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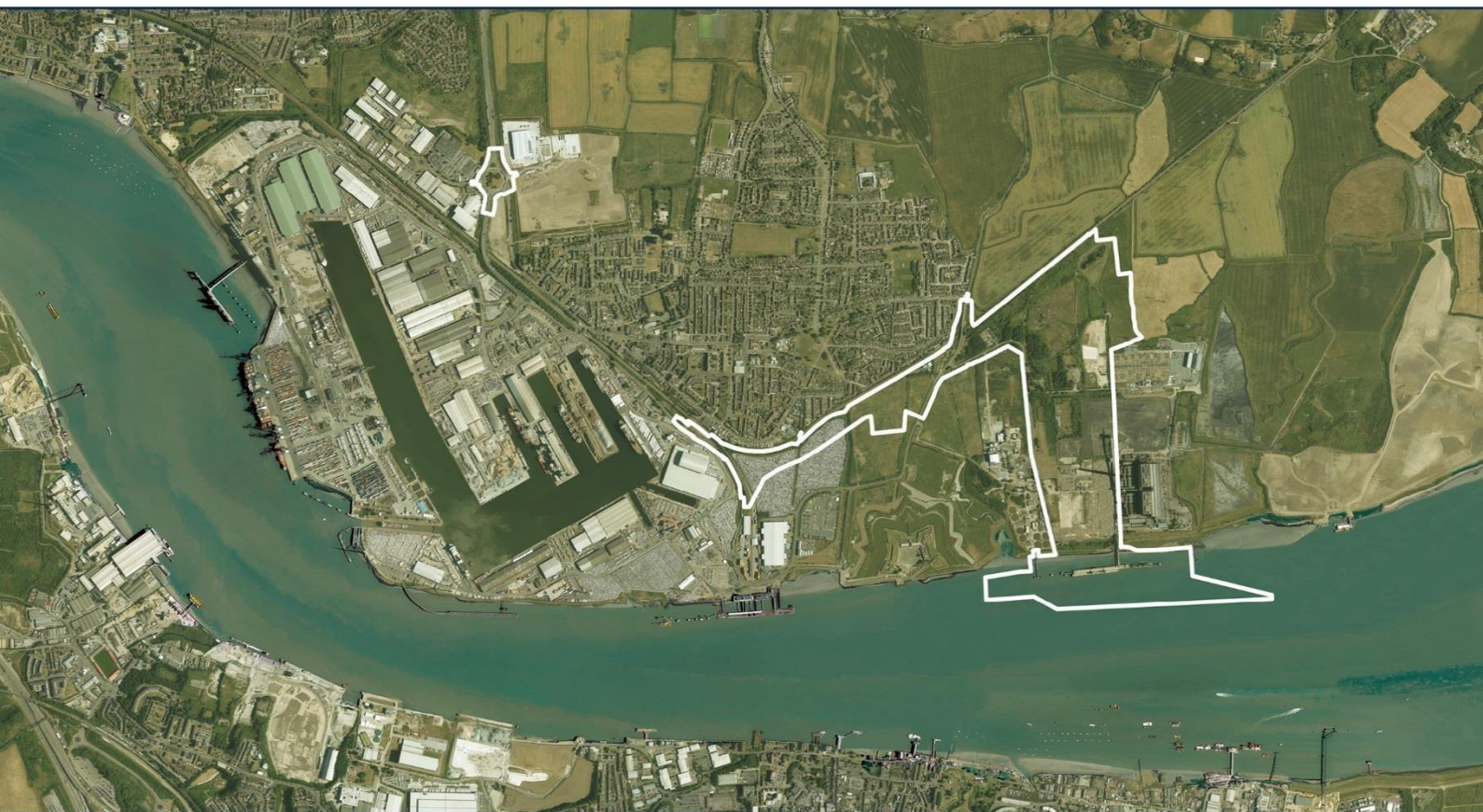
PROPOSED PORT TERMINAL AT FORMER TILBURY POWER STATION

