans take account of them.
2. Seek to avoid inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks.
3. Build, maintain and improve flood and coastal erosion management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society as well as achieving wider environmental benefits.
4. Increase public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face and to make their property more resilient; and
5. Improve the detection, forecasting and issue of warnings of flooding, co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

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#### 4.5. Climate Change & Peak Rainfall Intensity

In February 2016, the Environment Agency released 'Flood risk assessments: climate change allowances'<sup>1</sup> guidance to support the NPPF (further updated in May 2022).

The Application Site is located within the Medway Management Catchment for peak rainfall allowances. Table 4.4.1 and Table 4.4.2

Table 4.4.1 - 3.3% Annual Exceedance Rainfall Event

<i>Epoch</i>	<b>Central Allowance</b>	<b>Upper Allowance</b>
2050's	+20% (peak rainfall intensity)	+35% (peak rainfall intensity)
2070's	+20% (peak rainfall intensity)	+35% (peak rainfall intensity)

Table 4.4.2 - 1% Annual Exceedance Rainfall Event

<i>Epoch</i>	<b>Central Allowance</b>	<b>Upper Allowance</b>
2050's	+20% (peak rainfall intensity)	+45% (peak rainfall intensity)
2070's	+20% (peak rainfall intensity)	+40% (peak rainfall intensity)

As the scheme is scheduled to be operational by 2024 and deemed to have a 75-year design life (2061 -2100) the buildings lifespan will be within the 2070's epoch with the central rainfall allowance has been used for the 3.3% AEP Rainfall Event (40% respectively) and 1% AEP Rainfall Event (40% respectively)



## 5. Consultations

### 5.1. Medway County Council

As lead local flood authority Medways County Council will be consulted on proposed drainage strategy.

### 5.2. North Kent Marshes Internal Drainage Boards

North Kent Marshes Internal Drainage Board has a supervisory duty over all matters relating to surface water drainage within the district.

### 5.3. Environment Agency

As the surface water will eventually discharge into The River Thames, the environmental agency/LLFA we need to be consulted due as this is a public water course.

## 6. Surface Water Design

### 6.1. Existing Site Drainage

Much of the existing site that is to be developed, is believed to have no formal surface water drainage. With any surface water being dealt with by infiltration into the topsoil or via over land flows to the existing hardstanding drainage. This existing hardstanding surrounds the pool and has several channel drains which feed into the existing network that is believed to discharge into the Thames Estuary

Near the proposed site, a new show bar and activity equipment have been recently constructed with new below ground infrastructure for the surface water, based on the previous drainage strategy the total impermeable area is 4787m<sup>2</sup>. The information available appears to show the creation of a new surface water network from site to the northeast of the show bar that appears to eventually discharge into the estuary. The site appears to have several inlets into a swale, the outlet consists of a 150mm diameter pipe that has no flow control device attached.

A second outlet that appears to discharge into the Thames Estuary is located to the north of the show bar and this appears to serve the remaining half of the external areas and the recently constructed car park which was part of the show bar project. This network also appears to connect to the existing building. There is no evidence showing any flow control devices and no attenuation on this network.

