

Northfleet Central 1 Ltd

Ecological Services

Shadow Habitats Regulations Assessment

Northfleet, Gravesham



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Executive Summary

Designated Sites	Qualifying Features	Pathways of Impact Screened	Impacts requiring Appropriate Assessment
Thames Estuary and Marshes SPA and Ramsar site (5.7 km east of the Proposed Development Site): a wetland of European importance comprising a mosaic of intertidal habitats, saltmarsh, coastal grazing marshes, saline lagoons and chalk pits.	Wintering populations of the Annex 1 species: - Avocet, - Hen harrier, Wintering populations of non-annex 1 species: - Black-tailed godwit, - Dunlin, - Grey plover, - Knot, - Redshank. On passage – populations of: - Common ringed plover. - Waterbird assemblage (>20,000 birds). - Supports endangered and nationally scarce plants of wetland habitats and 20+ British Red Data Book invertebrates. - Supports the endangered least lettuce (<i>Lactuca saligna</i>), at least 14 nationally scarce plants of wetland habitats, and more than 20 British Red Data Book invertebrates. - Supports internationally important numbers of ringed plover, black-tailed godwit, grey plover, knot, dunlin and redshank.	-Recreational pressure and recreational disturbance of birds on the SPA/Ramsar; -Recreational pressure and recreational disturbance on qualifying features within FLL; -Impacts of cat predation on birds associated within the FLL; -Noise & Vibration and Visual (non-recreational disturbance), lighting disturbance of qualifying features during the construction and operational phase within the FLL; -The potential for overshadowing impacts of the completed development on the FLL; -Air pollution and atmospheric nitrogen deposition impacts on the FLL; and, -Reduced water quality and quantity on the FLL.	- Recreational pressure and recreational disturbance of birds on the SPA/Ramsar; - Recreational pressure and recreational disturbance on qualifying features within FLL; - Impacts of cat predation on birds associated within the FLL; - Noise & Vibration and Visual (non-recreational disturbance), lighting disturbance of qualifying features during the construction and operational phase within the FLL; - Air quality impacts arising from construction dust and construction plant emissions on the FLL; and, - Reduced water quality and quantity on the FLL during operation (with construction impacts screened out).

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1 Introduction

1.1 Background Information

- 1.1.1 Assystem was appointed by Northfleet Central 1 Ltd (the client) to carry out ecological assessments for a Proposed Development on land at Northfleet, Kent. Part of this ecological assessment includes a shadow Habitats Regulations Assessment (sHRA) in relation to potential adverse effects on European designated sites within the zone of influence of the Proposed Development. The Proposed Development is within the 6 km Strategic Access Management and Monitoring Scheme (SAMMS) buffer zone of the Thames Estuary and Marshes SPA and Ramsar, which was taken as the Zone of Influence.
- 1.1.2 Assystem have been involved in discussions with Natural England (NE) since November 2023 and attended a Discretionary Advice Service (DAS) meeting) on 16th January 2024 with further discussions continuing post DAS where final queries from NE were responded to.
- 1.1.3 The Swanscombe Peninsula Site of Special Scientific Interest (SSSI) is situated adjacent to the Proposed Development site, and the Botany Marsh area of the SSSI has been identified as supporting areas of Functionally Linked Land (FLL) to the Thames Estuary and Marshes SPA and Ramsar site following surveys undertaken to inform the sHRA.
- 1.1.4 Functionally linked land has been defined in the NE commissioned report 207¹ as follows:

‘The term “functional linkage” refers to the role or “function” that land or sea beyond the boundary of a European site might fulfil in terms of ecologically supporting the populations for which the site was designated or classified. Such land is therefore “linked” to the European site in question because it provides an important role in maintaining or restoring the population of qualifying species at favourable conservation status’.
- 1.1.5 It should be noted that whilst the definitions of functionally linked land and supporting habitat can apply to any mobile designated species features using habitat inside and outside the designated site boundary, for this assessment the only such designated species features assessed in this assessment are birds, plants and invertebrates associated with the Thames Estuary and Marshes SPA and Ramsar sites. Only one botanical qualifying species of these sites has been recorded in the wider SSSI and an area was recorded in the FLL in 2016, which is divided sedge (*Carex divisa*). Whilst this may provide foraging for duck species it is unlikely to be a significant component of the qualifying bird species diet. This is due to the fact that the majority of the qualifying species are either wading birds whose diet will be made up of crustaceans, molluscs, marine invertebrates and invertebrates, or birds of prey whose diet will mainly consist of small birds and mammals. Therefore, it is unlikely that divided sedge will provide a key food source for birds associated with the SPA and Ramsar sites and is unlikely to provide an ecological supporting function or role to the European Site. However, as literature on dispersal distances are limited (or not within the UK), there is potential for it to propagate through water and animal dispersal between the SPA and Ramsar site and the FLL.
- 1.1.6 Only where we identify the impact on the FLL has potential to adversely affect the SPA and Ramsar will we consider cumulative impacts on the designated site along with impacts on other FLL widely supporting it.
- 1.1.7 A wide range of invertebrates are listed as qualifying features for the Thames Estuary and Marshes SPA and Ramsar site, as identified in Table 1. There is evidence that some of these species such as a hoverfly (*Lejops vittate*) can travel distances beyond 5.7 km and could, therefore, rely on Botany

¹ Chapman, C. and Tyldesley, D. (2016) Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – a review of authoritative decisions. Natural England Commissioned Reports, Number 207.

Marshes. Other species are data deficient, thus a precautionary approach has been taken in the absence of evidence and they have been scoped in for assessment as a whole as suitable habitats such as ponds, marshy grassland, grassland and reedbeds are present.

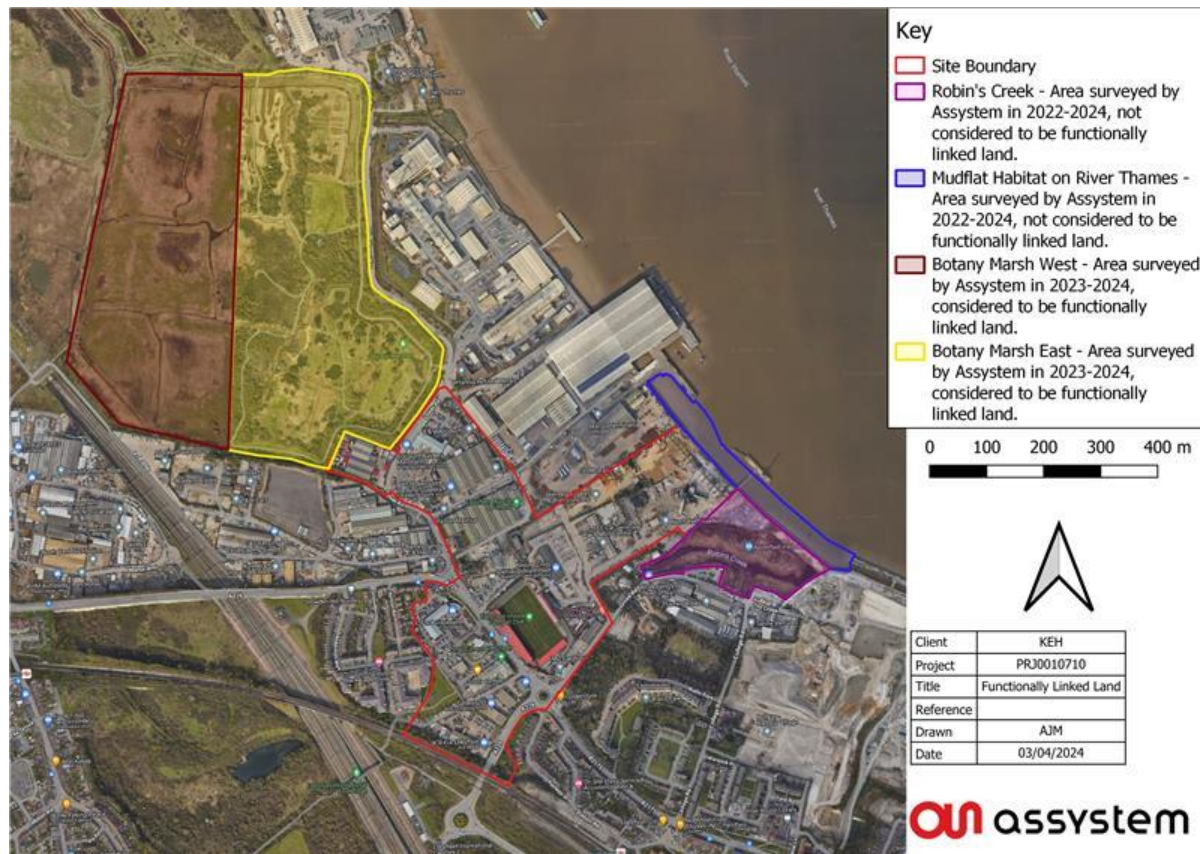
Table 1: Qualifying Invertebrate species of the Thames Estuary and Marshes Ramsar site.

Species Name	Endangered	Vulnerable
Nationally Important Species		
A beetle/weevil (<i>Bagous longitarsis</i>)	x	
A groundbug (<i>Henestaris halophilus</i>)		x
A weevil (<i>Bagous cylindrus</i>)		x
A ground beetle (<i>Polystichus connexus</i>)		x
A cranefly (<i>Erioptera bivittate</i>)		x
A cranefly (<i>Limnophila pictipennis</i>)		x
A horse fly (<i>Hybomitra expollicata</i>)		x
A hoverfly (<i>Lejops vittate</i>)		x
A dancefly (<i>Poecilobothrus ducalis</i>)		x
A snail-killing fly (<i>Pteromicra leucopeza</i>)		x
A solitary wasp (<i>Philanthus Triangulum</i>)		x
A damselfly (<i>Lestes dryas</i>)		x
Rare Species		
A ground beetle (<i>Anisodactylus poeciloides</i>)		
A water beetle (<i>Aulacochthebius exaratus</i>)		
A water beetle (<i>Berosus fulvus</i>)		
A water beetle (<i>Cercyon bifenestratus</i>)		
A water beetle (<i>Hydrochus elongatus</i>)		
A water beetle (<i>H. ignicollis</i>)		
A water beetle (<i>Ochthebius exaratus</i>)		
A water beetle (<i>Hydrophilus piceus</i>)		
A beetle (<i>Malachius vulneratus</i>)		
A rove beetle (<i>Philonthus punctus</i>)		
A fungus beetle (<i>Telmatophilus brevicollis</i>)		
A fly (<i>Campsicnemus magius</i>)		
A horsefly (<i>Haematopota bigoti</i>)		
A soldier fly (<i>Stratiomys longicornis</i>)		
A spider (<i>Baryphyma duffeyi</i>)		

- 1.1.8 The Proposed Development bounds Robin's Creek and mudflat habitat on the River Thames, therefore Assystem undertook winter bird surveys in the 2022-2023 winter period on these habitats to understand if these habitats could be constituted as FLL and support qualifying features associated with the Thames Estuary and Marshes SPA and Ramsar site. The results of these surveys are presented in Appendix C.
- 1.1.9 In the 2023-2024 winter period, Assystem undertook winter bird surveys on Robin's Creek, the mudflat habitat on the River Thames and within Botany Marsh in the SSSI to update the baseline on whether

the habitats could be constituted as FLL, the locations of these habitats are detailed in Figure 1. Appendix C details the full Winter Bird Surveys.

Figure 1: Habitats Surveyed and Assessment of FLL (Maps data: Google 2022)



1.1.10 Assystem presented their approach to the Winter Bird Surveys and rationale for the Zone of Influence for the Winter Bird Surveys, that had commenced in November 2023, to NE in the DAS (January 2024). The Zone of Influence for the Winter Bird Surveys of the development was defined as Botany Marshes (east and west), which extends ~480 m west and ~840 m north-west of the Proposed Development site. This area was considered as Botany Marsh had historically been identified as FLL as it supported numbers of qualifying bird species, and the proposed development is adjacent to Botany Marsh. The ZOI was based on incorporating peak disturbance distances of wintering waterfowl and waders of species previously found to be using these areas that form part of the important wintering bird assemblage of the Thames Estuary and Marshes SPA and Ramsar along with sight lines due to topology and present built structures. The assessment focused on waterfowl rather than raptors as the majority of impacts do not reach beyond 480 m. Guidance on disturbance distances assessed was taken from Goodship, N.M. and Furness, R.W. (MacArthur Green) 2020²:

- Ringed plover – 100-300 m;
- Red knot – 100-300 m;
- Black-tailed godwit – 100-200 m;
- Dunlin – 150-300 m;
- Grey plover – 150-300 m;
- Common redshank – 200-300 m;
- Hen Harrier- 300-750m; and

² Goodship, N.M. and Furness, R.W. (2020) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

- Avocet- no data available - as this is a large wading bird, it is assumed it has similar disturbance distances to other large wading birds such as black-tailed godwit.

- 1.1.11 The approach was discussed with NE, who accepted the approach being taken as appropriate.
- 1.1.12 During the NE discussions, NE accepted that the bird numbers from the 2022-2023 surveys, further supported by the 2023-2024 surveys, suggested that the mudflat habitat on the River Thames to the northeast and Robin's Creek to the east of the development are reasonably unlikely to constitute FLL and therefore did not need to be considered further this assessment, as such this approach has been adopted.
- 1.1.13 During the surveys, no Annex 1 species that use the Thames Estuary and Marshes SPA were found to be using the Botany Marsh FLL within Swanscombe Peninsula SSSI.
- 1.1.14 A peak count of one shoveler, which is cited as forming part of the internationally important waterfowl assemblage, was recorded on the FLL in December 2023 during a single survey visit. During the 2022-2023 surveys, this peak count was two in January 2023.
- 1.1.15 Dog walkers and loud bangs and machinery noise from the surrounding industrial areas were noted on all survey visits in the FLL, with the dog walks observed to be using the footpaths present within the FLL. No disturbance events were noted during the surveys in reaction to any of recreational activities and noise, that would potentially result in disturbance events.
- 1.1.16 The results of these surveys recorded very low numbers of species that are associated with the Thames Estuary Marshes SPA designation.
- 1.1.17 The overall number and species counted during the survey do not make up numbers of national or international importance, when compared to the 5-year peak mean population of species at the Thames Estuary and Marshes SPA.
- 1.1.18 Botany Marsh is within the Zone of Influence for Winter Bird Surveys from a disturbance point of view and has been assessed as FLL. Surveys in Botany Marsh identified roosting waterbird species. Whilst these are limited in the number of the qualifying species of the Thames Estuary and Marshes SPA and Ramsar sites, the overall assemblages and the potential to support these qualifying species means Botany Marsh may ecologically support these sites by providing an important space for roosting and resting overwintering birds using the wider Thames Estuary. Botany Marsh may provide a role in maintaining the population of qualifying overwintering waterbird species of the Thames Estuary SPA and Ramsar site, and as such it should be concluded that it is FLL. As a result, Botany Marsh will be considered as FLL for supporting qualifying winter bird populations in this report.
- 1.1.19 Following the DAS and discussions with NE which detailed proposed mitigation to be implemented as part of the Proposed Development, and as detailed in the subsequent letter (458917_DAS_Pre App_Natural England letter January 2024), NE stated in relation to the impacts on the SPA and Ramsar site, and designated features (such as the FLL within the SSSI) *"The Applicant concludes there is no significant impact based on survey data and we are satisfied to agree with this. We therefore advise that no further surveys are required to determine impacts on designated features of the Thames Estuary and Marshes SPA and Ramsar Site"*. To add robustness to this sHRA, further specific mitigation measures have been included alongside updates to the Design Code. Whilst this version of the sHRA has not specifically been reviewed by NE, the principles agreed with NE are followed, with the data and conclusions remaining the same. In line with the mitigation detailed below, the assessment concludes no adverse impact on the integrity of the Thames Estuary and Marshes SPA and Ramsar.
- 1.1.20 This sHRA is intended to provide the information necessary for Gravesham Borough Council, as the Competent Authority, to fulfil this role and make their own assessment of the Proposed Development. The sHRA is clear that mitigation measures are required to reduce adverse effects on the Thames Estuary and Marshes SPA and Ramsar and Botany Marshes as FLL, as well as additional mitigation, these mitigation have been discussed and agreed with NE. As the proposed development is outline in nature, detail on the design of some of the mitigation will need to be conditioned, in order that it is captured during reserved matters stages. This approach has been discussed and agreed with NE.

- 1.1.21 It should be noted that the responsibility of undertaking an Appropriate Assessment (AA) for the proposed development, lies with Gravesham Borough Council – the Competent Authority. Gravesham borough Council are the Local Planning Authority, who are responsible for determining the outline application for the proposed development, reference no. 20221064. It is the Applicant’s obligation to provide sufficient evidence to the Competent Authority to enable them to undertake the AA.

1.2 Legislative Context

- 1.2.1 The need for an AA of impacts on European sites is set out within the Conservation of Habitats and Species Regulations 2017 (as amended)³. The Regulations apply the precautionary principle to European Sites, in line with the findings of a legal judgement in the European Court of Justice (Waddenzee case C-127/02) and where any uncertainty or doubt over an impact or effect an adverse impact should be assumed.
- 1.2.2 Consent should only be granted for plans and projects once the relevant competent authority has ascertained that there will either be no likelihood of significant effects, or no adverse effect on the integrity of the European Site(s) in question. Where an Appropriate Assessment has been carried out and results in a negative impact, or if uncertainty remains over the significant effect, consent will only be granted if there are no alternative solutions and there are Imperative Reasons of Over-riding Public Interest (IROPI) for the development and compensatory measures have been secured. To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question. The competent authority is entitled to request the applicant to produce such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required. The information provided by the applicant, is provided via a Shadow Habitats Regulations Assessment, referred to as sHRA.
- 1.2.3 Over the years, ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this Report the term HRA is used for the overall process and the use of the term Appropriate Assessment is restricted to the specific stage of that name.
- 1.2.4 It should be noted that as the Competent Authority, the Gravesham Borough Council (the Local Planning Authority (LPA)) must determine whether the Proposed Development will have a significant effect on a European Site (whether alone or in combination with other Plans or Projects), in view of that Site's conservation objectives. This requirement is set down in Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) (the ‘Habitats Regulations’).

1.3 Site Description

- 1.3.1 The site is located in Northfleet adjacent to the River Thames, in the borough of Gravesham in Kent. Swanscombe Peninsula Site of Special Scientific Interest (SSSI) is adjacent to the north-west of the site. The Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site, is located to the east of the site, at a distance of approx. 5.7 km.
- 1.3.2 The proposed development due to its scale and nature was split into three areas referred to as:
- RLB South;
 - RLB North-East; and
 - RLB North-West.
- 1.3.3 The extent of this has been illustrated in Figure 2.

³ The Conservation of Habitats and Species Regulations 2017 (as amended). His Majesty’s Stationery Office (HMSO).

RLB South

1.3.4 The RLB South area of the site is approximately 6 hectares (ha) and is currently mainly occupied by leisure, industrial and commercial activities including Ebbsfleet FC stadium.

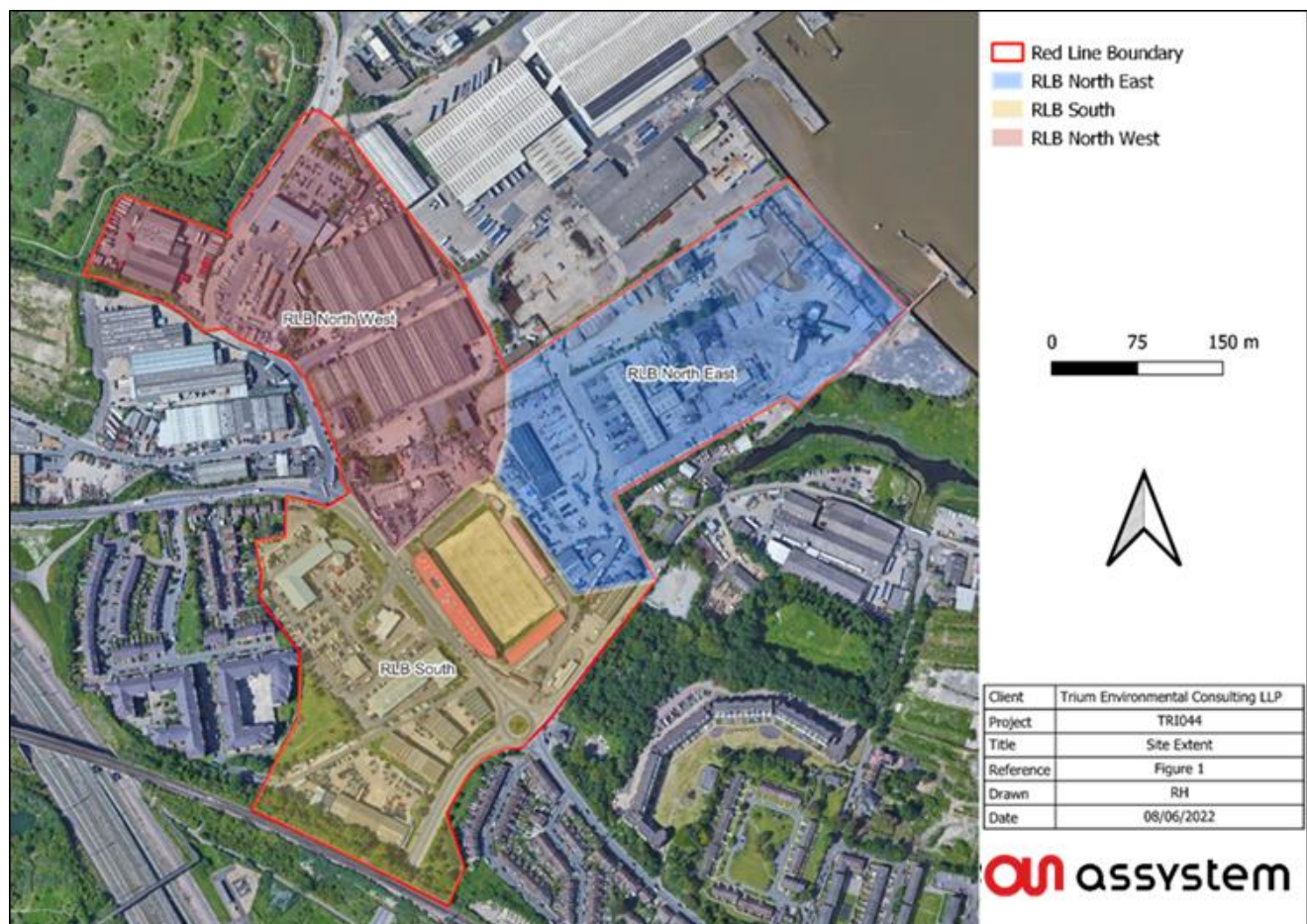
RLB North-East

1.3.5 The RLB North-East area of the site is approximately 6 hectares (ha) and is currently mainly occupied by industrial and commercial activities and other industrial buildings such as car and truck mechanic's buildings. Part of the site is linked to Robins Wharf, a safeguarded wharf operated by Aggregate Industries & Brett Aggregates.

RLB North-West

1.3.6 The RLB North-West area of the site is approximately 6.3 hectares (ha) and is dominated by industrial units, hardstanding mixed with ephemeral vegetation. Also on site are a small number of residential dwellings, scattered trees, ornamental planting as well as sparse species-poor hedgerow with trees. Directly adjacent north of the site is Swanscombe Peninsula SSSI, which directly includes a dense treeline adjacent to the site boundary.

Figure 2: Red-Line Boundary (Maps data: Google 2022)



1.4 Proposed Development

1.4.1 The Applicant is seeking outline planning consent for a mixed-use development comprising the redevelopment of the EUFC stadium, along with 180,000 sqft of office employment space, a maximum of 3,500 new residential units and extensive public realm and landscaping improvements. Given the

Applicant is seeking outline permission, should the application be granted, Reserved Matters Applications will be submitted in due course, which will provide more detail therefore assumptions have been made and worst-case scenario approaches taken where required.

Maximum quantum of floorspace by use (excerpt from Planning Statement)

USE	USE CLASS(ES)	NEIGHBOURHOOD AREA (MAX GEA SQ M)					TOTAL MAXIMUM GEA (SQ M)
		RIVERSIDE	PARKLAND	MARKETPLACE	BOULEVARD	STADIUM	
Retail	E(a)			18,000		4,500	22,500
Food and Beverage / Drinking Establishments (not including ancillary outlets within the stadium)	E(b) / Sui Generis	2,000		1,000	4,000	2,500	9,500
Local Services	E(c) / Sui Generis		200		900		1,100
Indoor Sport, Recreation and Fitness	E(d)	300	300		600		1,200
Medical or Health Services	E(e)	500	500				1,500
Creche or Nursery	E(f)	300	300				1,200
Office	E(g)			1,000	17,000		18,000
Local Community Use	F2	700	700	1,800	800		4,000
Stadium and Associated Facilities	Sui Generis					15,000	15,000
Hotel	C1				20,000		20,000
Residential (units)	C3	1,640	1,037		823		3,500 (units)
Total Maximum non-residential Floorspace		3,800	2,000	21,800	44,400	22,000	94,000

- 1.4.2 Plots 18 and 19, identified in Figure 3, which are the closest to the FLL are anticipated to be demolished and redeveloped within 26 month and 24-month periods respectively, however, these anticipated periods will need to revised to take into consideration the outcomes of the sHRA and any other relevant matters that arise a result of the LPA's consideration of the outline application.

Figure 3: Proposed Plot Boundaries



- 1.4.3 Much of the design is at an early stage and more detailed construction planning will be carried out as the individual building designs become more advanced.
- 1.4.4 The outline application sets out two phases for the Proposed Development. Phase 1 comprises the following:
- Demolition (into two phases);
 - Highway infrastructure;
 - Construction of the Stadium and commercial buildings (Plots 1 and 2); and,
 - Construction of residential Plots 3, 4, 5, 6, 7, 8, 15, 16, 17, 18, 19.
- 1.4.5 After Phase 1 is complete work on Phase 2 will commence. Phase 2 comprises the following:
- Demolition;
 - Highway infrastructure; and,
 - Construction of residential Plots 9, 10, 11, 12, 13 and 14.
- 1.4.6 It is understood that the LPA will condition the phasing of the proposed development, so that it is a matter that can be considered in further detail as part of reserved matters. The occupation of the development will be based on the completion of plots within each phase, with completion of plots being staggered. Subject planning conditions and planning obligations, this may allow for plots constructed first to be occupied prior to the construction of the later plots. Consequentially the Proposed Development will introduce human receptors throughout the construction programme which will need to be mitigated for resulting in measures that would protect the FLL, recreational pressures, vibration and pollution e.g. noise, light and water.

- 1.4.7 The construction activities at present are anticipated to take approximately 96 months (8 years). The assessment of construction noise and vibration has considered the periods where the highest potential for adverse effects could occur, i.e. when construction events across multiple plots occur simultaneously, therefore the construction of some plots could be scoped out of this assessment as they were at a distance away from the FLL that noise and vibration would not reach the FLL in adverse levels
- 1.4.8 The following construction plant assumptions have been made, as detailed in Environmental Statement Vol 3 - Part 7 Noise and Vibration:

Construction plant	Number	% activity	BS5228-1 reference	L_{Aeq} at 10 m (dB)
Dozer	2	50	C.2-1	75
Mobile crane (35t)	2	50	C.4-43	70
Concrete crushers	1	25	C.1-14	86
Tracked excavators with breakers	2	25	C.1-9	90
Tracked excavators	2	50	C.2-2	77

Highway infrastructure

The construction plant assumptions for the assessment of highway infrastructure are presented in Table 2

Table 2 Construction plant assumptions for highway infrastructure

Construction plant	Number	% activity	BS5228-1 reference	L_{Aeq} at 10 m (dB)
Dozer	2	50	C.2-1	75
Mobile cranes (35t)	2	50	C.4-43	70
Concrete crushers	1	25	C.1-14	86
Tracked excavator	1	50	C.2-2	77
Tracked excavator with breaker	1	25	C.1-9	90

Substructure

The construction plant assumptions for the assessment of substructure works for each plot are listed in Table 3.

Table 3 Construction plant assumptions for substructure

Construction plant	Number	% activity	BS5228-1 reference	L_{Aeq} at 10 m (dB)
Dozer	2	50	C.2-1	75
Concrete crushers	1	10	C.1-14	86
Tracked excavator	1	25	C.2-2	77
Piling rigs (CFA)	2	50	C.3-16	79
Tracked excavator with breaker	1	10	C.1-9	90
Mobile cranes (35t)	2	50	C.4-43	70
Concrete pump and concrete mixer trucks	2	25	C.4-28	75
Tower Crane	1	50	C.4-47	76

Superstructure

The construction plant assumptions for the superstructure works for each plot are listed in Table 4.

Table 4 Construction plant assumptions for superstructure

Construction plant	Number	% activity	BS5228-1 reference	L_{Aeq} at 10 m (dB)
Mobile cranes (35t)	2	50	C.4-43	70
Concrete pump and concrete mixer truck	2	50	C.4-28	75
Tower Cranes	1	50	C.4-47	76
External hoist	1	50	C.4-61	68

1.5 Quality Assurance

- 1.5.1 All lead Assystem ecologists are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct when undertaking ecological work.
- 1.5.2 All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2015, 14001:2015 and 45001:2018.
- 1.5.3 Assystem are a CIEEM Registered Practice, and as such champion high professional standards whilst delivering the best outcomes for biodiversity and supporting a thriving economy.

2 Methodology

2.1 The Habitats Regulations Assessment Process

- 2.1.1 The Conservation of Habitats and Species Regulations 2017 (as amended) transpose the European Union Birds Directive 1979/2009 and Habitats Directive 1992 into UK law. Under these regulations, competent authorities are required to consider whether plans or projects will have a likely significant effect on the integrity of a European protected site, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). In addition to these, national planning policy⁴ places an expectation for additional sites to be considered through the HRA process, comprising those sites under consideration, i.e., potential SPAs (pSPAs) and candidate SACs (cSACs), Ramsar sites and areas identified to provide compensatory sites.
- 2.1.2 The HRA process enables the competent authority to establish if the integrity of protected European sites is likely to be significantly impacted by a proposed plan or project by following a four-stage process as follows:
- **Stage 1: Screening.** Applicable if the proposals qualify as a ‘plan’ or ‘project’ within the scope of the Habitats Directive 1992, where the project or plan is not directly connected with or necessary to the management of the European site, and the plan or project is of a type that could possibly have an effect on a European site;
 - **Stage 2: Appropriate Assessment and the Integrity Test.** Applicable when it is confirmed by Stage 1 Screening that the plan or project is likely to have a significant effect on a European site either on its own or in combination with other plans or projects;
 - **Stage 3: Alternative Solutions.** If likely significant effects are unavoidable, Stage 3 considers if alternative solutions to the proposed plan are available, which would be of lesser impact on the European sites; and
 - **Stage 4: Imperative reasons of overriding public interest and compensatory measures.** If no alternative solutions are available, it must be determined if there are imperative reasons of overriding public interest which would enable the plan or project to proceed on the basis that compensation measures are secured with regard to the likely significant effects.

2.2 Purpose

- 2.2.1 The objective of this report is to provide information for Stage 1 Screening in order to ascertain whether Stage 2 Appropriate Assessment is required in relation to potential impacts of the proposed project on relevant European designated sites, and then to apply Stage 2 Appropriate Assessment if necessary.

2.3 The Assessment Methodology

- 2.3.1 Stage 1 Screening aims to ascertain what factors should ‘trigger’ Stage 2 Appropriate Assessment. In order to determine if the proposed plan or project may have a ‘likely significant effect’ (LSE) on the integrity of each relevant designated site, each qualifying feature (or group of qualifying features, where appropriate) is compared against each potential significant effect from the plan or project. Only those effects which are likely to be significant are then advised for progression through to Stage 2 Appropriate Assessment.

⁴ Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework.

- 2.3.2 Case law provides important direction in defining and determining the meaning of the words ‘likely’ and ‘significant’ in the context of HRA (Boggis v Natural England [2009] EWCA Civ 1061, 20th October 2009, paras 36 & 37; Advocate-General Sharpston’s opinion in Sweetman v An Bord Pleanála [2011] CJEU C-258/11, 11th April 2013, para 48), as well as providing key information that confirms that mitigation measures must not be included in the Stage 1 Screening Assessment (People Over Wind & Sweetman v Coillte [2018] CJEU C-323/17, 12th April 2018).
- 2.3.3 An in-combination assessment has been completed for all effect pathways identified during the screening and appropriate assessment review, this took into account the cumulative projects assessed in the Environmental Statement as well as an updated search to cover 2022-2024 (post-ES submission). In relation to functional linkage, due to the hydrological links along the River Thames to the Thames Estuary and Marshes SPA and Ramsar, tributaries to the River Thames, such as Ebbsfleet River, and the River Thames could provide functional links. It is not considered proportionate to evaluate each proposal associated with the River Thames and its tributaries, therefore where our Proposed Development may result in adverse effects on the Botany Marsh FLL and Thames Estuary and Marshes SPA and Ramsar, further assessment will be made in terms of in-combination effects.
- 2.3.4 The same applies for potentially functionally linked land associated with the noteworthy invertebrates and plant species associated with the Ramsar site, as there is limited literature on the dispersal distances and habitats that these species can be recorded in, a precautionary approach should be applied. However, given the potential for these species to be present in greenspaces such as gardens, parks etc. of which there are many, it is not deemed proportionate to evaluate them all as potential FLL, especially when some invertebrates can travel vast distances (around 63km for species of weevil).
- 2.3.5 In terms of Zone of Influences the following distances have been applied in a review of the Gravesham Borough Council and Ebbsfleet Development Corporation, websites for new schemes that could have in-combination effects over the past 2 years alongside consideration of those cumulative schemes previously identified in the ES:
- The North Kent Strategic Access Management and Monitoring Strategy (SAMMS) identified a series of measures to mitigate the disturbance to birds caused by an increase in visitor numbers. This Management and Monitoring Strategy is supported by a Mitigation Strategy, that set out that a strategic approach is required to deliver a series of measures to mitigate any disturbance to birds caused by increasing numbers of recreational visitors. The Mitigation Strategy details the evidence base supporting the need for mitigation, along with the measures being implemented to reduce any negative impact. The strategic mitigation measures are to be funded by developer contributions, applied to all new dwellings built within 6km of the SPAs. The mitigation strategy sets out that some larger developments, or those closer to the SPA may require additional mitigation. Due to the requirement for residential developments to pay SAMMs – no in-combination assessment has been undertaken as recreational disturbance effects are managed in accordance with the Mitigation Strategy, with mitigation secured via a financial contribution agreed for each project and/or additional mitigation secured;
 - Recreational disturbance distance from the FLL only – 2km is considered proportionate and appropriate, this is in line with the Impact Risk Zone guidance for impacts on the SSSI.
 - Cat predation – Proposed Development only, Zone of Influence is 400 m from the FLL only (given no impact on the integrity of the Thames Estuary and Marshes SPA and Ramsar) identified during Appropriate Assessment and no other proposed residential development within the Zol;
 - Noise & Vibration and Visual Disturbance– Proposed Development only, up to 750 m (the further disturbance distance associated with the qualifying bird features of the SPA and Ramsar), from the FLL only (given no impact on the integrity of the Thames Estuary and Marshes SPA and Ramsar), no other projects;

- Overshadowing – Proposed Development only, up to 600 m from the FLL only (given no impact on the integrity of the Thames Estuary and Marshes SPA and Ramsar in line with ES Desk Study) with no other projects identified that would contribute to further overshadowing of the FLL due to lower building heights and direction;
- Air pollution – Proposed Development only (construction dust – 50 m, construction and operational traffic – 200m), from the FLL only (given no impact on the integrity of the Thames Estuary and Marshes SPA and Ramsar) and no other residential or industrial developments within the Zol;
- Water quality and quantity – connectivity along the River Ebbsfleet to Ebbsfleet Central East Land (EDC/22/0168) which has been considered in-combination. Despite potential pathways associated with all projects along the Thames and its tributaries, it is considered proportionate to assess projects in the nearby vicinity which might impact the FLL. This is due to the likely dissipation of the water quality and quantity impact when it reaches the Thames.

2.3.6 The distance reviewed took into account the impact pathway, there is limited ecological connectivity to the FLL and focussed on larger development which could increase impacts such as recreational pressures of the FLL and SPA, Ramsar site, air quality etc. Where an effect was inconsequential alone, the Applicant has considered other plans and projects with the same effect to determine whether there may be a likely significant effect in-combination.

2.3.7 Where it is considered not possible to 'screen out' likely significant effects without detailed appraisal, or where mitigation is required that would not be implemented were it not for the need to protect the designated site, it is necessary to progress to the later 'Appropriate Assessment' stage to explore the adverse effects and devise mitigation. This stage may in some instances involve detailed data collection and analysis, and development of mitigation approaches, however, in other cases, where mitigation is already available, it may simply be a case of identifying the need to implement such mitigation. In short, the assessment detail should be 'appropriate' to the situation at hand.

3 Screening Assessment

3.1 Project Determination

- 3.1.1 As neither the Habitats Directive or the Conservation of Habitats and Species Regulations 2017 (as amended) provide a definition of what constitutes a project, consideration has been given to European Commission guidance⁵. This identifies that a project should be considered as *'the execution of construction works or of other installations of schemes – other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources'*.
- 3.1.2 The guidance also identifies that for a project or plan to be *'directly connected with or necessary to the management of the site'*, the *'management'* aspect requires measures to be for conservation purposes and the *'directly'* aspect requires measures to be solely formulated for the conservation management of a site and not the direct or indirect consequence of another activity.
- 3.1.3 As a result, the development of land at Northfleet, Kent is considered to comprise a project and is not directly connected with or necessary to the management of a European Site.