TILBURY2

TR030003

ECOLOGICAL MITIGATION AND
COMPENSATION PLAN

TILBURY2 DOCUMENT REF:
PoTLL/T2/EX/212



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1.0 INTRODUCTION

PROJECT OVERVIEW

- 1.1 Port of Tilbury London Limited (PoTLL) is proposing a new port terminal on the north bank of the River Thames at Tilbury, a short distance to the east of its existing Port. The proposed port terminal will be constructed on largely previously developed land that formed the western part of the former Tilbury Power Station.
- 1.2 The project is known as "Tilbury2." The proposed main uses on the site will be a Roll-on/Roll-off ("RoRo") terminal and a Construction Materials and Aggregates terminal ("the CMAT"), and associated infrastructure including rail and road facilities and revisions to the existing marine infrastructure. The CMAT will include stockpiling of construction materials and some processing of aggregates for the production of asphalt and concrete products. An 'infrastructure corridor' is proposed that will accommodate road and rail links to the existing rail and road network and an enhanced connection with the existing Port.
- 1.3 The project will require works including, but not limited to:
- creation of hard surfaced pavements;
 - improvement of and extensions to the existing river jetty including creation of a new RoRo berth;
 - associated dredging of berth pockets around the proposed and extended jetty and dredging of the approaches to these berth pockets;
 - new and improved conveyors;
 - erection of welfare buildings;
 - erection of a single 10,200sq.m. warehouse;
 - a number of storage and production structures associated with the CMAT;
 - the construction of a new link road from Ferry Road to Fort Road; and
 - formation of a rail spur and sidings.
- 1.4 The proposed volumes of import/export of RoRo units for the terminal exceed the threshold of 250,000 units stated in the Planning Act 2008 for throughput per annum. The Tilbury2 project therefore constitutes a Nationally Significant Infrastructure Project (NSIP).

SCOPE AND PURPOSE OF THIS DOCUMENT

- 1.5 As well as the development elements detailed above, the scheme also includes elements of retained habitat, proposed habitat creation and soft-landscaping. This includes new habitats created on and off-site, in part to

provide compensatory habitat for protected species for which translocation and other mitigation methods will be employed in accordance with relevant licences. The protected species for which licensed mitigation is, or is likely to be, required are water voles, badgers and bats. Provision for all of these species is being made on site. Protected species for which no licences are required include reptiles and nesting birds. Provision for these species groups is being partly made on site and partly off-site. Details of the construction of these created habitats are set out in this Ecological Mitigation and Compensation Plan (EMCP).

- 1.6 In keeping with the project's aims of ensuring no net loss of biodiversity, a significant element of off-site mitigation and compensation is also required.
- 1.7 The mitigation element of this includes receiving a proportion of the site's reptile population in off-site receptor habitats as there will be insufficient carrying capacity remaining on the site for the current population in the wake of the development. Off-site areas for receiving translocated substrates in order to try and recreate brownfield conditions and re-establish populations of scarce and rare invertebrates, lichens and vascular plants are also required. The methods, timescales and locations for these activities, and the future management of these translocated resources, are also dealt with in this EMCP.
- 1.8 Finally, there will be an element of wholly new off-site habitat creation and aftercare in compensation for losses incurred at the Tilbury2 site due to construction of the development. The methods, locations, phasing and aftercare of these habitats is also dealt with in this EMCP.

COMPARATIVE SCOPE OF EMCP AND LEMP DOCUMENTS

- 1.9 There are two documents which describe habitat creation works arising from the Tilbury2 project and their subsequent management. The distinction between them relates to matters of chronology, geography and responsibility. It is considered that, on balance, the division into these two distinct documents is helpful and logical, and for ease of adoptability should be retained. For clarity the comparative scope of these two documents is set out below:
 - **Ecological Mitigation and Compensation Plan (EMCP).** The EMCP deals, as its title suggests, with matters of mitigation (other than design actions employed to avoid impacts occurring in the first place, which is best considered as 'avoidance') and compensation. Mitigation includes *inter alia* the measures that will be taken, under licence where necessary and appropriate, to capture and relocate protected species and/or damage or destroy their habitats, or alternatively to prevent the spread of invasive non-native plant species during the disturbance associated with construction activity. Compensation includes the measures that will be taken to provide alternative or replacement habitats for species displaced or translocated from the development zones, which in some cases is delivered within the development masterplan, in other cases on adjoining land within the DCO limits, and in still other cases will be delivered at locations that are entirely off-site. The future and long-term management of off-site compensation features, which will be the responsibility of parties other than PoTLL (albeit under the terms of agreements with them), is also dealt with in the EMCP.

- **Landscape and Ecological Management Plan (LEMP).** PoTLL will retain responsibility for management of new on-site landscaping provision and of on-site habitats (and their associated species) within the Order Limits after the measures set out in the EMCP have been implemented, i.e. after the completion of any habitat creation as compensation for losses, and after the completion of species and habitat translocations. This is therefore dealt with under the separate LEMP [REP6-041].

1.10 Compliance with both the ECMP and the LEMP will be a requirement of the DCO. As such, the Port operator must comply with all measures within both documents including ensuring compliance in respect of off-site management objectives and delivery carried out by third parties. Additional information on the baseline resources that are proposed to be the subject of mitigation and compensation is provided in the project specific Environmental Statement Chapter 10 Terrestrial Ecology [APP-031] and associated ES Figures and Appendices.