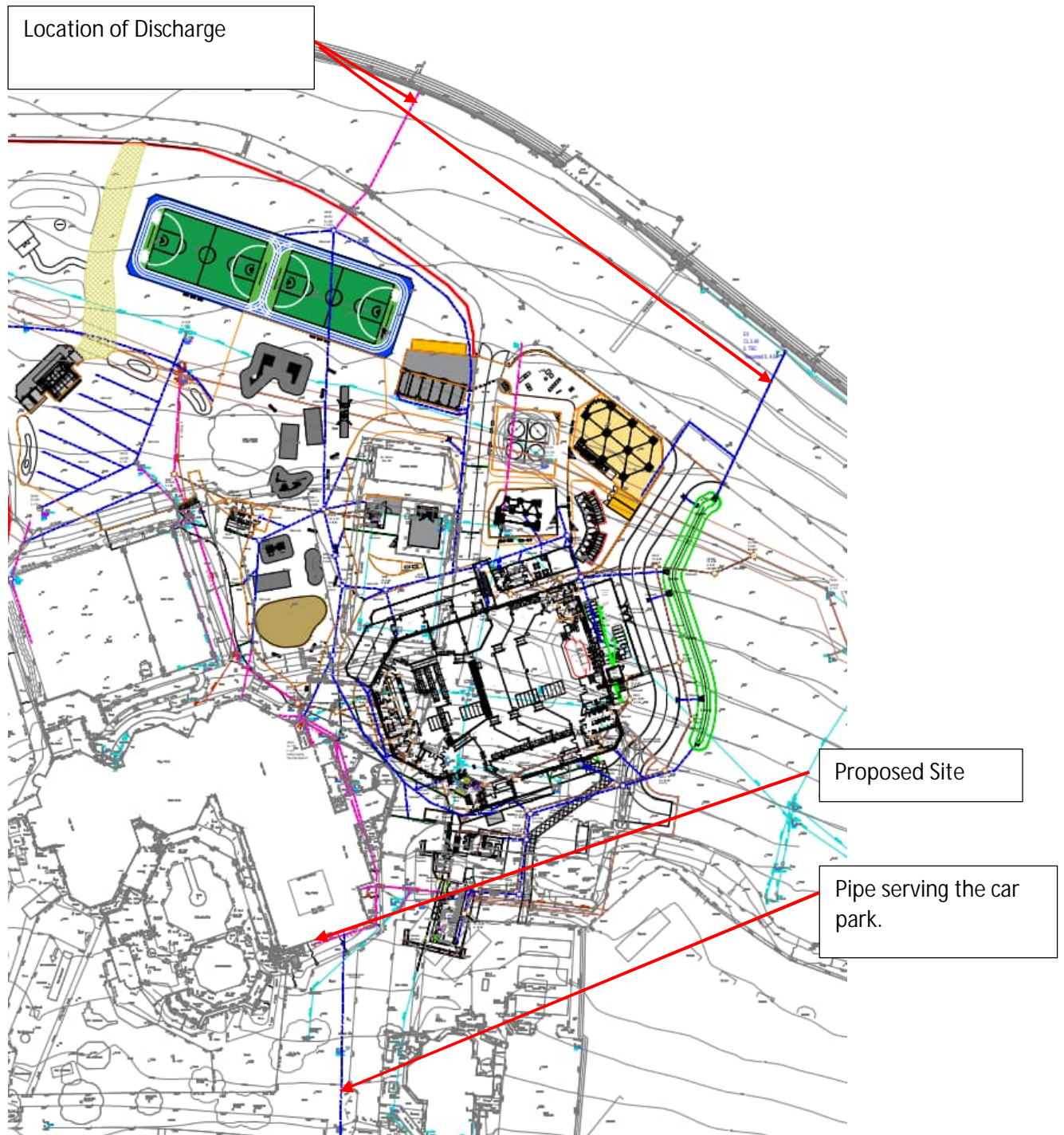
Consequently, it assumed the existing impermeable areas on site is discharging into the Thames Estuary at an unrestricted rate limited to the connection pipes maximum flow rate.

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Figure 6.1.1 – Location of Discharge



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## 6.2.Potential For Soakaway

Based on the assumed underlying ground conditions it is believed that infiltration is not viable for the main structure for this scheme, due to the extended thickness of clay materials underlying the site.

The paths tend to be of small cross section are assumed to infiltrate into the soft verges if impermeable or to be of permeable construction.

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### 6.3.Existing Surface Water Run Off Rates

The green field run off rates were calculation use Wallingford HR online calculator and a summary of the rates for the Site area are shown below:

Table 1: Greenfield rates

<i>Return Period</i>	<i>IH124 (l/s)</i>
1 Year	0.38
30 Year	1.04
100 Year	1.44

### 6.4.Catchments

The total proposed site area is Approx 3338m<sup>2</sup> with the new proposed impermeable areas totalling 1184m<sup>2</sup> this is broken down to the area beneath:

New Plant Room & Swimming Pool – 770m<sup>2</sup>

External Decking – 167m<sup>2</sup>

New Service Path & Path – 228m<sup>2</sup>

For the design a total area of 1200m<sup>2</sup> has been used.