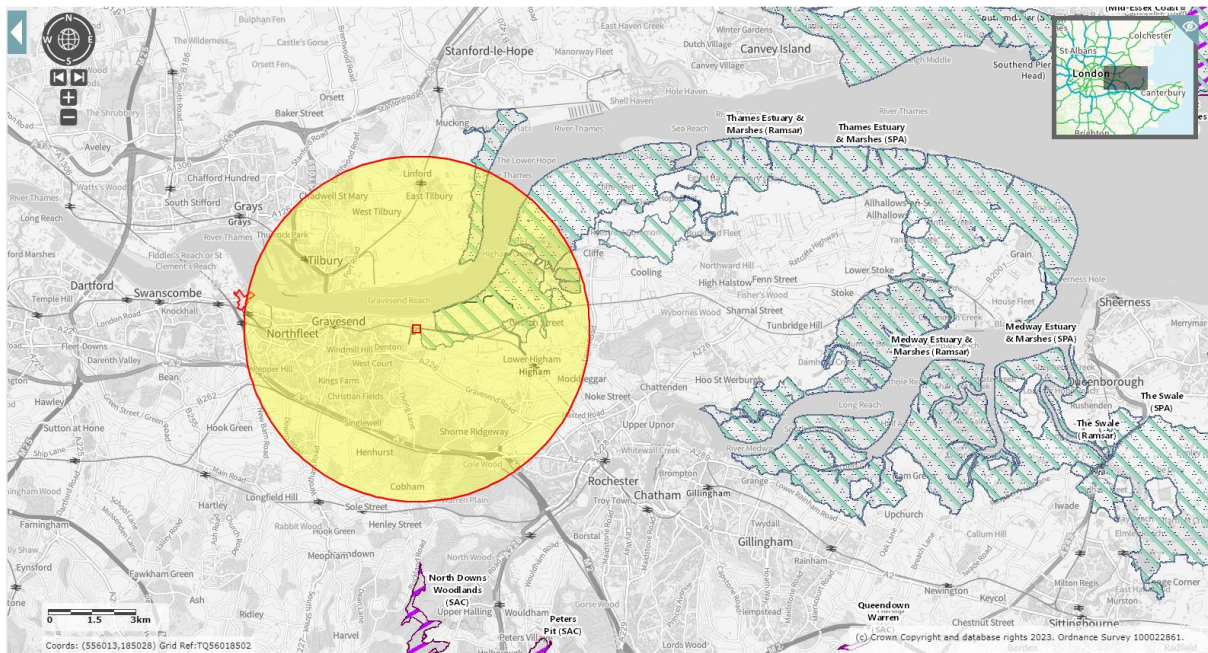
3.2 Determination of Sites for Consideration

- 3.2.1 Adverse effects resulting from development proposals will often extend beyond a project boundary, and as a result the consideration of sites potentially impacted by the development has been extended to include the Zone of Influence⁶ (Zoi) of the Thames Estuary and Marshes SPA and Ramsar site (6 km). As identified in Figure 4, consideration is given to Thames Estuary and Marshes SPA and Ramsar site which is c. 5.7 km east of the site. This Zoi is defined by the recreational disturbance distance associated with the Thames Estuary and Marshes SPA and Ramsar site. Whilst no direct comment by NE has been made on the Zoi, NE have accepted the sHRA which included this Zoi, as shown in correspondence with NE in Appendix B.
- 3.2.2 In terms of FLL, Botany Marshes within the Swanscombe Peninsula SSSI, has been subject to wintering bird surveys and deemed to support FLL. This site has been taken forward into the assessment. The survey effort to inform whether the nearby habitats support FLL was agreed with NE in correspondence in Appendix B.

⁵ European Commission (2000) Managing Natura 2000 Sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

⁶ Bird Wise (2018) Bird Wise North Kent Mitigation Strategy.

Figure 4: Thames Estuary and Marshes SPA and Ramsar Site Zone of Influence (Maps data: DEFRA, 2023)



- 3.2.3 The Thames Estuary and Marshes is located in the outer Thames Estuary on the south-east coast of England which separates Kent and Essex and is a wetland of European importance comprising a mosaic of intertidal habitats, saltmarsh, coastal grazing marshes, saline lagoons and chalk pits. The majority of the site is located on the south bank of the estuary, which stretches from the western side of Cliffe Pools to Grain Tower. The Thames Estuary and Marshes also covers a small part of the northern bank of the outer estuary between Coalhouse Point in East Tilbury, to the most western part of the reclaimed land at Mucking Flats (Essex).
- 3.2.4 The Thames Estuary and Marshes is predominantly characterised by extensive intertidal mudflats that are visible at low tide. There is saltmarsh, complex channel systems, and a series of disused quarry pits that have been transformed to create an extensive series of ponds and lakes at Cliffe Pools. The intertidal areas are mostly bound by levees and seawalls, occasionally featuring small beaches. Important habitats lie above the highest tide, such as the grazing marsh and flooded mineral works. Additionally, habitat creation schemes as part of the London Gateway port development are providing new habitat.
- 3.2.5 The SPA has a variety of habitat types, which provide wintering and breeding habitats for internationally important assemblages of waterbirds, as well as supporting migratory birds on passage. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.
- 3.2.6 The Thames Estuary and Marshes qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the GB populations of the Annex I species avocet (*Recurvirostra avosetta*) and hen harrier (*Circus cyaneus*), in any season. The site also qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations, in any season, of the regularly occurring migratory species listed in Table 2. Numbers shown in Table 2 have been taken from the from the Thames Estuary and Marshes English Nature's advice for Thames Estuary European marine site given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994⁷. The numbers are the population numbers using the site at the time the SPA was classified (5 yr peak mean 1993/94- 1997/98) and a further assessment of the change from the

⁷ Natural England (2001) Thames Estuary and Marshes SPA (UK9012021A) English Nature's advice for Thames Estuary European marine site given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994

classification numbers to the most recent report from The Wetland Bird Survey (WeBS), Waterbirds in the UK 2022/2023 report. The only species that has received a 'demotion' since the previous report is grey plover. However, all other species aside from avocet, knot and black-tailed godwit have reduced in numbers, and in the absence of survey data hen harrier, are assumed to be in unfavourable condition with an objective to restore. Avocet, knot and black-tailed godwit have increased in numbers and are in favourable condition with an objective to maintain.

Table 2: Thames Estuary SPA Bird Populations

Common Name	Scientific Name	Breeding/Wintering	Population Numbers (5 yr peak mean 1993/94- 1997/98)	WeBS Reporting Numbers from 18/19-22/23 ⁸ 5yr average
Annex 1 Species				
Avocet	<i>Recurvirostra avosetta</i>	Wintering	283 individuals (28.3% of GB population)	3,502 (exceeds International Importance threshold)
Hen harrier	<i>Circus cyaneus</i>	Wintering	7 individuals (1% of GB population)	No data
Non-Annex 1 Species				
Common ringed plover	<i>Charadrius hiaticula</i>	Concentration/Passage	1,324 peak mean (2.6% Europe/Northern Africa population)	873 (exceeds International Importance threshold)
Grey plover	<i>Pluvialis squatarola</i>	Wintering	2,593 peak mean (1.7% Eastern Atlantic population)	1,693 (demoted from exceeding International importance threshold to British National Importance threshold)
Dunlin	<i>Calidris alpina</i>	Wintering	29,646 peak mean (2.1% North Siberia/Europe/ W Africa population)	26,317 (exceeds International Importance threshold)
Knot	<i>Calidris canutus islandica</i>	Wintering	4,848 peak mean (1.4% NE Can/Grl/Iceland/NW Europe population)	21,637 (exceeds International Importance threshold)
Black-tailed godwit	<i>Limosa limosa islandica</i>	Wintering	1,699 peak mean (2.4% Iceland (breeding) population)	6,934 (exceeds International Importance threshold)
Redshank	<i>Tringa totanus totanus</i>	Wintering	3,251 peak mean (2.2% Eastern Atlantic (wintering) population)	2,347 (exceeds British National importance threshold)

3.2.7 The site also qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterfowl in any season.

3.2.8 Other Annex 1 species which regularly occur on the site in non-qualifying numbers are breeding common tern (*Sterna hirundo*), and passage and wintering Bewick's swan (*Cygnus columbianus bewickii*), golden plover (*Pluvialis apricaria*), ruff (*Philomachus pugnax*), short-eared owl (*Asio flammeus*) and kingfisher (*Alcedo atthis*). Although not included in the qualifying features of the site, the site also supports nationally important populations of shelduck (*Tadorna tadorna*), teal (*Anas crecca*), pintail (*Anas acuta*), gadwall (*Anas strepera*), shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*) and pochard (*Aythya farina*).

3.2.9 The European Site Conservation Objectives⁹ for Thames Estuary and Marshes Special Protection Area are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the SPA 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;

⁸ Woodward, I.D., Calbrade, N.A., Birtles, G.A., Peck, K., Wotton, S.R., Shaw, J.M., Balmer, D.E. and Frost, T.M. 2024. Waterbirds in the UK 2022/23: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

⁹ Natural England (2019) European Site Conservation Objectives for Thames Estuary and Marshes Special Protection Area Site Code: UK9012021.

- 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; and,
- The distribution of the qualifying features within the site.

3.2.10 The Proposed Development is within the zone of influence of the Thames Estuary and Marshes SPA/Ramsar Site, identified as 6 km where recreational pressure are likely to cause an adverse effect as specified by SAMMS. Due to the distance of the proposed development from the SPA/Ramsar, the development making a financial contribution in the form of the SAMMS tariff to mitigate the impacts set out in the Mitigation Strategy as outline under 2.3.5 is considered to be sufficient. Therefore, the Medway Estuary and Marshes SPA/Ramsar Site, and the Swale SPA/Ramsar Site are not considered within this assessment but are mentioned here as they form the wider SAMMS.

3.3 Effects on Functionally Linked Habitats

- 3.3.1 With reference to NE guidance set out in NECR2071¹⁰, there is a need to consider ‘functionally linked’ populations where they have been identified or where potential for qualifying species to be present cannot be reasonably ruled out despite not being seen during surveys, beyond the boundaries of the designated sites, in addition to populations of species occurring within the boundaries of the European Sites themselves.
- 3.3.2 Winter bird, botanical and invertebrate surveys undertaken to inform the London Resort Development Consent Order application indicated that a number of habitats within Swanscombe Peninsula, subsequently designated as a SSSI are functionally linked to the Thames Estuary and Marshes SPA and Ramsar, further winter bird studies undertaken by Assystem in 2023-2024 identified that Botany Marshes are FLL and within the ZoI for the Proposed Development. Invertebrate species associated with the Thames Estuary and Marshes SPA and Ramsar were not recorded in Botany Marshes. Swanscombe Peninsula SSSI was confirmed in November 2021 by Natural England, the enlarged SSSI includes all of the land previously notified as Bakers Hole SSSI, with the evidence collated for the London Resort Development Consent Order informing this decision.
- 3.3.3 Where established methodologies or outputs from quantitative studies are not available, professional judgment has been applied, taking into account factors such as distance, rates of attenuation and dilution, prevailing tidal and atmospheric conditions, and the existing industrialised nature of the Thames Estuary and individual species habituation and sensitivity.

3.4 Impact Pathways Considered

- 3.4.1 There are numerous pathways of impact that may connect a plan or project to potential likely adverse effects on a European protected site. Table 3 details current threats and pressures to Thames Estuary and Marshes SPA and Ramsar and FLL.
- 3.4.2 Table 3 details conservation objectives, current threats and pressures to Thames Estuary and Marshes SPA and Ramsar and FLL. The conservation objectives for the SPA are considered to be sufficient to support the management of the Ramsar site interests. This is due to a decision made by Defra and Natural England not to produce Conservation Advice packages for Ramsar sites. As the provisions on the Habitats Regulations relating to HRAs extend to Ramsar sites, Natural England considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar site interests.

¹⁰ Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions NECR207 (2016) Natural England

Table 3: Summary of Thames Estuary and Marshes Estuary SPA/Ramsar and Features

Designated Site	Proximity	Size of SPA	Qualifying Features ^{11,12}	Conservation Objectives ¹³	Current Pressures/Threats ^{14,9} to the SPA
Thames Estuary and Marshes SPA	5.7 km east	4,838.94 ha	Wintering populations of: - Avocet, - Black-tailed godwit, - Dunlin, - Grey plover, - Hen harrier, - Knot, - Redshank. On passage, populations of: - Ringed plover. Waterbird assemblage.	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; and - The distribution of the qualifying features within the site.	1. Coastal squeeze, 2. Public access/Disturbance, 3. Invasive species, 4. Changes in species distributions, 5. Fisheries: Commercial marine and estuarine, 6. Vehicles: illicit, 7. Air Pollution: risk of atmospheric nitrogen deposition.
Thames Estuary and Marshes Ramsar site	5.7 km east	5,588.59 ha	Criterion 2: site supports the endangered least lettuce (<i>Lactuca saligna</i>) and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates. Criterion 5: supports internationally important assemblages (>20,000 birds) of waterfowl. Criterion 6: for internationally important numbers of: - ringed plover and black-tailed godwit with peak numbers in spring/autumn; - grey plover, knot, dunlin and redshank with peak numbers in winter.	The Applicant considers that the following SPA conservation objectives are sufficient to support the management of the Ramsar site interests. 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; and - The distribution of the qualifying features within the site.	1. Erosion of intertidal habitat, 2. Dredging, 3. Public access/Disturbance, 4. Eutrophication.

¹¹ JNCC, DEFRA (2015). Natura 2000 Standard Data Form, Site UK9012021 Thames Estuary and Marshes.

¹² JNCC, DEFRA (2008). Ramsar Information Sheet: UK11069.

¹³ Natural England (2019 European Site Conservation Objectives for Thames Estuary and Marshes Special Protection Area Site Code: UK9012021

¹⁴ Natural England (2015). Site Improvement Plan Greater Thames Complex.

- 3.4.3 Table 3 shows details of the Thames Estuary and Marshes SPA and Ramsar, and potential pathways of impact. Threats currently known to be impacting the SPA have been determined via its Natura 2000 form⁷ and are cited as being:
- Invasive non-native species,
 - Outdoor sports and leisure activities, recreational activities,
 - Changes in abiotic conditions,
 - Changes in biotic conditions.
- 3.4.4 NE's Site Improvement Plan includes priority issues, identified in Table 3, that are being addressed.
- 3.4.5 Plots 10, 11, 12 and 13 (as identified in figure 3) of the Proposed Development are within the 6 km ZOI for recreational disturbance for the Thames Estuary and Marshes SPA/Ramsar site. The Proposed Development is also adjacent to Botany Marshes within the Swanscombe Peninsula SSSI, with Botany Marshes considered to be FLL to the Thames Estuary and Marshes SPA/Ramsar site, therefore other plots including 18 and 19 are also assessed.
- 3.4.6 Potential pathways of impact that require consideration in relation to the Proposed Development of the site are:
- Recreational pressure and recreational disturbance on birds in the SPA, Ramsar;
 - Recreational pressure and disturbance on qualifying birds and invertebrates within FLL;
 - Impacts of cat predation on birds associated within the FLL;
 - Noise & vibration and visual (non-recreational disturbance), lighting disturbance of qualifying birds during the construction and operational phase within the FLL;
 - The potential for overshadowing impacts of the completed development on the FLL;
 - Atmospheric nitrogen deposition / Air pollution; and
 - Reduced water quality and quantity on the FLL and SPA, Ramsar.

4 HRA Screening

4.1 Recreational Pressure and Recreational Disturbance of birds on the SPA/Ramsar

- 4.1.1 The Proposed Development will be located c. 5.7 km west of the Thames Estuary and Marshes SPA/Ramsar site, which is within the 6 km Zone of Influence identified by the Bird Wise North Kent Mitigation Strategy to represent the distance over which impacts to the SPA is likely without mitigation. Recreational activities can result in significant effects on protected sites because of erosion, trampling and disturbance, plus associated impacts such as fire and vandalism.
- 4.1.2 There is growing concern about the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfil conservation objectives while also providing recreational opportunity.
- 4.1.3 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking¹⁵. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers¹⁶. Data from visitor surveys suggest that important spatial (e.g. the area of a site potentially influenced) and temporal (e.g. how often or long an activity is carried out) parameters differ between recreational activities, suggesting that these are factors that should ideally be considered in ecological assessments. In addition, displacement of birds from one feeding site to others can increase the feeding pressure on available resources, which have to sustain greater numbers of birds¹⁷. Recreation disturbance in winter can be more adverse because birds are more vulnerable at this time of year due to food shortages. Disturbance can also represent a much more direct threat to survival, such as in the case of predation by dogs and cats. Dogs are often exercised off-lead and roam out of sight of their owners and have been documented to kill ground-nesting birds.
- 4.1.4 The Kent coast habitats are already subject to recreational pressure, however the increase in population resulting from the Proposed Development will likely lead to an increase in visitor numbers to the SPA. Unless adequately managed, this creates a potential for conflict between recreational activities and the conservation of internationally important assemblages of birds and habitats.
- 4.1.5 Breeding and overwintering waterbirds are susceptible to human disturbance from a range of land- and water-based activities (e.g. boating, water sports, walking, bait-digging, fishing and wildfowling). The types, levels and locations of potentially disturbing activities are constantly changing.
- 4.1.6 A bird disturbance study¹⁸ was undertaken in 2012 to assess the impacts of recreational activities on the North Kent SPA and Ramsar sites. The key findings are:
- There have been marked declines in the numbers of birds using the SPAs, in particular on the Medway at locations with the highest levels of access;
 - Disturbance is a potential cause of the declines; the busiest locations have seen the most marked bird declines and support particularly low numbers of birds;
 - Access levels are linked to local housing, with much of the access involving frequent use by local residents. It is not possible to rule out any likely significant effects on the integrity of the European sites as a result of increased housing. A suite of mitigation measures is therefore necessary to avoid potential adverse effects caused by future development;

¹⁵ Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* 3: 14pp

¹⁶ Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132

¹⁷ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72.

¹⁸ Liley, D., Lake, S. & Fearnley, H. (2012). Phase I – Bird Disturbance Report. Footprint Ecology/GGKM/NE.

- The current main cause of disturbance is dog walking, and when dogs are walked off the lead. Other activities that cause disturbance include cycling, jogging and those that involve people on the mudflats or the water;
- Development within 6 km of access points to the SPAs is particularly likely to lead to increase in recreational use of the SPAs. Local greenspace use such as dog walking, cycling, jogging, walking, and to some extent family outings, will originate from people living within this radius;
- Beyond 6 km from access points onto the SPA, large developments, such as the Northfleet Proposed Development, or large-scale changes to housing levels will also result in increased recreational use. Visitors to the North Kent coast mostly originate from a zone north of the M2/A2 between Gravesend and Herne. People living within this broad coastal strip (i.e. beyond 6 km from SPA access points and north of the M2/A2) are likely to visit for more coastal specific activities;
- Development beyond 6 km, with the exception of large development schemes, could be screened out of assessments as it is assumed they are unlikely to have a significant effect on the protected sites;
- Mitigation measures such as awareness raising, on-site wardening, provision of signage and access infrastructure, provision/enhancement of green space away from the SPAs and direct contact with users are suggested; and,
- Areas currently undisturbed, and in particular the main roost sites should, in particular, be protected from additional recreational pressure.

4.1.7 The effects of increased recreational disturbance on a range of species include:

- A reduction in the time spent feeding, due to repeated flushing and increased vigilance;
- Increased energetic costs;
- Avoidance of areas of otherwise suitable habitat, potentially with birds feeding at poorer quality locations;
- Increased stress; and,
- Depending on the nature, frequency and level of the disturbance, some birds may take flight temporarily, but return after the disturbance ends. Other birds may modify their feeding habits, whilst more sensitive species may suffer reduced breeding success or, ultimately, desert the site.

4.1.8 In summary, birds are expending energy avoiding visitors to the SPA, which is time that is not spent feeding¹⁹. Overall, disturbance is likely to increase energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds.

4.1.9 Where disturbance causes a bird to leave a particular site, the availability of suitable alternative sites is critical for the bird's survival. The site in which it settles may already be populated or may be of lower quality resulting in lower rates of energy intake. This is especially critical in cases of major flight, when a bird flies further than 500 meters, as the energy spent in flight can be catastrophic for the bird⁴.

4.1.10 The SPA and Ramsar site are separated from the Proposed Development by the urban area of Northfleet and Gravesend, however the Thames provides good connectivity between the Proposed Development and the SPA and Ramsar site. Whilst there is no evidence that the terrestrial elements of the Proposed Development support suitable habitats for wintering birds, Botany Marshes within the Swanscombe Peninsula SSSI has been assessed as FLL.

4.1.11 The Proposed Development will lead to an increase in population; therefore, it is not possible to screen out the pathway of recreational pressure and disturbance as without mitigation, the Proposed Development will add to a known pressure on the SPA and Ramsar site.

¹⁹ Riddington, R. et al. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. Bird Study 43:269-279

4.2 Recreational Pressure and Recreational Disturbance of qualifying features within the FLL

- 4.2.1 The Proposed Development will result in an increase of the resident and daytime population in the area, this could result in an increase in recreational pressure and footfall to FLL (Botany Marshes in the Swanscombe Peninsula SSSI), located adjacent to the Proposed Development to the north-west. The pressures are the same as discussed in the recreational pressures and disturbance for the SPA and Ramsar as detailed in Paragraph 4.1.7.
- 4.2.2 Taking the above into consideration, the increase in resident and daytime populations beyond the current site wide baseline could have direct detrimental effects (e.g. the degradation of habitats through trampling and water quality which could support birds and invertebrates, impacts upon birds as a result of dog walking, disturbance to overwintering birds etc.). Furthermore, the Proposed Development may lead to the introduction of predatory species for wintering birds, such as domestic cats.
- 4.2.3 A recreational zone of influence of 2 km around Swanscombe Peninsula SSSI is considered appropriate for the consideration of in-combination effects, aligning with the radius in which residential development is identified in the Impact Risk Zones for the site. The following schemes have been identified as being located within the zone of influence that could result in in-combination effects on the FLL: Land North of Hive Lane, Northfleet (EDC/21/0081); Land at Former Northfleet Cement Works, The Shore (EDC/16/0004); Land West of Springfield Road (Phase 2B) (EDC/17/0049) and Northfleet Embankment, East Crete Hall (EDC/17/0038). In addition, a review of additional projects identified a single new application relevant, Ebbsfleet Garden City (EDC/22/0168). This formalises the Tier 2 cumulative scheme for Ebbsfleet Central East in the cumulative assessment. Each of these developments will introduce additional residential receptors to the local area that may increase visitor numbers to the FFL.
- 4.2.4 There are no further developments of relevance within 2 km of the site for consideration of in-combination effects.
- 4.2.5 Whilst the existing usage of the Botany Marshes FLL by qualifying bird, invertebrate and plant species is low, as evidenced by the surveys, there is potential for the change in uses from predominantly industrial, commercial and leisure to residential, commercial and leisure resulting in increased recreational use that would result in significant differences in disturbance impacts. This includes aspects such as significantly increased levels of dog walking, that birds making use of the FLL would not be, or could not become, habituated to, thereby adding to the requirement to screen this into the Appropriate Assessment. It should be noted that any potential changes related to the proposed operation for the stadium, including both football matches and other events, as well as other commercial uses and public/private open and civic spaces will be covered in detail as part of relevant Management Plans to be prepared prior to the first occupation/operation of the relevant elements of the development.

4.3 Impacts of Cat Predation on birds associated with the FLL

- 4.3.1 Increases in residential populations and associated cat ownership can lead to likely significant effects on European sites where bird species are the qualifying features as a result of increased cat predation. Whilst cat predation is largely associated with more vulnerable ground-nesting birds, ground feeding birds are also at risk. With the residential development being adjacent to the Botany Marshes FLL within the Swanscombe Peninsula SSSI, this could be the case for the Proposed Development.
- 4.3.2 A number of heathland European sites²⁰ have a 400 m buffer zone around the boundary of the European site where there is a presumption of no further development (net increase in residential properties). This presumption reflects the issues with urbanisation and the lack of suitable mitigation

²⁰ E.g. the Thames Basin Heaths, the Dorset Heaths, the East Devon Pebblebed Heaths.

and avoidance measures and includes for consideration of impacts of cats on associated bird species. For example, for development so close to the European sites the options to divert access or provide suitable alternatives are very limited. The choice of 400 m is based on the literature summarised in Underhill-Day, 2005²¹, and to some extent is a pragmatic choice. Studies of cat roaming behaviour have shown 400 m to be an appropriate buffer width to limit cats in very urban environments²², however in more rural areas cats can roam considerably further and some studies have suggested ranges over 2 km for more rural situations^{23,24}.

- 4.3.3 It is also important to consider the Parameter Plans sought for approval (submitted with the outline planning application), which demonstrate that the ground floor uses within the Parkland Neighbourhood comprise flexible 'Mixed Use Commercial/ Community/ Parking' within the western extent of this neighbourhood and 'Mixed Use Residential/ Commercial/ Community/ Parking' within the eastern extent. This is similarly reflected in the other Neighbourhoods in the parameter plans, which demonstrate ground floor uses being dominated by Mixed Use Commercial/ Community/ Parking' with areas of 'Mixed Use Hotel/Parking', 'Mixed Use Sui Generis / Commercial/ Parking' and 'Sui Generis'. The parameter plans therefore limit the ground floor residential proposed, with residential spread out across the site at the first floor and above. However, given this is outline at this stage, appropriate consideration has been given in the assessment to the potential for this to change, in particular through the potential for effects and mitigation approach. The Local Authority have however, confirmed that a planning condition will be imposed that limits residential uses on the ground floor to only the town houses that form part of the Parkland Community area.
- 4.3.4 The current cat predation within the FLL and surrounding area is unknown, as is the predation rates of the birds within the SSSI. The Proposed Development is largely apartment-led, reducing the likelihood for cats in high-level apartments to stray outside given they have limited outdoor space (aside from balconies).
- 4.3.5 The type and location of household will have an effect on cat ownership and lifestyle within a development, with a study by Forman-Worsley *et al* (2021)²⁵ concluding that urban-dwelling owners and those living in flats or apartments are significantly more likely to have an indoor-only cat. As the development predominantly comprises apartment properties, albeit with some townhouses proposed, it is reasonable to assume that apartment properties from the third storey (i.e. second floor) and above with cat ownership will comprise indoor-only cats. Whilst we are assuming that all properties with cats at the ground and first floor (apartments and townhouses) will allow their cats access outside, the concerns discussed in the Forman-Worsley *et al* (2021) study could result in some cat owners at lower levels opting for indoor-only cats and therefore the below analysis represents a worst-case.
- 4.3.6 Cat ownership in the UK is identified by Cats Protection as 26%²⁶, which is supported by a PDSA study²⁷ which concluded 24 % of adults to own a cat and a study which identified household ownership in 2011 as 23% (Murray *et al* 2015)²⁸. Whilst the number of cats in a household can vary, with Cats Protection and Murray *et al* concluding this to be 67% and 62% in favour of single cats with an average

²¹ Underhill-Day, J. C. (2005) A literature review of urban effects on lowland heaths and their wildlife. Natural England Research Report Number 623.

²² Thomas, R. L., Baker, P. J. & Fellowes, M. D. E. (2014) Ranging characteristics of the domestic cat (*Felis catus*) in an urban environment. *Urban Ecosystems*, 17 pp 911 – 921.

²³ Metsers, E. M., Seddon, P. J. and van Heezik, Y. M. (2010) Cat-exclusion zones in rural and urban-fringe landscapes: how large would they have to be? *Wildlife Research*, 37 (1) pp 47-56.

²⁴ Hall, C. M., Bryant, K. A., Haskard, K., Major, T., Bruce, S. and Calver, M. C. (2016) Factors determining the home ranges of pet cats: a meta-analysis. *Biological Conservation*, 203 pp 313-320.

²⁵ Foreman- Worsley, R., Finka, L. R., Ward, S. J. and Farnworth, M. J. (2021) Indoors or Outdoors? An International Exploration of Owner Demographics and Decision Making Associated with Lifestyle of Pet Cats. *Animals*, 11 (2), pp 253 - 278.

²⁶ Cats Protection (2023) CATS Report —Cats and Their Stats, UK 2023.

²⁷ PDSA (2023) PAW – PDSA Animal Wellbeing Report 2023.

²⁸ Murray, J. K., Gruffydd-Jones, T. J., Roberts, M. A. and Browne, W. J. (2015) Assessing changes in the UK pet cat and dog populations: numbers and household ownership. *Veterinary Record*, 12 September 2015.

of 1.5 cats per household, Barratt (1995)²⁹ found that the home ranges of cats living at the same residence overlapped extensively.

- 4.3.7 Whilst it is acknowledged that a planning condition will be imposed to limit ground floor residential occupation to the town houses of the Parkland Community area, as a worst-case scenario It has been calculated that a maximum of 130 residential units could be provided across the ground and first floor (based on the illustrative scheme) of the site as a whole without this condition. Based on cat ownership, approximately 34 of these residential units would be likely to include cats with a maximum number of cats being approximately 51 across the all neighbourhoods at ground and 1st floor. Whilst a relatively high number overall, studies have shown that cats in urban areas have a smaller home range than those in rural environments (Lilith *et al* 2008³⁰, Hanmer *et al* 2017³¹ and Pirie *et al* 2022³²), with the maximum mean home range of urban cats in this example comprising 0.64ha, 1.56ha (suburban) and 2.01ha (peri-urban) respectively. The median maximum distance reached from home was 99 m, and again varied with level of urbanisation (urban: 79 m; suburban: 141 m; peri-urban: 148 m) As a result, cats associated with a number of areas of the site will not reach the FLL, instead those associated with the properties in the Parkland Neighbourhood, which sits closest to the designated site, are of greatest interest as depicted in Figure 3.
- 4.3.8 Figure 5 provides context of the home range discussed, representing an area of 2.2ha (taking peri-urban maximum mean home range, considered most appropriate to the site context, and rounding it to 2.2ha), from the nearest edge to the FLL for each development plot located near to the FLL.

²⁹ Barratt, D. G. (1995) Prey habits and movement patterns of house cats in Canberra, Australia. Executive summary of MSc. Thesis. University of Canberra

³⁰ Lilith, M., Calver, M. C. and Garkaklis, M. J. (2008) Roaming habits of pet cats on the suburban fringe in Perth, Western Australia: What size buffer zone is needed to protect wildlife in reserves? Australian Zoologist 34, pp 65-72

³¹ Hanmer, H. J., Thomas, R. L. and Fellowes, M. D. E. Urbanisation influences range size of the domestic cat (*Felis catus*): consequences for conservation. Journal of Urban Ecology, 3 (1) pp 1 -11.

³² Pirie, T. J., Thomas, R. L. and Fellowes, M. D. E. (2022) Pet cats (*Felis catus*) from urban boundaries use different habitats, have larger home ranges and kill more prey than cats from the suburbs. Landscape and Urban Planning 220 pp 1 – 10.

Figure 5: Cat Predation Range – showing a 2.2ha buffer zone around the nearest edge of each block to the FLL



- 4.3.9 There are no other developments within the 2.2ha range that could further increase the likelihood of cat predation. There are not considered to be in-combination effects.
- 4.3.10 However, due to the low numbers of residential ground floor apartments, the risk cannot be fully screened out and cat predation may pose a significant negative impact in the absence of mitigation. This element is screened into Appropriate Assessment.

4.4 Noise & Vibration and Visual (non-recreational disturbance), lighting disturbance of qualifying features during the construction and operational phase within FLL

Noise & Vibration and Visual (non-recreational disturbance)

- 4.4.1 Change in noise and vibration and changes in visual disturbance are considered separately within this assessment, however it should be noted that the project elements that result in these changes require people (visual stimuli) to operate the plant (visual stimuli) that will generate the noise and vibration. Scientific literature establishes the noise level at above which the disturbance of water birds (for all qualifying birds except the hen harrier and avocet) could be considered likely to occur at 55 dB for sudden noise (Cutts, *et al*, 2013³³; Hirvonen, 2001³⁴).

³³ Cutts, N., Hemmingway, K. and Spencer, J. (2013) Waterbird Disturbance Mitigation Toolkit. Informing Estuarine Planning and Construction Projects. Version 3.2. Institute of Estuarine & Coastal Studies (IECS), University of Hull.

³⁴ Hirvonen, H. (2001) Impacts of highway construction and traffic on a wetland bird community. In: Irwin, G. L., Garrett, P. and McDermott, K. P. (Eds) (2001) Proceedings of the 2001 International Conference on Ecology and Transportation. Pp 369-372.

- 4.4.2 In the absence of information for avocet, a precautionary approach is taken, and it is assumed that avocet will respond to noise levels similar large waders (such as black-tailed godwit). For hen harrier, there is limited evidence on the threshold to noise disturbance, however they are considered to have a medium sensitivity to disturbance³⁵. There is very limited literature on the vibration levels at above which would cause bird disturbance.
- 4.4.3 Disturbance distances for qualifying birds associated with the FLL are between 0-300 m, except for hen harrier which can be up to 750 m, there is limited data on avocet disturbance distances but as it is a large waterbird (rather than a raptor), it is considered that 0 – 300 m is an appropriate disturbance distance, as detailed in 1.1.10. Noise and visual impacts beyond 300 m for qualifying water bird species, and beyond 750 m for hen harrier is not considered to pose a significant adverse impact.
- 4.4.4 The IECS have produced the ‘Waterbird Disturbance Mitigation Toolkit’ in 2013 to assist developers in relation to disturbance impacts on non-breeding waterbirds arising from construction works within or adjacent to European sites (e.g. Special Protection Areas and Ramsar Sites)³⁶. The toolkit recognises and provides a simple screening criteria for developments. Disturbance stimuli ‘at the bird’ for all qualifying bird species, except avocet and hen harrier, were separated into three effect levels:
- High Level Disturbance Stimuli: Sudden single noise of over 60 dB (at the bird) and/or continuous/repetitive noise over 72 dB (at the bird) in an environment not previously disturbed;
 - Moderate Level Disturbance Stimuli: sudden noises of 55-60 dB (at the bird) and/or continuous/repetitive noises 60-72 dB (at the bird); and,
 - Low Level Disturbance Stimuli: Noise of less than 55 dB (at the bird) and/or noise of 55-72 dB (at the bird) in a highly disturbed environment (e.g. with background ambient noise levels of >60 dB).
- 4.4.5 The toolkit also provides a criterion to assess the effects of noise decay, where construction activities will be taking place at a distance away from the potentially affected bird colonies (for all qualifying bird species, except avocet and hen harrier) as shown in Figure 6.
- Acceptable ‘dose’ levels are shaded green, with dark green unlikely to have any affect, and pale green occasionally inducing a low-level behavioural response such as a heads-up reaction;
 - Yellow to orange shading is where a response is likely, but mitigation may be effective in reducing the disturbance risk;
 - Pale red is where mitigation is necessary and might be of value, but with a remaining risk of effect; and,
 - Dark red is where a flight response is almost certain to occur and would be increasingly difficult to mitigate through screening and may require the cessation of works during high sensitivity periods.

³⁵ Goodship, N.M. and Furness, R.W. (2020) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

³⁶ Cutts, N., Hemmingway, K. and Spencer, J. (2013) Waterbird Disturbance Mitigation Toolkit. Informing Estuarine Planning and Construction Projects. Version 3.2. Institute of Estuarine & Coastal Studies (IECS), University of Hull.

Figure 6: IECS Threshold Matrix

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

- 4.4.6 The outcomes from the IECS toolkit, which can be applied to this scheme, can largely be defined as the following: the construction will result in a moderate level disturbance effect in the absence of mitigation and that ambient construction noise levels will need to be below 70 dB at the bird to be an acceptable dose level, however due to the requirement for sudden noises (such as piling) to be below 55 dB, to remove any impact this is the level the noise levels should aim to be below. Subject to distance approx. noise levels of 70-80 dB, as shown in Figure 6, the noise level (dBs) are in the yellow zone where a disturbance response is likely. Generally below 70 dB the birds will habituate to regular noise below this level; however, there is no recent UK based literature detailing how long it will take for birds to habituate. However, noise levels below 55 dB and, sudden noise and vibration below 55 dB is unlikely to have any impact on waterbirds. These assertions are also supported by similar studies undertaken in the intertidal and marine environment³⁷.
- 4.4.7 It is assumed that birds during flight will be less sensitive to noise as they are not as vulnerable (flight is a disturbance result, and the risk taking in birds is measured as the flight initiation distance) and can change direction if required. Noise and vibration levels both during the construction and operational phases of the development will need to be conditioned and controlled, in order to ensure that noise levels remain below 55 dB, which will limit the need for the birds to settle in less affected areas of the Botany Marshes FLL.
- 4.4.8 Construction activities will take place during the specific time periods only, i.e. Monday to Friday (08:00-18:00) and Saturday (08:00-13:00). Consequently, this factors the disturbance on wintering birds. The only plots that are predicted to result in a level above 55 dB within the 750 m zone of influence are Plots 18 and 19, which are those nearest to the FLL. These are scheduled to be constructed over 24 and 28 months. If demolition and construction take place as proposed, the impact whilst temporary will cover at least two wintering bird seasons. The remaining plots of the proposed plots are sufficiently distanced from the FLL, that when combined with their phasing will ensure that the anticipated noise within the FLL will be below 55 dB. This is due to noise dissipating over distance to a level that is well below 55 dB, and a limited number of plots/ activities being brought forward in tandem with Plot 18 and 19 (e.g., construction activities at plots 2 and 15).

³⁷ Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency [accessed 27/06/2021]

- 4.4.9 Due to the outline stage of the application, it is anticipated that noise will be continuous throughout the demolition and construction of the Proposed Development. However, due to the overlapping activities, in order to ensure that periods of peak activity (particularly noisy activities) are taken into consideration, seven 'timeslices' across the indicative works programme were identified and assessed in the Environmental Statement. These timeslices represent points throughout the indicative works programme where there are concurrent construction activities taking place across multiple plots of the Proposed Development and represent periods of peak activity.
- 4.4.10 As detailed in Chapter 9: Noise and Vibration, only timeslice 1 and timeslice 2 would result in levels above the 55 dB threshold on the FLL and these impacts have been predicted pre-mitigation. Timeslice 1 includes demolition of plots 15 and 18, infrastructure road works at Plot 2 and substructure works at Plot 19. Timeslice 2 includes demolition activities (breakout hard standings), infrastructure road works, superstructure works at plots 2 and 19, substructure activities at Plot 18. These timeslices represent points throughout the indicative works programme where there are concurrent construction activities taking place across multiple plots of the Proposed Development and represent periods of peak activity, therefore are assessed at the centre of the plot. Whilst it is acknowledged that the noise within the FLL could be slightly louder than projected in the Figures, as the Figure is a worst-case prediction the noise could also be less within the FLL. The assessment of timeslices ensures that any peaks in activity that would result in peaks in construction and demolition noise are adequately assessed.
- 4.4.11 In the report it is detailed that the rest of the timeslices (3-7) do not reach above 55 dB without mitigation in any part of the FLL. This is due to noise dissipation over distance. 55 dB is classed as a low noise level effect in relation to waterbirds and unlikely to cause response in birds.
- 4.4.12 Without mitigation, the highest evaluated sound pressure levels, as detailed in the ES Chapter, at these receptors were $L_{Aeq,10h}$ 69 dB during timeslice 1 and $L_{Aeq,10h}$ 64 dB during timeslice 2 within an area of the FLL as shown in Figures 7 and 8. Whilst the model shows the noise to be at the centre of the plots (where the noise is likely to be generated from), there is potential for these sound pressures to reach $L_{Aeq,10h}$ 74 dB and $L_{Aeq,10h}$ 69 dB as a worst-case scenario when works are on the edge of the plots adjacent to the FLL.
- 4.4.13 Therefore, whilst noise levels for timeslice 2 within the FLL fall below the 70 dB threshold for impact from continuous noise, it does not for the worst-case scenario for timeslice 1, and the sound pressure levels exceed the 55 dB threshold for impulsive noise.
- 4.4.14 In terms of operational noise, the ES Chapter assessed:
- Noise emissions from building services plant and commercial activities;
 - Change in noise from road traffic;
 - Noise breakout from the stadium; and
 - Noise along the pedestrian routes to the stadium.
- 4.4.15 There is potential, without designed mitigation, that operational noise could reach the FLL in levels above 55dB, therefore this is screened into the appropriate assessment.
- 4.4.16 There is a lack of literature on the appropriate criterion for the assessment of animal disturbance due to construction vibration. Typically, human response to vibration is evaluated using VDV (vibration dose values) or PPV (peak particle velocity). It is more common to use PPVs (measured as mm/s) when evaluating construction vibration.
- 4.4.17 Vibration during construction is most likely during piling works. BS 5228-2 provides historic data for different piling methods. Applying the BS 5228-2 data we can see that rotary bore piling (loamy and clayey soil conditions) would expect to result in vibration that is less than 1.0mm/s at distances of 10m from the piling rig. Even lower vibration levels can also be seen (e.g. 0.13 at 5.5m distance). These vibration levels are considered suitable for avoiding significant adverse impacts on humans within buildings.