2.0 PROTECTED SPECIES MITIGATION: WATER VOLES

- 2.1 The baseline status as regards the presence of water voles *Arvicola amphibius* within the proposed Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology (see in particular paragraphs 10.252-10.255 and Table 10.33 [APP-031]), and as set out in the associated ES Figures and Appendices (see in particular Figure 10.8a and 10.8b [APP-133]).
- 2.2 There will be a need to capture and relocate water voles to pre-prepared receptor habitats prior to and/or during the construction phase in order to ensure legal compliance. Receptor habitat will be created sufficiently in advance of this exercise to ensure that it is suitably vegetated and mature to support the translocated population.
- 2.3 A stand-alone planning application (planning reference 18/00448/FUL¹) for on-site water vole habitat creation was submitted to Thurrock Council, in March 2018 and consent was granted on 22 June 2018. This consent is being implemented in order to optimise phasing and lead-in times and thereby reduce the scope for delay in implementation of the Tilbury2 project should it be granted a DCO.
- 2.4 The water vole capture and relocation activity will require a licence to be obtained under section 16 of the Wildlife and Countryside Act 1981 (as amended). A draft licence method statement was submitted to the licensing authority (Natural England), and agreement sought from Natural England in advance of the stand-alone planning submission to Thurrock Council. Once the final version of the licence method statement has been approved by Natural England (on completion of the licensing process after the DCO is made), this will be inserted into this EMCP at Appendix 1.
- 2.5 In the interim, Natural England has advised that there is no in-principle objection to the approach to water vole mitigation and compensation set out in the agreed draft licence method statement, and has confirmed this via a 'Letter of No Impediment (LoNI)' as issued on 20 March 2018 (see Appendix 4).

¹ <https://regs.thurrock.gov.uk/online-applications/applicationDetails.do?keyVal=P61IDKQGMML00&activeTab=summary>

3.0 PROTECTED SPECIES MITIGATION: BADGERS

- 3.1 The baseline status as regards the presence of badger *Meles meles* within the proposed Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology (see in particular paragraphs 10.228-10.232 [APP-031]), and as set out in the associated ES Figures and Appendices (see in particular Figure 10.3; [APP-126]).
- 3.2 Setts, including a single breeding (main) sett for a small social group of badgers, will need to be closed during the construction phase (should they be active at that time). In order to ensure legal compliance, badgers will need to be excluded from any active setts prior to their closure under the terms of a licence issued under the Protection of Badgers Act 1992. In advance of this, an alternative (artificial) sett will be created on land peripheral to the Tilbury2 site and with access to open countryside beyond. The construction of this artificial sett is included in the stand-alone planning application referred to in the previous section (planning reference 18/00448/FUL), and which was submitted to Thurrock Council in order to optimise phasing and reduce the scope for delay in implementation of the Tilbury2 project should it be granted a DCO. Consent was granted on 22 June 2018 and is being implemented in advance of grant of the DCO. This includes construction of the artificial sett.
- 3.3 The methodology for artificial sett construction, the measures that will be pursued to encourage its uptake and use by badgers prior to sett closure, and the methods and timing of sett closure are described in a draft licence method statement document that was issued to Natural England in advance of the stand-alone planning submission to Thurrock Council. Once the final version of the licence method statement has been approved by Natural England (on completion of the licensing process after the DCO is made), this will be inserted into this EMCP at Appendix 2.
- 3.4 Natural England has advised that there is no in-principle objection to the approach to badger mitigation and compensation set out in the agreed draft method statement, and has confirmed this via a 'Letter of No Impediment (LoNI)' as issued on 20 March 2018 (Appendix 4). If the sett/s in conflict with development works are active at the time of construction, their closure will require a licence to be obtained under the 1992 Act; and the agreed draft method statement documents would in that scenario be the basis of the necessary formal submission to the licensing authority (Natural England) for such a licence.