Existing Show bar Development Impermeable area into Swale 3740m<sup>2</sup>

It is believed there will not be any additional catchment that would flow onto the proposed site, as the road above the site will redirect any surface water into road drainage and bypass the proposed site. Any Existing drainage beneath the proposed development will be rerouted to maintain the existing connections and outfalls.

### 6.5.Proposed Discharge

The proposal is to use the existing discharge that into the Thames via the northeast outlet which was installed as part of the recent show bar development, it is assumed this will be achieved by gravity drains via connecting into the recently constructed swale. The preliminary design is based on limiting the discharge to the maximum flow rate of the existing outlet.

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## 6.6. Attenuation

For the proposed project that will use an existing outlet to the Thames Estuary, the storage and drainage calculations will be based on the impermeable areas of the new development plus the existing show bar development, that is discharging into swale and outlet. For these areas the storage requirement will be based on not exceeding of the as built network capacity, in dealing with the recently developed show bar. Please note this assessment has been based on the limited information provided on the recent project.

For this it is assumed the scheme for the existing scenario allows for no flooding for the 3.33% + CC, but for the 1% AEP + CC there appears to be approximately 44m<sup>3</sup> over land flooding, which originates at the bottom of the swale and would flow downhill onto the access road and eventually into the road drainage which is assumed to discharge into the Thames.

This volume has been based on an uncontrolled discharge rate to the Thames estuary, which is assumed to be approved in the previous application. A conservative estimate has been made on the existing swale volumes for these calculations.

For the scenario of the proposed project plus the show bar development, the methods used to ensure that there is no increased flooding in the 1% AEP + CC and the 3.33% AEP + CC will be achieved by:

- Increasing the outfall diameter, currently is a 150mm pipe. However, the previous drainage strategy allowed for a 225mm diameter connection, with this increase it will ensure that there is no flooding for the 3.33% AEP + CC and only 33m<sup>3</sup> in the 1% AEP + CC.
- In addition to increasing the outlets diameter, weirs will be installed in the existing swale to increase the storage volumes, as currently the swale is sloping downhill, this results in poor efficiency of storing surface water and the additional weirs in the swale would drastically increase its storage volume, detailed measurements are to be taken next stage to fully analyse the existing geometry and develop the modifications required. However, it can be assumed this will further reduce the flooding and improve the current flooding event for the 1% AEP + CC.

The work to the existing swale and outfall will be done of the existing planning application and within the boundary of the show bar development.