- 4.4.18 Without key guidance on acceptable vibration limits for animals it is not possible to present additional supportive analysis. However, it is seen that detectable level of vibration may only exist for short distances from the piling activities. An appropriate methodology for the piling works (monitoring of the area prior to undertaking works) would likely be the most pragmatic approach to avoiding significant impacts.
- 4.4.19 Cutts *et al.* (2013)³⁸ state that for most wader species (all qualifying bird species except hen harrier and avocet), behavioural responses to visual disturbance are unlikely beyond a maximum distance of 250 m, plots within 250 m include 17, 18 and 19 and the park. Plot 17 is screened from the FLL by plots 18 and 19 and will not provide more impactful visual disturbance than the construction of plots 18, 19 and the park.
- 4.4.20 For hen harrier, the disturbance distance is up to 750 m, which covers the majority of the project site, however plots would be screened by the construction of plots 18 and 19 which is in the first part of the programme. Current infrastructure, such as warehouses and commercial buildings also screen the FLL from plots 12, 13 and 14, and the bank with vegetation that bounds the FLL also screens out a lot of visual disturbance effects from the ground level. The close proximity of plots 18 and 19 could result in visual disturbance during construction and could result in behavioural changes to qualifying bird species within the FLL. Visual disturbance is therefore screened into Appropriate Assessment.
- 4.4.21 There are no additional developments within 750 m disturbance distance of the FLL that would further increase noise, vibration and visual effects on the FLL, therefore in-combination impacts have been screened out.
- 4.4.22 As it is therefore uncertain whether or not any significant disturbance to the individual birds using the affected habitat areas would result, LSE cannot be discounted. This element is screened into the Appropriate Assessment.

³⁸ Cutts, N., Hemingway, K. and Spencer, J. 2013. Waterbird Disturbance Mitigation Toolkit. Information for Estuarine Planning and Coastal Projects. Produced by Institute of Estuarine and Coastal Studies (IECS), University of Hull

Figure 7: Timeslice 1 - Construction Noise Level ($L_{Aeq,10h}$ dB)

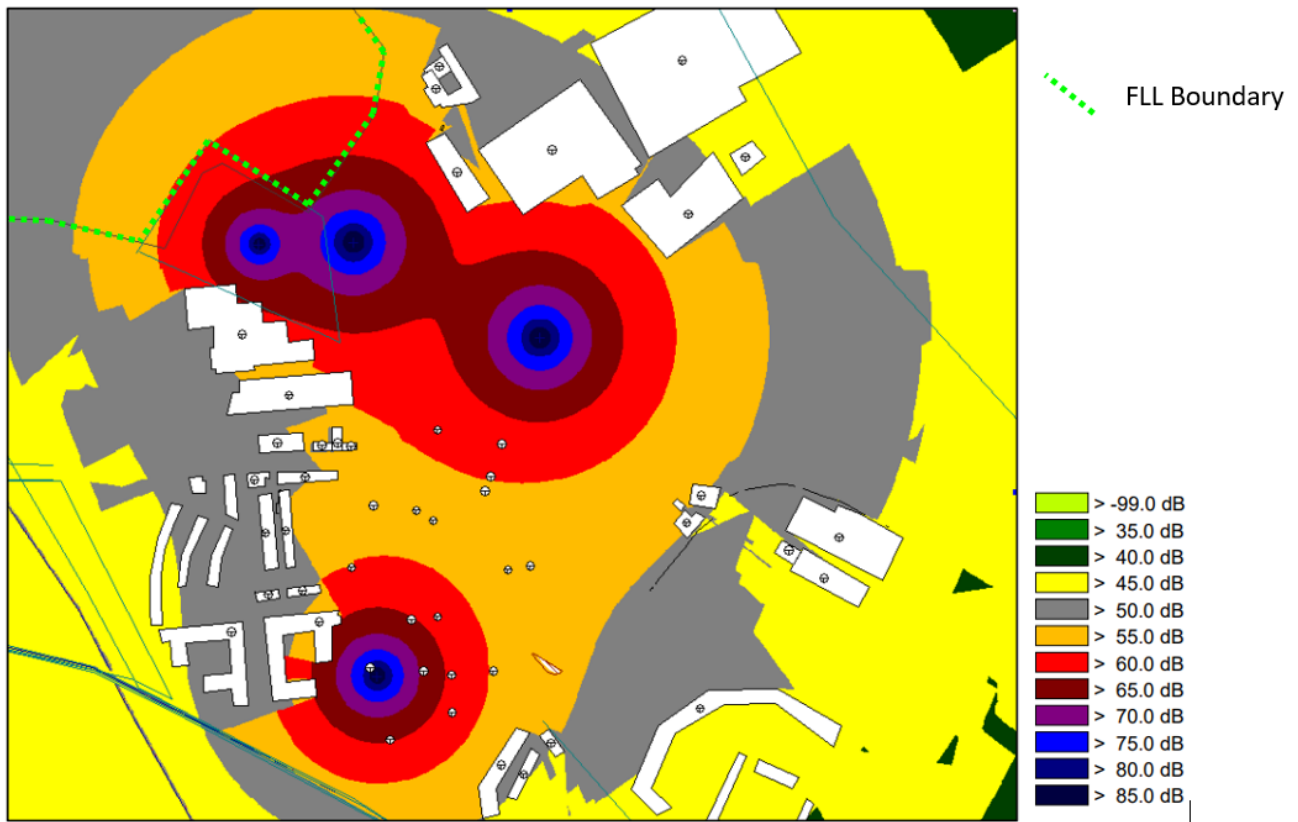
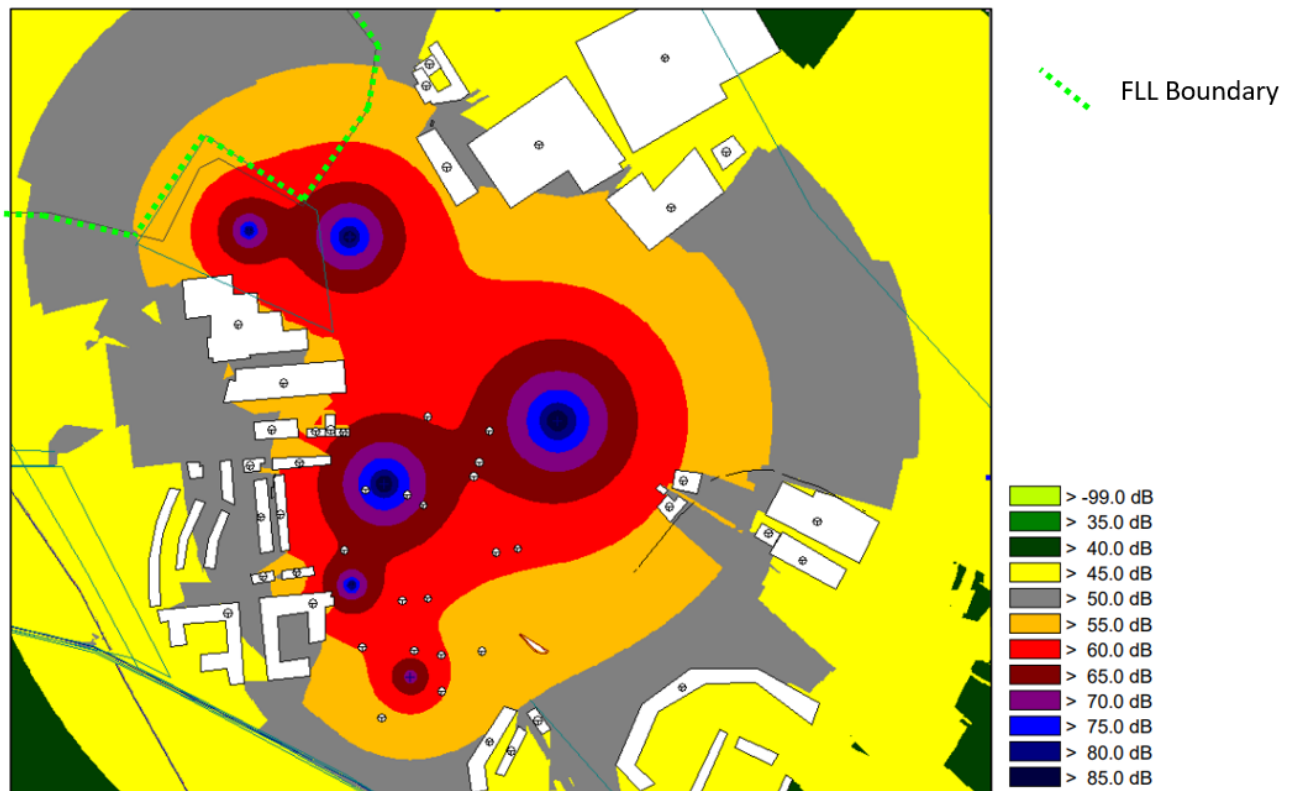


Figure 8: Timeslice 2 - Construction Noise Level ($L_{Aeq,10h}$ dB)



Lighting

- 4.4.23 Lighting and its impact on the qualifying bird features of the FLL has limited case studies. It is anticipated that the additional lighting could aid foraging during winters months, or cause disorientation if a sudden increase in lighting occurs (Hill, 1992)³⁹. In the absence of case studies, a precautionary approach has been adopted.
- 4.4.24 Lighting can also adversely qualifying invertebrate features of the FLL, as it can disrupt natural light/dark patterns. A range of invertebrates rely on the natural rhythms of day-night and seasonal and lunar changes to light levels. As a result, artificial lighting has several negative impacts on a wide range of invertebrates including disrupting their feeding, breeding and movement which may reduce and fragment populations.
- 4.4.25 The FLL is currently protected from some types of low-level lighting, as there is a bank (~1.5 m high and 4m wide), with tree and scrub vegetation on top and behind it reaching to 3.5-7 m in height above the ground), separating the Proposed Development site and the FLL and there is also boundary vegetation providing screening. This bank is outside the Proposed Development boundary and therefore not impacted by the Proposed Development.
- 4.4.26 During construction in the winter months, the works would be likely to result in light being emitted from machines and safety lights when light levels are low and sunset and sunrise are within site working hours, and the distance the light would spread would likely reach the FLL. Lux level assessments have not been undertaken due to the early stage of the development; however, following a precautionary principle it can, in the absence of literature and evidence, be concluded that without mitigation light spill will adversely affect the FLL during construction. This element will, therefore, be screened into the Appropriate Assessment.
- 4.4.27 During operation, high-rise residential spaces are not expected to be lit to a significant level at night, any light visible would be very limited. In general, residential buildings would not emit high levels of light spillage, as lights are typically off at night, or blinds/curtains are likely to be drawn. The illustrative plans show that the Plot 18 and 19 buildings would be between 10-20 m from the site boundary. However, with the introduction of buildings ranging up to 55 m in height adjacent to the FLL, and beyond the high-rise buildings a sports stadium, and the inclusion of a park, there is a change in lighting from both egress from buildings and public realm. Public realm lighting changes will result from streetlights, car lights and commercial businesses. This element will, therefore, be screened into the Appropriate Assessment.
- 4.4.28 Lighting associated with other developments is not considered relevant as the nearest development that incorporates high-rise buildings, Ebbsfleet Garden City Central East, is located approximately 560 m south and is separated by infrastructure reducing light spill to ground level on the FLL, this project also did not identify any FLL that it would adversely affect. High-rise buildings are important to review as the light-spill would travel further and would not be buffered from the Botany Marsh FLL screening vegetation. It is not considered proportionate to review any projects that will increase lighting on all FLL associated with Thames Estuary and Marshes SPA and Ramsar. Our Proposed Development will only affect a small proportion of FLL in the absence of mitigation, and there are opportunities for the qualifying bird species to use land further within the Swanscombe Peninsula SSSI. The lighting assessment associated with the Ebbsfleet Garden City Central East planning application concluded a negligible effect as a result of construction lighting and operational lighting without secondary mitigation on the SSSI, as the FLL is within the SSSI it is considered that this negligible impact is appropriate for the FLL and in combination effects are not considered likely to occur and are not considered further.

³⁹ Hill, D. (1992) *The Impact of Noise and Artificial Light on Waterfowl Behaviour: A Review and Synthesis of Available Literature* British Trust for Ornithology.

4.5 The potential for overshadowing and microclimate impacts on the FLL.

Overshadowing

- 4.5.1 The Design Code illustrates that residential blocks in Character Area 3 – Parkland, will consist of building heights of up to 35 m, 51 m and 66 m, which would result in the transitory and permanent overshadowing of the FLL from the Proposed Development in the southern corner of the Swanscombe Peninsula SSSI next to Lower Road. The area of the FLL which will be permanently overshadowed in winter covers an area of 0.38 ha. It supports dense scrub habitat and grassland, which could be suitable habitat for qualifying bird or invertebrate species associated with the Thames Estuary and Marshes SPA and Ramsar.
- 4.5.2 The transitory overshadowing impacts a further distance into the FLL and into habitats more suitable to support foraging qualifying bird species and plant and invertebrate species of the Thames Estuary and Marshes SPA and Ramsar. The qualifying waterbird species generally forage on grassland plant material and are not normally found far from a waterbody for taking shelter from ground-based predators. The area impacted by permanent and transitory overshadowing has limited waterbodies and a high density of scrub limiting site lines, there is also less open grassland meaning foraging is limited making these areas of habitat less suitable for overwintering birds. Hen harrier can be found in a variety of habitats including wetlands, estuaries, coastal and farmland and feed on a range of small mammals, therefore the overshadowing impact is less likely to affect them as they can utilise a range of habitats not impacted by overshadowing.
- 4.5.3 There is limited species-specific data pertaining to invertebrates and the impact of overshadowing. Information has been obtained from the JNCC Species Status project on invertebrates listed as qualifying features of the Thames Estuary and Marshes SPA and Ramsar site found in Table 6. This study includes details on threats to each species and overshadowing is not included in any of the threats to the qualifying species of the SPA and Ramsar site listed in Table 3⁴⁰. Some species require sunlight for basking and to support degradation of organic matter, however direct illumination has been observed to be avoided by some aquatic invertebrates⁴¹. It has been shown that in horsefly, including *Hybomitra expollicata*, greater differentiation between sunny and shady areas increases their efficiency⁴². Other qualifying species such as *Bagous longitarsis* and *Philonthus punctus* are nocturnal and as such negates the preference for shade or sun so are expected to have limited impacts from changes in overshadowing. Additionally, the plants that *Bagous longitarsis* are associated with such as hornworts (*Ceratophyllum*) and water-milfoil (*Myriophyllum* sp.) grow both in shade and sun. The majority of the remaining qualifying species are all found in a range of habitats from stone and leaf litter⁴³ to open saline habitats and sandy exposures⁴⁴ which are subject to a range of light intensities which suggest these invertebrates require the range of light intensities. Additionally, the qualifying features are associated with a range of plant species which tolerate a range of light intensities from sun to shade.
- 4.5.4 Images are provided in the overshadowing assessment for the three key dates, as recommended by BRE Guidance. These are March/September 21st (equinox) at the mid-point of the year, representing

⁴⁰ Falk, S.J. & Crossley, R. (2005) A review of the scarce and threatened flies of Great Britain. Part 3: Empidoidea. Species Status 3: 1-134. Joint Nature Conservation Committee, Peterborough.

⁴¹ Hunting (2019), Significance of sunlight for organic matter degradation in aquatic systems. Environmental Research Communications Vol 1: 10.

⁴² Horváth Gábor, Szörényi Tamás, Pereszlényi Ádám, Gerics Balázs, Hegedüs Ramón, Barta András and Åkesson Susanne (2017) Why do horseflies need polarization vision for host detection? Polarization helps tabanid flies to select sunlit dark host animals from the dark patches of the visual environment. R. Soc. Open Sci. 4170735

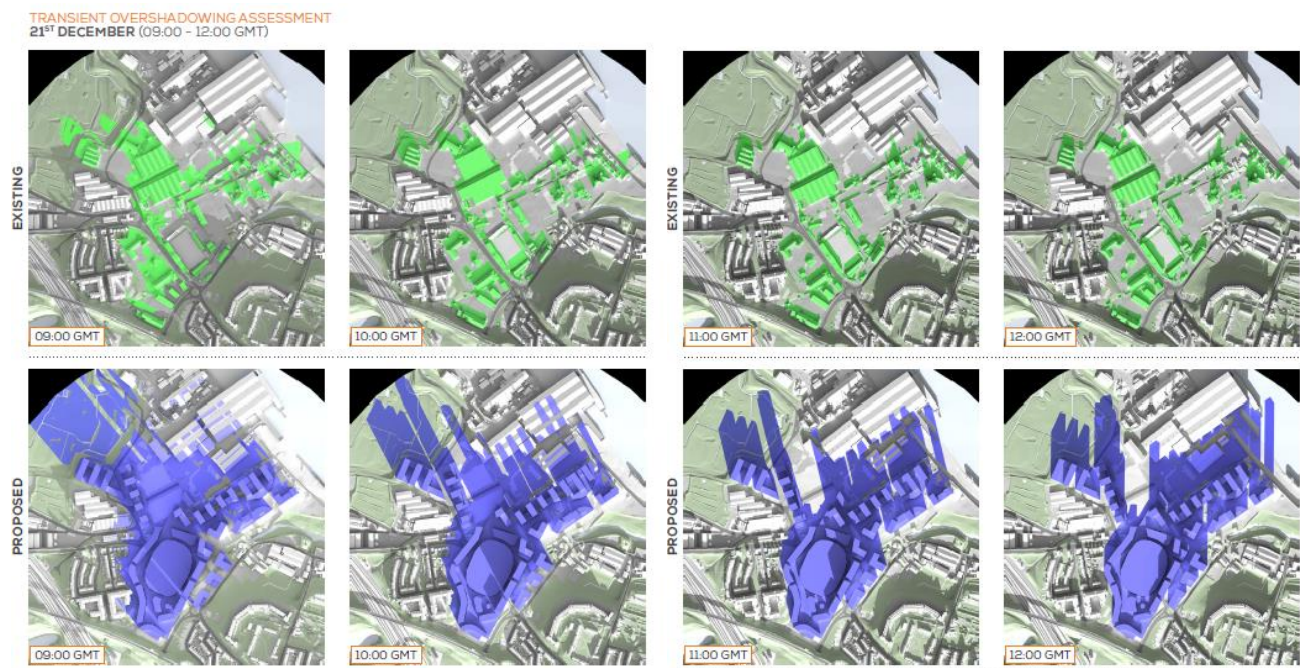
⁴³ UK Beetle Recording. Available at <https://www.coleoptera.org.uk/species/anisodactylus-poeciloides> (Accessed 18/04/2024)

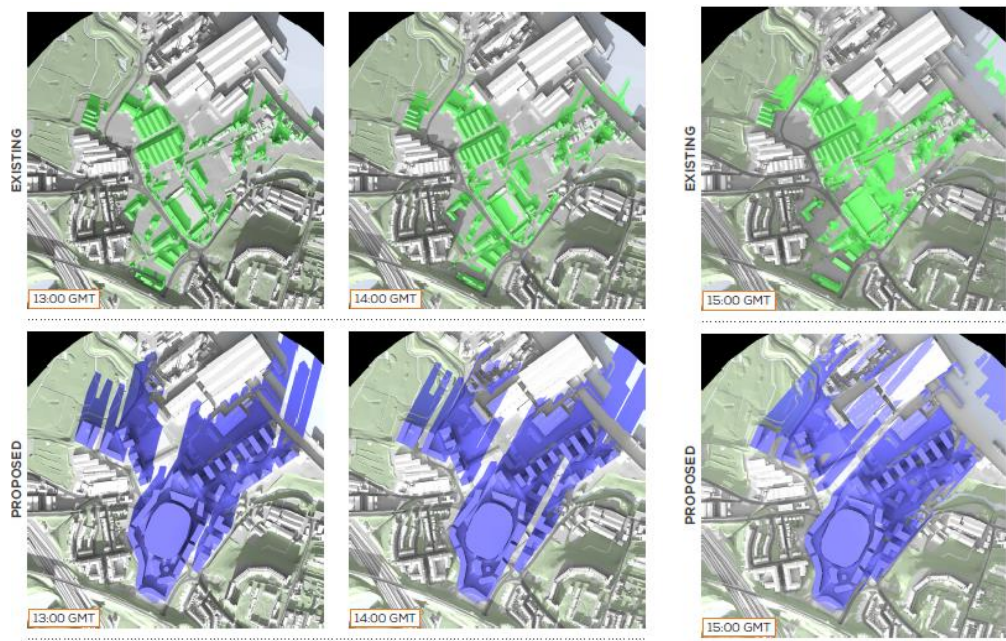
⁴⁴ Bees, Wasps & Ants Recording Society (2013) *Philonthus triangulum*. Available at <https://bwars.com/wasp/crabronidae/philanthinae/philanthus-triangulum> (Accessed 18/04/2024)

an average amount of shading, June 21st (summer solstice) when the shadows are shortest, and December 21st (winter equinox) when shadows are longest.

- 4.5.5 In terms of qualifying species (birds, plants and invertebrates) within the FLL, the spring/autumn and summer assessments show transitory overshadowing within a small section of the FLL (the south-east block) covering approximately 4% of the FLL (approximately 1.5 ha of the 34 ha of FLL are in shadow at one time). Considering 1.5 ha of overshadowing in relation to the total area of the Thames Estuary and Marshes SPA and Ramsar, and potential FLL, the area affected is minimal (~0.02%). The area that is overshadowed permanently and temporarily represents a very small area of the available land suitable for bird foraging and plants and invertebrate habitat.
- 4.5.6 The winter solstice would not cast permanent shadows on any particular area, beyond the nearest vicinity of the Plot 19 parameter footprint (covering around 3 ha which is around 8.8% of the FLL and 0.06% when considered as part of the Thames Estuary and Marshes SPA and Ramsar site), these edge habitats are less suitable for the qualifying bird species due to the habitats present (marshy and proximity to sub-urban environments, this is further qualified as no birds were recorded in this area during the bird surveys). In terms of invertebrates, they are transient species, therefore it is considered that species favouring low-light intensity conditions would be suited to the overshadowed areas. No notable plant species have been recorded in the permanently overshadowed areas, and the area that is permanently overshadowed supports grass / scrub species that can survive in dark conditions as evidenced by the current plant assemblages in the areas overshadowed in the baseline.
- 4.5.7 On the winter equinox, as the sun rises in the sky throughout the morning, shadows reduce in scale and there are breaks in between areas of shading, where sunlight can permeate through the blocks, particularly to the north of Plot 19 (represented by the 12 pm image). By this time, the west of Plot 19 is almost completely free from shadow. Throughout the afternoon, as the shadows are directed towards the north-east, most of the area in the north of Plot 19, and all of the area to the west is unaffected by shadow. This information is detailed in Figure 9.

Figure 9: Transient Overshadowing Assessment – Winter Solstice





- 4.5.8 The area overshadowed permanently did not record any qualifying birds associated with the FLL or any other waterfowl, the habitats are also sub-optimal here but as birds are transient they could use this habitat occasionally and in low numbers. However, this area is adjacent to a road and a bus garage and so subject to higher disturbance levels in the baseline. The amount of FLL adversely impacted by overshadowing is considered to be small compared to the rest of the FLL area not impacted by the overshadowing. When taken into context with the wider SPA and Ramsar site which the birds have access to during the winter solstice, the changes in permanent overshadowing from baseline to completed development is not considered to result in significantly adverse effects on winter bird populations in the FLL.
- 4.5.9 Whilst overshadowing of the FLL will occur as a result of the Proposed Development, the transient nature of the overshadowing, small area that is overshadowed, and the slow change (i.e not a quick change in light which could result in disturbance) alongside the responses to the above demonstrates how this is not considered to have significant adverse impacts on the qualifying bird species associated with the FLL.
- 4.5.10 Therefore, as the area impacted is minimal in the context of the FLL, and wider SSSI, and only associated with the periphery of the FLL which is less likely to support qualifying bird, plant or invertebrate species (due to proximity to urban infrastructure), the effects of the Proposed Development are not anticipated to be likely significant on Thames Estuary and Marshes SPA, Ramsar site.

Microclimate

- 4.5.11 In relation to microclimate within the FLL, changes in the microclimate could result in likely significant effects on qualifying features of the Thames Estuary and Marshes SPA and Ramsar by changing the ambient temperature, humidity, solar radiation (or shading) and wind speed. The Proposed Development would likely influence microclimate within the FLL in the following ways:
- The wind speed within the FLL (and beyond into the wider SSSI) would be reduced by the inclusion of the Proposed Development (as evidenced in **ES Volume 1, Chapter 11: Wind Microclimate** by the eradication of the baseline strong winds condition). As such, any wind-chill effect within the FLL would be reduced by the inclusion of the Proposed Development and thus impacts associated with this would be negligible on any species present;
 - The level of solar radiation impacts within Botany Marshes FLL only affects a small area of the Botany Marshes FLL (4% in spring, summer and autumn, and 5% in winter) as detailed in the

transient overshadowing analysis contained within ES Volume 3, Appendix: DSOGLI – Annex 5. The wind assessment (in ES Volume 1, Chapter 11) shows that this region would be relatively calm and so would not exacerbate any cooling effects.

- 4.5.12 As such, any effects (adverse or beneficial) resulting from changes to the microclimate and wind conditions within Botany Marshes FLL, as part of the SSSI, throughout the year would not impact upon species present and, therefore, would not be considered likely to have significant effects on the Thames Estuary and Marshes SPA and Ramsar.
- 4.5.13 Given the above, and that there are no standard metrics for assessing the results of full outdoor thermal modelling with respect to habitats and wildlife, no further modelling is considered necessary.
- 4.5.14 As detailed in the letter issued 26th January 2024 from NE, following the consultation through the DAS for the shadow HRA, “Natural England has no significant concerns. Natural England is satisfied that, on the basis of the objective information provided, it can be excluded that the proposed plan or project will have a significant effect on Swanscombe Peninsula SSSI through the following impact pathways: hydrology, air quality, micro-climate and overshadowing”. The SSSI incorporates Botany Marsh FLL, therefore the conclusions are considered valid.

In-Combination

- 4.5.15 The nearest high-rise redevelopment (Ebbsfleet Garden city) is located over 560 m south-east from the Botany Marsh FLL at the nearest point. The tallest building is at 60.2 m and is located 970 m to the south-west and is separated from Botany Marsh FLL by considerable urban infrastructure so that overshadowing from this new development would not reach the FLL, this is proven that at winter solstice the sun when the sun’s elevation is at 5° the shadow (in the absence of any obstructions), the shadow would reach ~680 m⁴⁵. There are no other potential developments nearby that could overshadow the FLL given the distance and heights associated with the developments, and as wind and microclimate effects are relatively local there are no further developments within the 600 m study area that could affect the wind and microclimate conditions. Therefore, it can be concluded that no likely significant effects will occur as a result of the Proposed Development, either alone or in combination with other plans and projects, on the FLL due to overshadowing.
- 4.5.16 It would be possible to conclude based on the above information, that the Proposed Development will maintain the integrity of the FLL.

4.6 Air pollution and atmospheric nitrogen deposition impacts on the FLL

- 4.6.1 NE details an approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, therefore it is advised that Gravesend Borough Council, as the competent authority should consult NE.
- 4.6.2 As part of this shadow HRA process, Assystem have consulted NE and following that consultation process NE concluded that “Natural England acknowledges that Chapter 8 in ES Vol. 1 assesses the increase in vehicle emissions both during construction and operational stages and concludes impacts on local air quality will not be significant. Given the industrial nature of the existing site, it is likely air quality in the long-term will be improved for the SSSI from the Proposed Development.
- 4.6.3 We note the assessment of dust and traffic impacts to ecological receptors, including the SSSI which has ‘medium sensitivity’ to construction works, within Chapter 8 of the ES Vol. 1. The Applicant proposes mitigation is achieved through a Dust Management Plan (DMP) and an industry-standard CEMP. We advise this is secured and reviewed prior to construction beginning”.
- 4.6.4 ES Volume 1, Chapter 8: Air Quality provides an assessment on potential dust and traffic impacts to local receptors, including sensitive ecological features. There are four aspects to the air quality impacts,

⁴⁵ Hoffmann, T. (2024) SunCalc. Available at <https://www.suncalc.org/#/51.4489,0.325,12/2024.04.15/16:59/60.2/3> (Accessed 15/04/2024).

discussed in turn below, which are: dust generation during demolition and construction; construction plant emissions; vehicular emissions during construction; vehicular emissions during operation, and other operational emissions.

Construction Dust

- 4.6.5 The Institute of Air Quality Management (IAQM) best practice guidance identifies the screening criteria for the assessment of air quality impacts is required where ecological receptors are present within 50 m of the boundary of the site and/or 50 m from the route used by construction vehicles on the public highway up to 250 m from the site entrance. The Thames Estuary and Marshes SPA and Ramsar falls outside of the area of influence, however the FLL does fall within this area of influence and requires further consideration.
- 4.6.6 The FLL falls within the area of influence of the on-site construction activities, being located less than 20 m from the boundary of the site with the ES chapter identifying the FLL, comprising part of the Swanscombe Peninsula SSSI, as being of 'medium' sensitivity to construction works. This is an appropriate level of sensitivity for the area, in line with the definitions in the IAQM best practice guidance.
- 4.6.7 The FLL is not, however, located within 50 m of the public highway from the site boundary, and therefore dust related impacts resulting from trackout activities are not relevant to the assessment.
- 4.6.8 The demolition and construction phase of the Proposed Development has the potential to generate air-borne dust through dispersal during material movement, wind-blown particles from stored material and mud on on-site haul routes disturbed by vehicle movement, especially during periods of dry and windy weather. With the prevailing wind direction blowing dust towards the River Thames, which is hydrologically linked to both the FLL and Thames Estuary and Marshes SPA and Ramsar, there could be potential for in-combination effects on the designated site as a result of dust deposition within the estuary. However, given the size of the waterbody and associated catchment and influences on this throughout the catchment, individual contributions will be low. Furthermore, given the Thames Estuary and Marshes SPA and Ramsar is located 5.7 k m downstream, the impact from the Proposed Development is likely to be small and inconsequential alone and consideration of the potential for in-combination effects across the Thames catchment would be disproportionate. Nevertheless, contribution from the Proposed Development can be minimised/prevented as a result of the adoption of mitigation measures.
- 4.6.9 Consequently, as the FLL falls within the area of influence from on-site construction dust impacts and there could be potential for in-combination effects to the SPA and Ramsar through the hydrologically linked Thames estuary. Therefore, mitigation is required to minimise/negate impacts it is screened into Appropriate Assessment.

Construction Plant Emissions

- 4.6.10 The Air Quality ES Chapter highlights that best practice guidance from the IAQM concludes that "experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed". The Proposed Development is not significantly different to most large-scale development proposals in its type, nature, scale or approach. As a result, emissions from demolition and construction plant have not been explicitly modelled or assessed, however suitable mitigation measures for site plant are presented as mitigation.
- 4.6.11 As a phased development, impacts associated with the Proposed Development will vary through the demolition and construction phase according to the Plots being developed. Nevertheless, the application of mitigation measures will mitigate any potential effects on the FLL. As a result, the effects of construction plant are, on a precautionary basis, screened into the Appropriate Assessment.

Construction Traffic Emissions

- 4.6.12 In terms of vehicle traffic, nitrogen oxides (NO_x i.e., nitrogen oxide or NO, and nitrogen dioxide or NO_2) are considered to be the key pollutants. Deposition of nitrogen compounds may lead to both soil and freshwater acidification, and NOX can cause eutrophication of soils and water. The Institute of Air Quality Management (IAQM), provides ‘a guide to the assessment of air quality impacts on designated nature conservation sites’. It states, “where substantial changes in traffic volumes are being considered, there is the potential for wider-scale impacts, which can potentially affect the future background concentrations, as well concentrations within 200 m of individual roads within the affected network.”
- 4.6.13 Therefore to assess air quality, the IAQM advocate the approach set out within the Design Manual for Roads and Bridges (DMRB) ‘LA 105 Air Quality’ (Highways England, now National Highways; 2019), designates sites of ecological conservation importance on protected species and on habitats located within 200 m of the affected road network being included within the air quality assessment. This aligns with previous versions of the guidance that stated that the contribution of vehicle emissions from the roadside to local pollution levels is not significant beyond this distance.
- 4.6.14 Nitrogen deposition can exceed site-relevant critical loads for the designated site and hence there is a risk of harmful effects. Nitrogen disposition can also change species composition of habitats and their ability to support qualifying species.
- 4.6.15 The FLL of Botany Marshes falls slightly beyond 200 m from the main roads affected by the development (i.e., site access road, A226 Galley Hill Road). Chapter 8 ‘Air Quality’ of the ES describes the result of the road traffic model undertaken for the proposed development, which includes two receptors adjacent to the A226 (i.e., receptors R6 and R7, as listed in Table 8.3 of the ES) that can be used to determine any potential impacts on the FLL of Botany Marshes. This approach would provide a conservative scenario as the FLL of Botany Marshes is located at around 200 m distance from the A226, whereas the considered receptors are located in close proximity to the road.
- 4.6.16 Modelling demonstrates that impacts on sensitive receptors, including receptors considered to be representative of FLL of Botany Marshes, are negligible for all pollutants.
- 4.6.17 Although the Thames Estuary and Marshes SPA/Ramsar is adjacent to Lower Higham Road, it is c. 460 m from the A226 Galley Hill Road which is one of the main roads affected by the proposed development and is one of the access roads to the site. As a result, no significant effect from traffic-related air pollution is considered likely on the SPA/Ramsar site.
- 4.6.18 It is therefore concluded that no likely significant effects will occur as a result of the Proposed Development, alone or in combination with other plans and projects, on the Thames Estuary and Marshes SPA and Ramsar site as a result of construction traffic emissions.

Operational Traffic Emissions

- 4.6.19 During the operational phase, the Proposed Development will lead to changes in vehicle flows on local roads. However, as discussed above, the Highways Agency identify screening and assessment distances for considering significant effects on designated sites to be up to a maximum of 200 m from a road (refer to DMRB LA105 Air Quality). As discussed above, the principal transport routes that will see any significant increases in vehicle traffic fall beyond 200 m from the FLL. Although the Thames Estuary and Marshes SPA/Ramsar is adjacent to Lower Higham Road, it is c. 460 m from the A226/Rochester Road.
- 4.6.20 The air quality assessment also considered the realigned Manor Way within the modelling, with receptors assessed all falling significantly within relevant air quality objectives for all pollutants.
- 4.6.21 The air quality modelling is based on traffic data that incorporates all relevant cumulative schemes, both extant and proposed, thereby in-combination effects are inherent within the assessment. Consequently, it is concluded that no likely significant effects will occur as a result of the Proposed

Development, alone or in combination with other plans and projects, on the Thames Estuary and Marshes SPA and Ramsar site as a result of operational traffic emissions.

Other Operational Emissions

- 4.6.22 Redevelopment of the site will result in the removal of industrial uses in favour of commercial and residential properties. Through the DAS, Natural England queried the beneficial effect of changing land-use type upon the SSSI, which includes the FLL.
- 4.6.23 The DAS response identified that *“the industrial uses within the application site and the likely pollutants emitted, include:*
- Aggregates/ concrete handling and processing – dust;
 - Asphalt production – PM₁₀ and sulphur dioxide, potentially also polycyclic aromatic hydrocarbons; and
 - Petrol station – benzene”.
- 4.6.24 However, removal of these industrial uses are not likely to be significant to the FLL, as the predominant wind direction in the UK is from the southwest and so existing emissions from the industrial processes will, for the majority of the time, be blown towards the River Thames and away from the FLL.
- 4.6.25 The Air Pollution Information Service (APIS) identifies sensitive features of designated sites and the associated Site Relevant Critical Loads. It states that there are no comparable habitat with established critical load estimate/ insufficient knowledge to make a judgement of the impacts on the species. Therefore, as pollutants derived from the site are blown away from the FLL and, therefore, are unlikely to comprise a significant contribution to deposition on the SSSI. Consequently, the change in operational emissions as a result of the Proposed Development, which includes provision of heating and hot water using fully electric technology, is not considered likely to have significant effects, alone or in combination with other plans and projects, on the Thames Estuary and Marshes SPA and Ramsar site.
- 4.6.26 As detailed in the letter issued 26th January 2024 from NE, following the consultation and discussion of mitigation through the DAS, NEs position on the query above was that: *“Natural England has no significant concerns. Natural England is satisfied that, on the basis of the objective information provided, it can be excluded that the proposed plan or project will have a significant effect on Swanscombe Peninsula SSSI through the following impact pathways: hydrology, air quality, micro-climate and overshadowing”*. In being satisfied that impacts on the SSSI are excluded, impacts on the FLL can also be excluded.

4.7 Reduced Water Quality & Quantity on the FLL

- 4.7.1 Due to the proximity of the Proposed Development to the FLL, and the hydrological links to the Thames Estuary and Marshes SPA and Ramsar site, water quality impacts could arise during construction and operation.

Construction

- 4.7.2 The pollution from the construction phase of the Proposed Development would be temporary (up to eight years’) and could result from spills, surface run-off and sedimentation during construction.
- 4.7.3 Embedded standard best practice measures conditioned through the CEMP will include:
- Proper maintenance of demolition/construction vehicles in accordance with good site practices to reduce the risk of hydrocarbon contamination and will only be active when required;
 - Construction materials will be stored, handled and managed with due regard to the sensitivity of the local aquatic environment and thus the risk of accidental spillage or release will be minimised, in the event of spillage, spill kits will be available and all relevant staff made aware of how to response to an incident, where appropriate, staff will be trained in the use of them;

- Any existing debris located within the area of the proposed works would be removed before the start of construction and after completion of the proposed works;
- Any excavated material or spoil stored on site will be located within an area surrounded by a bund and covered to prevent loss during dry, windy weather, to ensure that, should a heavy rainfall event occur, then there will be no risk of soil washout entering the river via a surface water flow pathway;
- In accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001, any tanks storing more than 200 litres of oil will have secondary bunding and any above ground storage tanks will be located on a designated area of hardstanding, well away from the FLL and watercourses
- Oil interceptors will be regularly inspected, cleaned and maintained. Full records will be kept of inspections, maintenance works and measures undertaken to sustain equipment performance. These provisions should ensure no significant impacts occur on water quality. The use of settlement facilities will aid the removal of any contaminated particulate material that might be derived from construction materials;
- The construction drainage system will be designed and managed to comply with BS6031:2009 'The British Standard Code of Practice for Earthworks', which details methods that should be considered for the general control of drainage on construction sites. Further advice is contained within the British Standard Code of Practice for Foundations (BS8004: 2015);
- The risk of redistributing any potential contamination around the site (i.e. from residual soil contamination or similar on construction vehicles) will be minimised by designating clean and dirty work areas to prevent cross-contamination;
- Vehicles and equipment will be washed down in specially designated areas and ensuring that areas of hard standing at access and egress points are cleaned at appropriate intervals and wash off into the ground or surface waters is reduced;

4.7.4 Following the implementation of the measures incorporated into the CEMP, such as storage of chemicals and hazardous materials within bunded areas, with adequate capacity, appropriate management of spills and leaks and no polluted water to be discharged from the site (as noted within the Outline CEMP). Further to this the majority of the site falls away and downstream from the FLL, toward the River Ebbsfleet and Thames, and in the unlikely event of a spill or pollution event (minor surface run-off), any pollutant will be adequately diluted before it reached Thames Estuary and Marshes SPA, Ramsar.