4.0 PROTECTED SPECIES MITIGATION: BATS

- 4.1 The baseline status as regards the presence of bats within the proposed Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology, (see in particular paragraphs 10.233 to 10.254 and Tables 10.26 to 10.30 [APP-031]) and as set out in the associated ES Figures and Appendices (see in particular Figure 10.5a-b [APP-128]).
- 4.2 A single low-medium conservation status roost for common pipistrelle bats *Pipistrellus pipistrellus* is present within building B7 (former 'degreasing shed'), comprising internal night roosts likely to be used for mating (possibly also by brown long-eared bats) and (on external features) a day roost for small numbers of individuals of common pipistrelle bat.
- 4.3 Building B7 is due to be demolished and therefore, in order to ensure legal compliance, a licence to derogate from the provisions of the Conservation of Habitats and Species Regulations 2017 will be required. The licence will only be granted if the favourable conservation status of the affected bat species is maintained through suitable mitigation and compensation. Mitigation will take the form of ensuring no bats are harmed in the process, and compensation will be provided by means of bat boxes to be erected on retained mature trees in a suitably unlit area at the western boundary of the Tilbury2 site.
- 4.4 Natural England has advised that there is no in-principle objection to the approach being taken to bat mitigation and compensation. They have issued a high-level 'Letter of No Impediment (LoNI)' to this end in December 2017 (Appendix 4).
- 4.5 The methodology for alternative roost site provision and the methods and timing of destruction of the existing roost were issued to Natural England on 15 March 2018. Natural England responded by issuing a full 'Letter of No Impediment (LoNI)' on 16 March 2018 (Appendix 4). Once the final version of the licence method statement has been approved by Natural England (on completion of the licensing process after the DCO is made), this will be inserted into this EMCP at Appendix 3.

5.0 PROTECTED SPECIES MITIGATION: REPTILES

- 5.1 Within the proposed Order Limits are populations of four reptile species: common lizard *Zootoca vivipara*, slow worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*. The baseline status as regards the presence of these species within the proposed Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology (in particular paragraphs 10.262 to 10.268 and Tables 10.35 and 10.36 [APP-031]), and as set out in the associated ES Figures and Appendices (see in particular Figure 10.10a and 10.10b [APP-137]).
- 5.2 There will be a need to trap and relocate reptiles to pre-prepared receptor habitats both on- and off-site prior to and/or during the construction phase in order to ensure legal compliance. This activity does not require a licence, but best practice protocols will be followed and the methodology to be employed is described here.
- 5.3 Receptor habitat will be prepared sufficiently in advance of this exercise to ensure that it is suitably vegetated and mature to support the translocated population.
- 5.4 On-site receptor habitat has been secured and is being enhanced by restoring the reptile-proof fencing surrounding the pre-existing c.1.5ha reptile 'exclosure' in the north-eastern part of the land contained within the proposed Order Limits (Green Belt land). The fencing here was originally put in place by RWE in c.2012 in advance of a reptile translocation that never occurred. Although the exclusion fencing was subsequently compromised by the activities of feral grazing ponies, only small numbers of reptiles colonised due to the heavy grazing that ensued. These low numbers have been trapped out and released outside the exclosure, the exclusion fencing restored, hibernacula created, and the vegetation allowed to develop to reinstate full carrying capacity by early 2019.
- 5.5 In addition to the above, a minimum of 10 hectares of off-site receptor habitat for reptiles has been secured via agreement with a third party landowner at the off-site compensation site at Paglesham, South Essex (Figures 2, 3 and 4 and Appendix 5). The land identified for this purpose until recently comprised a mixture of heavily sheep-grazed coastal grassland and arable land. Grazing and cultivation has been withdrawn and these areas are currently in the process of reversion to grassland with coarse, tussocky structure. Reptile exclusion fencing has been installed to prevent colonisation of these habitats and to maintain carrying capacity. The receptor areas adjoin grassed sea wall embankments known to support existing populations of all four of the species that also occur at the Tilbury2 site, therefore allowing scope for population dispersal, interchange and genetic flow following completion of translocation and removal of the exclusion fencing. Aftercare and future management of the receptor areas will be tailored to maintaining the reptile population, as set out in section 12.
- 5.6 The trapping and translocation process itself will follow best practice standards in accordance with prevailing guidance and supporting information. Full details are provided at Appendix 9, but the headline elements are set out below.