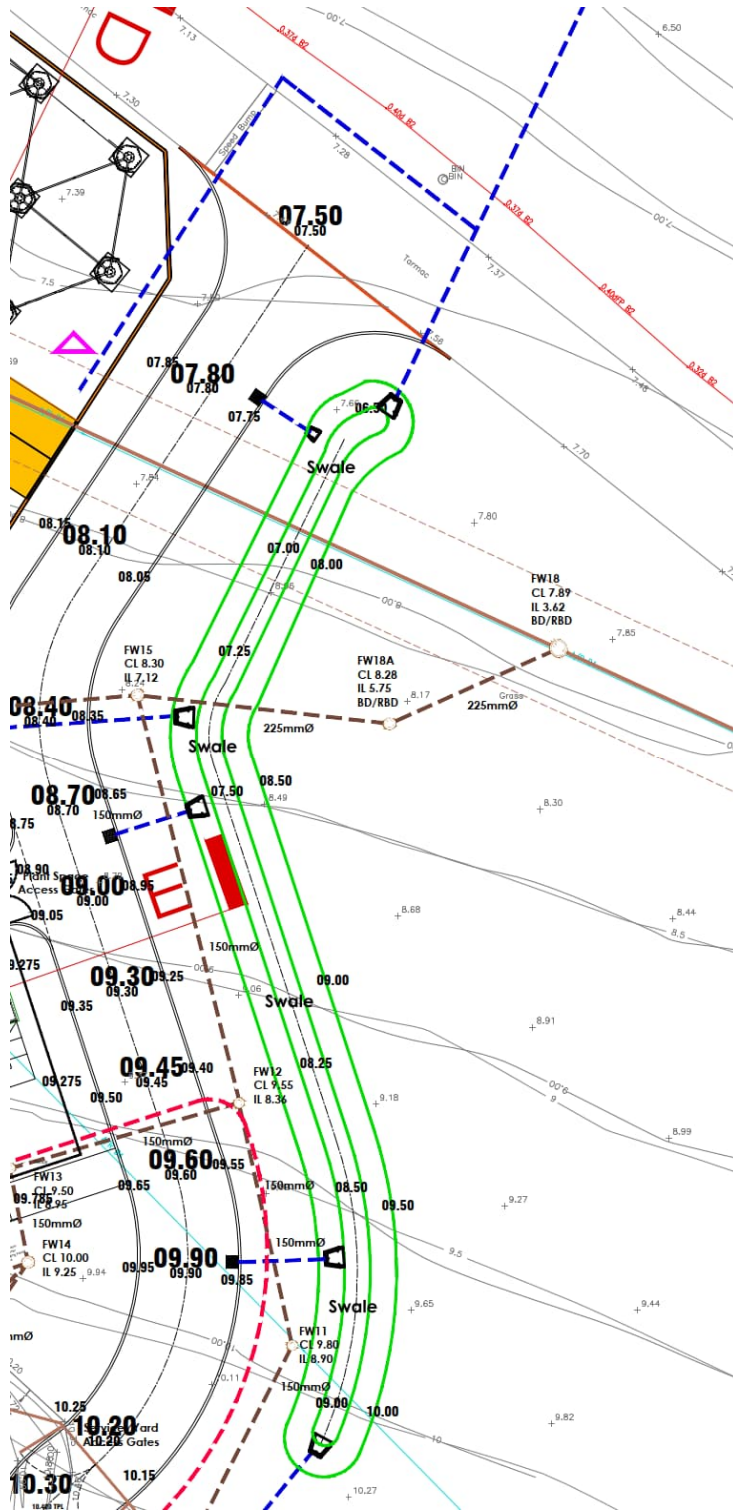


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Figure 6.6.1 – Details of Existing Swale





## 7. Foul Drainage Design

### 7.1. General Foul Design

The arrangement of the existing foul network is currently unknown at this stage and the design will be developed at the next stage.

However, it is understood that the existing foul drainage that serves the main complex flows to the north via gravity drains to a public sewer the runs along its north boundary.

Figure 6.1.1 – Location of Public Sewer



With the proposed site there are several existing drains crossing the proposed site that will be rerouted to avoid the proposed extension initial indications show that the drainage will connect to the public sewer via gravity. There is a deep basement that it is assumed will have a sump and pump system installed that will lift the water into the local gravity foul network.

Based on the proposed development it is believed that this development will not increase the site occupancy, therefore the overall foul flows generated by the wider site would not increase. Consequently, it is anticipated that the existing public sewer will have sufficient capacity and the flows will remain unchanged for continued use.

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## 7.2.Backwash

Currently there is an existing above ground backwash tank that appears to discharge into the existing on-site drainage network, the discharge rate of this tank is unknown. This tank is to be replaced with new backwash storage tanks, that are to be designed to serve the existing and proposed pools and will be connected into the existing drainage system. The exact connection point, rate and details will be developed at the next stage.

For the proposed development an assumption of 5l/s has been taken for allowable discharge rate which the network currently can accommodate. There is a lack of information on the exact arrangement of this on the existing network in terms of how the backwash is currently connected which is needs to be confirmed by site inspections and surveys.

A new trade waste licence will be required for the discharge as the connection is likely to be into a public foul drain. This will be subject to approval, that may include dichlorination prior to discharge, and agreement on discharge rates and times with the local water authority (Southern Water). Limited details of existing licences have been received, to date, and it is assumed that new licences for connection to a public network, or discharge to ground or surface water feature may need to be applied for as the design develops.

## 7. Adoption and Maintenance

The following section sets out the anticipated ownership/adoption routes for each drainage feature within the Proposed Development and their maintenance requirement(s).