4.7.5 The potential for contamination and associated risks and effects at individual development sites would be identified by the applicants of all cumulative schemes to ensure that each development would be 'suitable for use' in accordance with the mandatory legislative requirements of Part IIA of the Environmental Protection Act, 1990 and associated planning conditions. Sites where contamination may be present will be required to undertake intrusive investigation and risk assessment and it is likely that the relevant planning authority would require a site-specific CEMP, to avoid detrimental effects to sensitive receptors. Where significant pollutant linkages are identified for the site or other local cumulative schemes, a subsequent remediation strategy and verification plan will be required. In terms of water quality, new or cumulative schemes will have to incorporate appropriate pollution control measures to protect the underlying groundwater and/or local surface waters through planning conditions enforced by the GBC (and other relevant local planning authorities) and/or discharge consents enforced by the EA.

4.7.6 Taking account, the information above, the construction of the Proposed Development is not considered likely to have significant effects, alone or in combination with other plans and projects, on the FLL or the Thames Estuary and Marshes SPA and Ramsar.

Operational

4.7.7 The new development will not drain differently from the current land use. The majority of the site falls away and downstream from the FLL, toward the River Ebbsfleet and Thames. Currently, any surface

water runoff generated within the majority of the site flows in a southerly direction and runoff from the south-eastern corner flows in a northerly direction and is assumed to flow into the existing drainage system and the public surface water sewer along Stonebridge Road. It is assumed that this surface water sewer discharges into the River Thames. Surface water runoff from the northern part of the site flows in a northerly direction and is assumed to flow into the River Thames. In the unlikely event of a spill or pollution event (minor surface run-off), any pollutant will be adequately diluted before it reached Thames Estuary and Marshes SPA, Ramsar.

- 4.7.8 At this stage, the exact arrangement of the private network inside the site boundary has not been established and will be developed further as part of reserved matters.
- 4.7.9 London's Victorian sewage system discharges storm-sewage pollution into the river when capacity is reached; the biodiversity supported by the Thames is generally well adapted to changes in conditions due to this and the tidal nature of the estuary.
- 4.7.10 The site is at risk of sewer flooding and increases of surface water run-off in the absence of mitigation and preventative measures. This element will, therefore, be screened into the Appropriate Assessment.
- 4.7.11 The cumulative effects of new development on foul drainage provision are managed at the regional level by the appropriate water companies in consultation with statutory bodies such as the Local Planning Authorities and the Environment Agency. The cumulative effect of increases in mains water and foul drainage demand have to be offset by sustainable design and water efficiency measures, to be imposed via planning conditions and infrastructure contributions for sewage treatment works, where necessary. These measures should collectively ensure that the cumulative effects on regional water resources and treatment performance are controlled to an acceptable level during both the demolition and construction and the operation of the Proposed Development. Thus, it is considered unlikely that significant effects from the Proposed Development will occur on the FLL and Thames Estuary and Marshes SPA and Ramsar are not considered.
- 4.7.12 The cumulative effects of new development on water resources and foul drainage provision are managed at the regional level by the appropriate water companies in consultation with statutory bodies such as the Local Planning Authorities and the EA. Policy CS18: Climate Change from Gravesham's Local Plan Core Strategy (2014) states that "*The Council will seek to manage the supply of water in the Borough and reduce the impact of new development on the supply of potable water as much as possible. In particular, the Council will:*
 - Require all new homes to be built to at least level 3/4 of the Code for Sustainable Homes in terms of water use (105 litres per person per day consumption). Where it can be demonstrated that a development is unable to meet these standards, or the additional standards set out below, permission will only be granted if provision is made for compensatory water savings elsewhere in the Borough;
 - Seek 5% of homes on Key Sites to act as exemplars by meeting level 5/6 of the Code for Sustainable Homes in terms of water use (80 litres per person per day consumption);
 - Require all non-residential developments of 1,000 sq m and above to meet the BREEAM "excellent" standards of water efficiency and include provision for the collection of rainwater; and
 - Support proposals to retrofit existing residential properties in ways which reduce water consumption."
- 4.7.13 These measures should collectively ensure that the cumulative effects on regional water resources and treatment performance are controlled to an acceptable level during both the demolition and construction and the operation of the Proposed Development.

4.7.14 Further to the in-combination effects, the sHRA for the Ebbsfleet Garden City Central East (submitted 18th March 2024), did not identify any hydrological links to the Thames Estuary and Marshes SPA and Ramsar site.

4.8 Summary of Screening

1.1.1 The screening exercise undertaken to inform this HRA has concluded that likely significant effects remain as a result of the development in combination with other plans and projects through:

- Recreational pressure and disturbance of birds on the SPA/Ramsar site;
- Recreational pressure on qualifying birds, plants and invertebrates within the FLL;
- Impacts of cat predation on bird species associated with the FLL;
- Noise & Vibration and Visual (non-recreational disturbance), lighting disturbance of qualifying species during the construction phase both within FLL;
- Air Quality impacts upon the FLL associated with construction dust and construction plant emissions, and
- Water Quality and Quantity impacts on the FLL during operation.

4.8.1 Therefore, further Appropriate Assessment is required, and this is considered in Section 5.

5 Appropriate Assessment

5.1 Recreational Pressure and Recreational Disturbance of birds of the SPA/Ramsar

- 5.1.1 In the absence of appropriate avoidance/mitigation, a likely significant effect on Thames Estuary and Marshes SPA and Ramsar site could occur during the operational phase of the Proposed Development due to increased recreational pressure from new residents in combination with new residents associated with other schemes within the ZoI. This represents a worst-case scenario following the precautionary principle.
- 5.1.2 The Thames, Medway and Swale Estuaries Strategic Access Management and Monitoring Strategy⁴⁶ sets out a strategy to resolve disturbance issues to wintering birds on the North Kent Marshes, focussing on the European Protected Sites (Thames Estuary and Marshes SPA/Ramsar Site, Medway Estuary and Marshes SPA/Ramsar Site, and The Swale SPA/Ramsar Site) and their internationally important bird interest features. The Strategy has been produced by the North Kent Strategic Access Management and Monitoring Scheme (SAMMS) Board, a partnership of the following organisations: Kent Wildlife Trust, The Kent Developers Group, NE, Royal Society for the Protection of Birds (RSPB), Canterbury City Council, Ebbsfleet Development Corporation, Kent County Council, Gravesham Borough Council, Medway Council and Swale Borough Council.
- 5.1.3 The potential for recreational pressure and disturbance to occur on the Thames Estuary and Marshes SPA and Ramsar site as a result of the Proposed Development requires mitigation.
- 5.1.4 The North Kent Strategic Access Management and Monitoring Scheme⁴⁷ provides guidance on suitable mitigation measures. There are currently two main mechanisms that provide funding for measures to avoid, and mitigate for, impacts on European sites: the Community Infrastructure Levy (CIL), or an individual planning obligation referred to as a Section 106. Large developments may be able to provide mitigation measures as part of the development, such as dedicated areas for dog walking.
- 5.1.5 The CIL places a levy on new development that then provides funding to meet local infrastructure requirements, enabling growth to proceed with adequate and maintained infrastructure in place. Section 106 agreements can be bespoke and specific to individual proposals.
- 5.1.6 Bird Wise, the recipients of the tariff, is a partnership of local authorities, developers and environmental organisations, and is the brand name for SAMMS. The Bird Wise Mitigation Strategy identifies mitigation measures that the Section 106 agreement payment will support, with the aim of reducing the adverse effects of the SPA/Ramsar from the Northfleet project to a level that is non-significant.
- 5.1.7 Gravesham Borough Council⁴⁸ state that “Developers are requested to pay the full tariff of £328.27 for every new dwelling or non-C3 residential use, provided within 6 km of the Ramsar site and SPA and for larger housing developments beyond 6 km from them.” The fee is subject to inflation and will increase annually.
- 5.1.8 The Proposed Development will include the provision of significant planting and landscaping on-site to encourage residents to use on-site greenspaces and reduce pressure on the SPA/Ramsar site. As detailed in ES Volume 1, Chapter 14: Ecology and Biodiversity, in order to help manage operational footfall, and therefore reduce impacts on, nearby designated sites the following mitigation measures have been embedded within the design:
 - The provision of adequate minimum on-site open space for operational amenity.

⁴⁶ Liley, D. & Underhill-Day, J. (2013). Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy. Unpublished report by Footprint Ecology.

⁴⁷ Liley, D. & Underhill-Day, J. (2013). Thames, Medway and Swale Estuaries – Strategic Access Management and Monitoring Strategy. Unpublished report by Footprint Ecology.

⁴⁸ Gravesham Borough Council. SAMMS tariffs.

- The provision of an information centre/cafe within the Power Park, next to the play areas, to encourage walks around the site as opposed to within designated sites, and to provide information regarding notable species and habitats including relevant protection measures within the local area.

5.1.9 The following mitigation measures will be provided as part of the Proposed Development:

- Mixed woodland,
- Modified grassland,
- Pocket parks,
- Pedestrian priority public realm.

Calculating SAMM

- 5.1.10 The cost of implementing the mitigation measures will increase with inflation; the per dwelling tariffs will be updated each year. The cost per dwelling currently stands at £328.27 (from 1st April 2024), with the tariff totalling at the current rate £1,148,945.
- 5.1.11 The Bird Wise Mitigation Strategy states “Mitigation in relation to student accommodation, Houses in Multiple Occupation (HMOs), residential care homes, residential nursing homes, hotels, boarding and guest houses, hostels, holiday parks and all other residential institutions, will be considered on a case-by-case basis. Factors to consider will be proximity to the coastal areas, size of development and the likelihood of residents using the SPA for recreational activities. This is in keeping with advice received from Natural England in 2015.”
- 5.1.12 With contributions to SAMMS provided in line with the above tariffs it would be possible to conclude that the Proposed Development will not lead to Likely Significant Effects on the Thames Estuary and Marshes SPA and Ramsar site.
- 5.1.13 The contributions to SAMMS will need to be addressed as part of the Planning Obligations agreement accompanying a positive decision, should the LPA be minded to approve the outline application.

5.2 Recreational Pressure and Disturbance of qualifying features within the FLL

- 5.2.1 In the absence of appropriate avoidance/mitigation, a likely significant effect on qualifying bird and invertebrate species in the FLL could occur during the operational phase of the Proposed Development, due to increased recreational pressure from resident and daytime populations of the Proposed Development in-combination with new residents associated with other proposed schemes within the ZOI such as the Ebbsfleet Garden City Central East and EDC/21/0081 development. Although this has not been fully quantified through a detailed in-combination assessment, as there are no background assessments to the threshold of recreational impacts to the SSSI (and subsequently the FLL), by employing the precautionary principle it is assumed as a reasonable worst-case scenario has been adopted.
- 5.2.2 As noted in ES Volume 1, Chapter 14: Ecology and Biodiversity, Paragraph 14.138, it is proposed that the Applicant commits to undertaking an audit to monitor the recreational usage from the Proposed Development on the SSSI and implement proportionate mitigation measures required, which will be secured via planning conditions and/or planning obligations. This assessment will take into account recreational usage of the FLL, which is within the SSSI. This will identify the effect threshold or the point at which wildlife begins to be disturbed by such recreational activities to provide informed recommendations to key stakeholders regarding infrastructure construction and visitor management. This will inform future phases of this Proposed Development on the most appropriate and proportionate mitigation requirements to reduce impacts on the SSSI if a threshold is reached and to commit to necessary action as required. It is considered with the implementation of the following mitigation measures such as:
- High-quality on-site greenspaces, as outlined in Part E of the Design Code;

- Guided walks and pathways designed to encourage the public to walk around the site area rather than onto sensitive areas for birds, such as Botany Marshes, and information boards to provide information about the sensitivities of wintering birds within the SSSI. No new paths to be created through Botany Marshes to prevent disturbance to overwintering birds;
- SAMMS payment for recreational disturbance to Thames Estuary and Marshes SPA, Ramsar (as detailed above);
- The audit of recreational usage of the FLL and surrounding SSSI area and requirement to action mitigation if required; and,
- Work with the LPA to ensure the mitigations noted within the planning application and the sHRA are delivered and effective.

5.2.3 Adverse effects of recreational use on wildlife identified by the audit will be mitigated for in future phases of the Proposed Development (such as visitor management and management regimes, which could include restricting park access to visitors, pathway use to limit trampling, restricting dog access during wintering periods, constructing dense hedges and/or embankments/natural screens to reduce visitors accessing sensitive areas or the potential for visual disturbance, *etc.*) to ensure effects remain negligible. During the reserved matters stages of the Proposed Development, relevant bodies such as NE will be consulted to inform and agree the detail of the mitigation measures to be incorporated into the detailed design of the Proposed Development. This will ensure that the suite of measures enacted are adequate in terms of controlling the recreational pressures and disturbance upon the qualifying features of the FLL.

5.2.4 Further to this, the sHRA for the Ebbsfleet Garden City Central East (submitted 18th March 2024), did not identify any FLL within their Proposed Development or any FLL that their Proposed Development might adversely affect the integrity of during construction or operation. Ebbsfleet Garden City Central East does, however, include for the provision of high-quality greenspace, with the illustrative masterplan incorporating a riverside park on the eastern side and a 'green spine' threading through the northern part of the site following the River Ebbsfleet. The inclusion of this recreational resource will help to manage recreational pressures on the Swanscombe Peninsula SSSI. However, this may also provide a more attractive route towards Northfleet Harbourside and therefore the Swanscombe Peninsula SSSI.

5.2.5 Based on the above information it would be possible to conclude based on the above information that, through mitigation of the impacts on the Botany Marshes FLL, the Proposed Development will not adversely affect the integrity of the Thames Marshes and Estuary SPA and Ramsar.

5.3 Impacts of Cat Predation on birds associated with the FLL

5.3.1 The Applicant is committed to providing and maintaining a cat proof fence along the north-western boundary, as illustrated in the Design Code, combined with defensive planting comprising dense scrub to reduce the ability for cats to access the fence line. As an outline application, the residential layout will be established in the detailed design and communicated through the Reserved Matters Applications. At this time, opportunities that further minimise predicted cat numbers for the Parkland Neighbourhood will be considered through the residential layout, where feasible.

5.3.2 An audit has also been recommended to understand potential thresholds for negative effects within the SSSI including the FLL, which could include analysis of predation rates.

5.3.3 The dense shrub planting which will be planted early in the construction process to enable the vegetation to establish prior to occupation. It is considered that the use of thick and tall shrub, such as hawthorn and blackthorn, within the buffer zone (in addition to the cat proof fencing) would reduce access by cats, whilst not fragmenting habitats (as raised by NE).

5.3.4 The use of fencing as an exclusion method for cats has been widely used in Australia and New Zealand to provide protection to sites of high conservation value that support species that are vulnerable to

predation by feral cats and have been reported to be effective in their purpose (Cecchetti et al, 2020⁴⁹ and Moseby and Read, 2006⁵⁰). Application in the UK is also noted in literature (Connolly, Day and King, 2009⁵¹) for cats (as well as foxes and rabbits).

- 5.3.5 Whilst Connolly, Day and King (2009) outline that results regarding the efficacy of fencing has been mixed, referencing studies by Day and MacGibbon (2002⁵²; 2007⁵³) and Sanders et al (2007)⁵⁴, this is often a result of design faults, poor construction or insufficient maintenance. However, they are effective where the fence design takes into account the physical abilities and behaviour of those pest animals it means to exclude (Clapperton and Day, 2001)⁵⁵.
- 5.3.6 In terms of physical characteristics, cats are reported to be able to jump to a height of between 140 cm and 180 cm and can use their footpads and claws to climb above ground (Coman and McCutchan 1994⁵⁶; Long and Robley, 2004⁵⁷; Dickman, 2012⁵⁸). They are reluctant diggers but can excavate short burrows in soft sediment (Dickman, 2012). Studies carried out by Robley et al (2006⁵⁹; 2007⁶⁰) and Moseby and Read (2006)⁶¹ tested the efficacy of fences in preventing feral cats, concluding that the following properties were important and effective in preventing cat breaches:
- 5.3.7 Fences should be a minimum of 1.8 m height with a maximum mesh size of 50 mm and support wires at 300 mm spacing and incorporating a recurved overhang of c. 600 mm (facing away from the sensitive site) to deter animals climbing over;
- Fencing should be anchored into the ground, either in a concrete base or fencing being buried and folded back on itself to prevent digging beneath the fence;
 - Fencing should include an apron of hard-wired mesh to prevent chewing;
 - Electric wires are not necessary to successfully exclude cats; and
 - Maintenance is important to ensure the efficacy of the exclusion fencing remains high.
- 5.3.8 The applicant will apply these principals within the Proposed Development significantly reduce the likelihood of cats entering the SSSI. This fence design and height has been shown to be effective in studies (Robley et al, 2006), and is to be considered in further detail as part of the reserved matters

⁴⁹ Cecchetti, Crowley and McDonald (2020) Drivers and facilitators of hunting behaviour in domestic cats and options for management. Mammal Review 51 307-322 published by Mammal Society and John Wiley & Sons Ltd.

⁵⁰ Moseby, K.E. and Read J. L. (2006) The efficacy of feral cat, fox and rabbit exclusion fence designs for threatened species protection. Biological Conservation 127, 4, Pp 429-439.

⁵¹ Connolly, Day and King (2009) Estimating the potential for reinvasion by mammalian pests through pest-exclusion fencing Wildlife Research, 36 (5) pp410 - 421

⁵² Day, T. D. and MacGibbon, R. J. (2002). Escape behaviour and physical abilities of vertebrate pests towards electrified and non-electrified fences. Xcluder Pest Proof Fencing Company unpublished internal report. (Xcluder Pest Proof Fencing Company Ltd: Cambridge, New Zealand.)

⁵³ Day, T. D. and MacGibbon, R. J. (2007). Multiple-species exclusion fencing and technology for mainland sites. In 'Managing Vertebrate Invasive Species: Proceedings of an International Symposium'. (Eds G. W. Witmer, W. C. Pitt and K. A. Fagerstone.) pp. 418-433. (USDA/APHIS/WS, National Wildlife Research Center: Fort Collins, CO.)

⁵⁴ Sanders, M., Brown, K. P., and Keedwell, R. J. (2007). 'Testing the Effects of a Predator-exclusion Fence on Predator Abundance and Wetland Bird Breeding Success at Ruataniwha Wetlands, Twizel.' (Department of Conservation: Christchurch, New Zealand.)

⁵⁵ Clapperton, B. K. and Day, T. D. (2001). Cost-effectiveness of exclusion fencing for stoat and other pest control compared with conventional control. DoC Science Internal Series. Department of Conservation, Wellington, New Zealand

⁵⁶ Coman, B.J. and McCutchan, J. (1994) Predator Exclusion Fencing for Wildlife Management in Australia. Australian Nature Conservation Agency: Canberra, Australia.

⁵⁷ Long, K. and Robley, A. (2004) Cost effective feral animal exclusion fencing for areas of high conservation value in Australia. Report to the Department of the Environment and Heritage. Arthur Rylah Research. Institute, Melbourne.

⁵⁸ Dickman, C. R. 2012 Fences or Ferals? Benefits and Costs of Conservation Fencing in Australia. In: Somers, M. J. and Hayward, M. W. (Eds) Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?

⁵⁹ Robey, A., Purdey, D., Johnston, M. and Lindeman, M. (2006) Experimental Trials to Determine Effective Feral Cat and Fox Exclusion Fence Designs. Arthur Rylah Institute for Environmental Research, Department of Sustainability and Environment Melbourne.

⁶⁰ Robley, A., Purdey, D., Johnston, M. and Lindeman, M. (2007) Experimental trials to determine effective fence designs for feral Cat and Fox exclusion. Ecological Management and Restoration, 8, 3, pp193-198.

⁶¹ Moseby, K.E. and Read, J.L. (2006) The efficacy of feral cat, fox and rabbit exclusion fence designs for threatened species protection. Biological Conservation, 127, 429-437.

stage. The literature reviewed demonstrates that exclusion fencing can be effective in preventing access to sites of high conservation value, therefore this would be an effective and deliverable mitigation measure for the Proposed Development.

- 5.3.9 NE confirmed their satisfaction with this approach via an email on 6th February 2024, included in Appendix B, subject to clarification on some elements at Reserved Matters, and through the inclusion of appropriate planning conditions and/or planning obligations relating to monitoring and maintenance. The applicant has committed to the measures required, including associated planting and also including extension to the fencing and overhang width through Part E of the Design Code with further information part of detailed design and to be delivered through the Reserved Matters application and subject to further consultation and agreement with NE.
- 5.3.10 Part E of the Design Code also commits to the adoption of wet fences/swales, as per NE recommendations, in the event that the fencing design brought forward is not agreed at the Reserved Matters stage with Natural England or in the event that the mitigation is proven to be ineffective through monitoring. This position aligns with Natural England's requisites within their approval of the approach, and thus for the purposes of the sHRA it can be concluded that mitigation can be adopted to mitigate the impact of cat predation on birds associated with the FLL.
- 5.3.11 As maintenance will be an important aspect, it has been agreed with NE that detail regarding the maintenance and monitoring of fencing and associated planting are to be addressed through the inclusion of appropriate planning conditions and/or planning obligations. Management of the fence line and the associated planting will be incorporated within the Biodiversity Enhancement and Management Plan (BEMP), which will ensure routine inspections of vegetation and fencing along with reactive inspections following periods of significant adverse weather. Any repairs required should be actioned immediately.
- 5.3.12 Subsequent to this, NE revised their position on the fencing approach on the basis of the presence of nightingales within the adjacent land which are indicated to be more vulnerable to predation. However, the species is not a qualifying feature to the Thames Estuary and Marshes SPA and Ramsar, and therefore not associated with the FLL and measures proposed remain appropriate for protection of those species associated with the FLL. Nevertheless, Part E of the Design Code commits to the adoption of wet fences/swales, should this mitigation need to form part of the detailed design solution as part of the Reserved Matters stage. This will provide the highest level of protection to the FLL from cat predation. It would, therefore, be possible to conclude based on the above information that, through mitigation of the impacts on the Botany Marshes FLL, the Proposed Development will not adversely affect the integrity of the Thames Marshes and Estuary SPA and Ramsar.

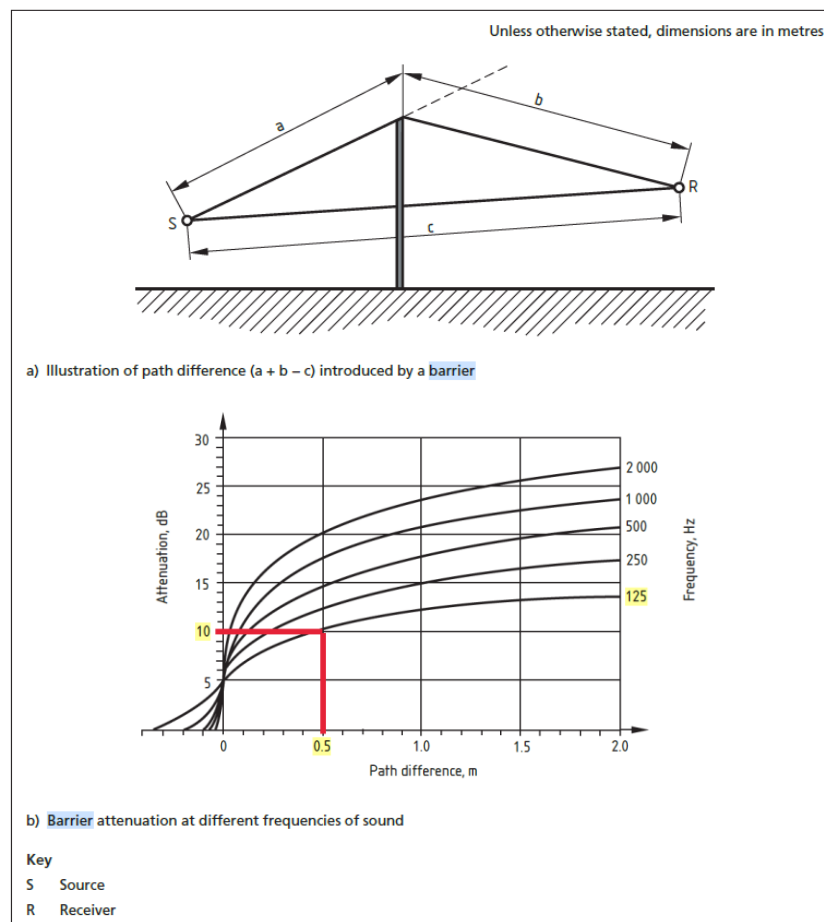
5.4 Noise, Vibration and Visual Disturbance, and lighting of qualifying features during the construction and operational phase within FLL.

Noise, Vibration and Visual Disturbance

- 5.4.1 As detailed in the Noise and Vibration Assessment, an overview of the construction assumptions applied suggested that mitigation measures would be required to reduce noise emissions so that they do not affect the integrity of the qualifying features of the Thames Estuary and Marshes SPA and Ramsar. As detailed in the Screening Assessment, only noise levels in plots 18 and 19 exceed 55 dB within the FLL and only exceed this level within a small section of the FLL nearest the construction site. However, the loss of noise provided by screening was not included in the assessments of the EIA, and therefore further consideration of the effect of this mitigation is evaluated here. Screening would be expected to reduce noise levels at ground level to the height of the screens, so could reduce impacts of foraging qualifying bird species in the FLL. At best, a site hoarding would be expected to reduce noise levels by a further 10 dB, as explained in Figure 10.

5.4.2 BS 5228-1⁶² is referenced when calculating the reduction in noise from screens on a building site. Figure 10 shows the principles of how the losses are calculated when a 7 kg/m² barrier is adopted, such as the SilentUP retractable noise barrier (<https://www.wal.hk/#!barrier>). The barrier should be installed between the noisy equipment and the noise sensitive receiver (the FLL). These can be constructed from commercially available panels which are lined with sound absorbing materials to achieve the maximum shielding effect. For maximum effectiveness, a barrier should be located as close as possible to the noise source, and should be built so as to shield totally the noise source. Gaps and openings at joints in the barrier material should be avoided. The length of a straight vertical barrier should generally be at least five times greater than its height and minimum height of a barrier should be such that no part of the noise source will be visible from the noise sensitive receiver being protected. As shown in Figure 10, the key consideration is the path difference, i.e. the difference of path above the screen to the one through it. A path difference of 0.5 m will result in a 10 dB attenuation at each octave band. The image illustrates that the closer a receptor is to the ground, the more benefit there will be from screening, as the path difference would be higher. This is particularly relevant for animals on the ground.

Figure 10: Principals of how noise losses are calculated when a barrier is adopted



5.4.3 There are further options, which can give further assurance that noise levels can be adequately reduced if required, to reduce the sound produced by the construction activities (as it is an outline application) such as:

⁶² BSI (2009) British Standard 5228-1:2009 + A1:2014, Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. British Standards Institute, London.

- Soft starts and other best practice methods, such as the use of low impact machinery to limit noise and vibration disturbance, will be used for noisy works, such as piling, concrete breaking (or activities that could result in above 55 dB within the FLL), if undertaken in the overwintering season (November to March) and will be detailed in the CEMP and PWMS;
- As part of industry best practice, machines will be turned off when not in use;
- Fitting compressors, percussion tools and vehicles with effective silencers of a type recommended by the manufacturers of the compressors, tools or vehicles and at least to the requirements of BS 5228-1:2009+A1:2014;
- Setting audible vehicle reversing sirens on as low a setting as is compatible with safety requirements;
- Only using plant that conforms with or better than relevant national or international standards, directives or recommendations on noise or vibration emissions, including The Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001;
- Machines in intermittent use will be shut down in intervening periods of non-use when it is safe to do so;
- Methods of construction and associated plant will be selected so as to minimise noise and vibration in the first instance, thus reducing the need for the use of percussive and vibratory equipment;
- Static plant will be located so as to optimise screening and/or distance attenuation in relation to occupied residential properties, and fitted with suitable acoustic surrounds if required.
- Good practice guides will be provided to all operatives through the provision of toolbox talks and an appropriate induction routine. The induction will inform operatives, amongst other issues, of good practice to be employed.

5.4.4 In a worst case scenario the noisiest equipment during the demolition phase is currently assumed to be a tracked excavator with a breaker. This piece of equipment is used to break-out the hardstanding that is currently in place. However, this is prior to the imposition of a planning condition which imposes requirements for a Construction Environmental Management Plan, which can require any selected contractor to use an alternative method of removing the hardstanding, e.g. a hand-held pneumatic breaker, which is 7 dBA quieter.

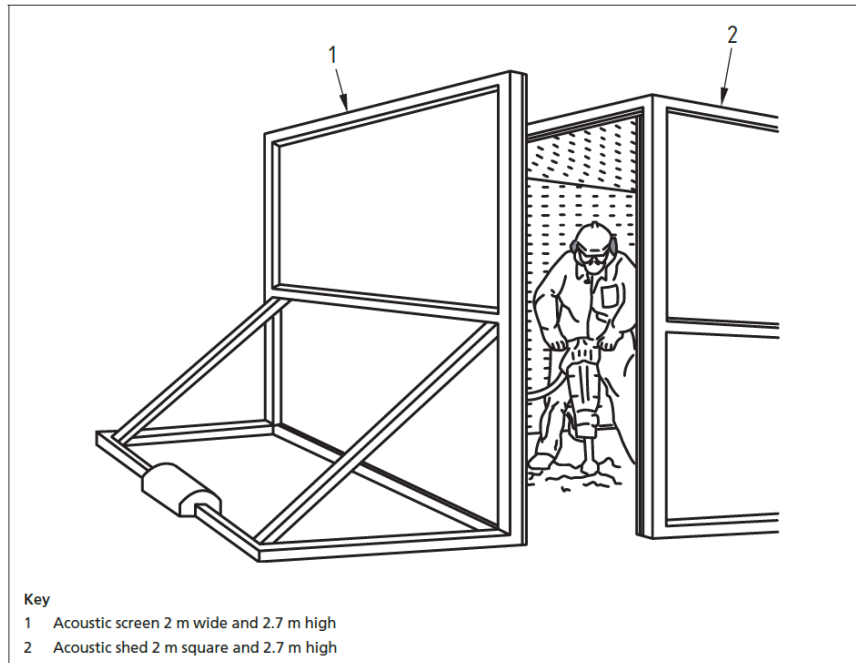
5.4.5 It is also feasible that the times of using the breaker are limited so that it only takes place when other activities have been stopped, i.e. only the pneumatic breaker will be active.

5.4.6 A barrier will be installed along the perimeter of Plots 18 and 19 (adjacent to the FLL). A perimeter barrier height of 5m has been included in the model, which could potentially be adopted by a scaffold system. There are alternatives, such as an “acoustic shed” around the breaker (see Figure 11 from BS 5228-1⁶³ below), which would reduce noise all round. Alternatives to the 5m barrier can be investigated by any contractor(s) that are appointed by the applicant, as part of their CEMP, and agreed with the LPA in consultation with NE at Reserved Matters Stage.

⁶³ British Standards Institute (2014) BS 5228-1:2009 + A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. BSI, London.

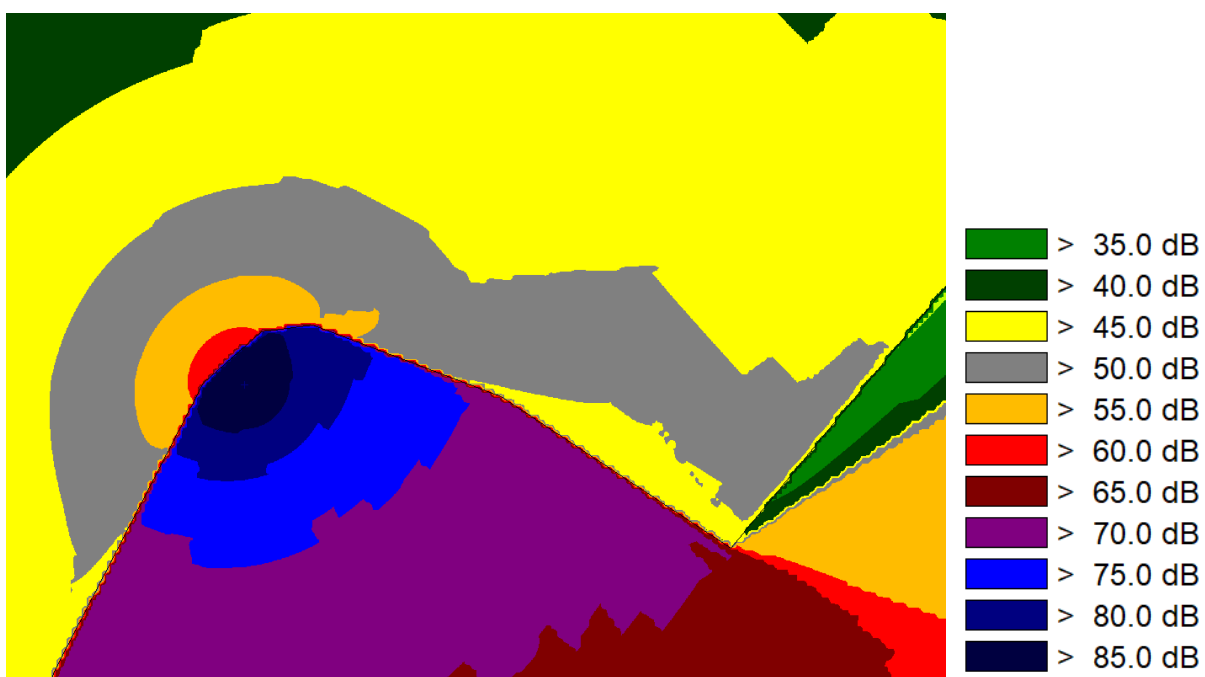
Figure 11: Example of an Acoustic Shed (from BS5228-1)

Figure B.2 Typical acoustic shed



- 5.4.7 With these measures in place (not, including the acoustic shed), you can see in Figure 12 that noise from the breaking (at the perimeter of the site) will have the below effect (grid height at 1.5m above ground).
- 5.4.8 55 dBA will be expected at around 15 m from the perimeter of the site/distance from the breaking.

Figure 12: Noise levels assessed at the edge of Plot 18, immediately adjacent to the FLL when mitigation is incorporated (not including the acoustic shed but including barrier mitigation)



Substructure Works

- 5.4.9 During the substructure works the noisiest plant assumed was the tracked excavator with breaker. This is a worst-case assumption and like the demolition phase the contractor could select an alternative method to remove hard ground (e.g. using hand-held pneumatic drill or just an excavator). Either the pneumatic drill or excavator will result in similar predictions as presented for the demolition phase analysis.
- 5.4.10 The next noisiest item of plant that would operate at the perimeter of the site would likely be a piling rig. Figure 13 shows a single piling rig operating at the perimeter of the site, with the above-mentioned perimeter barrier in place. This shows broadly similar results to the breaker, with 55 dBA being predicted at a distance of 13 m from the site perimeter/activity.

Figure 13: Noise levels with perimeter barrier installed



5.4.11 Overall, these calculations illustrate:

- The CEMP should require any potential contractors to utilise methods/equipment that reduce and maintain noise emissions to an acceptable level i.e. below 55 dBA, for example the applicant could utilise a modern construction method for plots 18 and 19 such as similar to Mace's 'Jump Factory' <https://www.macegroup.com/projects/east-village-no8>;
- Construction needs to be phased and activities coordinated so that works in combination to not exceed the 55 dBA limit;
- 5m barriers along the perimeter will be installed to reduce noise during the construction phase, unless otherwise agreed to in writing with the LPA. Should activities require further mitigation, contractors will via the CMP be required to utilise acoustic sheds or similar close screening; and
- Noise levels should be reduced to 55 dBA at short distances and limited areas within the SSSI, with the applicant required to undertake active noise monitoring during the construction

phase. This would facilitate practical monitoring measures, such as works being brought to a halt should noise levels exceed 55 dBA that would in turn reduce adverse impacts.

- 5.4.12 All the above can be secured via conditions as part of an appropriately detailed CEMP, or through the inclusion of additional planning conditions and/or planning obligations .
- 5.4.13 The evaluation provided indicates that the mitigation measures are able to reduce construction noise levels so that they are similar to those currently experienced. We note that the periods of high construction noise will likely be limited in duration (they are temporary and would not occur at the same levels across the entire construction programme) and extent within the FLL (locations closest would be affected more by noise than further away).
- 5.4.14 With these measures it is estimated that noise emissions can be reduced for the most part to a level below 55 dB in the nearest point of the FLL. Should the FLL experience some temporary noise above 55 dB (worst case based on noise generation at the boundary), with the mitigation proposed, the extent of the habitat affected will be limited, and the impacted habitat has not been identified as supporting birds during the surveys undertaken. Further, there are areas available outside of the impacted habitat, for birds. When considered alongside soft start methodology and with noise decreasing further into the FLL, any temporary noise above 55 db will not significantly impact on the FLL in terms of supporting birds and, therefore, will not impact on the integrity of the SPA and Ramsar. Noise levels further away from the Proposed Development boundary, and further into the FLL, would be lower still as noise dissipates over distance.
- 5.4.15 Given the potential for noise disturbance on overwintering birds resulting from the demolition and construction works, measures set out in this document, will need to be taken into account within a detailed CEMP that will minimise the potential for adverse ecological effects upon overwintering birds. In addition to the CEMP, a Precautionary Working Method Statement (PWMS) should be conditioned and agreed with as part of the Reserved Matters Stage, to capture all specific working methods for overwintering birds.
- 5.4.16 In terms of visual disturbance during construction, barrier vegetation will be retained and hoarding around Plots 17 and 18 which would reduce visual disturbance at up to the height of the barriers however visual disturbance during construction with the heights of buildings exceeding the vegetation and hoarding and the introduction of cranes needs to be mitigated for.
- 5.4.17 Crane use in Plots 18 and 19, which are likely to be the cause of the most visual disturbance during the construction process (as a precautionary approach as it is not known if cranes are required), should be avoided during the months of the highest use of site by overwintering birds (November to March). Where this is not possible, they should be set up prior to this period (such as before the wintering bird period – September), and a watching brief, comparing baseline bird results, to those during installation, and on the week of first use to assess levels of disturbance. There is limited literature on habituation times of the qualifying bird species, however if disturbance were to occur, then additional time should be given for the birds to habituate to the crane prior to use.
- 5.4.18 Regarding operational noise emissions from building services plant and commercial activities, Paragraphs 5.4.18 and 5.4.19 of the ES Chapter (ES Volume 1, Chapter 5: Demolition and Construction) outline the control measures described (conditions and methods) for controlling noise emissions from commercial activities and building services plant.
- 5.4.19 Specifically, BS 4142:2014+A1:2019⁶⁴ provides a method of rating sound from industrial and commercial activities at residential receptors. The mitigation/limits included in the ES chapter would ensure that noise levels do not generally rise above those that are currently in place – these limits are presented in Table 9.28 and include the existing industrial facilities on Lower Road which is adjacent to the SSSI.