- 5.7 Prior to the commencement of full site clearance or other development-related activities, reptile-proof fencing will be deployed to partition the site into manageable trapping units (ensuring these are capable of sustaining contained populations for the duration of the translocation) and appropriate densities of artificial refugia (sometimes known as ‘tins’, although in reality comprising a mixture of corrugated tin, roofing felt mats and corrugated bitumen sheets) will be placed in all habitats capable of supporting reptiles.
- 5.8 Trapping will commence no earlier than mid-February (for adders and common lizard) and mid-March (for other species) in any trapping year and will continue no later than October, to ensure it occurs at times when the target species are out of hibernation and active. Artificial refugia will be checked at least daily, and possibly more frequently, by trained and experienced herpetologists, and any reptiles found will be captured and transferred to temporary receptacles for transit to the receptor site. For the duration of trapping visits or ‘rounds’, these are likely to be suitably deep plastic buckets furnished with vegetation to maintain temperatures, provide cover and reduce stress, although cloth bags may also be used (e.g. for snake species). The herpetologists involved will be required to be trained in the safe capture and handling of adders, and will use snake gauntlets for this species, as required.
- 5.9 When conditions allow, having regard to temperature, humidity/rainfall, daylight hours and forecast conditions, transport of captured reptiles to and release at the receptor site will occur the same day. There may be instances where ‘overnighting’ is required, although these will be kept to a minimum. When it is necessary, suitable vivaria will be used to house reptiles, having regard to the needs of species separation, avoiding overcrowding, and provisioning with appropriate food items and a water source.
- 5.10 Trapping will continue until suitable confidence levels are attained that all reptiles have been removed from a trapping unit, or that only small numbers remain such that proceeding onto habitat manipulation is sufficiently low-risk. Habitat manipulation will then be deployed, as appropriate, to maximise trapping efficiency for the final proportion of the population. Translocation effort will be deemed to have reached ‘reasonable’ levels when a minimum number of capture days in suitable conditions has passed, **and** there has subsequent to that point been a suitable period of no captures. In no cases will trapping effort be less than 30 suitable trapping days and in no instance will the translocation be rendered complete in a trapping compartment unless five consecutive clear days of nil captures in suitable season and weather conditions and on the basis of daily checks, have passed.
- 5.11 Release of animals at the receptor site will be into suitably structured vegetation and/or into or near constructed temporary or permanent refugia/hibernacula. Release will only occur in suitable conditions with due care taken to ensure released animals have sufficient daylight hours to settle in, and are not exposed to heightened risk of exposure to poor conditions or predation.

6.0 PROTECTED SPECIES MITIGATION: NESTING BIRDS

- 6.1 Within the proposed Order Limits are breeding populations of a number of bird species, including one species (Cetti's warbler) subject to special protection against disturbance at the nest site by virtue of being listed at Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)². The baseline status as regards the presence of breeding bird species within the proposed Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology (see in particular paragraphs 10.276 to 10.278 and Table 10.40 [APP-031]), and as set out in the associated ES Figures and Appendices (see in particular Figure 10.11 [APP-138]).
- 6.2 All birds are protected from killing or injuring under the Act, and the active nests and also the eggs and dependent young are similarly protected from destruction. Schedule 1 species are further protected from disturbance whilst at the nest site.
- 6.3 The need for avoidance or mitigation measures to ensure legal compliance in respect of nesting birds is largely a seasonal one. The risk of nesting birds being present in vegetation is highest in the spring and early summer months. The current intended implementation timescale suggests that there is a risk of site clearance and preparation for construction coming into conflict with this period in early 2019 if the DCO is granted.
- 6.4 Measures to obviate or reduce this risk are set out in the CEMP (paragraph 6.10 [REP6-008]). This states:
- “Over and above the requirement for advance translocation and/or displacement of legally protected species, the times when clearance of vegetation is possible will also be subject to seasonal constraints. In particular, clearance of vegetation with the potential to support nesting birds should aim to avoid the peak nesting months of mid-February to July wherever possible. In situations where this is not possible, surveys and/or monitoring by specialist ornithologists will be employed to assess whether nests are present or likely to be present in affected vegetation, and whether appropriate measures such as temporary stand-offs will be deployed to work around such constraints in a legally compliant manner.”*
- 6.5 The surveys referred to above will be tailored to the particular circumstances, but will follow tried and tested protocols to eliminate risk as far as possible and/or signpost where additional measures may need to be taken. For example:
- Vegetation with an inherently low likelihood of supporting nesting birds (e.g. small expanses of sparsely vegetated substrates or short grassland with little cover) will be subject to a walkover survey by a suitable qualified and experienced ornithologist in order to ascertain if there is any risk to nesting bird species. This may or may not involve timed static observation as appropriate.

² A range of other bird species, including additional Schedule 1 species, use the site in winter or otherwise in a non-breeding capacity.