### Attenuation Swale – Surface Water

- Ownership / adoption: Haven
- Maintenance requirements: Operational and maintenance requirements for Attenuation Storage Tanks can be found within Table 21.3 of The SuDS Manual (CIRICA C753).

### Onsite Private Sewer Network

- Ownership / adoption: Haven
- Maintenance requirements: Operational and maintenance requirements for the private sewer network will be undertaken in accordance with the specification of the maintenance company.

### Onsite Public Sewer Network

- Ownership / adoption: Southern Water
- Maintenance requirements: Operational and maintenance requirements for the public sewer network will be undertaken by Southern Water.

Haven is a well-respected and knowledgeable client who have many sites with private and complex drainage systems. They have permanent maintenance teams on site and have in place management contracts to maintain and service their systems and these would be extended to the new systems.

## 8. Conclusion And Recommendations

Crouch Waterfall (CWP) was commissioned by Haven to produce an Outline Flood Risk Assessment and Drainage Strategy (DS) report to support the proposed alterations of the southern section of the existing main complex at Haven Allhallows Resort.

This preliminary drainage strategy and outline flood risk assessment has been prepared to support the proposed development through the planning process only.

Investigations into the sources of flooding at the development site indicate that it is at low to very low risk of flooding. As the site is in flood zone 1 and less than 1 hectare a formal Flood risk assessment is not required.

The drainage strategy produced by CWP is for the surface and foul water design of the new extensions to contain the new splash pad and Plantroom, and for the alterations of the original show to a changing village.

In summary, it is deemed disposal of surface water via infiltration is unlikely to be viable, therefore we propose to discharge the surface water into the Thames Estuary via an existing outlet which was installed as part of the recent constructed show bar development. The proposed storm water will be discharged at uncontrolled flowrate, only limited by the pipe diameter. Our new pipework will discharge into the existing swale on site. Improvements will be made to the swale to increase its water storage capacity.

In accordance with National and Local design guides, the surface water drainage design has been designed to accommodate the 3.3% AEP and the 1% AEP rainfall event being below ground.

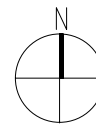
The proposed drainage is to connect into the existing swale for the show bar development and reuse the existing outlet to the Thames which is an uncontrolled flow rate. To ensure there is no increase in the flooding from the site with the increased impermeable area. The outfall will be increased to a 225mm pipe, this size was described in the previous drainage strategy as part of the show bar. Also, to increase the storage capacity weirs are to be installed in the existing sloping swale to increase the storage volume and ensure there is a reduction in the volume of flooding in the 1% AEP rainfall event for the site.

Foul drainage will connect to the public drain to the north of the site, via gravity. The overall volume of foul drainage will remain unchanged as the overall occupancy of site will not be increased as part of the works. New backwash arrangements and discharge requirements will be negotiated with Southern Water.

It is proposed that attenuation features and private drainage within the development will be maintained by a private management firm. All elements of the proposed drainage will be maintained in accordance with the manufacture's specifications.

PROJECT TITLE: Haven Allhallows	
DOCUMENT TITLE: Outline Flood Risk Assessment & Drainage Strategy	DATE: 12-05-23

## Appendix 1- Proposed Plans



NOTE

— Planning Boundary Line



Revision	Date	Description	By/Ch
P01	11.05.23	Issued for Planning	SG

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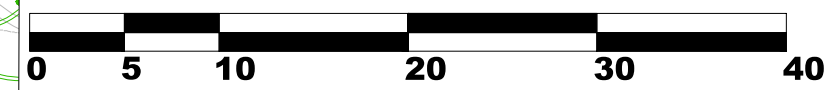


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STATUS: Issued for Planning

PROJECT  
Haven Holiday Parks  
Allhallows

DRAWING  
Site Plan As Proposed

SCALE 1:200    SHEET SEE A1    DRAWN BY GM    CHECKED BY SP    DATE 10.10.2022  
PROJECT NO.    DRAWING NO.    REVISION  
3893-ASP-ZZ-XX-DR-A-0823-P01



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