⁶⁴ British Standards Institute (2019) BS 4142:2014 + A1:2019. Methods for rating and assessing industrial and commercial sound. BSI, London.

- 5.4.20 Through compliance with the limits there will be no increase in sound generally from those measured.
- 5.4.21 In relation to operational road traffic noise, Table 9.27 in the (ES Volume 1, Chapter 9: Noise and Vibration) provides a summary of the likely change in road traffic noise at the receptors due to the development coming forward. In particular reference should be made to receptors along Lower Road (adjacent to the SSSI and FLL), where a 7 dBA reduction in road traffic noise has been predicted. While this is just one source of noise (industrial activities within premises along Lower Road will remain), this should be viewed as a positive indication that road traffic noise in the vicinity of the SSSI will reduce as a result of the development coming forward.
- 5.4.22 Operational noise was assessed regarding the breakout from the Stadium, and no receptors close to the SSSI or FLL were evaluated within the ES chapter, though predictions of sound from the stadium at plots 18 and 19 are presented in Table 9.32 in ES Volume 1, Chapter 9: Noise and Vibration. The predicted sound pressure levels are $L_{Aeq,T}$ 41 dB at plot 18 and $L_{Aeq,T}$ 32 dB at plot 19. These are the highest experienced at the buildings, so lower sound pressure levels can be expected in the FLL, which is further away and would not have façade reflections present. This compares favourably to the existing ambient sound pressure levels, so that no change to the existing conditions would be expected.
- 5.4.23 Operational noise from Pedestrian Routes was assessed and no pedestrian routes are shown adjacent to the SSSI. The assessment of receptors adjacent to the pedestrian routes show a temporary increase in sound pressure level (Table 9.30 in ES Volume 1, Chapter 9: Noise and Vibration). The receptors furthest away (Taunton Road and Robinson Way) from the pedestrian routes are predicted to experience a sound pressure level of $L_{Aeq,T}$ 44 dB due to the “projected maximum capacity” crowds moving along the routes. The sound pressure levels due to crowds along the pedestrian routes within the SSSI will be significantly lower than those predicted at Taunton Road/Robinson Way due to the increased distance away and the beneficial screening that will be in place when the Proposed Development is fully built and operational.
- 5.4.24 Overall, the identifiable operational noise sources (when mitigated and controlled) will not increase the existing ambient sound levels experienced in the SSSI. The objective will be secured by appropriate planning conditions and management plans (e.g. Event/Noise/Transport) relating to noise from the commercial activities/building services plant, which is normal.
- 5.4.25 Other noise sources that cannot be evaluated (e.g. people talking next to the development plot) will be temporary and will, like construction impacts, only potentially effect limited areas of the FLL. Such disturbance can be adequately addressed via the SAMMS
- 5.4.26 From an operational perspective, the landscape designs for the Proposed Development will provide barriers for visual disturbance to wintering birds and will include further buffer planting between the FLL and the northern boundary of the site to further screen the FLL from the Proposed Development. The FLL is currently screened by a bank and trees and scrub atop the bank. This baseline screen rises to 7.5m in parts. The phased construction of the development will provide an opportunity for the birds to become habituated having been slowly introduced to the buildings during construction, reducing impacts during the operational phase.
- 5.4.27 It would be possible to conclude based on the above information that, through mitigation of the impacts on the Botany Marshes FLL, the noise, vibration and visual disturbance from the Proposed Development will not adversely affect the integrity of the Thames Marshes and Estuary SPA and Ramsar.

Lighting

- 5.4.28 ES Volume 1, Chapter 10: Daylight, Sunlight, Overshadowing, Solar Glare and Light Intrusion provides a qualitative assessment of light spillage onto the SSSI (refer to Paragraph 10.201) and assesses it as non-significant across the SSSI during construction and operation, however the majority of the lightspill will be on the FLL.
- 5.4.29 The portions of the site closest to the FLL would comprise residential accommodation (Plots 18 and 19 to the northeast). These are located approximately 20 m from the FLL.

- 5.4.30 During the detailed design process a management plans (e.g. lighting, construction) should be produced, and approved by the LPA, which would include the following measures to mitigate lightspill during the demolition and construction phase:
- Where directional artificial lighting (including lighting towers) is required, the lighting will be required to be directional and focussed lighting with aids such as cowls or hoods to reduce lightspill;
 - Should any night works take place where lighting is required, the artificial lighting used should be controlled in the CEMP, with lighting features such as cowls, external louvres, and hoods, particularly in relation to Plots 18 and 19;
 - Hoarding would be set up around the plots, to block any light spill such that effects would be reduced to not adversely affect the integrity of the FLL. The hoarding would be 2.4m high and would be well maintained;
 - Lighting higher than the hoarding will need to be directional and screened so not to spill into the FLL;
 - Lighting shall be at the lowest lux level necessary for safe delivery of the task;
 - Lighting towers will be high enough to allow for the main beam angle to be not more than 70° to keep glare to a minimum.
- 5.4.31 Lighting would be kept to a minimum to reduce disturbance during demolition and construction. Should the works be undertaken at night and floodlighting required, lighting should be kept to a minimum, and hooded spotlights directed away from the FLL and with the lowest lux level necessary for the safe delivery of the task, to reduce disturbance while ensuring standards for health and safety.
- 5.4.32 The potential impact of operational artificial light would be minimised through the implementation of best practice such as 'Guidance Notes for the Reduction of Obtrusive Light' (Institute of Lighting Professionals (ILP), 2011⁶⁵ and 'Guidance Note 08/23, Bats and Artificial Lighting at Night' (ILP/Bat Conservation Trust, 2023)⁶⁶ and mitigation included within 'A Review of the Impact of artificial Light on Invertebrates, 2011'⁶⁷. Whilst the latter guidance note is targeted at bats, transferable measures around screening of lighting through boundary treatments and mitigation to reduce light spill, through considered placement of balconies and provision of recessed rather than pendant lighting, will benefit other target species potentially affected by artificial lighting at night.
- 5.4.33 The following planning conditions should be attached to the future planning permission (encapsulated as part of a lighting management plan condition and dealt with as part of Reserved Matters Stage) to ensure that the detailed design of the Proposed Development would be as such to avoid light impacts to the FLL given at this stage this assessment cannot be undertaken.
- For the operation of the Proposed Development, as discussed by the ILP, measures such as recessing fittings, considering lighting positions within rooms relative to sensitive window locations such as along the edge of the FFL, and the effect of balconies will reduce the spread of light into the FLL and will be considered at the detailed design stage. Recessed downlight luminaires to be provided to all rooms with apertures that are adjacent to the FLL. (Typically, downlight luminaires used, and sold for use, in residential properties will have beam angles of 30- 40 degrees. The recessed nature of downlights, and smaller beam angles reduces light spill, compared with pendant luminaires);
 - When lighting vertical structures such as advertising signs, direct light downwards wherever possible. If there is no alternative to up-lighting, as with much decorative lighting of buildings, then the use of shields, baffles and louvres will help reduce spill light around and over the structure to a minimum;

⁶⁵ Institution of Lighting Professionals (2020) Guidance note for the reduction of obtrusive light. Guidance Note1/20.

⁶⁶ Institution of Lighting Professionals and Bat Conservation Trust (2023) Bats and Artificial Lighting at Night. Guidance Note 08/23.

⁶⁷ Bruce-White, C. and Shardlow, M. (2011) A Review of the Impact of Artificial Light on Invertebrates. Buglife—The Invertebrate Conservation Trust, Peterborough.

- Light spill from buildings should be addressed via appropriate glazing being utilised;
- For road and amenity lighting installations, light near to and above the horizontal should normally be minimised to reduce glare and sky glow. Given the suburban location, luminaires fitted with a more decorative bowl and good optical control of light should be used;
- Mitigation measures required to avoid significant light impacts on the FFL during the operation of the stadium will be included within relevant Management Plans (e.g. Lighting, Construction, Events).

- 5.4.34 Additionally, the inclusion of boundary planting, such as dense hedging (hawthorn or blackthorn) will provide a buffer zone between the buildings in Plots 18 and 19 and FLL habitat and consideration will be given to best practice measures, as discussed in the ILP's Guidance Note 8 in relation to bats and artificial lighting, including aspects such as fitting and luminaire types, heights, direction and control mechanisms to limit periods of illumination.
- 5.4.35 Consideration will also be given in the lighting design and glazing used for the high-rise apartments, particularly those in closer proximity to the FLL.
- 5.4.36 A wildlife sensitive lighting scheme is required for the site. Impacts of artificial light spill resulting from newly fitted internal lighting should be mitigated by positioning new fixtures in line with recommendations within current best practice guidance⁶⁸.
- 5.4.37 In terms of car lights – the design of the project does not result in new roads running along the edge of the FLL and diverts a road away from the FLL edge, although the existing lay-bay used by lorries accessing/ leaving the Britannia Refined Metals site will be retained. The FLL is behind a bank with vegetation reducing intrusion of car and other low-level lights. Retained hedging and new landscaping (boundary planting) will further protect the FLL from car lights which are low level further reducing any adverse effects on the qualifying birds and invertebrates that might utilise the FLL.
- 5.4.38 It would be possible to conclude based on the above information, that, through mitigation of the impacts on the Botany Marshes FLL, the Proposed Development will not impact upon the integrity of the Thames Estuary and Marshes SPA and Ramsar site.

5.5 Air Quality impacts arising from construction dust and construction plant emissions on the FLL

Construction Dust

- 5.5.1 The Air Quality ES Chapter (ES Volume 1, Chapter 8: Air Quality) sets out the mitigation requirements to control dust emissions from on-site construction activities in line with best practice guidance from the IAQM⁶⁹, which are adopted in the Outline Construction Environmental Management Plan. The following measures are highly recommended to be included within a Dust Management Plan, which will form part of the detailed CEMP:

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before and during work on site;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager;
- Display the head or regional office contact information.

⁶⁸ Institution of Lighting Professionals (2023). Guidance Note 08/23 Bats and Artificial Lighting at Night <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

⁶⁹ Institute of Air Quality Management (2024) Guidance on the assessment of dust from demolition and construction. Version 2.2, January 2024. IAQM, London.

Dust Management Plan

- Develop and implement a Dust Management Plan (DMP) approved by the Local Authority which documents the mitigation measures to be applied, and the procedures for their implementation and management.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book;
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Monitoring

- Undertake daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust. Record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the site boundary, with cleaning to be provided if necessary;
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked;
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and Maintaining the Site

- Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below;
- Cover, seed, or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles switch off their engines when stationary – no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided,

subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);

- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. This plan will form part of the CEMP.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes, conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- No bonfires or burning of waste materials on site.

Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground;
- Ensure that demolition activities are undertaken using manual or mechanical techniques which do not result in noise levels exceeding the 55 dB $L_{Aeq,T}$ noise criteria;
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or trackifiers where it is not possible to revegetate or cover with topsoil, as soon as practicable;
- Only remove the cover from small areas during work, not all at once.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces), if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

- 5.5.2 It would be possible to conclude based on the above information, that, through mitigation of the impacts on the Botany Marshes FLL, construction dust arising from the Proposed Development will not adversely affect the integrity of the Thames Estuary and Marshes SPA and Ramsar site.

Construction Plant Emissions

- 5.5.3 The Air Quality ES Chapter identifies that the implementation of measures specified in the Outline Construction Environmental Management Plan will ensure emissions generated by NRMM are controlled. This includes the following:

- Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible;
- Avoid the use of diesel- or petrol-powered machinery where practicable, and ensure all diesel- or petrol-powered machinery vehicles switch off their engines when stationary – no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable;
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate);
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. This plan will form part of the CEMP;
- Access gates should be located away from receptors, as far as is possible, and should at all times be at least 10 m away from receptors.

- 5.5.4 It is then judged that there will be no risk of significant effects at existing receptors as a result of on-site plant emissions, and therefore it can be concluded that, through mitigation of the impacts on the Botany Marshes FLL, emissions arising during construction from on-site plant from the Proposed Development will not adversely affect the integrity of the Thames Estuary and Marshes SPA and Ramsar site.

5.6 Reduced Water Quality & Quantity on the FLL during operation

- 5.6.1 The surface water drainage strategy provides attenuation within the Sustainable Drainage Systems (SuDS) features for the 1 in 100 year plus 40% climate change allowance and ensures that during an extreme event, or should it become blocked, then additional storage would be provided in the form of shallow flooding of hard-paved areas. Should an extreme exceedance event occur, the majority of the site falls away and downstream from the FLL toward the River Ebbsfleet and Thames and only a small area of the site slopes towards the SSSI. This would mimic what would occur naturally on the site in its existing condition.
- 5.6.2 As detailed in the Drainage Strategy, there is a proposed reduction of 98.7% in discharge rate from the Proposed Development from attenuated surface water runoff, due to the provision of podium tanks, rainwater harvesting systems and green roofs, and an assumption that the parks will be permeable, providing a significant betterment in water quantity when compared to the existing site.
- 5.6.3 With regards to water quality, according to the SuDS Manual, the existing land uses have a high pollution hazard level given the industrial nature of the site. The part of the site that falls towards the FLL have proposed land uses of medium to low pollution hazard level and, therefore, in the unlikely event of an exceedance event occurring there would be a betterment in water quality for runoff from the Proposed Development when compared to the existing site. Further to this, the drainage strategy ensures that the SuDS features meet the pollution indices required for the land use, in line with the SuDS manual, so the discharge will be of suitable quality prior to entering the Thames. The SuDS maintenance will be the responsibility of the developer, who will either maintain the SuDS features

themselves or negotiate with and secure the agreement of a third party to maintain the SuDS. This will be controlled by a suitably worded condition.

- 5.6.4 The proposed drainage strategy includes a pumped discharge into a new strategic sewer or directly into Robin's Creek for the majority of the site and part of the site will drain via gravity into Robin's Creek. The drainage strategy may be subject to change at the Reserved Matters Stage as a connection into the existing drainage network may be feasible, subject to potential upgrades and maintenance.
- 5.6.5 Asset location plans indicate foul sewers are located along Stonebridge Road. Foul sewers are located along Grove Road and the unnamed road in the western part of the site and a rising main is located along Lower Road and Stonebridge Road within the site. Non-return valves will be provided on sewers within the site to prevent water entering the any properties from drains and sewers. Non-return valves can be installed with gravity sewers or drains, within the property's private sewer system. Further information is provided in the CIRIA publication 'Low-cost options for prevention of flooding from sewers.'. With the implementation of these measures the risk from sewer flooding is deemed to be low.
- 5.6.6 Furthermore, since the publication of the connections and development charging rules in April 2018, drainage authorities in England are obligated to provide a point of connection and undertake any mitigation or improvement works and network reinforcements, where necessary. These will be programmed once planning consents are granted. This reduces the risk of foul system overflowing and flooding the site and nearby receptors, such as the FLL and hence, the risk of sewer flooding is assumed to be low.
- 5.6.7 Currently the site comprises heavy industrial land uses, therefore from a pollution and land use perspective, the Proposed Development would be bringing forward betterment in terms of land uses resulting in 'less contaminative' land uses and therefore less likely to result in pollution event when compared to previous site.
- 5.6.8 It is therefore concluded that the Proposed Development will not adversely affect the integrity of the Thames Estuary and Marshes SPA and Ramsar site associated with changes in water quality and quantity, subject to the imposition of planning conditions.

6 Conclusion

- 6.1.1 The HRA process has been able to exclude the possibility of significant effects on the FLL and Thames Estuary and Marshes SPA and Ramsar Sites, from the following possible sources:
- Recreational pressure and disturbance of birds on the SPA;
 - Recreational pressure and disturbance on qualifying birds and invertebrates within FLL;
 - Impacts of cat predation on birds associated within the FLL;
 - Noise & Vibration and Visual (non-recreational disturbance), lighting disturbance of qualifying birds and invertebrates during the construction phase both within FLL
 - The potential for overshadowing impacts of the completed development on the FLL.
 - Atmospheric nitrogen deposition / Air pollution.
 - Reduced water quality and quantity on the FLL.
- 6.1.2 The Proposed Development comprises a mixed-use development c. 5.7 km west of the Thames Estuary and Marshes SPA and Ramsar site. This increase in population is likely to cause an increase in recreational pressure on the SPA (including the FLL habitat). A financial contribution for the dwellings in the Proposed Development will be required, to mitigate the impact to the Thames Estuary and Marshes SPA in accordance with Bird Wise SAMMS current requirements.
- 6.1.3 This report to inform a shadow HRA has been able to determine that as a result of the Proposed Development of the land adjacent to the River Thames in Northfleet, in the borough of Gravesham in Kent, in relation to recreational pressure and disturbance, cat predation, noise, vibration and visual disturbance, air pollution / atmospheric nitrogen deposition, and reduced water quality, there will be no adverse impact on the integrity of the qualifying features on the Thames Estuary and Marshes SPA and Ramsar site, either as a result of the project alone, or in combination with any other plans or projects.
- 6.1.4 This conclusion is reached based on the payment of a financial contribution to Bird Wise and the inclusion of accessible greenspace within the Proposed Development to mitigate for the likely significant effect of recreational pressure and disturbance to the SPA that would otherwise result from the Proposed Development.
- 6.1.5 In terms of in-combination assessments, as the River Thames is hydrologically linked to the Thames Estuary and Marshes SPA and Ramsar site, in theory, any development adjacent to the River Thames or its catchment areas, could result in a cumulative increase in adverse effects on the SPA, Ramsar.
- 6.1.6 As no residual adverse effect has resulted from the Proposed Development, as assessed in this sHRA, on the FLL or the SPA and Ramsar, there is no in-combination effect on the designated site alongside other developments on wider FLL.
- 6.1.7 Taking into account proportionality, and certain requirements on discharges and pollution events for each project, the Applicant has concluded that there would not be a proportionate in-combination effect, as the nature of the inconsequential effect means that it would not act with other plans and projects to cause a conceivable effect (Paragraph 3.16 (1) of Advice Note 10 version 9 (Planning Inspectorate, 2022)) or real risk⁷⁰ to the European site's conservation objectives.
- 6.1.8 There will be no effect on the conservation objectives and the integrity of the Thames Estuary and Marshes SPA, Ramsar and as a result of this report, the competent authority can conclude favourably, that the integrity of the Thames Marshes and Estuary SPA, Ramsar will be maintained.

⁷⁰ As stated in the DEFRA Guidance 'Habitats regulations assessments: protecting a European site - a competent authority when assessing a LSE should check if there's a risk or possibility of a significant effect based on the evidence and only consider real not hypothetical risk.' <https://www.gov.uk/guidance/habitatsregulations-assessments-protecting-a-european-site#take-a-precautionary-approach-to-decisions>

- 6.1.9 This conclusion is support by the letter from NE on 11th March 2024 (Appendix B), which details “*No Objection – subject to appropriate mitigation being secured*”.

Appendix A Relevant Legislation

A.1 The Conservation of Habitats and Species Regulations 2017 (as amended)

- A.1.1 The Conservation of Habitats and Species Regulations 2017 (as amended) consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.
- A.1.2 Under the Regulations, competent authorities, *i.e.* government departments and public bodies, have a general duty to have regard to the EC Habitats Directive and Wild Birds Directive. The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000. The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the precautionary principle applies, *i.e.* consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.
- A.1.3 The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a few purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

Appendix B Natural England Consultation (NE Northfleet Response)

Date: 20 November 2023
Our ref: 448983
Your ref: 20221064



Katherine Parkin
Planning
Gravesham Borough Council

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

BY EMAIL ONLY

Dear Mrs. Parkin,

Planning consultation: 20221064 Amendment More info Outline with all matters reserved, except for means of access, for a mixed-use redevelopment demolition of existing buildings & structures & development of up to 3,500 residential units (Class C3), up to 55,000sqm (GEA) of Class E including up to 32,000sqm (GEA) floorspace for retail, food etc.

Location: Land Surrounding Ebbsfleet United Football Club, Bounded By Lower Road, Railway Line, Grove Road And The River Thames, Northfleet, Gravesend.

Thank you for your consultation on the above dated 06 September 2023 which was received by Natural England on the same date.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

SUMMARY OF NATURAL ENGLAND'S ADVICE

FURTHER INFORMATION REQUIRED TO DETERMINE IMPACTS ON DESIGNATED SITES

As submitted, the application could have potential significant effects on the following designated sites:

- Swanscombe Peninsula Site of Special Scientific Interest (SSSI)
- Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar Site

As in our previous response (ref: 413779) Natural England requires the following further information in order to determine the significance of these impacts and the scope for mitigation:

- A detailed, evidence-based assessment of the potential for direct and indirect impacts to the above sites and full details of the avoidance and mitigation measures that will be implemented, specifically but not limited to:
 - Impacts from changes in microclimate caused by overshadowing from the proposed development on the Swanscombe Peninsula SSSI;
 - Impacts on breeding birds assemblage of SSSI;
 - Impacts from an increase in recreational pressure on the SSSI;
 - Impacts on water quality/quantity on SSSI.

Without this information, Natural England may need to object to the proposal.

Please re-consult Natural England once this information has been obtained.

Natural England's further advice on designated sites/landscapes and advice on other issues is set out below.

Additional Information required

Natural England sent a response to this application in December 2022 (our ref: 413779). Having reviewed the additional information submitted in response to our advice and in support of this application, we recommend that further additional information is still required to allow a robust assessment of the potential implications of this application for statutory designated sites and the England Coast Path. In the absence of such information, Natural England may need to object to this proposal.

Swanscombe Peninsula Site of Special Scientific Interest (SSSI)

The application site borders the Swanscombe Peninsula SSSI. This site is a corridor of habitats that connects the Ebbsfleet Valley and southern shore of the River Thames, and includes bare open ground habitats with low scrub cover, as well as wetland, grazing marsh and saltmarsh habitats. The Swanscombe Peninsula SSSI is notified for its geological, vascular plant, breeding bird and invertebrate interest.

We acknowledge the 'Northfleet – Letter Response to NE Consultation' (2023) prepared by the Applicant to address our previous letter's advice regarding a greater level of evidence-based information to ensure impacts can be avoided or fully mitigated. We also welcome the measures included in the Design and Access Code (August 2023, rev. B) to promote nature recovery, biodiversity, green infrastructure and connecting people with nature.

However, there remains significant information outstanding whereby impacts have been inadequately assessed or not adequately mitigated. We note that the Applicant states they are keen to develop mitigation with Natural England at the detailed design stage (which we understand as the Reserved Matters Applications stage). We advise, however, that impacts that are likely to significantly impact a sites designated features and appropriate mitigation to prevent this must be determined at the Outline Planning Applications stage. Therefore please see our following advice:

1. Potential direct and indirect impacts to the breeding bird assemblage within the Swanscombe Peninsula SSSI

Natural England acknowledge the breeding bird survey carried out on 13th and 23rd July 2022 (Environmental Statement, Vol. 1, Annex 3) and that they concluded: (a) impacts from the Proposed Development upon breeding birds from the Swanscombe Peninsula SSSI and (b) the importance of the mudflats as foraging habitat for birds from the SSSI, were insignificant. We advise that these surveys provide an insufficient evidence-based; we recommend two surveys are conducted per month during the breeding months (typically May to August). Should the Applicant not wish to conduct these, they could assume the presence of any species for which the habitat is suitable and avoid/mitigate accordingly.

Natural England acknowledges that the Applicant has considered potential impacts upon the breeding bird assemblage of the SSSI through (i) noise and lighting during construction and operational phases, ii) recreational disturbance, and (iii) cat predation. We address the mitigation proposed for these in following sections, however we advise the SSSI breeding bird assemblage may also be impacted through habitat loss through sterilisation due to overshadowing of dense scrub habitats in the south eastern corner of the SSSI by residential blocks in Character Area 3 of the proposed development (discussed further under point 4); birds associated with this include nightingale, bullfinch and garden warbler.

We note that the Applicant proposes to conduct black redstart surveys covering the whole breeding season prior to construction; we welcome the Applicant complying with The Wildlife and Countryside Act but highlight this species is not part of the SSSI breeding bird assemblage.

We further advise that bird surveys undertaken for the London Resort Scheme in 2019 and 2020 may be considered out of date and need to be re-done; we therefore caution the use of these bird surveys by the Applicant to inform their assessment of impacts from the proposed development (page 2, Northfleet – Letter Response to NE Consultation (2023)).

2. Potential direct and indirect impacts to vascular plants associated with the SSSI.

Natural England acknowledges that the Applicant's site survey did not find any notable plant species or habitats and therefore they do not anticipate any direct impacts upon vascular plants associated with the SSSI. We welcome the inclusion of green and brown roofs to provide habitat for vascular plants associated with the SSSI to colonise (Preliminary Ecological Appraisal (PEA), 2022, para. 10.1.5).

We note that dust has been identified as a key factor to impact vascular plants of the SSSI (principally during the construction phase) and that the Applicant proposes that a Construction Environment Management Plan (CEMP) will be conditioned to mitigate these impacts. We are satisfied this is a suitable mitigation measure and advise you, as competent authority, to secure and review this before construction starts.

We however advise that an assessment is carried out with specific attention to possible direct and indirect impacts to vascular plants associated with the SSSI from impacts caused by overshadowing and changes to microclimate from the Proposed Development.

3. Potential direct and indirect impacts to invertebrate assemblage associated with the SSSI.

Natural England notes that the Applicant considers there is no potential mechanism for direct or indirect effects upon invertebrate species associated with SSSI assemblage as a result of the proposed development. As such they conclude targeted invertebrate species surveys are not required.

The Environmental Statement (ES) concludes that impacts would not be significant on invertebrate species during demolition, construction and operational phases due to the mitigation measures required to reduce impacts on the SSSI, such as a detailed CEMP and creation of further habitats on-site through brown and green roofs to replicate open mosaic habitat within the SSSI. We welcome the inclusion of green and brown roofs to provide habitat for invertebrates associated with the SSSI (Preliminary Ecological Appraisal (PEA), 2022, para. 10.1.5) and acknowledge that some level of ground disturbance is beneficial to invertebrate features of this SSSI.

We however advise that an assessment is carried out with specific attention to possible direct and indirect impacts to invertebrates associated with the SSSI from impacts caused by overshadowing and changes to microclimate from the Proposed Development.

4. Areas of the SSSI that will be subject to overshadowing, the duration and impacts that this will have for notified features and the habitats that support them.

The Design Code illustrates that residential blocks in Character Area 3 – Parkland, will consist of building heights of up to 35m, 51m and 66m. Natural England notes that overshadowing of the SSSI from the proposed development is identified for the southern corner of the SSSI next to the Lower Road, and that some of the SSSI here will be overshadowed almost permanently where there is dense scrub habitat. The Applicant says this habitat is unlikely to be sensitive to overshadowing. We advise that this is not insignificant and will have an impact upon microclimate (discussed below) and also cause loss of SSSI through sterilisation (e.g. lack of solar radiation). We further advise that although this is currently dense scrub, given the nature of the SSSI and its management, it is likely in future this will be opened up and as such overshadowing has a potential to impact more habitats/species.

There is no mention of any mitigation for this potential loss of SSSI and we strongly advise the Applicant to explore alternatives (for example, in building height, arrangement and location) to

prevent the overshadowing of the SSSI. We suggest these alternatives could also link to other benefits such as building resilience of the SSSI and protection against cat predation.

5. Changes to the microclimate within the SSSI resulting from this development with an evidence based consideration of impacts to habitats and species associated with the designated site.

Natural England acknowledges the comments made in response to this point in our previous letter in the 'Northfleet – Letter Response to NE Consultation' (2023) in relation to wind. We acknowledge that strong wind conditions for the site were recorded at baseline and not as a result of the Proposed Development. However, we highlight that microclimate is impacted by factors including but not limited to wind, such as radiation, shade, humidity and air temperature.

We strongly advise that the impacts of overshadowing of the southern corner of the SSSI upon microclimate are also considered, and that potential changes to microclimate are then used to assess impacts on the habitats and species of the SSSI.

Microclimate modelling could be a helpful tool to assess and visually show changes to air temperature, moisture, wind, radiation etc. as a result of the proposed development.

6. Clarity on whether any species associated with the Swanscombe Peninsula SSSI are present within the application site itself and the mitigation (where required) that will be implemented to ensure that the resilience of the SSSI is not impacted.

Natural England welcomes the Applicant proposal to create wildlife corridors and green spaces, as well as provide complementary habitat for notable species within the SSSI (such as brown roofs for invertebrates and birds). We note from the Design Code that residential buildings are proposed to abut the SSSI in Character Area 3 – Parkland and therefore also welcome the inclusion of a new buffer zone proposed along the boundary of the Proposed Development between the residential properties and the SSSI; this may also benefit protection against cat predation by creating more separation between residential buildings and the SSSI (Northfleet – Letter Response to NE Consultation (2023)).

7. Air quality assessment (both dust and transport generated along the affected road network) for the Swanscombe Peninsula SSSI (and any other designated sites along the affected road network).

Natural England acknowledges that Chapter 8 in ES Vol. 1 assesses the increase in vehicle emissions both during construction and operational stages and concludes impacts on local air quality will not be significant. Given the industrial nature of the existing site, it is likely air quality in the long-term will be improved for the SSSI from the Proposed Development, but we advise this needs to be evidenced through specific assessments on the SSSI's habitats and species.

We note the assessment of dust and traffic impacts to ecological receptors, including the SSSI which has 'medium sensitivity' to construction works, within Chapter 8 of the ES Vol. 1. The Applicant proposes mitigation is achieved through a Dust Management Plan (DMP) and an industry-standard CEMP. We advise this is secured and reviewed prior to construction beginning.

8. Water quality and quantity impacts from the development to habitats within the Swanscombe Peninsula SSSI.

Natural England has reviewed the Flood Risk Assessment and Surface Water Drainage Strategy (September 2023) and the proposed Sustainable Urban Drainage System (SuDS) features. We note in the Montagu Evans document (August 2023 v.1, page 23) that the Avison Young Review says, "the [Environment Agency] EA have requested a site specific flood risk model ... and consider the findings of the existing model – a very low level of flood risk to the site – are inaccurate and should not be used as the only assessment for fluvial flooding." Based on this we are unable to concur that, together with the mitigation measures in the Proposed CEMP and SuDS, impacts upon water

quality and quantity of the SSSI should not be significant. Please re-consult us once the Applicant has responded to the EA's advice on this issue and the model findings are considered reliable.

We also bring to your attention the FRA & SWDS (2023, para. 4.18), which states during exceedance events (should the proposed drainage system become blocked) any water leaving the site would be routed along the road network towards the River Ebbsfleet, River Thames and Swanscombe Marshes. We cannot assess the potential impacts of these events upon the SSSI, but advise that any potential impacts are assessed and if significant, mitigation is proposed.

9. Potential urbanisation effects (including noise, lighting, disturbance, cat predation for birds, for example) that may result from the application to the species and habitats associated with the designated site.

- Lighting

We welcome the incorporation of wildlife-sensitive lighting within the Design Code and note that a lighting management strategy has been proposed for the construction phase, however we advise that the impacts of artificial lighting directly upon features of the SSSI should be avoided. We also welcome the inclusion of a tree-line to limit visual disturbance for breeding birds (e.g. Cetti's Warbler) at Robin's Creek.

However, we advise that lighting assessments are currently limited to impacts within the proposed development site and therefore need to specifically assess impacts to the SSSI's habitats and species.

- Noise

Natural England notes from Chapter 9 of ES Vol.1 that there is a small portion of the SSSI that borders the development site (in the south-eastern corner) where noise is expected to temporarily exceed 70dB. We advise that mitigation is proposed to address this impact.

We welcome the inclusion of a Precautionary Working Method Statement (PWMS) within the CEMP, specifically the use of visual and noise barriers for overwintering birds, avoiding noisy and disturbing works outside of sensitive periods for birds of the SSSI, and use of low impact machinery to limit noise and vibration disturbance if works are undertaken in the breeding season (para. 9.2.6, PEA, 2022).

- Cat predation

The 'Northfleet – Letter Response to NE Consultation' (2023) states that the current cat predation within the area is unknown, as is the predation rates of the breeding birds within the SSSI. The Applicant reasons that because the proposed development is largely apartment-led, if the residents' owned cats, they would likely not stray outside given they have limited outdoor space (aside from balconies). We do not concur with this reasoning and advise that cat predation may pose a significant negative impact upon the breeding bird assemblage of the SSSI and therefore requires an evidence-led assessment.

The Applicant proposes the use of cat-proof fencing. We welcome the initiative to address cat predation, but we advise this could have limitations: it is visually less attractive; it is not fully effective as it is possible for cats to either climb or simply run to the end of the fencing; it can fragment habitats and inhibit movement between species. We therefore encourage the Applicant to (a) estimate cat numbers associated with the proposed new dwellings and (b) explore other mitigation measures, drawing on case studies, that will limit cat predation within the SSSI. For example the use of permanently wet ditches could be considered as a more effective measure.

10. Potential impacts to the SSSI from increased recreational disturbance impacts from residents.

Natural England acknowledges the Applicant's proposed audit to assess the residual effects of increased recreational pressure on the Swanscombe Peninsula SSSI, however we are not clear if this is intended after the development is occupied. If this is the case, we strongly advise that an

assessment of potential increased recreational pressure upon the SSSI is carried out prior to planning permission is granted so that mitigation measures can be appropriately developed.

We also strongly advise that, should impacts be shown to be significant, strategic measures are developed to manage recreational pressures on the SSSI associated with the proposed increase in residential dwellings and increased footfall from users. Such a solution should be evidence-led and based upon the findings of a recreational pressure assessment and could include the improvement of existing public rights of way or paths within the SSSI and to the Botany Marshes Nature Reserve.

We welcome the proposed inclusion of high quality greenspaces, signposts to display the sensitivity of the SSSI to human disturbance as well as an information centre/cade within the Power Park (Design Code, page 102) in order to raise residents' awareness of SSSI species and habitats. Furthermore we support connecting people with nature. However, we question if the current proposed greenspace is adequate for the proposed new populations (e.g. based current wind testing shows that the Power Park does not provide any areas suitable for sitting in the summer and only little space for standing in the windiest seasons (Montagu Evans August 2023 v.1, page 21). We refer you to our [Green Infrastructure Planning and Design Guide](#) (page 48 onwards).

11. A detailed and comprehensive consideration of the above impacts cumulatively with other developments.

Natural England acknowledges the Applicant's response in the 'Northfleet – Letter Response to NE Consultation' (2023) that: *"Cumulative impacts have been assessed within ES Volume 1, Chapter 14: Ecology and Biodiversity. Due to the potential London Resort development, the cumulative impact assessment took into account the impacts that the Proposed Development and London Resort scheme would have upon the SSSI and its features. Whilst it is considered that the Proposed Development on its own would have no significant adverse effects due to the mitigation and enhancement measures (outlined in ES Volume 1, Chapter 14: Ecology and Biodiversity and noted throughout this response), the cumulative assessment concludes there would be a significant effect on the SSSI, arising from recreational pressure, which would need to be mitigated through detailed design and consultation with key stakeholders. Furthermore, the proposed mitigation and enhancement measures are in line with legislation and planning policy."*

We advise that before such mitigation measures are accepted, you, as competent authority, should decide if London Resort (due to be re-submitted) should be considered within cumulative impacts.

12. A comprehensive, evidence based avoidance and mitigation strategy for the above where impacts are likely to result to ensure that the SSSI is not adversely impacted by the proposal.

The 'Northfleet – Letter Response to NE Consultation' (2023) states that both *"Kent Wildlife Trust and Natural England will be consulted to discuss any potential further mitigation measures (as required and relevant) to be incorporated into the detailed design of the Proposed Development to mitigate adverse impacts upon the SSSI arising from recreational pressures. This may form specific on-site detailed landscaping measures or off-site financial contributions to aid management/maintenance of the SSSI, however this will be discussed and agreed."*

We welcome this intent, but advise that a comprehensive, evidence-based avoidance and mitigation strategy should be developed during this stage of the planning application. We therefore maintain our advice that this strategy is required in order to conclude that there will be no significant adverse impacts upon the Swanscombe Peninsula SSSI's habitats and species.

Habitats Regulations Assessment

Natural England notes that the Habitats Regulations Assessment (HRA) has not been produced by your authority, but by the Applicant. As competent authority, it is your responsibility to produce the HRA and be accountable for its conclusions. We provide the advice enclosed on the assumption

that your authority intends to adopt this HRA to fulfil your duty as competent authority.

Your appropriate assessment concludes that your authority is able to ascertain that the proposal will not result in adverse effects on the integrity of any of the sites in question.

Having considered your assessment, and the measures proposed to mitigate for any adverse effects, Natural England's advice is that your assessment is not sufficiently rigorous or robust to justify this conclusion and therefore it is not possible to ascertain that the proposal will not result in adverse effects on the integrity of the sites in question. We advise that your authority should not grant planning permission at this stage.

Thames Estuary and Marshes Special Protection Area and Ramsar site

- Functionally Linked Land (FLL)

Natural England advise that the following additional work on the assessment is required to enable it to be sufficiently rigorous and robust: full wintering bird survey for mudflats within the impact risk zones of Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar Site. Natural England should be re-consulted once this additional work has been undertaken and the appropriate assessment has been revised.

In our December 2022 response (ref: 41377) we stated:

Surveys undertaken for the London Resort Nationally Significant Infrastructure Project indicated that the Swanscombe Peninsula and the surrounding intertidal habitat was used by birds associated with the Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site. The environmental statement for the London Resort indicated that, given numbers of birds associated with the SPA and Ramsar site, the area was functionally linked to the SPA and Ramsar site and as such mitigation measures were required.

We further advised:

Whilst no assessment of the potential impacts to wintering birds has been provided, Natural England acknowledge that wintering bird surveys are proposed to be undertaken during the winter of 2022/23. It should be noted that two years of surveys are generally recommended to understand whether impacts are likely to result.

We note from the Northfleet Harbourside Response to Avison Young Independent Environmental Statement Review Report (August 2023) that a wintering bird survey was conducted twice across two months – on 13th December 2022 and 23rd January 2023 – during 'one' season. Natural England highlight that this is insufficient; we advise that core months for a wintering bird survey range from October to March and should typically include two surveys to be conducted (one at high tide and one at low tide) per month. However as the mudflats are completely covered during high tide, we accept only one survey per month during low tide is required for this application. Without this rigour of assessment, it is not possible to conclude with certainty that (a) the adjacent surrounding habitats are not FLL for the SPA and Ramsar sites and therefore (b) there is no adverse effect on the integrity of features of the Thames Estuary and Marshes SPA and Ramsar Site.

Natural England accept that the evidence provided so far suggests that the mudflats to the northeast and Robin's Creek to the east of the development are not highly likely to constitute FLL. And we acknowledge that the surveys provided do not appear to indicate that significant numbers of designated bird species were making use of the surveyed habitats. In addition, we recognise that the current industrial land use of the site, involving gravel pit works with associated noise and visual disturbance, may make the site less attractive for regular use, or even habituate wildlife in the area to a certain type and level of disturbance. Nevertheless, there is potential for the change from industrial to residential/recreational use to lead to significant differences in disturbance impacts, such as the introduction of dog walking, that birds making use of the site would not be, or could not become, habituated to.

We therefore advise that additional survey effort would help to provide your authority with the level of certainty required when undertaking your Habitats Regulations Assessment.