- Discrete patches of vegetation with the potential to support nesting birds up to 10x10 m² will be subject to timed observations from suitable vantage points, with the number of suitably qualified and experienced surveyors appropriate to ensure comprehensive coverage. Timed observations will be not less than 20 minutes duration in order to try and detect inward and outward movements of nest-building or parent birds. If nest building, nests with eggs, or the presence of broods is ascertained or suspected, suitable stand-off areas and cordons will be devised to protect the nest site and surrounding vegetation and prevent the risk of activity close to the nest site causing desertion (and hence *de facto* 'destruction').
- In cases where active nests of Schedule 1 species are suspected to be present (e.g. Cetti's warbler), the extent of any cordon is likely to be larger to prevent any disturbance (even non-significant disturbance) to the bird at the nest site and thereby ensure legal compliance.
- Where cordons are set up, they will remain in place for an appropriate duration. The length of time will be set on the basis of what evidence can be drawn from surveys as to the status of the nest (i.e. a longer duration is likely to be necessary where the initial evidence found is of nest building activity, as against a situation where adult birds are evidently bringing food to young). Cordons will not removed prior to further monitoring having ascertained that there is no further risk to active nests (or disturbance to birds at active nest sites in the case of Schedule 1 species).
- Where more expansive areas of suitable bird nesting habitat are affected, there may be a need for progressive monitoring and removal in stages, if works cannot be timed to avoid risk. The exception is likely to be in the case of expansive areas of open/unvegetated ground where surveys are more likely to be able to clearly ascertain the presence or absence of ground nesting species such as ringed plover, oystercatcher or lapwing.

6.6 The above protocols will be an essential pre-requisite to any works of site clearance or otherwise affecting established vegetation between the months of April to end of June. Between mid-February / end-March and the beginning of July / mid-August, the requirement for the above monitoring and additional avoidance and mitigation measures surveys will be considered on a case by case basis. Outside of these periods, the risk of encountering nesting birds is low, but contractors will be briefed to be vigilant for early, late or year-round nesting species and to seek expert advice if they suspect a nest site is present.

7.0 PROTECTED SPECIES MITIGATION: EELS

7.1 Eels are known to be present within the River Thames. Current conditions within the site are inhospitable for eels and features such as the sea wall represent barriers to eel passage. As such, eel passage through the ditch network is likely to be relatively limited (if eel passage occurs at all). Nonetheless, as the Eels (England and Wales) Regulations 2009 make provisions for measures be put in place to aid eel stock recovery, precautionary mitigation measures to prevent impacts on eels have been set out as follows:

- Fish and eel passage will be retained under any crossing installed as part of the works (WFD Assessment [APP-088], paragraph 1.67 and Table 1.7), and secured through operation of the EA's protective provisions in the DCO;
- The Environment Agency will have the opportunity to approve the detailed design of the proposed Thames outfall, including incorporation of eel-friendly control structures ('eel flaps'), pursuant to their protective provisions;
- Provisions within chapter 6 of the CEMP [REP6-008] ensure that eels are protected during construction phase; and
- Compensatory wet ditch habitats will be provided ensuring no net diminution of the quantum of this habitat due to the development (see APP-088 and Figure 1 of this EMCP).

8.0 ON-SITE HABITAT CREATION

NEW / REPLACEMENT HABITATS

8.1 New habitat creation (or restoration) forms part of both the On-Site Ecological Mitigation and Compensation Strategy (presented at Figure 1 of the LEMP [REP6-041]) and the Landscape Strategy (see Figure 9.9 of the ES [APP-120] and effectively replicated as Figure 1 of this EMCP). It is a requirement of the DCO that these features are constructed and managed in accordance with the EMCP and LEMP. The LEMP advises that further details of the construction of new habitats (as opposed to their future management once constructed) are set out in the EMCP, and this section duly presents that information.

8.2 Newly created or restored habitat features include the following S41 Habitats (Habitats of Principal Importance further to section 41 of the NERC Act 2006) or ecologically similar equivalents:

- Open Mosaic Habitat on Previously Developed Land;
- Coastal and Floodplain Grazing Marsh;
- Lowland Mixed Deciduous Woodland / Hedgerows³;
- Ponds (2 no.);
- Reedbed; and
- Intertidal habitats (saltmarsh / mudflat).

8.3 Other newly created habitat and landscape features will include the following:

- Wet ditches (suitable for water voles)⁴;
- Dry ditches (including surface water / highway drainage attenuation swales); and
- Scrub and woodland planting.

8.4 Further details of the on-site construction of each of these habitats are given below:

Open Mosaic Habitat on Previously Developed Land (OMHPDL)

8.5 In total, there is estimated to be around 9.3ha of existing OMHPDL present within the proposed Order Limits (i.e. in the baseline state) (ES Table 10.49, and Figure 10.2d [APP-125]). Around 0.3ha of this will be retained, including in the northernmost part of the Green Belt land, and within the infrastructure corridor (locations indicated at Figure 1).