- Recreational disturbance

In addition to the potential for impacts to birds associated with the SPA and Ramsar site, the planning application relates to proposals for new dwellings within the zone of influence (6 kilometres) of the Thames Estuary and Marshes, Medway Estuary and Marshes, and The Swale Special Protection Areas (SPAs) and Wetlands of International Importance under the Ramsar Convention (Ramsar Sites).

Natural England note from the Shadow HRA within the Northfleet Harbourside Response to Avison Young Independent Environmental Statement Review Report (August 2023, pages 20-21) that the Applicant has stated any impact arising due to an increase in recreational disturbance on the SPA and Ramsar Sites can be addressed through an appropriate contribution to the provision of strategic access management measures. Due to the location of the proposed development, we are minded to agree with this approach.

We continue to advise that it is the Council's responsibility to ensure that the proposals fully adhere to the agreed approach within the Thames, Medway and Swale Estuaries Strategic Access Management and Monitoring Strategy (SAMMS), to mitigate for additional recreational impacts on the designated sites and to ensure that adequate means are in place to secure the mitigation before first occupation.

Swanscombe Marine Conservation Zone (MCZ)

Natural England acknowledge that the Applicant has provided clarity regarding the potential for impacts on the nearby Swanscombe MCZ. Given the 1.2km distance between the development site and the MCZ, the separation of the Swanscombe Peninsula SSSI in between, the fact that the development is downstream from the MCZ, as well as the proposed mitigation to appropriately manage run-off quality and quantity into the River Thames, we are satisfied that there is not likely to be any significant impacts.

England Coast Path

In the Applicant's 'Northfleet – Letter Response to NE Consultation' (2023), it is stated that "the routing of the Coastal Path will remain unaffected by the Proposed Development" (p.15). However, Natural England note that the East Sussex National Trail officer comments (05 October 2023) state that the "proposed development would have a significant impact on the (England Coast Path) and (would) necessitate a diversion of the National trail". As such, it is currently unclear as to which exact route is being proposed.

As previously advised, the Applicant should discuss any required route alteration of the National Trail with the Public Rights of Way department at Kent County Council and Natural England in order to agree an approach. The principle for the Coast Path is to keep the trail as close to the coast and estuary as possible and this should be followed with any proposed realignment.

Please note that if your authority is minded to grant planning permission contrary to the advice in this letter, you are required under Section 281 (6) of the Wildlife and Countryside Act 1981 (as amended) to notify Natural England of the permission, the terms on which it is proposed to grant it and how, if at all, your authority has taken account of Natural England's advice. You must also allow a further period of 21 days before the operation can commence.

Further general advice on the protected species and other natural environment issues is provided at Annex A.

If you have any queries relating to the advice in this letter please contact me on Hannah.Lee@naturalengland.org.uk.

Should the Applicant wish to discuss the further information required and scope for mitigation with Natural England, we would be happy to provide advice through our [Discretionary Advice Service](#).

Please consult us again once the information requested above, has been provided.

Yours sincerely,

Hannah Lee
Sustainable Development, Sussex and Kent Area Team - 14

Date: 26 January 2024
Our ref: DAS/A012422
Your ref: 20221064



Customer Services
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Crewe Business Park
Electra Way
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BY EMAIL ONLY

Dear Sir/Madam,

Discretionary Advice Service (Charged Advice)

DAS/A012422

Development proposal and location: Northfleet Harbourside – Land surrounding Ebbsfleet United Football Club.

Thank you for your consultation on the above dated 29 November 2023, which was received on the same date.

This advice is being provided as part of Natural England's Discretionary Advice Service. Assystem Energy and Infrastructure LTD has asked Natural England to provide advice upon:

- Potential impacts on designated and proposed designated sites
- Ecological mitigation plan
- Information for a draft Habitats Regulation Assessment (HRA)

This advice is provided in accordance with the Quotation and Agreement dated 10 January 2024.

The following advice is based upon the information within the submitted DAS Supporting Information zip file including:

1. 00_Northfleet Central_DESIGN CODE_ADDENDUM_231117 (no date: received November 2023)
2. 9. Bugslife (23 September 2023)
3. 13. Kent Wildlife Trust (27 September 2023)
4. NH_ESVol1_Ch14_Ecology_and_Biodiversity (no date: received November 2023)
5. Northfleet – Letter Response to NE Consultation_1B (no date: received November 2023)
6. Northfleet Central_DESIGN CODE_220930 (September 2022)
7. TRI053 Bird survey report – Winter REV001 (February 2023)

As well as documents received latterly by email:

8. Northfleet Harbourside – NE and KCC Response_Dec 2023_DRAFT (December 2023)
9. Northfleet_Natural England_January 2024 (19 January 2024)

Protected sites

1. Natural England has no significant concerns

Natural England is satisfied that, on the basis of the objective information provided, it can be excluded that the proposed plan or project will have a significant effect on Swanscombe Peninsula

SSSI through the following impact pathways: hydrology, air quality, micro-climate and overshadowing.

Natural England is satisfied that, with the inclusion of proposed mitigation measures to address noise impacts to the breeding bird assemblage during the construction phase, it can be excluded that noise from the proposed plan or project will have a significant effect on features of the Swanscombe Peninsula SSSI. We advise the Environmental Statement (ES) is updated with the additional mitigation details outlined in the 'Northfleet – Natural England January 1A.pdf'.

Natural England advises that mitigation measures for lighting impacts are included by condition and that the Applicant clearly identifies specific best practice standards that will be adhered to in order to keep lighting impacts from the resident blocks adjacent to the SSSI boundary within acceptable levels for the breeding bird and invertebrate assemblages of the SSSI. We advise the Environmental Statement (ES) is updated where necessary to include this detail. Based on these mitigation measures and ES update, Natural England is satisfied that it can be excluded that lighting from the proposed plan or project will have a significant effect on features of the Swanscombe Peninsula SSSI.

Natural England is satisfied that, based on the ecology assessment adopting a worst-case scenario and assuming presence of breeding birds that the mitigation measures allow a significant effect to be excluded on the breeding bird assemblage of the Swanscombe Peninsula SSSI. We concur with the Applicant's proposal to carry out additional breeding bird surveys during 2024 in order to update previous data from the London Resort Scheme and agree with this being conditioned as part of the application's Reserved Matters Stage.

2. Natural England does not have enough information

i. Recreational disturbance

Natural England maintains the view that recreational disturbance from new residents of the proposed Northfleet development is likely to have an adverse impact on designated features of the Swanscombe Peninsula SSSI if not robustly mitigated.

We welcome the opportunity to connect people with nature and therefore advise that a condition is added for the Reserved Matters Stage for the Applicant to:

(1) carry out surveys to quantitatively assess recreational impacts from the proposed development on the SSSI, and

(2) work collaboratively with Gravesham Borough Council (the Local Planning Authority), Natural England and other stakeholders/partners to develop a strategic access management plan for the Swanscombe Peninsula SSSI.

This management plan should be developed and in place before occupation of the Northfleet development.

ii. Thames Estuary and Marshes SPA and Ramsar Site

The Applicant concludes there is no significant impact based on survey data and we are satisfied to agree with this. We therefore advise that no further surveys are required to determine impacts on designated features of the Thames Estuary and Marshes SPA and Ramsar Site.

3. On the basis of the information so far provided it is thought that the proposed development will have a harmful effect on a designated site

Natural England is concerned that the proposed operations are likely to damage the interest features of the Swanscombe Peninsula SSSI. Natural England therefore requests the Applicant to consider what alternative mitigation measures might be provided in order to minimise or avoid this damage to the SSSI.

i. Urbanisation effects – Cat predation

Natural England is still reviewing the supporting information received by email from Erin Fairley on 24 January 2024, which proposed the use of cat-proof fencing together with thick scrub planting as combined mitigation measures. We will provide our position on this soon.

Other advice

There is also another possible impact resulting from this proposal that you should consider when developing your planning application. This issue is summarised below:

King Charles III England Coast Path

The development proposal affects the King Charles III England Coast Path. The current alignment of this National Trail at Northfleet is somewhat inland of the Thames Estuary, due to the presence of industrial development when the trail was opened in 2022. Within the original proposals for the coast path, the opportunity for moving the trail was highlighted for several developments in the Northfleet area “Development here is likely to affect the proposed trail, however there may be opportunities, as part of the new development, to align the trail closer to the coast, with views of the sea”. Being close to the sea, with views of estuary are both key elements in the coast path legislation: the Marine and Coastal Access Act 2009.

The Local Planning Authority will seek to protect and look for opportunities for the National Trail, in line with paragraphs 104, 178(d) and 180 (c) of the National Planning Policy Framework, including that: ‘Planning policies and decisions should contribute to and enhance the natural and local environment by: c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate’.

Natural England considers the route in this area would better meet its statutory criteria (close to coast, with views of the sea), as well as benefitting local residents and the public, if located to the north of the current alignment – and linked to the east along the riverside and across the mouth of Robins Creek. Natural England fully supports the recommendations made through Tom Kennedy, the South East England Coast Path National Trails Officer, in his letter to Gravesham BC of 5 October 2023:

- “It is requested that the trail is re-aligned through the open green space in the northern corner of the site and passes along the proposed pedestrian route, before continuing east via Robins Creek. Should the section across Robins Creek be located outside the applicants control, consideration should be given to delivering this valuable public access link through a planning obligation. With the support of the local highway authority and local stakeholders, this new connection would provide a direct and attractive riverside trail for the public, enhancing opportunities for active travel and outdoor recreation.
- With regards to the north west section of the site, there appears to be a network of public access routes being proposed. It is requested that these routes are consolidated and, where appropriate, the KCIIIECP is ‘snapped’ to the alignment of a PRoW that is direct and attractive to use. This approach would avoid a duplication of routes and minimise the public burden of path maintenance.”

For clarification of any points in this letter, please contact Hannah Lee at Hannah.Lee@naturalengland.org.uk.

This letter concludes Natural England’s Advice within the Quotation and Agreement dated 11 January 2024.

commercialservices@naturalengland.org.uk

As the Discretionary Advice Service is a new service, we would appreciate your feedback to help shape this service. We have attached a feedback form to this letter and would welcome any comments you might have about our service.

☒ The advice provided in this letter has been through Natural England’s Quality Assurance

process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely,

Hannah Lee
Sustainable Development, Sussex and Kent – Area Team 14

Cc commercialservices@naturalengland.org.uk

Annex 1

European Protected Species

A licence is required in order to carry out any works that involve certain activities such as capturing the animals, disturbance, or damaging or destroying their resting or breeding places. Note that damage or destruction of a breeding site or resting place is an absolute offence and unless the offences can be avoided (e.g. by timing the works appropriately), it should be licensed. In the first instance it is for the developer to decide whether a species licence will be needed. The developer may need to engage specialist advice in making this decision. A licence may be needed to carry out mitigation work as well as for impacts directly connected with a development. Further information can be found in Natural England's '[How to get a licence](#)' publication.

If the application requires planning permission, it is for the local planning authority to consider whether the permission would offend against Article 12(1) of the Habitats Directive, and if so, whether the application would be likely to receive a licence. This should be based on the advice Natural England provides at formal consultation on the likely impacts on favourable conservation status and Natural England's [guidance](#) on how the three tests (no alternative solutions, imperative reasons of overriding public interest and maintenance of favourable conservation status) are applied when considering licence applications.

Natural England's pre-submission Screening Service can screen application drafts prior to formal submission, whether or not the relevant planning permission is already in place. Screening will help applicants by making an assessment of whether the draft application is likely to meet licensing requirements, and, if necessary, provide specific guidance on how to address any shortfalls. The advice should help developers and ecological consultants to better manage the risks or costs they may face in having to wait until the formal submission stage after planning permission is secured, or in responding to requests for further information following an initial formal application.

The service will be available for new applications, resubmissions or modifications – depending on customer requirements. More information can be found on [Natural England's website](#).

From: Lee, Hannah <Hannah.Lee@naturalengland.org.uk>
Sent: 06 February 2024 09:22
To: Erin Fairley; Walkden, Niall
Cc: Greg Attwood; Dr. Abdulla Al-Humaidi; Jack Douglas; Abbey Musker; Jon Bradburn (Guest); Alex Partridge; HALL Tom; MEREDITH Joanna
Subject: RE: Natural England's DAS Advice Letter: Northfleet Harbourside

Dear Erin,

Thank you for your patience awaiting our advice regarding your proposed mitigation measures for cat-predation on the Swanscombe Peninsula SSSI breeding bird assemblage in proximity to the Application site.

Natural England is satisfied with the evidence provided to illustrate the use and efficacy of cat-proof fencing and dense shrub planting to address impacts from cat-predation. However, there are outstanding points we would like clarity on and advise that several of these (addressing monitoring and maintenance) are attached as planning conditions and included in the application documents.

1. Clarity on why these mitigation measures stop at the western boundary and do not continue around the south-western/southern side of the development given their proximity still to the SSSI boundary.
2. Clarity on spacing between planting and fencing. Cats can climb planting and use it to scale fencing; therefore, dense scrub planting needs to be an appropriate distance from fencing and height to prevent this.
3. Correction to fencing overhang width: from 500mm (currently in 'Part E - Detailing the Place') to 600mm (as quoted in your email text).
4. Detailed information on how the cat-proof fencing & dense shrub planting will be monitored in perpetuity to ensure: (a) their integrity is maintained and (b) that they effectively mitigate impacts of cat-predation on the SSSI breeding bird assemblage. This should include details of the body responsible for ensuring the monitoring is undertaken, the frequency of monitoring, reporting requirements, and the funding to secure the monitoring in perpetuity.
5. Detailed information on how the cat-proof fencing & dense shrub planting will be maintained in perpetuity. This should include details of the body responsible for ensuring the fencing and planting is maintained, the timescales for rectification of any breaches of integrity and the funding mechanism to ensure the fence and planting are maintained in perpetuity.
6. Commitment to implement alternative mitigation measures, such as 'wet fences/swales', should the monitoring of the SSSI bird assemblage and integrity of the cat-proof fencing reveal these mitigation measures as ineffective.

If you would like to discuss any of this, please feel free to contact me.

Kind regards,
Hannah Lee

Sustainable Development Lead Advisor
Sussex and Kent Team
Natural England, International House, Ashford, TN23 1HU
M: (+44) 782 339 6958

Working days: Monday-Thursday (0930-1500)

<http://www.gov.uk/natural-england>

From: Lee, Hannah

Sent: Friday, January 26, 2024 1:08 PM

To: Erin Fairley <erin.fairley@triumenv.co.uk>; Walkden, Niall <Niall.Walkden@naturalengland.org.uk>

Cc: Greg Attwood <greg.attwood@keh-group.com>; Dr. Abdulla Al-Humaidi <a.alhumaidi@kehgroup.org>; Jack Douglas <jack.douglas@triumenv.co.uk>; Abbey Musker <abbey.musker@triumenv.co.uk>; Jon Bradburn (Guest) <jon.bradburn@montagu-evans.co.uk>; Alex Partridge <alex.partridge@montagu-evans.co.uk>; HALL Tom <thall@assystem.com>; MEREDITH Joanna <jmeredith@assystem.com>

Subject: Natural England's DAS Advice Letter: Northfleet Harbourside

Dear Erin and colleagues,

Please find attached a summary of Natural England's advice given through our Discretionary Advice Service, contract number **A012422**.

As you will read, we are still reviewing your evidence and proposed dual mitigation measures to address impacts on the SSSI breeding bird assemblage from cat-predation. I will send you our response on these soon.

If you have any other points of clarification, please feel free to contact me.

Kind regards,

Hannah Lee

Sustainable Development Lead Advisor

Sussex and Kent Team

Natural England, International House, Ashford, TN23 1HU

M: (+44) 782 339 6958

Working days: Monday-Thursday (0930-1500)

<http://www.gov.uk/natural-england>

Date: 11 March 2024
Our ref: 468328
Your ref: 20221064



Katherine Parkin
Planning
Gravesham Borough Council

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
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T 0300 060 3900

BY EMAIL ONLY

Dear Mrs.Parkin,

Planning consultation: 20221064 Amendment More info Outline with all matters reserved, except for means of access, for a mixed-use redevelopment demolition of existing buildings & structures & development of up to 3,500 residential units (Class C3), up to 55,000sqm (GEA) of Class E including up to 32,000sqm (GEA) floorspace for retail, food etc.

Location: Land Surrounding Ebbsfleet United Football Club, Bounded By Lower Road, Railway Line, Grove Road And The River Thames, Northfleet, Gravesend.

Thank you for your consultation on the above dated 01 September 2023 which was received by Natural England on the same date.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

SUMMARY OF NATURAL ENGLAND'S ADVICE

NO OBJECTION - SUBJECT TO APPROPRIATE MITIGATION BEING SECURED

We consider that without appropriate mitigation the application would:

- have an adverse effect on the integrity of Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site <https://designatedsites.naturalengland.org.uk/>.
- damage or destroy the interest features for which Swanscombe Peninsula Site of Special Scientific Interest (SSSI) has been notified.

In order to mitigate these adverse effects and make the development acceptable, the following mitigation measures are required / or the following mitigation options should be secured:

- Appropriate contributions to the Thames, Medway and Swale Estuaries Strategic Access Management and Monitoring Strategy (SAMMS),
- Strategic Access Management Plan to address recreational impacts upon Swanscombe Peninsula SSSI features
- Measures to address construction impacts on SSSI breeding bird assemblage e.g. Construction Environment Management Plan (CEMP) including measures to minimise or avoid noise impacts during the breeding season (February to August/September for most species, although weather conditions can alter this)

- Lighting levels to follow best practice standards for wildlife to address impacts on birds and invertebrates of the SSSI
- Revised strategy to address impacts of cat predation on ground nesting birds to include at a minimum wet fences and details of maintenance and monitoring.

In addition, we consider the KCIIIECP route would better meet its statutory criteria if located to the north of the current alignment and linked to the east along the riverside and across the mouth of Robin's Creek.

We advise that an appropriate planning condition or obligation is attached to any planning permission to secure these measures.

Natural England's further advice on designated sites/landscapes and advice on other natural environment issues is set out below.

Further advice on mitigation

Natural England responded to your consultation for this application on 20 November 2023 and issued a 'Further Information Request' to determine impacts on designated sites. In January 2024 the Applicant engaged with Natural England through our Discretionary Advice Service (DAS). This response letter reflects our updated advice based on this DAS engagement and the Applicant's response to our further information requests set out in November 2023.

Swanscombe Peninsula SSSI

Recreational Disturbance

Natural England maintains the view that recreational disturbance from new residents of the proposed Northfleet development is likely to have an adverse impact on designated features of the Swanscombe Peninsula SSSI if not robustly mitigated.

We welcome the opportunity to connect people with nature and therefore advise that a condition is added for the Reserved Matters Stage for the Applicant to:

- 1) carry out surveys to quantitatively assess recreational impacts from the proposed development on the SSSI, and
- 2) work collaboratively with the competent authority, Natural England and other stakeholders/partners to develop a Strategic Access Management Plan for the Swanscombe Peninsula SSSI.

This management plan should be developed and in place before occupation of the Northfleet development.

Breeding bird assemblage

Natural England is satisfied that, based on the Applicant's ecology assessment adopting a worst-case scenario and assuming presence of breeding birds that the mitigation measures allow a significant effect to be excluded on the breeding bird assemblage of the Swanscombe Peninsula SSSI.

We concur with the Applicant's proposal to carry out additional breeding bird surveys during 2024 in order to update previous data from the London Resort Scheme and agree with this being conditioned as part of the application's Reserved Matters Stage.

Noise

Natural England is satisfied that, with the inclusion of proposed mitigation measures to address noise impacts to the breeding bird assemblage during the construction phase, notably through a Construction Environment Management Plan (CEMP), it can be excluded that noise from the

proposed plan or project will have a significant effect on features of the Swanscombe Peninsula SSSI. We advise the Environmental Statement (ES) is updated with the additional mitigation details outlined in the Applicant's document: 'Northfleet – Natural England January 1A.pdf'.

Lighting

Natural England advises that mitigation measures for lighting impacts are included by condition and that the Applicant clearly identifies specific best practice standards that will be adhered to in order to keep lighting impacts from the resident blocks adjacent to the SSSI boundary within acceptable levels for the breeding bird and invertebrate assemblages of the SSSI. We advise the Environmental Statement (ES) is updated where necessary to include this detail. Based on these mitigation measures and ES update, Natural England is satisfied that it can be excluded that lighting from the proposed plan or project will have a significant effect on features of the Swanscombe Peninsula SSSI.

Urbanisation effects: Cat-predation

In January 2024 the Applicant engaged with Natural England through our Discretionary Advice Service (DAS). We provided further correspondence updating our advice based on this DAS engagement and the Applicant's response to our further information requests set out in November 2023. Based on our engagement and the best available information Natural England had at the time we advised that we were satisfied that the measures currently proposed were suitable to avoid significant impact to breeding bird assemblage from cat predation if measures were robustly implemented.

Since then, further information has been provided to us by local colleagues detailing the presence of nightingales within Botany Marshes, the unit of Swanscombe Peninsula closest to the proposed developments. This was not observed by our ornithologists or progressed further to mitigation in the Applicant's proposals. As nightingales are particularly vulnerable to predation by cats the nature of our advice has changed

It is important to note that Natural England does not consider any fencing to be 'cat proof' as during the lifetime of the development there will inevitably be lapses in integrity. We do not support the use of fencing to exclude cats where there are particularly vulnerable bird species and habitats such as ground nesting and heathland birds.

Consequently, Natural England does not agree that the fencing and shrub planting proposed will alone be sufficient to exclude cats from Swanscombe Marshes SSSI.

As discussed through our discretionary advice mitigation with the highest likelihood of success in excluding cats from an area is the provision of wet fences. These are wet ditches or swales of sufficient proportions to create a barrier for cats. As with any measure the design of these is crucial to their success to ensure adequate width, depth and year-round wetness, and Natural England would welcome engaging with the Applicant to develop a suitable approach.

If this approach can be agreed, we are happy to work with the Applicant in advance of the reserved matters stage.

We would like confirmation on the following and advise that several of these elements (addressing monitoring and maintenance) are attached as planning conditions and included in the Applicant's supporting documents.

- 1) Confirmation of the provision of continuous wet fences around the south-western/southern side of the development. These are wet ditches or swales of sufficient proportions to create a barrier for cats.
- 2) Confirmation that the Applicant has continued fencing and shrub planting around the south-western/southern side of the development given their proximity still to the SSSI boundary.
- 3) Confirmation the Applicant will engage with you, as competent authority, Natural England and any other relevant partners to determine spacing between the shrub planting and fencing to ensure an appropriate design. Cats can climb planting and use it to scale fencing;

therefore, dense scrub planting needs to be an appropriate distance from fencing and height to prevent this. If, as the Applicant argues, the proposed Hawthorn & Blackthorn planting dissuades cats from climbing this should be appropriately evidenced.

- 4) Confirmation that correction to fencing overhang width (from 500mm to 600mm) has been updated in the Design Code Addendum.
- 5) Detailed information on how the wet fences including water levels, fencing & dense shrub planting will be monitored in perpetuity to ensure: (a) their integrity is maintained and (b) that they effectively mitigate impacts of cat-predation on the SSSI breeding bird assemblage. This should include details of the body responsible for ensuring the monitoring is undertaken, the frequency of monitoring, reporting requirements, and the funding to secure the monitoring in perpetuity.
- 6) Detailed information on how the wet fences including water levels, fencing & dense shrub planting will be maintained in perpetuity. This should include details of the body responsible for ensuring the fencing and planting is maintained, the timescales for rectification of any breaches of integrity and the funding mechanism to ensure the fence and planting are maintained in perpetuity.

Please note that if your authority is minded to grant planning permission contrary to the advice in this letter, you are required under Section 28I (6) of the Wildlife and Countryside Act 1981 (as amended) to notify Natural England of the permission, the terms on which it is proposed to grant it and how, if at all, your authority has taken account of Natural England's advice. You must also allow a further period of 21 days before the operation can commence.

Thames Estuary and Marshes SPA and Ramsar site

Natural England notes that the Habitats Regulations Assessment (HRA) has not been produced by your authority, but by the applicant. As competent authority, it is your responsibility to produce the HRA and be accountable for its conclusions. We provide the advice enclosed on the assumption that your authority intends to adopt this HRA to fulfil your duty as competent authority.

Your appropriate assessment concludes that your authority is able to ascertain that the proposal will not result in adverse effects on the integrity of any of the sites in question. Having considered the assessment, and the measures proposed to mitigate for all identified adverse effects that could potentially occur as a result of the proposal, Natural England advises that we concur with the assessment conclusions, providing that all mitigation measures are appropriately secured in any planning permission given.

Natural England notes from the Shadow HRA within the Northfleet Harbourside Response to Avison Young Independent Environmental Statement Review Report (August 2023, pages 20-21) that the Applicant has stated any impact arising due to an increase in recreational disturbance on the SPA and Ramsar Sites can be addressed through an appropriate contribution to the provision of strategic access management measures. Due to the location of the proposed development, we are minded to agree with this approach.

We continue to advise that it is the Council's responsibility to ensure that the proposals fully adhere to the agreed approach within the Thames, Medway and Swale Estuaries Strategic Access Management and Monitoring Strategy (SAMMS), to mitigate for additional recreational impacts on the designated sites and to ensure that adequate means are in place to secure the mitigation before first occupation.

Other advice

King Charles III England Coast Path The development proposal affects the King Charles III England Coast Path. The current alignment of this National Trail at Northfleet is somewhat inland of the Thames Estuary, due to the presence of industrial development when the trail was opened in 2022. Within the original proposals for the coast path, the opportunity for moving the trail was highlighted for several developments in the Northfleet area "Development here is likely to affect the proposed trail, however there may be opportunities, as part of the new development, to align the trail closer to

the coast, with views of the sea". Being close to the sea, with views of estuary are both key elements in the coast path legislation: the Marine and Coastal Access Act 2009.

The Local Planning Authority will seek to protect and look for opportunities for the National Trail, in line with paragraphs 104, 178(d) and 180 (c) of the National Planning Policy Framework, including that: 'Planning policies and decisions should contribute to and enhance the natural and local environment by: c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate'. Natural England considers the route in this area would better meet its statutory criteria (close to coast, with views of the sea), as well as benefitting local residents and the public, if located to the north of the current alignment – and linked to the east along the riverside and across the mouth of Robins Creek.

Natural England fully supports the recommendations made through Tom Kennedy, the South East England Coast Path National Trails Officer, in his letter to Gravesham BC of 5 October 2023:

- "It is requested that the trail is re-aligned through the open green space in the northern corner of the site and passes along the proposed pedestrian route, before continuing east via Robins Creek. Should the section across Robins Creek be located outside the applicants control, consideration should be given to delivering this valuable public access link through a planning obligation. With the support of the local highway authority and local stakeholders, this new connection would provide a direct and attractive riverside trail for the public, enhancing opportunities for active travel and outdoor recreation.
- With regards to the north west section of the site, there appears to be a network of public access routes being proposed. It is requested that these routes are consolidated and, where appropriate, the KCIIIECP is 'snapped' to the alignment of a PRow that is direct and attractive to use. This approach would avoid a duplication of routes and minimise the public burden of path maintenance."

Further general advice on consideration of protected species and other natural environment issues is provided at Annex A.

If you have any queries relating to the advice in this letter please contact me on Hannah.Lee@naturalengland.org.uk.

We would be pleased to provide advice on the discharge of planning conditions or obligations attached to any planning permission to address the issues above.

Should the proposal change, please consult us again.

Yours sincerely,

Hannah Lee
Sustainable Development
Sussex and Kent Area Team

Appendix C Winter Bird Survey Reports



WINTERING BIRD SURVEY REPORT 2023 - 2024
Northfleet, Gravesham

Client Reference: **Kuwaiti European Holding Group (KEH)**

Assystem E&I Ltd. Reference: **PRJ0010322**

Issue: A

Status: Draft



Document Approval

Originator : JM	Reviewed by :	Approved by :
Signature : 	Signature :	Signature :
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1. Executive Summary

Purpose

Winter bird surveys were undertaken to determine the presence and/or absence of wintering bird species in and around the site at Northfleet and the neighbouring Swanscombe Marshes SSSI in Northfleet, Gravesham, and to understand how they are using the site in winter.

This report focuses on the winter results and assesses any avoidance, mitigation, compensation, and enhancement measures needed to avoid the Proposed Development causing an offence.

Introduction

A habitat survey was undertaken in May 2022, to support the planning application, which was submitted in September 2022, and remains valid. Whilst no overwintering habitat is present on the site due to the urban nature, the offsite habitats were assessed as they support suitable overwintering habitat. The suitable habitats identified included mudflats for foraging, and foraging and roosting habitat in Robin's Creek. These habitats are connected by the River Thames to the Swanscombe Marshes SSSI and the Thames Estuary and Marshes SPA. Therefore, in order to establish if these habitats are functionally linked to either the SPA or SSSI, winter bird surveys were undertaken in the winter of 2022-2023 and winter 2023-2024. The surveys in the winter of 2023-2024 were increased to include an area of the neighbouring SSSI of Swanscombe Marshes due in order to confirm and update the results of previous wintering bird surveys undertaken in this area as part of the London Resort development. Consultation with Nature England has agreed the survey methodology to be suitable and sufficient.

In order to establish usage by wetland birds which would overwinter on suitable habitat in the zone of influence of the Proposed Development, surveys were undertaken based on the British Trust for Ornithology's (BTO's) Wetland Bird Surveys (WeBS) methodology. Core counts of wetland birds were taken, and intertidal (low tide) surveys were undertaken in the winters of 2022-2023 and 2023-2024. These surveys were extended to include the noting of potential disturbance events and any reactions shown by the birds in order to establish a basic baseline of what disturbance levels the birds on the mudflats may already be habituated to due to the sand and gravel works and Seacon Terminals which they currently neighbour.

Key Findings

During the surveys no Annex 1 species that use the Thames Estuary and Marshes SPA in internationally important populations were found to be using the mudflats or Robin's Creek or the surveyed area of Swanscombe Peninsula SSSI.

The overall number and species counted during the survey within the zone of influence follows data collected in 2019/2020 and 2012/2013 London Resort Wintering Bird Baseline remains of species assemblages that would not be regarded as important at the International or National level in their own right. Due to numbers recorded some of the area in the zone of influence in Swanscombe Peninsula acts a locally important area for roosting and resting. It is likely that the waders and waterfowl populations are part of a wider meta-populations that may at some time use any of all designated sites along the wider Thames system and therefore this habitat in the Botany Marsh area of the site is functional linked to the Thames Estuary SPA.

Given their status as functionally linked land this area must be considered at the International level for nature conservation value. Despite this due to distance, species present and visual barriers of vegetation in between these roosting sites and the Proposed Development, impacts are expected to be low and best practice guidelines will be followed during the development to mitigate any impacts on waterfowl waders using the foraging and roosting habitats in the zone of influence of the development. These will be fully detailed in the CEMP but will include methods such as visual and noise barriers between the site and these habitats and specific methodologies to noisy works such as slow starts for piling to limit disturbance and a wildlife friendly lighting plan. Therefore, it is thought that any disturbance generated by the construction will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.

The overall number and species counted during the surveys of the mudflats and Robin's Creek do not make up numbers of national or international importance and when compared to the 5-year peak mean population of species at the Thames Estuary Marshes, for example for redshank this is 3,251 birds, this suggests that the relative importance of this area of mudflats and Robin's Creek is of limited importance to overwintering bird species.

The mudflat is already subject to disturbance from the sand and gravel works. During the surveys a crane was being used to load a boat with gravel for the whole of the survey time and workers walking back and forth along raised walkways above the mudflats. Robin's Creek is also subject to noise disturbance with messages over the loudspeaker system and other machinery noises such as alarms being regularly heard during surveys. No disturbance behaviours were noted of the waterfowl using the mudflats or Robin's Creek during this time and the waterfowl appeared to forage as normal. Despite this, as the construction works may bring some new visual and audible disturbances some disturbance may occur from construction methods however this is thought to be of low impact due to the low numbers of birds using the area and the birds will likely habituate reasonably quickly to these works due to current habitation to the gravel works.

Due to the low numbers of overwintering waterfowl using the habitats next to the Proposed Development it is thought that neighbouring habitats do not provide functionally linked overwintering habitats to the SSSI or SPA of any significant value. Therefore, it is thought that any disturbance generated by the demolition and construction phases of the Proposed Development will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.

There will be no loss of direct loss of overwintering habitat from the demolition and construction phases of the Proposed Development.

Best practice methodologies have been recommended within this report to mitigate any disturbance on the overwintering populations.

2. Introduction

- 2.1.1 Assystem (previously known as Schofield Lothian) was commissioned by Kuwaiti European Holding Group (KEH) to undertake ecological assessments for a Proposed Development on land at Northfleet, Kent. As part of this bird surveys were undertaken in the summer of 2022 and the winters of 2022-2023 and 2023-2024. Summer survey results can be found in the Bird Survey report (Schofield, 2022), which can be found in **ES Volume 3, Appendix: Ecology and Biodiversity, Annex 3**. This report will cover the wintering bird surveys undertaken in 2023-2024 only.
- 2.1.2 The initial Phase one habitat survey (Schofield, 2022), which can be found in **ES Volume 3, Appendix: Ecology and Biodiversity, Annex 1** found there is no suitable overwintering habitat present on the Proposed Development site due to the urban nature and infrastructure present.
- 2.1.3 There is potential overwintering habitat neighbouring the Proposed Development site in the form of foraging habitat on the mudflats and foraging and roosting habitat in Robin's Creek. The mudflat and Robin's Creek habitats are linked by the River Thames to the Swanscombe Peninsula SSSI and the Thames Estuary and Marshes SPA. Therefore, in order to establish if these habitats are functionally linked to either the SPA or SSSI winter bird surveys were undertaken in the winters of 2022-2024.
- 2.1.4 Foraging and roosting habitat is present in the neighbouring Swanscombe Peninsula SSSI with the Botany Marshes and Black Duck Marsh areas of the SSSI being assessed in 2020 as functionally linked habitat to the Thames Estuary and Marshes SPA. Due to this, updated surveys were undertaken in the winter of 2023-2024 in a zone of influence agreed with Natural England, to confirm whether the area is still functionally linked and to inform mitigation, if required
- 2.1.5 The Proposed Development is connected by the Thames to the SSSI site of Swanscombe Marshes, notified under Section 28 of the Wildlife and Countryside Act 1981, through sharing a small section of the northern boundary of the site. The neighbouring habitats to the Proposed Development, additionally considered in this report Robin's Creek and the mudflats are linked through the River Thames to the SSSI and the wider Thames Estuary and Marshes SPA and Ramsar for which the site sits within the 6km zone of influence (c.5.7km east of the site).
- 2.1.6 By undertaking an investigation of the habitats and species present in both summer and winter, this report, along with a review of the London Resort Application surveys, will provide a greater understanding of the ecological value of the area and immediate surrounding areas for birds. It identifies any potential risks, obligations and restrictions that may be necessary to guarantee compliance with wildlife legislation.
- 2.1.7 Surveys were led by Joanna Meredith an ecologist with over six years' experience with a wide range of ornithology experience, with the most relevant experience being two years of conducting disturbance surveys on a SSSI designated for a significant overwintering wildfowl accumulation, supported by Rebecca Sanders, an ecologist with 2 years' experience including ornithology experience.

2.2 Validity of Data

- 2.2.1 The findings of this study are valid for a period until the end of the 2025-2026 wintering period. If works have not commenced within this date, then an updated site visit should be carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

2.3 Site Context and Survey Areas

- 2.3.1 The site is located adjacent to the River Thames in Northfleet, in the borough of Gravesham in Kent. Swanscombe Peninsula Site of Special Scientific Interest (SSSI) is adjacent to the north-west of the site and Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site, is located 5.7 km to the east of the site.
- 2.3.2 Due to the scale of the site, it was split into three areas referred to as:
- RLB South;
 - RLB North-East; and
 - RLB North-West.
- 2.3.3 Whilst no habitats are present on Proposed Development site that would support overwintering birds, the following habitats have been assessed to be within the Proposed Developments zone of influence:
- Mudflats;
 - Robin's Creek (otherwise known as Northfleet Harbour) which is made up of reedbeds; and
 - An area of the Swanscombe Peninsula SSSI including Botany Marshes which includes a mixture of habitats including reedbeds, marsh, rough grassland.
- 2.3.4 The zone of influence of the development was assessed based upon peak disturbance distances of wintering waterfowl and waders of species previously found to be using the areas in previous surveys undertaken on the SSSI for London Resort in 2012-2013 and 2019-2020 and using disturbance distances assessed in Goodship, N.M. and Furness, R.W. (MacArthur Green) 2020¹. This area was discussed with Natural England through the Discretionary Advice Service and was deemed appropriate. This area can be found in figure 1 in the methodology section. Much of the area surveyed separated from the development site by an earth bank, dense vegetation and treelines and other vegetation.
- 2.3.5 The mudflats and Robin's Creek are detailed in the Phase 1 habitat map in Appendix A. The Target Note numbers within the extended Phase 1 habitat map in Appendix A correspond to the following points of ecological interest within the site.

Mudflats

- 2.3.6 Intertidal mudflats are present on the north-east boundary of the site at low tide, Target Note 1 in the map on Appendix A, which extend for at least 50 m into the Thames. These are gently sloping mudflats which turn into a shingle beached area, Target Note 2 in the map on Appendix A, which is above the tide line on the edge of the flood wall of the Thames. These areas may provide potential foraging and resting areas for overwintering waterfowl and waders. Some commercial piers/loading docks are present in this area. This habitat is connected by the River Thames to SSSI site of Swanscombe Marshes around 600 m upstream along the river.

¹ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283

Robin's Creek

- 2.3.7 Robin's Creek, Target Note 3 in the habitat map in Appendix A, may provide suitable roosting and foraging overwintering habitat to a range of waterfowl in the extensive reedbeds and associated intertidal creek.

Swanscombe Peninsula SSSI (surveyed area)

- 2.3.8 Swanscombe Peninsula SSSI is present to the north of the site and may provide suitable roosting and foraging overwintering habitat to a range of waterfowl and waders in the mixed habitats of Botany Marshes which includes reedbeds, marsh, rough grassland and areas of standing water.

2.4 Legislative Context

- 2.4.1 The Proposed Development is connected by the Thames to the SSSI site of Swanscombe Marshes, notified under Section 28 of the Wildlife and Countryside Act 1981, through sharing a small section of the northern boundary of the site. The SSSI is known to support notable species of bird such shelduck (*Tadorna tadorna*) and little egret (*Egretta garzetta*) in both its saltmarsh habitats and intertidal mudflats and Schedule 1 species such as little ringed plover (*Charadrius dubius*). Whilst the SSSI is only designated for breeding birds it is likely that the habitats support assemblages of overwintering birds. Previous winter bird surveys for the London Resort in 2020 have found areas of SSSI including Botany Marshes and Black Duck March to be functionally linked habitat to the SPA. The neighbouring habitats (Robin's Creek and the mudflats) to the Proposed Development could also hold the potential of being a stoppage point on a journey of overwintering birds from the Thame Estuary and Marshes SPA, which supports significant number of internationally important wild birds to the Swanscombe Marshes.
- 2.4.2 The Thames Estuary and Marshes SPA qualifies as a SPA under 4.1 and 4.2 of the EU Birds Directive by supporting three kinds of internationally important populations of: regularly occurring Annex 1 species, regularly occurring migratory species, and assemblage of waterfowl.
- 2.4.3 The species listed on Annex 1 that use the Thames Estuary and Marshes in internationally important populations are avocet (*Recurvirostra avosetta*) and hen harrier (*Circus cyaneus*). Other non-qualifying, Annex 1 species that regularly occur on the European marine site include common tern (*Sterna hirundo*), Bewick's swan (*Cygnus columbianus bewickii*), golden plover (*Pluvialis apricaria*), and ruff (*Philomachus pugnax*).
- 2.4.4 The Thames Estuary supports internationally important numbers of regularly occurring migratory species including ringed plover (*Charadrius hiaticula*), grey plover (*Pluvialis squatarola*), dunlin (*Calidris alpina*), knot (*Canutus islandica*), black-tailed godwit (*Limosa limosa*) and redshank (*Tringa tetanus*) and nationally important populations include shelduck (*Tadorna tadorna*), teal (*Anas crecca*) and pintail (*Anus acuta*).
- 2.4.5 Other species which contribute to the internationally important waterfowl assemblage within the Thames Estuary and Marshes SPA which rely less on mudflats and more on the surrounding grazing marsh habitats include gadwall (*Anas strepera*), shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*) and pochard (*Aythya farina*).
- 2.4.6 As mudflats are a rich source of invertebrates, they have the potential to provide feeding grounds for wintering species including the avocet, dunlin, knot and black-tailed godwit. These surveys will identify if the mudflats are being used by any of the species for which the SPA is designated in significant numbers

to assess whether the Proposed Development could have an effect on the favourable conservation status of Interest features of the SPA.

2.5 Scope of Works

2.5.1 The survey objectives were to:

- Carry out an assessment of the habitat identified with the potential to support wintering birds to confirm presence and numbers of wintering assemblages in the zone of influence of the Proposed Development;
- Confirm if the mudflat and Robin's Creek area are functionally linked habitat to either the SPA or SSSI and inform mitigation, if required, for these areas; and
- Update previous wintering bird surveys undertaken on Swanscombe Peninsula in the zone of influence, to confirm whether the area is still functionally linked habitat to the SPA and to inform mitigation, if required.

2.6 Quality Assurance

- 2.6.1 All lead Assystem ecologists are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct when undertaking ecological work.
- 2.6.2 Assystem are a CIEEM Registered Practice, and as such champion high professional standards whilst delivering the best outcomes for biodiversity and supporting a thriving economy.

3. Methodology

3.1 Bird Survey

- 3.1.1 In order to establish usage by wetland birds which overwinter on the Swanscombe Marshes SSSI habitats, mudflat habitats and Robin's Creek identified adjacent to the application site (including Annex 1 and Schedule 1 species) and a rough baseline of disturbance, intertidal (low tide) surveys were undertaken monthly within the winter season of 2023/2024 from November to March (NB: the site was not surveyed in October due to unseasonably warm weather) with one survey undertaken at high tide in March.
- 3.1.2 The visual bird disturbance survey method was a modified version of the Wetland Bird Survey (WeBS) core count 'Look-See' method² which allowed both species counts to be undertaken and disturbance behaviour of the birds to be recorded. Surveys were completed in accordance with best practice guidelines³.

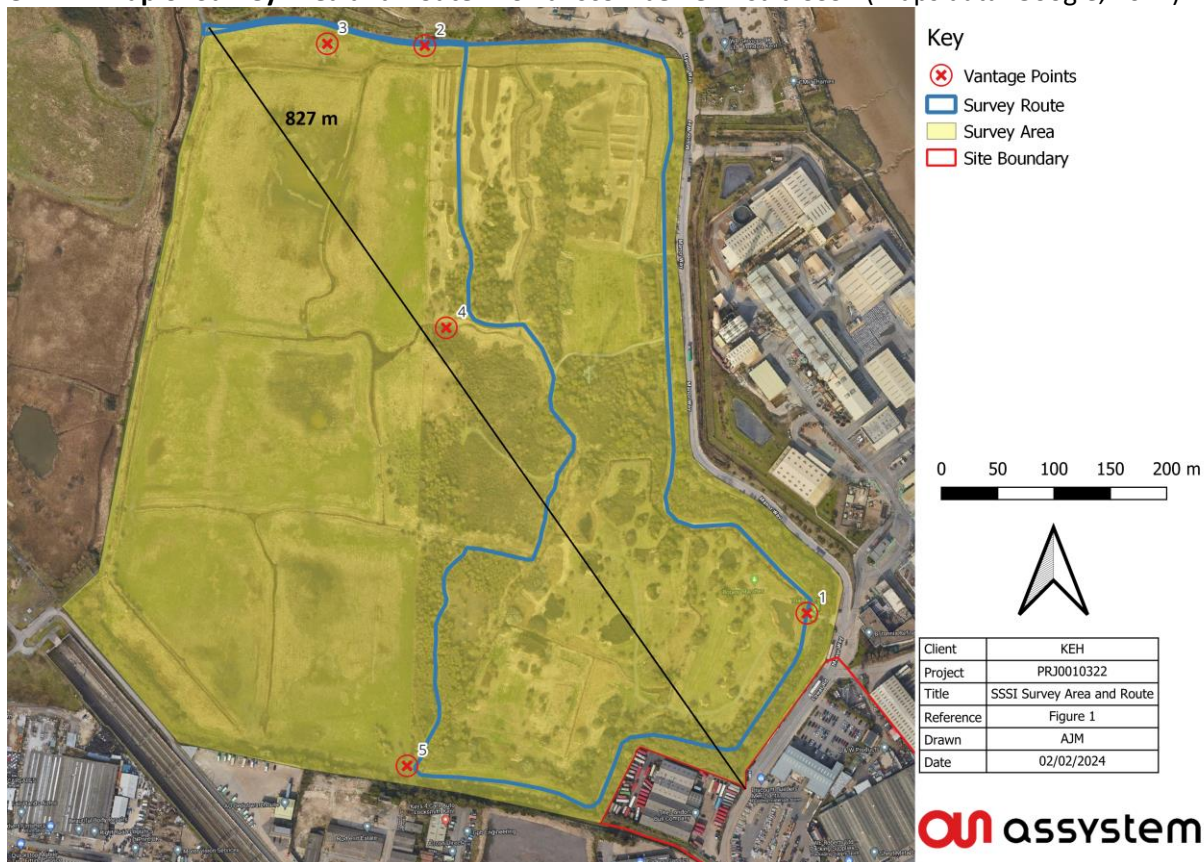
² Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S. 2000. Bird Census Techniques. Second Edition. Academic Press, London.

³ Bird Survey Guidelines. Non-Breeding Bird Survey Methodology [Online] Available at: <https://birdsurveyguidelines.org/non-breeding-survey-methodology/> Accessed 01/02/2024.

- 3.1.3 Different vantage points (VP) were selected to provide the best visual coverage of the survey area. The selection of the vantage points was limited due to access.
- 3.1.4 Two hours were spent on the vantage point overlooking the mudflats, one hour was spent on Robin's Creek and another three hours spent on in the Swanscombe Peninsula. This time was considered proportionate as the survey area was walked at a slow and methodical pace and was appropriate in relation to the habitat and species recorded during the survey.
- 3.1.5 The zone of influence of the development was assessed based upon peak disturbance distances of wintering waterfowl and waders of species previously found to be using the areas in previous survey data⁴ undertaken on the SSSI for London Resort in 2012-2013 and 2019-2020 and using disturbance distances assessed in Goodship, N.M. and Furness, R.W. (MacArthur Green) 2020. This area was discussed with Natural England through the Discretionary Advice Service and was deemed appropriate. This area can be found in Figure 1 and along with the walking route and vantage points selected.

⁴ The Environmental Dimension Partnership Ltd (2020) London Resort Appendix 12.1: Ecology Baseline Report. Report Reference edp5988_r009a.

Figure 1 Map of Survey Area and Route in Swanscombe Peninsula SSSI (Maps data: Google, 2022)



- 3.1.6 When at each VP, weather conditions were recorded, and surveyors counted individually waterfowl and waders present and any other species of note such as birds of prey.
- 3.1.7 Potential disturbance events were also noted to understand a baseline of what the birds react to. Disturbance behaviour of waterfowl is defined as any behaviour shown by the birds that constituted a diversion from normal behaviour. These behaviours were noted on the map by the surveyor doing the waterfowl count.
- 3.1.8 Surveys were conducted to coincide with low tide with one survey coinciding with high tide in March.

3.2 Limitations

- 3.2.1 There was no access to the sand and gravel pits on-site however the mudflats and Robin's Creek were viewed from the Thames pathway which is currently diverted to a route that runs to the southeast of Robin's Creek to the Thames barrier. A high specification spotting scope was used to view the site mudflats and Robin's Creek from vantage points selected on the Thames pathway, so the surveys were able to correctly identify all species on the mudflats and the shingle beach from the viewpoints. Limited areas were blocked from view from the pier however this was not thought to be a significant limitation due to the length of time these areas were observed and the use of identification of bird calls. No areas within the red line boundary of the site were deemed as suitable habitat for overwintering birds due to the developed nature of the site meaning lack of suitable habitat. Therefore, the lack of access is not deemed to have limited the surveys.

4. Results

4.1 Wintering Bird Surveys

4.1.1 Table 1 details the weather conditions and tide times of the surveys.

Table 1 Weather Conditions and Low-Tide Times of the Surveys

	November	December	January	February	March
Date	29/11/2023	13/12/2023	17/01/2024	12/02/2024	05/03/2024
Start Time (am)	07:00	07:30	08:30	07:30	07:00
Low-Tide Time	08:16	07:02	11:34	09:18	13:00 (High tide 07:11)
Temperature (°C)	5	6	2	5	8
Cloud Cover (%)	15	100	90	5	100
Wind (Beaufort Scale)	0	1	0	1	1
Precipitation	None	Occasional Light rain showers	None	None	Occasional Light rain showers

4.1.2 Table 2 details the bird species recorded during the surveys. The locations split into individual tables. Full survey maps can be found in Appendix B with BTO codes used in these maps found in Appendix C.

Table 2 Waterfowl and Wader numbers per month in each location (mudflats, Robin's Creek and Swanscombe Peninsula)

Mudflats

Species	November	December	January	February	March
Redshank	2		2		
Common Sandpiper	1				
Teal					
Mallard	2				2
Shelduck			1	1	
Blackheaded Gull	14	5	2	32	28
Canadian Goose			1		

Robin's Creek

Species	November	December	January	February	March
Coot	1	1	2	1	
Moorhen	2	1			
Teal	30			3	2
Mallard	2	3	3	5	4
Wigeon		3			
Little Grebe		1			
Blackheaded Gull			1		

Swanscombe Peninsula

Species	November	December	January	February	March
Coot		1			
Shoveler		1			
Shelduck		1			3
Teal		23			
Mallard	2	2	3	5	11
Canadian Goose	5	27	30	47	11
Greylag Goose	7	16	44	35	29
Blackheaded Gull		35	45	77	55
Herring Gull			1	1	2
Marsh Harrier				1	1

November Survey Summary

- 4.1.3 During the November survey wintering bird numbers in Swanscombe Peninsula was very low with numbers focused around the lake area within the grassland 600 m from the closest point of the Proposed Development.
- 4.1.4 Numbers of Teal using Robin's Creek were higher than any other survey and redshank and common sandpiper were seen foraging on the mudflats.
- 4.1.5 No disturbance events observed. Dog walkers and high levels of noise from surrounding industry observed.

December Survey Summary

- 4.1.6 During December wintering bird numbers increased in Swanscombe Peninsula with 23no. teal using the lake area. Geese and gull numbers increased using the grassland areas around the lake area for foraging and roosting.
- 4.1.7 Wintering bird numbers on the mudflats and Robin's Creek were low.
- 4.1.8 No disturbance events observed. Dog walkers and high levels of noise from surrounding industry observed.

January Survey Summary

- 4.1.9 Wintering bird numbers in January were mainly associated with geese and gulls using the grassland areas around the lake area for foraging and roosting.

- 4.1.10 Wintering bird numbers on the mudflats and Robin's Creek where low however two redshank were observed foraging on the mudflats.
- 4.1.11 No disturbance events observed. Dog walkers and high levels of noise from surrounding industry observed.

February Survey Summary

- 4.1.12 Wintering bird numbers in February were mainly associated with geese and gulls using the grassland areas around the lake area for foraging and roosting with an increase in the roost size of black-headed gulls from January using the southern end of the field. A juvenile marsh harrier was observed flying over the fields.
- 4.1.13 Wintering bird numbers on the mudflats and Robin's Creek where low, black-headed gull numbers using the mudflats for foraging increased.
- 4.1.14 No disturbance events observed. Dog walkers and high levels of noise from surrounding industry observed.

March Survey Summary

- 4.1.15 Wintering bird numbers in March were mainly associated with geese and gulls using the grassland areas around the lake area for foraging and roosting including a roost of black headed gulls using the southern end of the field. An adult female marsh harrier was observed flying over the fields. Cetti's warbler were heard during the transect in the Botany Marsh area.
- 4.1.16 Wintering bird numbers on the mudflats and Robin's Creek where low with black headed gull making the majority of the numbers using the mudflats for foraging.
- 4.1.17 No disturbance events observed. Dog walkers and high levels of noise from surrounding industry observed.

5. Assessment

Summary

- 5.1.1 During the surveys no Annex 1 species that use the Thames Estuary and Marshes SPA in internationally important populations were found to be using the mudflats or Robin's Creek or the surveyed area of Swanscombe Peninsula SSSI.
- 5.1.2 One of the species the Thames Estuary and Marshes SPA supports in internationally important numbers, as shown in Table 3, of regularly occurring migratory species was found to be using land adjacent to the site: redshank (within the mudflats) and two nationally important migratory species the SPA supports: teal (found to be using Robin's Creek and Swanscombe Peninsula) and shelduck (found using the mudflats and Swanscombe Peninsula). One other species which contributes to the internationally important waterfowl assemblage within the Thames Estuary and Marshes SPA was found on the mudflats, shoveler.

- 5.1.3 Whilst these species were found in the surveyed areas these were all in low numbers with a peak count of 2no. redshank foraging on the mudflats in November 2023.
- 5.1.4 Peak counts of 30no. teal were observed roosting and foraging in Robin's Creek in November 2023, an increase on the peak count found during the previous year's survey data of 14no. using the mudflats briefly whilst travelling from east to west up the Thames, and 6no. in Robin's Creek in January 2023.
- 5.1.5 Peak counts of 3no. shelduck were seen in Swanscombe Peninsula in March 2024. Peak counts of 2no. shoveler were seen on the mudflats in January 2023. Thirteen other wading and waterfowl species were recorded.
- 5.1.6 Peak numbers of waterfowl and waders using Robin's Creek was 34no. in November 2023 and in the zone of influence of the development within Swanscombe Peninsula was 177no. In February 2024.
- 5.1.7 Peak counts on the mudflats were lower with only 19no. records in December 2023, however higher counts of other waterfowl were noted flying up from east to west up the Thames without stopping at the site.
- 5.1.8 Dog walkers and loud bangs and machinery noise from the surrounding industrial areas were noted on all survey visits in the SSSI area. The dog walks were all noted using public footpaths present within the SSSI. No disturbance events were noted during the surveys in reaction to any of these potential disturbance events.

Table 3 Important Populations of Bird Species Using Thames Estuary SPA (Reproduced from Thames Estuary and Marshes SPA Regulation 33 Conservation Advice Package⁵)

Internationally important populations of regularly occurring Annex 1 species.

Species	Population (5 yr peak mean 1993/94 - 1997/98)*
Avocet (<i>Recurvirostra avosetta</i>)	283 birds 28.3 % Great Britain

Internationally important populations of regularly occurring migratory bird species.⁶

Species	Population (5 yr peak mean 1993/94 - 1997/98) *
Ringed Plover (<i>Charadrius hiaticula</i>)	1,324 birds 2.6% Europe /North Africa
Grey Plover (<i>Pluvialis squatarola</i>)	2,593 birds 1.7% Eastern Atlantic
Dunlin (<i>Calidris alpina alpina</i>)	29,646 birds 2.1% Northern Siberia/Europe/West Africa
Knot (<i>Calidris canutus islandica</i>)	4,848 birds 1.4% North West Europe
Black-tailed Godwit (<i>Limosa limosa</i>)	1,699 birds 2.4% Iceland
Redshank (<i>Tringa totanus totanus</i>)	3,251 birds 2.2% Eastern Atlantic

An internationally important assemblage of waterfowl.

Importance	Population (5 yr peak mean 1993/94 - 1997/98)*
Thames Estuary supports large populations of wintering waterfowl.	75,019 individual birds _

5.1.9 Impacts- Swanscombe Peninsula SSSI

5.1.10 The overall number and species counted during the survey within the zone of influence follows data collected in 2019/2020 and 2012/2013 London Resort Wintering Bird Baseline (reference: edp5988_r003e) and remains of a species assemblages that would not be regarded as important at the International or National level in their own right. Due to numbers recorded some of the area in the zone of influence in Swanscombe Peninsula acts a locally important area for roosting and resting. It is likely that the waders and waterfowl populations are part of a wider meta-populations that may at some time use any of all designated sites along the wider Thames system and therefore this habitat in the Botany Marsh area of the site is functional linked to the Thames Estuary SPA.

5.1.11 Given their status as functionally linked land this area must be considered at the International level for nature conservation value. Despite this due to distance, species present and visual barriers of vegetation in between these roosting sites and the Proposed Development, impacts are expected to be low and best practice guidelines will be followed during the development to mitigate any impacts on waterfowl waders using the foraging and roosting habitats in the zone of influence of the development. These will be fully detailed in the CEMP but will include methods such as visual and noise barriers between the site and

⁵ English Nature (2001) Thames Estuary European Marine Site: English Nature's advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994

these habitats and specific methodologies to noisy works such as slow starts for piling to limit disturbance and a wildlife friendly lighting plan. Therefore, it is thought that any disturbance generated by the construction will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.

Potential Impacts- Robin's Creek and Mudflats

- 5.1.12 The overall number and species counted during the survey do not make up numbers of national or international importance and when compared to the 5-year peak mean population of species at the Thames Estuary Marshes for example for redshank this is 3,251 birds this suggests that the relative importance of this area of mudflats and Robin's Creek is of limited importance to overwintering bird species.
- 5.1.13 The mudflat is already subject to disturbance from the sand and gravel works. During the two surveys a crane was being used to load a boat with gravel for the whole of the survey time including with workers walking back and forth along raised walkways above the mudflats. Robin's Creek is also subject to noise disturbance with messages over the loudspeaker system and other machinery noises such as alarms being regularly heard during surveys. No disturbance behaviours were noted of the waterfowl using the mudflats or Robin's Creek during this time and the waterfowl appeared to forage as normal. Despite this, as the construction works may bring some new visual and audible disturbances some disturbance may occur from construction methods however this is thought to be of low impact due to the low numbers of birds using the area and the birds will likely habituate reasonably quickly to these works due to current habitation to the gravel works.
- 5.1.14 Due to the low numbers of overwintering waterfowl using the habitats next to the Proposed Development it is thought that neighbouring habitats do not provide functionally linked overwintering habitats to the SSSI or SPA of any significant value. Therefore, it is thought that any disturbance generated by the demolition and construction phases of the Proposed Development will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.
- 5.1.15 There will be no loss of direct loss of overwintering habitat from the demolition and construction phases of the Proposed Development.
- 5.1.16 Overshadowing has been measured and the only area of overshadowing was concentrated on terrestrial land and not on Robin's Creek or the mudflats. If designs should alter the overshadowing should be re-measured to see if this is expected to have any effect on the invertebrate populations within the mudflats or Robin's Creek leading to long term loss of habitat. If any overshadowing is expected the mudflats are not of foraging significance.

Potential Impacts – In use

- 5.1.17 The Proposed Development has the potential to increase light pollution on the SSSI through internal lighting spill. The effects artificial light has on birds has been studied with contradictory results. Some impacts that have been suggested include disorientating migrating birds⁶, affecting the timing of

⁶ Van Doren, M., et al (2017) High-intensity urban light installation dramatically alters nocturnal bird migration

migration and other seasonal behaviours through disruption of biological clocks as birds may interpret artificial light as increased daylength⁷. Other studies have shown positive effects of artificial light on shorebirds⁸ as increased light levels allowed redshanks to forage for longer periods at night which increased their food intake.

- 5.1.18 Artificial light at night can mimic a full moon; waders switch from tactile to the more efficient visual foraging⁹ when light levels increase. Increased illumination improves birds' visual perception of prey and predators at night which means that their foraging is more efficient, but their energetic costs were also increased as they took flight when the risk was further away, resulting in better predator avoidance. Whilst there is not enough scientific evidence to fully assess if the overall impact of increase light pollution would be positive or negative on the overwintering populations on the SSSI, the mitigation hierarchy should be followed, and avoidance of this impact should be implemented where possible.
- 5.1.19 Additional disturbance on the overwintering wildfowl using the areas in the zone of influence of the Proposed Development could come from a range of sources such as increase recreational pressure and an increase in predation through the increase of cats. Several studies have shown that the distance to the disturbance and the intensity of the disturbance are important factors in the impact on bird species. Where disturbance levels are high, some species can become habituated to human presence¹⁰. Bewick swans adopt flexible foraging strategies and vary their feeding behaviour in response to disturbance and flock size¹¹. Whilst habituation may occur in overwintering populations to increase recreational pressures, mitigation should be implemented to minimise these impacts.

6. Recommendations and Enhancements

- 6.1 No further surveys are recommended for wintering birds as long as development has started by the start of the 2026-2027 wintering season.

6.2 Design

- 6.2.1 A wildlife sensitive lighting scheme is required for the site. Impacts of artificial light spill resulting from newly fitted internal lighting should be mitigated by positioning new fixtures in line with recommendations within current guidance (BCT & ILP 2023). Specifically, in order to limit light spill through windows, internal lighting should be recessed into the ceiling and set back from all windows as to limit horizontal light spill¹². Glazing treatments are not thought to have any significant reduction in light levels emitted from internal lighting and are not recommended.

⁷ Fraenkel, A. (2022) The Growing Effects of Light Pollution on Migratory Birds

⁸ University of Exeter (2012) Ecologists shed new light on effects of light pollution on wildlife

⁹ Jolkkonen, J., Gaston, K.J. & Troschianko, J. Artificial lighting affects the landscape of fear in a widely distributed shorebird. *Commun Biol* **6**, 131 (2023). <https://doi.org/10.1038/s42003-023-04486-x>

¹⁰ English Nature Research Reports – RSPB: Underhill-Day, J. C., (2005) A Literature Review of Urban Effects on Lowland Heaths and their Wildlife.

¹¹ Yu, C. et al (2019) The Influence of Food Density, Flock Size, and Disturbance on the Functional Response of Bewick's Swans (*Cygnus columbianus bewickii*) in Wintering Habitats

¹² Institution of Lighting Professionals (2023). Guidance Note 08/23 Bats and Artificial Lighting at Night <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

- 6.2.2 Guided walks and pathways will be designed to encourage the public to walk around the site area rather than onto sensitive areas for birds such as the SSSI and information boards should contain information about the sensitivities of wintering birds within the SSSI. It is recommended that no new footpaths are created through the areas surveyed to prevent disturbance to overwintering birds.
- 6.2.3 Education to the public during sensitive times of the year for birds on limiting of disturbance will be given in the information centre/ café. This is to be secured via the Design Code.
- 6.2.4 Landscaping designs are to be included to provide barriers for visual disturbance to wintering birds and will include buffer planting between the SSSI and the northern boundary of the site and a tree line will be used to limit visual disturbance from the public on the Robin's Creek.
- 6.2.5 Mitigation for increased predation from cats on overwintering birds using the SSSI is to be secured via the Design Code as agreed through discussion with Natural England through the DAS process.

6.3 Methods during Construction

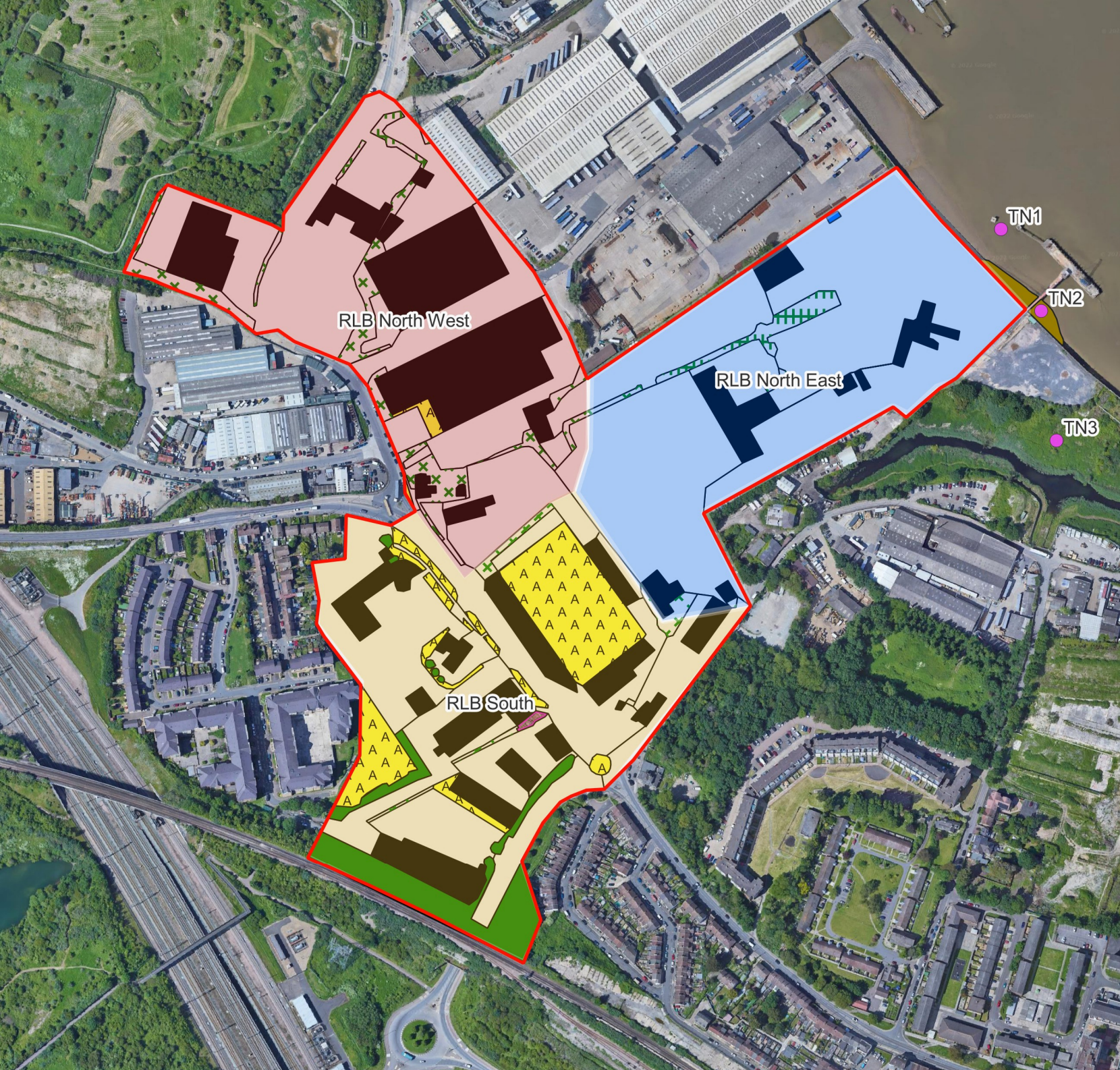
- 6.3.1 Given the potential for direct visual and noise disturbance on overwintering birds resulting from the demolition and construction works, additional disturbance surveys and ecological relevant measures defined within a detailed CEMP will minimise the potential for any adverse ecological effects upon overwintering birds. It is recommended that Precautionary Working Method Statement (PWMS) is written to capture all specific working methods for overwintering birds. These methods should include:
- Crane use in plot 18 and 19, which are likely to be the cause of the most visual disturbance during the construction process, should be avoided during the months of the highest use of site by overwintering birds January, February, and March. Where this is not possible, disturbance surveys should be carried out during the first week of crane use to monitor for disturbance. If disturbance were to occur, then additional time should be given for the birds to habituate to the crane prior to use.
 - Whilst the numbers of waterfowl using Robin's Creek and the mudflats were low visual and noise barriers could be used prevent disturbance to the birds using Robin's Creek and the mudflats in winter through best practice through simple measures such as site hoarding.
 - Soft starts and other methods such as the use of low impact machinery to limit noise and vibration disturbance will be used for noisy works such a pilling if undertaken in the overwintering season and will be detailed in the CEMP and PWMS.

6.4 Enhancement Measures

- 6.4.1 The National Planning Policy Framework (NPPF) outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed rather than using land that has a higher environmental value, and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.
- 6.4.2 Taking the requirements of NPPF into account, North Kent Marshes are over 10 km away so should not be affected by the Northfleet works however there is a North Kent Catchment Improvement Plan. The project could carry out some of the actions on the improvement plan through volunteering in order to

improve North Kent Marshes which would improve the wider area for bird species found at the Northfleet site. These actions include practical action days to improve habitat such as litter picks and management of bankside vegetation.

Appendix A Habitat Survey Map



Red Line Boundary

RLB North East

RLB North West

RLB South

● Target Notes

Additional Habitats

Shingle

Standing Water Tanks

PH1.qgz

A1.1.1 - Broadleaved woodland - semi-natural

A2.2 - Scrub - scattered

J1.2 - Cultivated/disturbed land - amenity grassland

J1.4 - Introduced shrub

J2.3.2 - Hedge with trees - species-poor

J3.6 - Buildings

J5 - Hardstanding and Ephemeral vegetation

Japanese Knotweed Stand

Client	Trium Environmental Consulting LLP
Project	TRI044 - Northfleet
Title	Phase 1 habitat map
Reference	Figure 2
Drawn	RH
Date	08/06/2022

Appendix B Survey Maps



Client	KEH
Project	PRJ0010322
Title	Robin's Creek and Mudflats Wintering Bird Results November 2023
Reference	Map 1
Drawn	JM
Date	25/03/2024



December 2023



Client	KEH
Project	PRJ0010322
Title	Robin's Creek and Mudflats Wintering Bird Results December 2023
Reference	Map 2
Drawn	JM
Date	25/03/2024





Client	KEH
Project	PRJ0010322
Title	Robin's Creek and Mudflats Wintering Bird Results January 2024
Reference	Map 3
Drawn	JM
Date	25/03/2024



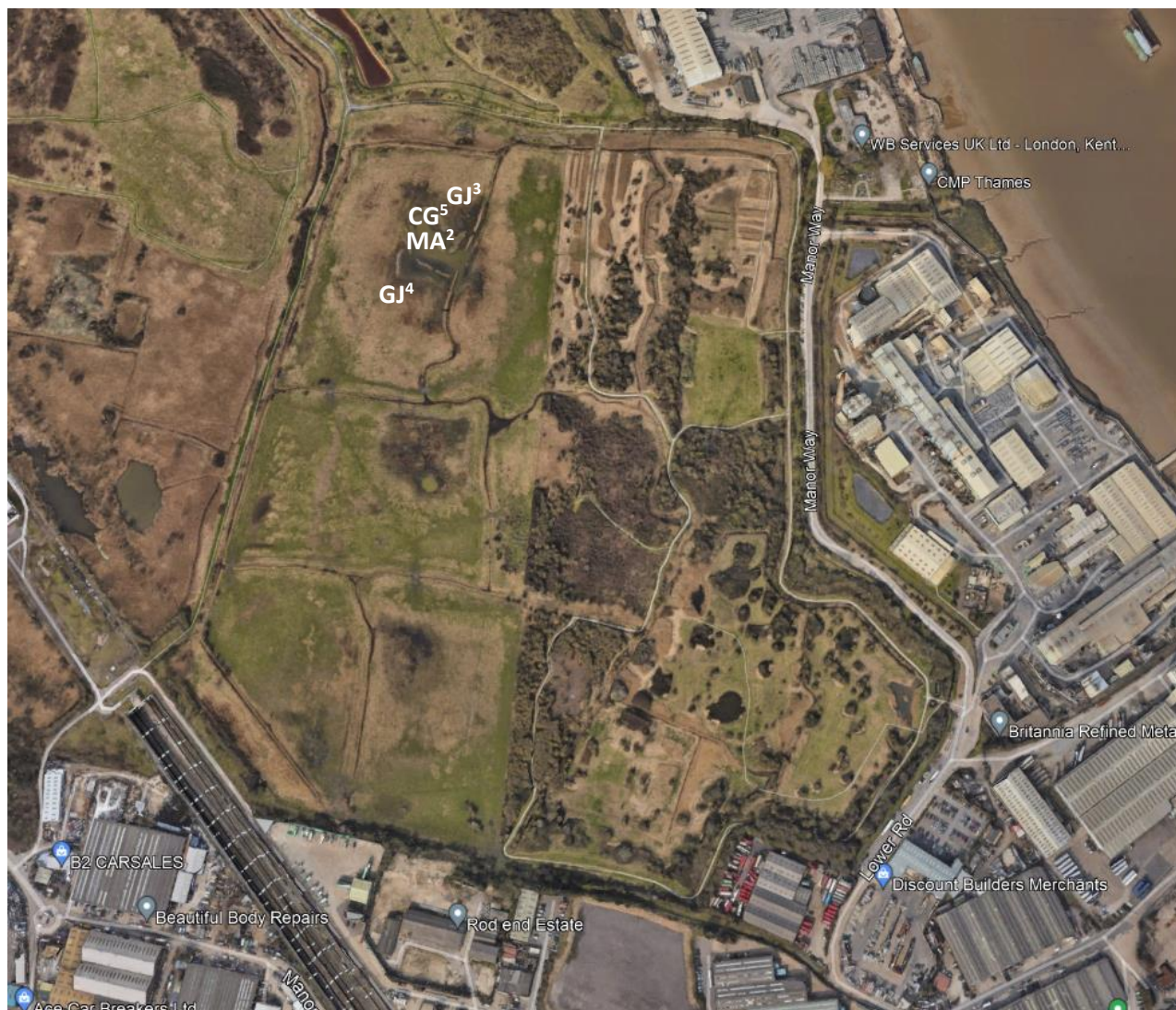
Client	KEH
Project	PRJ0010322
Title	Robin's Creek and Mudflats Wintering Bird Results February 2024
Reference	Map 4
Drawn	JM
Date	25/03/2024

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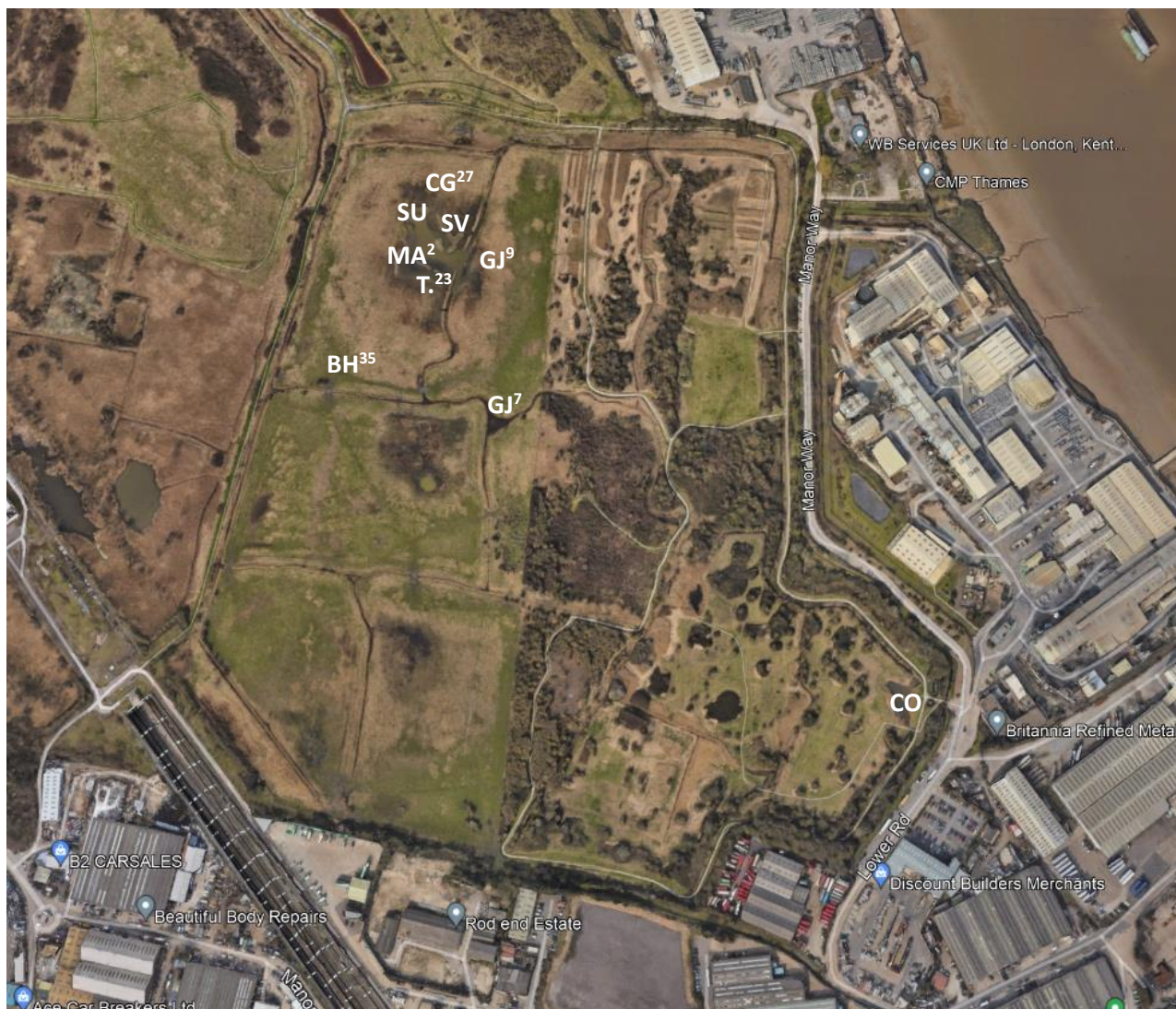
Client	KEH
Project	PRJ0010322
Title	Robin's Creek and Mudflats Wintering Bird Results March 2024
Reference	Map 5
Drawn	JM
Date	25/03/2024





Client	KEH
Project	PRJ0010322
Title	Swanscombe Peninsula Wintering Bird Results November 2023
Reference	Map 6
Drawn	JM
Date	25/03/2024

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Client	KEH
Project	PRJ0010322
Title	Swanscombe Peninsula Wintering Bird Results December 2023
Reference	Map 7
Drawn	JM
Date	25/03/2024

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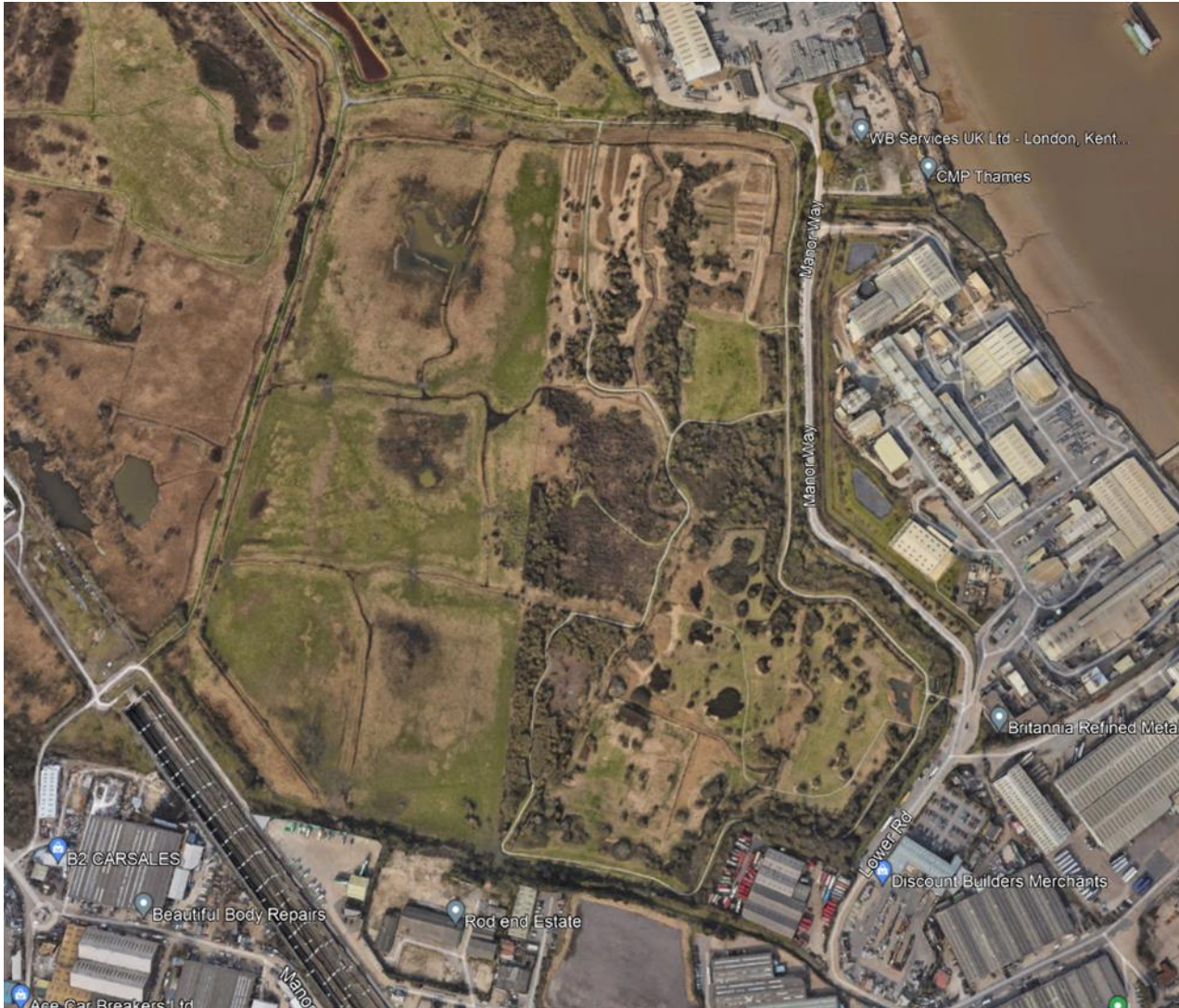
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Project	PRJ0010322
Title	Swanscombe Peninsula Wintering Bird Results January 2024
Reference	Map 8
Drawn	JM
Date	25/03/2024

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Client	KEH
Project	PRJ0010322
Title	Swanscombe Peninsula Wintering Bird Results February 2024
Reference	Map 9
Drawn	JM
Date	25/03/2024

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Client	KEH
Project	PRJ0010322
Title	Swanscombe Peninsula Wintering Bird Results March 2024
Reference	Map 10
Drawn	JM
Date	25/03/2024

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Appendix C British Trust for Ornithology (BTO) Species Codes

Table 4 BTO Codes of Species Recorded During Surveys

Code	Species Name
BH	Black-headed gull
CG	Canada goose
HG	Herring gull
OY	Oystercatcher
RK	Redshank
SV	Shoveler
T.	Teal

Table 5 BTO Species Codes

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin

BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carrion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove

CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Duncock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

Appendix D Relevant Legislation

The Environment Act 2021

The focus of the Act is the “...provision for targets, plans and policies for improving the natural environment...” and its requirements are structured around a number of broad themes (noting this is not a comprehensive summary of the provisions):

Nature and biodiversity – Part 6 of the Act importantly makes provision for “*biodiversity gain in planning*” which will apply to applications under the Town & Countryside Act and the Planning Act. In addition, the responsibilities on Government or public bodies have changed, including through:

- strengthening the existing biodiversity duty;
- requiring biodiversity reports;
- setting up local nature recovery strategy areas;
- providing for national habitat mapping; and
- establishing species conservation and protect site strategies.