³ Non-S41 but ecologically very similar habitats will be created through screen planting and other scrub creation under 'scrub and woodland planting'

⁴ These form part of Coastal and Floodplain Grazing Marsh S41 habitat but are considered separately here due to their specific water vole mitigation and compensation function

- 8.6 Of the remaining 9ha of OMHPDL on-site, around 5ha of this has been identified for use in translocation and re-creation of brownfield habitat. This is on the basis of it comprising substrates which are practical to translocate to receptor locations either on- or off-site. The receptor locations for this material are as follows:
- A 10ha off-site OMHPDL receptor at Mucking Landfill (for location see Figures 5-8). This will receive c.5ha of translocated material, with the remaining c.5ha proposed to receive virgin or recovered brownfield substrates from other sources (e.g. recovered PFA and other substrates) or existing brownfield habitat that would otherwise be lost to restoration activities. This alone will result in 10ha of compensatory habitat, thus exceeding (in quantitative terms) the c.9ha lost.
 - Potential locations within the Order Limits that may be available to receive brownfield substrates, delivering additional 'windfall' OMHPDL where it is practical and achievable to do so. This would be over and above the 10ha off-site provision. Potential locations are indicated at Figure 1, and include existing hard-standing to the south of the bund within the infrastructure corridor (i.e. immediately adjacent to retained areas of OMHPDL), and in the Green Belt on the central 'island' created within the concentric rings of ditches.
- 8.7 The off-site compensation design at Mucking Landfill as agreed with the landowner is presented at Figures 5-8 with further details provided in section 9. This design complies with the search criteria and design objectives discussed with Natural England, as referred to in their representations [REP5-061] and as discussed at the Issue Specific Hearing in June 2018 [EV-011; and item 3.2.1 within REP5-036]. The design may be subject to further minor adjustments (e.g. to substrate type) as informed by technical studies but these will not be substantive. A feature of the design is that it adjoins a previous successful 3.5ha area of compensatory brownfield habitat creation.

Coastal and Floodplain Grazing Marsh

- 8.8 Of the 5.3ha of this habitat present within the proposed Order Limits in the baseline state, around 3.4ha will be permanently lost, and c.0.1ha will be temporarily lost whilst appropriated during the construction phase⁵. This temporary loss of Coastal and Floodplain Grazing Marsh comprises a linear strip of land East of Fort Road (within land parcel 03/07 by reference to the land plans [REP5-006])⁶.
- 8.9 Compensation for the permanent losses of Coastal and Floodplain Grazing Marsh habitat will be delivered off-site (see section 9 and Figure 4).
- 8.10 The temporary construction-phase losses of Coastal and Floodplain Grazing Marsh will be restored as follows:
- 8.11 To prevent excessive damage to, compaction of and erosion of soils, an anchored 'no-dig' ground reinforcement paving tile (or similar) will be laid

⁵ For an account of the change in these calculated figures since the production of the ES, please refer to the response to FWQ 1.2.8 and 1.2.9; and to tabulated response to FWQ 1.2.10 provided within the Applicant's Deadline 2 submission document; and to subsequent changes to the land plans [REP5-006].

⁶ Furthermore, where losses west of Fort Road within land parcel 03/08 and south of the proposed junction are only temporary, these would also be restored as set out at paragraph 8.10 - 8.15.)

(instead of aggregate, which could be difficult to remove afterwards). The tiles would be placed in existing grassed areas over porous geotextile matting. The design suppresses resurgence of mud from below but allows effective drainage. This layer would remain in place for the duration of the construction activity.

- 8.12 Following completion of the works in this area, any ground protecting tiles/matting would be removed. After this, the ground can be prepared for restoration. In areas of light soil compaction, physical aeration may be required, e.g. using a hand-held spiker or mechanical lawn aerator. If heavier compaction has occurred then rotovation/disking may be necessary. Seeding would then take place directly onto the areas of exposed soil, as set out above. Seed will be appropriate to the Coastal and Floodplain Grazing Marsh habitat type, and of local provenance.
- 8.13 Provisions within the Construction Environmental Management Plan (CEMP [REP6-008]) ensure that the drainage channels within the Tilbury Marshes Local Wildlife Site (LoWS) are protected during the works; and installation of temporary access over Pincocks Trough (e.g. in the form of a removable 'bailey bridge') and any necessary restoration after its removal would be subject to Environment Agency approval through the operation of their protective provisions in the DCO. The channels will not therefore require any further restoration except where they have been subject to realignment works. The detailed design of the channel realignments and proposed restoration works will be approved by the Environment Agency through the operation of their protective provisions in the DCO.
- 8.14 *Short-term management.* Grazing animals will need to be excluded from restored areas temporarily whilst the grassland re-establishes (e.g. 6-12 months), and during this time the sward would be subject to simple management including weed control (e.g. by cutting or pulling).
- 8.15 *Long-term management.* The restored area of Coastal and Floodplain Grazing Marsh habitat falls outside the management areas defined in the Landscape and Ecological Management Plan (LEMP [REP6-041]). For the avoidance of doubt, the intention is for this 0.1ha area to be returned to its current management (i.e. horse- and pony-grazing) once the restoration works set out above have been completed and following the establishment and aftercare period.