Section 98 and 99 introduce biodiversity gain requirements that make changes to the Town & Country Planning Act and The Planning Act. The commencement of these changes and whether secondary legislation will be required to enact them will have to be subject to legal interpretation and advice.

Conservation covenants– Part 7 of the Act makes provisions for conservation covenants which essentially support the “*biodiversity gain in planning*” concept by providing a mechanism through which any gains can be secured and managed. These come into force at the point that the Secretary of State “*by regulations appoints*”.

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

The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European Protected Species', and the adaptation of planning and other controls for the protection of European Sites.

Under the Regulations, competent authorities (i.e. government departments and public bodies) have a general duty to have regard to the EC Habitats Directive and Wild Birds Directive. The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000, now referred to as ‘National Site Network’. The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation.

The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the precautionary principle applies i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licences by the appropriate authorities. Licences may be granted for a few purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild populations of the species concerned.

The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Conservation of Habitats and Species Regulations 2017 (as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).

Schedules of the Act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species.

Schedule 1 – Part 1 relates to birds and their young, for which it is an offence to intentionally or recklessly disturb at, on or near an ‘active’ nest. Schedule 1 – Part 2 relates to birds afforded special protection during the close season which is 1 February to 31 August (21 February to 31 August below high-water mark), but which may be killed or taken outside this period.

The Countryside and Rights of Way (CROW) Act 2000

The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife legislation. Legislation detailed in the Wildlife and Countryside Act 1981 (as amended) places a duty on government departments and the National Assembly for Wales to have regard for biodiversity and provides increased powers for the protection and maintenance of SSSIs. The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists superseded Section 74 of the CROW Act 2000.

UK Biodiversity Action Plan

The United Kingdom Biodiversity Action Plan (UK BAP), first published in 1994 and updated in 2007, was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UK BAP contained a list of priority habitats and species of conservation concern in the UK and outlined biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats were also included. The priority habitats and species correlated with those listed on Section 41 and 42 of the NERC Act.

The UK BAP required that conservation of biodiversity be addressed at a County level through the production of Local BAPs. These were complementary to the UK BAP, however, were targeted towards species of conservation concern characteristic of each area. In addition, several local authorities and large organisations have produced their own BAPs.

Species and Habitats of Material Consideration for Planning in England – UK Post-2010 Biodiversity Framework

In 2011, the government published the 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' to replace the previous England Biodiversity Strategy. In 2012 the UK BAP was replaced by the UK Post-2010 Biodiversity Framework.

Previous planning policy (and some supporting guidance which is still current, e.g. ODPM Circular 06/2005, now under revision), refers to UK BAP habitats and species as being a material consideration in the planning process. Equally many local plans refer to BAP priority habitats and species. Both remain as material considerations in the planning process, but such habitats and species are now described as Species and Habitats of Principal Importance for Conservation in England, or simply priority habitats and priority species under the UK Post-2010 Biodiversity Framework. The list of habitats and species remains unchanged and is still derived from Section 41 list of the Natural Environmental and Rural Communities (NERC) Act 2006. As was previously the case when it was a BAP priority species hen harrier continues to be regarded as a priority species although it does not appear on the Section 41 list.

The 'UK Post-2010 Biodiversity Framework', published in July 2012 succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach'. The framework was produced by JNCC and Defra to set a broad enabling structure for action across the UK. Its purpose was to:

- Set out a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute.
- Identify priority work at a UK level which will be needed to help deliver the Aichi Targets and the EU Biodiversity Strategy.
- Facilitate the aggregation and collation of information on activity and outcomes across all countries of the UK, where the four countries agree this will bring benefits compared to individual country work.
- Streamline governance arrangements for UK-scale activity.

Natural Environment White Paper – ‘The Natural Choice: securing the value of nature’ 2011

The principal aims of Natural Environment White Paper, published in June 2011, are to preserve and improve the natural environment, and build a connection between people and nature as well as introducing policies that will help ‘move progressively from net biodiversity loss to net gain’ through reforms such as ‘biodiversity offsets’.

The ‘Biodiversity 2020: A strategy for England’s wildlife and ecosystem services’ strategy builds on this, offering a more comprehensive approach to stop biodiversity loss such as emphasis on preserving and maintaining important habitats, priority habitats and connections between areas with special status such as SSSIs.

Birds of Conservation Concern 5: the Red List for Birds

The latest review of Birds of Conservation Concern 5: the Red List for Birds was published in December 2021.

Commonly referred to as the UK Red List for birds, this is the fifth review of the status of birds in the UK, Channel Islands and Isle of Man, and updates the last assessment in 2015. Using standardised criteria, 245 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird NGOs and assigned to the Red, Amber or Green lists of conservation concern.

Northfleet Central 1 Ltd

Ecological Services

Wintering Bird Survey Report

Northfleet, Gravesham



Reference No.: TRI053

Date: August 2023

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Executive Summary

Purpose	The surveys were undertaken to determine the presence and/or absence of Schedule 1 and non-Schedule 1 bird species in and around the site a Northfleet, Gravesham, and to understand how they are using the site in both winter and summer. Summer surveys have been undertaken and are reported in a separate report (Schofield Lothian 2022). This report focuses on the winter results and assesses any avoidance, mitigation, compensation, and enhancement measures needed to avoid the Proposed Development causing an offence.
Introduction	A habitat survey was undertaken in May 2022, to support the planning application, which was submitted in September 2022, and remains valid. Whilst no overwintering habitat is present on the site due to the urban nature, the offsite habitats were assessed as they support suitable overwintering habitat. The suitable habitats identified included mudflats for foraging and foraging and roosting habitat in Robin's Creek. These habitats are connected by the River Thames to the Swanscombe Marshes SSSI and the Thames Estuary and Marshes SPA. Therefore, in order to establish if these habitats are functionally linked to either the SPA or SSSI, winter bird surveys were undertaken in the winter of 2022-2023. These were undertaken on 13th December 2022 and 23rd January 2023. In order to establish usage by wetland birds which would overwinter on the mudflat habitats and Robin's Creek identified adjacent to the application site (including Annex 1 and Schedule 1 species) were undertaken based on the British Trust for Ornithology's (BTO's) Wetland Bird Surveys (WeBS) methodology. Core counts of wetland birds were taken, and two intertidal (low tide) surveys were undertaken in December 2022 and January 2023. These surveys were extended to include the noting of potential disturbance events and any reactions shown by the birds in order to establish a basic baseline of what disturbance levels the birds on the mudflats may already be habituated to due to the sand and gravel works and Seacon Terminals which they currently neighbour.

Key Findings	During the surveys no Annex 1 species that use the Thames Estuary and Marshes SPA in internationally important populations were found to be using the mudflats or Robin's Creek. One of the species the Thames Estuary and Marshes SPA supports in internationally important numbers of regularly occurring migratory species was found to be using the site: redshank (<i>Tringa tetanus</i>) and one nationally important migratory species the SPA supports: teal (<i>Anas crecca</i>). One other species which contributes to the internationally important waterfowl assemblage within the Thames Estuary and Marshes SPA was found on site: shoveler (<i>Anas clypeata</i>). Whilst these species were found on site these were all in low numbers with a singular redshank foraging on the mudflats on both surveys. Peak counts of 3no. teal using Robin's Creek on the first survey on (13th December 2022) and 14no. using the mudflats briefly whilst travelling from east to west up the Thames on the second survey (23rd January 2023) and 6no. in Robin's Creek. Peak counts of 2no. shoveler were seen on the mudflats on the second survey. Peak counts of other wading and waterfowl species (gulls excluded) were on the first survey (13th December 2022) in Robin's Creek: 2no. mallard (<i>Anas platyrhynchos</i>) and on the mudflats 2no. oystercatcher (<i>Haematopus ostralegus</i>). On the second survey on 23rd January 2023 peak counts of other birds were in Robin's Creek 3no. coot (<i>Fulica atra</i>) and on the mudflats 2no. mallard. Higher counts of other waterfowl were noted flying up from east to west up the Thames without stopping at the site on the survey on 23rd January 2023. The overall number and species counted during the surveys do not make up numbers of national or international importance and when compared to the 5-year peak mean population of species at the Thames Estuary Marshes for example for redshank this is 3,251 birds. This suggests that the relative importance of this area of mudflats and Robin's Creek is of limited importance to overwintering birds' species. Additionally, it should be noted that this mudflat is already subject to disturbance from the sand and gravel works and other industrial uses, such as the Seacon Terminals. During the first survey a crane was being used to load a boat with gravel for the whole of the survey time including with workers walking back and forth. No disturbance behaviours were noted of the waterfowl using the mudflats during this time and the waterfowl appeared to forage as normal. Due to the low numbers of overwintering waterfowl using the habitats next to the Proposed Development it is thought that neighbouring habitats do not provide functionally linked overwintering habitats to the SSSI or SPA of any significant value. Therefore, it is thought that any disturbance generated by the construction will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.
Recommendations	Whilst the habitats next to the Proposed Development are already subject to disturbance from the sand and gravel works and other surrounding industrial uses, best practice guidelines will be followed during the demolition and construction of the Proposed Development to ensure no adverse effects to the limited populations of waterfowl using the foraging and roosting habitats of the mudflats and Robin's Creek. These will be fully detailed in the CEMP but will include methods such as visual and noise barriers between the site and these habitats and specific methodologies to noisy works such as slow starts for piling to limit disturbance. Further surveys should be undertaken during RMA to ensure the baseline data is up to date, but the current assessment (alongside data from London Resort) is that the mudflats and Robin's Creek habitats next to the Proposed Development do not provide functionally linked overwintering habitats to the SSSI or SPA of any significant value so there will not be an effect on the favourable conservation status of Interest features of the SPA and it is considered proportionate.

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1 Introduction

- 1.1.1 Schofield Lothian, which as of January 2023 will be trading as Assystem Energy & Infrastructure Ltd, was commissioned by Northfleet Central 1 Ltd to undertake bird surveys in the summer of 2022 and the winter of 2022-2023. Summer survey results can be found in the Bird Survey report (Schofield, 2022), which can be found in **ES Volume 3, Appendix: Ecology and Biodiversity, Annex 3**. This report will cover the wintering bird surveys only.
- 1.1.2 The initial Phase one habitat survey (Schofield, 2022), which can be found in **ES Volume 3, Appendix: Ecology and Biodiversity, Annex 1** found the Proposed Development supported foraging and roosting habitat for overwintering birds on land neighbouring the red line boundary of the site. Foraging habitat is present in mudflats and roosting with a small amount of foraging is present in Robin's Creek.
- 1.1.3 The Proposed Development is connected by the Thames to SSSI site of Swanscombe Marshes around 600m along the Thames notified under Section 28 of the Wildlife and Countryside Act 1981. The SSSI is known to support notable species of bird such shelduck (*Tadorna tadorna*) and little egret (*Egretta garzetta*) in both its saltmarsh habitats and intertidal mudflats and Schedule 1 species such as little ringed plover (*Charadrius dubius*). Whilst the SSSI is only designated for breeding birds it is likely that the habitats support assemblages of overwintering birds. The neighbouring habitats (Robin's Creek and the mudflats) to the Proposed Development could also hold the potential of being a stoppage point on a journey of overwintering birds from the Thame Estuary and Marshes SPA, which supports significant number of internationally important wild birds to the Swanscombe Marshes.
- 1.1.4 The Thames Estuary and Marshes SPA qualifies as a SPA under 4.1 and 4.2 of the EU Birds Directive by supporting three kinds of internationally important population: of regularly occurring Annex 1 species, regularly occurring migratory species and assemblage of waterfowl.
- 1.1.5 The species listed on Annex 1 that use the Thames Estuary and Marshes in internationally important populations are avocet (*Recurvirostra avosetta*) and hen harrier (*Circus cyaneus*). Other non-qualifying, Annex 1 species that regularly occur on the European marine site include common tern (*Sterna hirundo*), Bewick's swan (*Cygnus columbianus bewickii*), golden plover (*Pluvialis apricaria*), and ruff (*Philomachus pugnax*).
- 1.1.6 The Thames Estuary supports internationally important numbers of regularly occurring migratory ringed plover (*Charadrius hiaticula*), grey plover (*Pluvialis squatarola*), dunlin (*Calidris alpina*), knot (*Canutus islandica*), black-tailed godwit (*Limosa limosa*) and redshank (*Tringa tetanus*). Nationally important populations include shelduck (*Tadorna tadorna*), teal (*Anas crecca*) and pintail (*Anus acuta*).
- 1.1.7 Other species which contribute to the internationally important waterfowl assemblage within the Thames Estuary and Marshes SPA which rely less on mudflats and more on the surrounding grazing marsh habitats include gadwall (*Anas strepera*), shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*) and pochard (*Aythya farina*).
- 1.1.8 As mudflats are a rich source of invertebrates, they have the potential to provide feeding grounds for wintering species including the avocet, dunlin, knot and black- tailed godwit. These surveys will identify if the mudflats are being used by any of the species for which the SPA is designated in significant numbers to assess whether the Proposed Development could have an effect on the favourable conservation status of Interest features of the SPA.

- 1.1.9 By undertaking an investigation of the habitats and species present in both summer and winter, this report, along with a review of the London Resort Application surveys, will provide a greater understanding of the ecological value of the area and immediate surrounding areas for birds. It identifies any potential risks, obligations and restrictions that may be necessary to guarantee compliance with wildlife legislation.
- 1.1.10 Surveys were led by Joanna Meredith an ecologist with over five years' experience with a wide range of ornithology experience, with the most relevant experience being two years of conducting disturbance surveys on a SSSI designated for a significant overwintering wildfowl accumulations, supported by Molly Richardson and ecologist with 4 years' experience including ornithology experience and Mirza Rashid and ecologist with two years' experience.

1.2 Site Description

- 1.2.1 Due to the scale of the site, it was split into three areas referred to as:
- RLB South;
 - RLB North-East; and
 - RLB North-West.
- 1.2.2 Only areas deemed to have the potential to support Schedule 1 nesting birds in the PEA were assessed during the bird surveys. All of these are in the RLB North-East area of the site.
- 1.2.3 The habitat assessed to have potential to support Schedule 1 bird species both on and next to the site are as follows:
- Sand and Gravel Works (onsite);
 - Mudflats (offsite); and
 - Robin's Creek (otherwise known as Northfleet Harbour) (offsite).
- 1.2.4 These habitats are detailed in the Phase 1 habitat map in Appendix A. The Target Note numbers within the extended Phase 1 habitat map in Appendix A correspond to the following points of ecological interest within the site.
- TN1 – Intertidal mudflats;
 - TN2 – Shingle beach above high tide mark; and
 - TN3 – Robin's Creek.

Mudflats

- 1.2.5 Intertidal mudflats are present on the north-east boundary of the site at low tide, Target Note 1 in the map on Appendix A, which extend for at least 50m into the Thames. These are gently sloping mudflats which turn into a shingle beached area which is above the tide line on the edge of the flood wall of the Thames. Some commercial piers/loading docks are present in this area providing further habitat for food for waterbirds. This habitat is connected by the Thames to SSSI site of Swanscombe Marshes around 600 m along the Thames.
- 1.2.6 During the PEA a range of waterbirds were seen foraging on the mudflats next to the site including shelduck along with herring gulls, black headed gulls, female shoveler with young and mallards. Bird surveys are needed to understand the use of the mudflats for foraging by waterbirds which may be coming from the SSSI both in summer and winter months to cover both breeding and overwintering species.

- 1.2.7 The gravel beach area, Target Note 2 on the map in Appendix A, is suitable for little ringed plover to use for nesting (a Schedule 1 species) and are known to be in the area.

Robin's Creek

- 1.2.8 Robin's Creek, Target Note 3 in the habitat map in Appendix A, provides suitable nesting, foraging and overwintering habitat to a range of birds and waterfowl including Schedule 1 birds which have additional protections from disturbance whilst nesting. Cetti's Warbler was seen and heard during the PEA in the Creek area adjacent to south boundary of the RLB North-East area of the site within suitable breeding habitat. Whilst it is more likely that the Swanscombe Peninsula would be more favourable, the reedbeds at the Robin's Creek may also provide suitable nesting habitat for marsh harrier (*Circus aeruginosus*).

1.3 Scope of Works

- 1.3.1 The survey objectives were to:
- Carry out an assessment of the habitat identified with the potential to support Schedule 1 wintering birds to confirm presence of wintering on site and in the immediate surrounding areas; and
 - Carry out an assessment of the habitat identified as having the potential to support assemblages of wildfowl in summer and winter to understand the importance of the habitat as a foraging area for birds from the Swanscombe Marshes SSSI.

1.4 Quality Assurance

- 1.4.1 All lead AEIL ecologists are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct when undertaking ecological work.

2 Methodology

2.1 Bird survey

- 2.1.1 In order to establish usage by wetland birds which would overwinter on the mudflat habitats and Robin's Creek identified adjacent to the application site (including Annex 1 and Schedule 1 species) and a rough baseline of disturbance, intertidal (low tide) surveys were undertaken twice within the winter season of 2022/2023 these were a mixture of disturbance and to establish the baseline.
- 2.1.2 The visual bird disturbance survey method was a modified version of the Wetland Bird Survey (WeBS) core count 'Look-See' method (Bibby et al., 2000) which allowed both species counts to be undertaken and disturbance behaviour of the birds to be recorded.
- 2.1.3 Different vantage points (VP) were selected to provide the best visual coverage of the survey area. The selection of the vantage points was limited due to access.
- 2.1.4 Two hours were spent on the vantage point overlooking the mudflats and one hour was spent on the Robin's Creek. This time was considered proportionate as the survey area was walked at a slow and methodical pace and was appropriate in relation to the habitat and species recorded during the survey.

- 2.1.5 For the first five minutes spent at each VP, weather conditions were recorded, and surveyors counted individually all nationally important species e.g. shoveler, tufted duck and pochard and a total count of other wildfowl and water bird species present. Any evidence of breeding behaviour was noted.
- 2.1.6 Potential disturbance events were also noted to understand a baseline of what the birds react to. Disturbance behaviour of waterfowl is defined as any behaviour shown by the birds that constituted a diversion from normal behaviour. These behaviours were noted on the map by the surveyor doing the waterfowl count.
- 2.1.7 Surveys were conducted at dawn to get the highest level of bird activity. Surveys were timed for when low tide coincided with dawn in order to see the full extent of the mudflats and use of this habitat by birds.

3 Limitations

- 3.1.1 There was no access to the sand and gravel pits on-site however the mudflats and Robin's Creek were viewed from the Thames pathway which is currently diverted to a route that runs to the southeast of Robin's Creek to the Thames barrier. A high specification spotting scope was used to view the site mudflats and Robin's Creek from vantage points selected on the Thames pathway, so the surveys were able to correctly identify all species on the mudflats and the shingle beach from the viewpoints. Limited areas where blocked from view from the pier however this was not thought to be a significant limitation due to the length of time these areas were observed and the use of identification of bird calls. No areas within the red line boundary of the site were deemed as suitable habitat for overwintering birds due to the developed nature of the site meaning lack of suitable habitat. Therefore, the lack of access is not deemed to have limited the surveys.

4 Results

4.1 Wintering Bird Surveys

- 4.1.1 Table 4-1 details the weather conditions at the time of the surveys.

Table 4-1: Weather conditions during survey

Parameter	Survey 1	Survey 2
Date(s)	13/12/2022	23/01/2023
Start time and finish time	07:30 to 09:30	07:00 to 10:00
Temperature (°C)	0	2
Cloud Cover (%)	0	0
Wind (Beaufort Scale)	0	1
Precipitation	None (snow forecast)	None

- 4.1.2 Table 4-2 details the bird species recorded from Vantage Point 1 during the surveys and Table 4-3 details the bird species recorded from Vantage Point 2 during the surveys. The locations are detailed in Appendix B.

Table 4-2: Bird species recorded from Vantage Point 1 - Mudflats

Species Name	Number	Notes	Schedule 1
Survey 1			
Redshank (<i>Tringa tetanus</i>)	1	Foraging on mudflats	-
Oystercatcher (<i>Haematopus ostralegus</i>)	2	Foraging on mudflats	-
Herring Gull (<i>Larus argentatus</i>)	8	Seen foraging on mudflats north of the gravel loading pier.	-
Blackheaded Gull (<i>Chroicocephalus ridibundus</i>)	1	Observed flying north over the site up the Thames.	-
Survey 2			
Redshank (<i>Tringa tetanus</i>)	1	Foraging on mudflats	-
Teal (<i>Anas crecca</i>)	14	Observed travelling from the west and landing on the water in front of the gravel works area. 7 minutes later 8no. teals then flew north-east up the Thames. The remaining birds remained on the water for the rest of the survey.	-
Shoveler (<i>Anas clypeata</i>)	2	Observed briefly on mudflats and flew into the river.	-
Mallard (<i>Anas platyrhynchos</i>)	12	Seen flying north and south along the Thames past the site.	-
Canada Goose (<i>Branta canadensis</i>)	3	Seen flying north along the Thames past the site.	-

Table 4-3: Bird species recorded from Vantage Point 2 – Robin's Creek

Species Name	Number	Notes	Schedule 1
Survey 1			
Teal (<i>Anas crecca</i>)	3	Observed resting in Robin's Creek	-
Mallard (<i>Anas platyrhynchos</i>)	2	Observed resting in Robin's Creek	-
Survey 2			
Teal (<i>Anas crecca</i>)	6	Observed resting in Robin's Creek	-
Coot (<i>Fulica atra</i>)	3	Observed resting in Robin's Creek	-

5 Assessment

- 5.1.1 During the surveys no Annex 1 species that use the Thames Estuary and Marshes SPA in internationally important populations were found to be using the mudflats or Robin's Creek.
- 5.1.2 One of the species the Thames Estuary and Marshes SPA supports in internationally important numbers of regularly occurring migratory species was found to be using the site: redshank (*Tringa tetanus*) and one nationally important migratory species the SPA supports: teal (*Anas crecca*). One other species which contribute to the internationally important waterfowl assemblage within the Thames Estuary and Marshes SPA was found on site shoveler (*Anas clypeata*). Whilst these species were found on site these

were all in low numbers with a singular redshank foraging on the mudflats on both surveys. Peak counts of 3no. teal using Robin's Creek on the first survey and 14no. using the mudflats briefly whilst travelling from west to east up the Thames on the second survey and 6no. in Robin's Creek. Peak counts of shoveler were 2no. seen on the mudflats on the second survey. Peak counts of other wading and waterfowl species (gulls excluded) were seen on the first survey in Robin's Creek 2no. mallards and on the mudflats 2no. oystercatchers. On the second survey peak counts of other birds were in Robin's Creek 3no. coots and on the mudflats 2no. mallards. Higher counts of other waterfowl were noted flying up from east to west up the Thames without stopping at the site.

- 5.1.3 The overall number and species counted during the survey do not make up numbers of national or international importance and when compared to the 5-year peak mean population of species at the Thames Estuary Marshes for example for Redshank this is 3,251 birds this suggests that the relative importance of this area of mudflats and Robin's Creek is of limited importance to overwintering bird species.
- 5.1.4 The mudflat is already subject to disturbance from the sand and gravel works. During the first survey a crane was being used to load a boat with gravel for the whole of the survey time including with workers walking back and forth. No disturbance behaviours were noted of the waterfowl using the mudflats during this time and the waterfowl appeared to forage as normal.
- 5.1.5 Due to the low numbers of overwintering waterfowl using the habitats next to the Proposed Development it is thought that neighbouring habitats do not provide functionally linked overwintering habitats to the SSSI or SPA of any significant value. Therefore, it is thought that any disturbance generated by the demolition and construction phases of the Proposed Development will not be significant on overall overwintering populations so will not have an effect on the favourable conservation status of Interest features of the SPA.
- 5.1.6 There will be no loss of direct loss of overwintering habitat from the demolition and construction phases of the Proposed Development.
- 5.1.7 Overshadowing has been measured and the only area of overshadowing was concentrated on terrestrial land and not on Robin's Creek or the mudflats. If designs should alter the overshadowing should be re-measured to see if this is expected to have any effect on the invertebrate populations within the mudflats or Robin's Creek leading to long term loss of habitat. If any overshadowing is expected the mudflats are not of foraging significance.

Internationally important populations of regularly occurring Annex 1 species.

Species	Population (5 yr peak mean 1993/94 - 1997/98)*
Avocet (<i>Recurvirostra avosetta</i>)	283 birds 28.3 % Great Britain

Internationally important populations of regularly occurring migratory bird species.⁶

Species	Population (5 yr peak mean 1993/94 - 1997/98)*
Ringed Plover (<i>Charadrius hiaticula</i>)	1,324 birds 2.6% Europe /North Africa
Grey Plover (<i>Pluvialis squatarola</i>)	2,593 birds 1.7% Eastern Atlantic
Dunlin (<i>Calidris alpina alpina</i>)	29,646 birds 2.1% Northern Siberia/Europe/West Africa
Knot (<i>Calidris canutus islandica</i>)	4,848 birds 1.4% North West Europe
Black-tailed Godwit (<i>Limosa limosa</i>)	1,699 birds 2.4% Iceland
Redshank (<i>Tringa totanus totanus</i>)	3,251 birds 2.2% Eastern Atlantic

An internationally important assemblage of waterfowl.

Importance	Population (5 yr peak mean 1993/94 - 1997/98)*
Thames Estuary supports large populations of wintering waterfowl.	75,019 individual birds _

6 Recommendations & Enhancements

- 6.1.1 No further surveys are recommended.
- 6.1.2 The impacts of displacement on overwinter birds are anticipated overall to be at worst minor adverse which is non-significant (if demolition and construction is undertaken in the winter), given the low concentrations of birds recorded during the wintering bird surveys. As a precautionary approach, works bounding Robin's Creek and the River Thames could be undertaken April to August inclusive, reducing impacts to negligible.

6.2 Design

- 6.2.1 Specific black redstart mitigation is included in the landscaping design with brown roofs with features to encourage insects such as puddle pools and stone and log piles, foraging habitat and ledges and nest boxes to be installed on site in inaccessible areas.
- 6.2.2 A tree line will be used to limit visual disturbance from public on the Robin's Creek.
- 6.2.3 Guided walks and pathways will be designed to encourage the public to walk around the site area rather than onto sensitive areas for birds such as the SSSI.

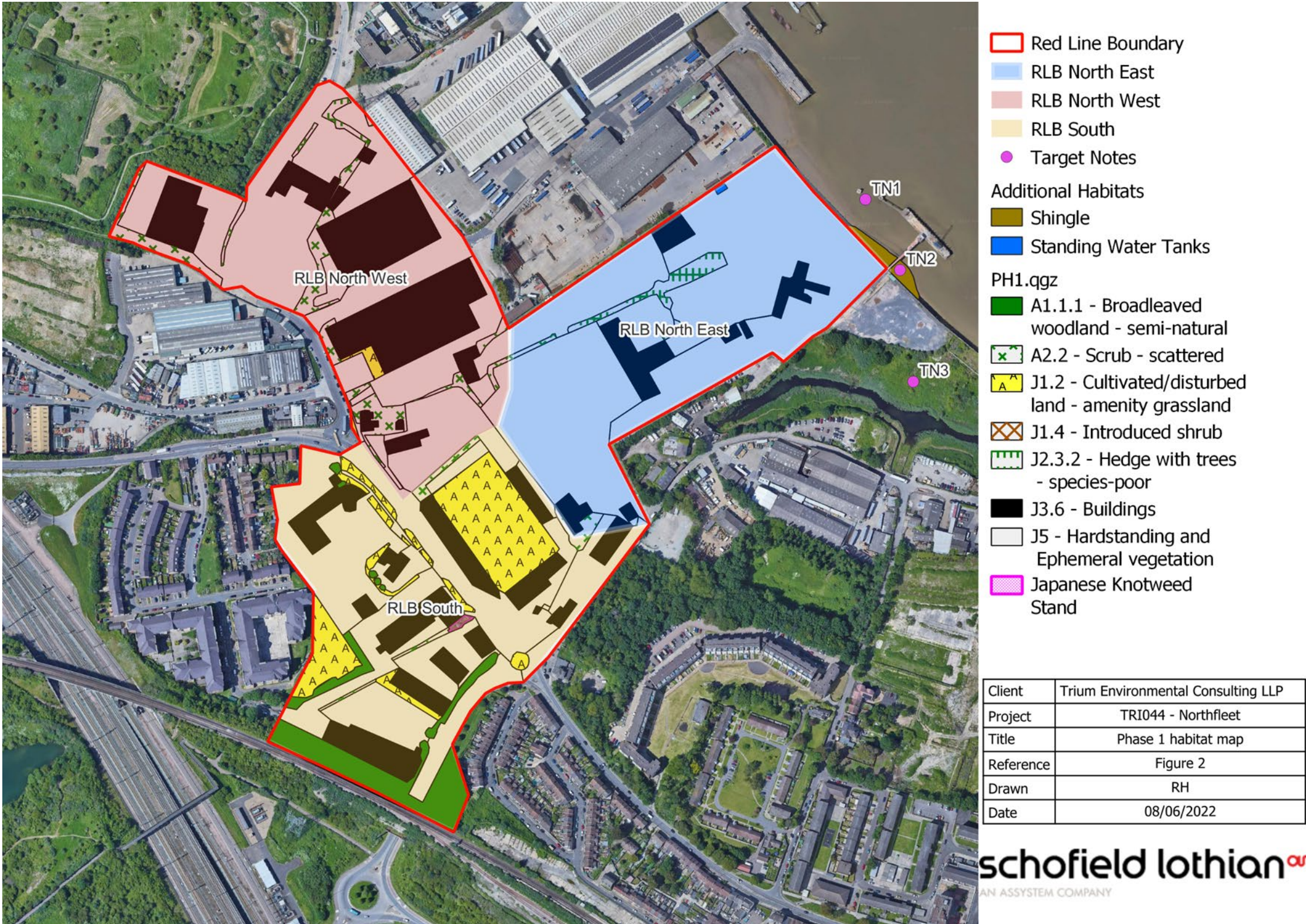
6.3 Enhancement Measures

- 6.3.1 The National Planning Policy Framework (NPPF) outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed overusing land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that

developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

- 6.3.2 Taking the requirements of NPPF into account, North Kent Marshes are over 10km away so should not be affected by the Northfleet works however there is a North Kent Catchment Improvement Plan. The project could carry out some of the actions on the improvement plan through volunteering in order to improve North Kent Marshes which would improve the wider area for bird species found at the Northfleet site. These actions include practical action days to improve habitat such as litter picks and management of bankside vegetation.
- 6.3.3 A range of bird boxes and insect boxes could be added to the planting and retained trees to increase the local bird population. Suitable wildlife boxes can be bought from a number of retailers and further advice, if necessary, can be provided by Assystem on construction and siting arrangements.

Appendix A Phase 1 Habitat Map



Appendix B Wintering Bird Survey Map 1



Key:

- ✕ Vantage Point 1
- ✕ Vantage Point 2



Client	Trium Environmental Consulting LLP
Project	TRI053
Title	Winter Bird Survey 1 Map
Reference	Appendix B
Drawn	JM
Date	16/02/2023

Appendix C Wintering Bird Survey Map 2



Key:

- ⊗ Vantage Point 1
- ⊗ Vantage Point 2



Client	Trium Environmental Consulting LLP
Project	TRI053
Title	Winter Bird Survey 2 Map
Reference	Appendix C
Drawn	JM
Date	16/02/2023

Appendix D Relevant Legislation

D.1 NPPF

- D.1.1 The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments

D.2 The Conservation of Habitats and Species Regulations 2017

- D.2.1 The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.
- D.2.2 Under the Regulations, competent authorities i.e. government departments and public bodies, have a general duty to have regard to the EC Habitats Directive and Wild Birds Directive. The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000. The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the precautionary principle applies i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.
- D.2.3 The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a few purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

D.3 The Wildlife and Countryside Act (WCA) 1981 (as amended)

- D.3.1 The WCA, as amended, consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Habitat Regulations 2010

(as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).

- D.3.2 Schedules of the act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species. All relevant species-specific legislation is detailed later in this Appendix.
- D.3.3 Schedule 1 – Part 1 relates to birds and their young, for which it is an offence to intentionally or recklessly disturb at, on or near an ‘active’ nest. Schedule 1 – Part 2 relates to birds afforded special protection during the close season which is 1 February to 31 August (21 February to 31 August below high-water mark), but which may be killed or taken outside this period.

D.4 The Countryside and Rights of Way (CROW) Act 2000

- D.4.1 The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife.
- D.4.2 Legislation detailed in the WCA places a duty on government departments and the National Assembly for Wales to have regard for biodiversity and provides increased powers for the protection and maintenance of SSSIs. The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

D.5 The Natural Environment and Rural Communities (NERC) Act 2006

- D.5.1 Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists superseded Section 74 of the CROW Act 2000.

D.6 UK Biodiversity Action Plan

- D.6.1 The United Kingdom Biodiversity Action Plan (UK BAP), first published in 1994 and updated in 2007, was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UK BAP contained a list of priority habitats and species of conservation concern in the UK and outlined biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats were also included. The priority habitats and species correlated with those listed on Section 41 and 42 of the NERC Act.
- D.6.2 The UK BAP required that conservation of biodiversity be addressed at a County level through the production of Local BAPs. These were complementary to the UK BAP, however, were targeted towards species of conservation concern characteristic of each area. In addition, several local authorities and large organisations have produced their own BAPs.

D.7 Species and Habitats of Material Consideration for Planning in England

- D.7.1 In 2011, the government published the ‘Biodiversity 2020: A strategy for England’s wildlife and ecosystem services’ to replace the previous England Biodiversity Strategy. In 2012 the UK BAP was replaced by the UK Post-2010 Biodiversity Framework.

D.7.2 Previous planning policy (and some supporting guidance which is still current, e.g. ODPM Circular 06/2005, now under revision), refers to UK BAP habitats and species as being a material consideration in the planning process. Equally many local plans refer to BAP priority habitats and species. Both remain as material considerations in the planning process, but such habitats and species are now described as Species and Habitats of Principal Importance for Conservation in England, or simply priority habitats and priority species under the UK Post-2010 Biodiversity Framework. The list of habitats and species remains unchanged and is still derived from Section 41 list of the Natural Environmental and Rural Communities (NERC) Act 2006. As was previously the case when it was a BAP priority species hen harrier continues to be regarded as a priority species although it does not appear on the Section 41 list.

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