Lowland Mixed Deciduous Woodland and Hedgerows

- 8.16 A total of 2.2ha of Lowland Mixed Deciduous Woodland (of fairly recent plantation origin) will be lost to the development along with 645 metres of hedgerow. Around 1.2ha of replacement plantation woodland is proposed on-site and around 836m of hedgerow at the locations indicated on Figure 1 of this EMCP. These habitats will be created by planting of an agreed palette of native species appropriate to the locality, as set out in the Technical Note on Tilbury2 Landscape Mitigation Proposals (Appendix E of the LEMP [REP6-041]). The establishment and aftercare provisions for these habitats are set out in the LEMP at section 4.0.

Ponds

- 8.17 A single pond of approximately 217m² extent of permanent standing water and forming part of the Tilbury Centre (TEEC) LoWS will be lost to the development. This will be replaced by two new ponds within the Green Belt land north-east of the CMAT area and rail spur, which will themselves sit within the series of multiple concentric rings of ditch created for compensatory water vole and wet ditch habitat.
- 8.18 It is intended that these ponds will be constructed after receipt of the DCO and may therefore follow on from completion of the surrounding compensation ditches. In this situation, 'bailey bridge' type structures will be used to access the central 'island' created by the ring ditch system for the duration of excavation and ground-modelling works.
- 8.19 It is envisaged that the ponds will total approximately 1941m² and 876m² in area (as set out in the WFD Assessment at paragraph 1.266 [APP-088]). Pond construction will follow established principles to ensure maximum benefit to biodiversity, and drawing upon the design principles adopted in the construction of the existing compensation pond to the north. Pond profiles will be shallow to promote fringing reedbed creation (see below) and the depth profile will also be tailored towards local groundwater levels to ensure permanent standing water.

Reedbed

- 8.20 An area of 0.6ha of reedbed will be lost to the development and a replacement area of 0.6ha of this habitat will be created in conjunction with the ponds discussed above.

Wet & Dry ditches

- 8.21 Existing ditches to be retained other than where affected by bridging or realignment works are dealt with under 'Coastal and Floodplain Grazing Marsh' above.
- 8.22 In addition to these, some 3,922m of wet ditch and 1,622m of dry ditch will be created on-site as part of advance water vole habitat creation, surface water drainage and attenuation infrastructure or both (as set out in the WFD Assessment at paragraph 1.267 [APP-088]).

Scrub and Woodland Planting

- 8.23 In addition to the habitats classed as falling within the definitions of Lowland Mixed Deciduous Woodland and Hedgerow, as discussed above, some 7.6ha of scrub, ranging from dense stands of bramble through to closed-canopy stands of mature hawthorn scrub, will be lost to the development. Some 1.8ha of this habitat will be reinstated in the locations shown on Figure 1, by a combination of planting and natural regeneration. The balance will be created off-site (see Section 9.0 and Figure 4).

Intertidal habitats

- 8.24 Proposals to create new saltmarsh habitat within the Order Limits to off-set the minor losses (e.g. to outfall construction) in the medium-long term have been agreed in principle with the Environment Agency.
- 8.25 Timber groynes will be used to stabilise an area of coastal habitat within the Order Limits where the previous extent of coastal saltmarsh has been eroded to the level of intertidal mudflat. Spoil excavated from intertidal areas during outfall construction will be used to raise the level of the area between the proposed groynes. The proposed groynes are also expected to slow tidal velocities and allow further accretion of fine sediments. It is anticipated that saltmarsh vegetation will begin to colonise the accreting material from the adjacent stands of habitat. The design principles, as presented at Appendix 2 of the Response to Examining Authority's RIES [REP6-020], have been agreed in principle with the Environment Agency. The detailed design of this mitigation will be determined in consultation with the Environment Agency, pursuant to their protective provisions within the DCO; and if required, separate MMO consent will be obtained for the construction of the groynes below MHWS.

9.0 OFF-SITE HABITAT CREATION

OFF-SITE HABITAT CREATION SITES

9.1 Two sites will be used for the purposes of off-site habitat creation as follows:

1. **Paglesham:** Land at Church Hall Farm, Church End, Paglesham, Essex SS4 2DP (location shown at Figures 2, 3 and 4); and
2. **Mucking Landfill:** Land at Mucking Landfill Site, Mucking, Stanford-le-Hope, Thurrock, Essex, SS17 0RN (location shown at Figures 5, 6, 7 and 8).

9.2 Further details are set out for both sites below.

1) PAGLESHAM OFF-SITE COMPENSATION SITE: BASELINE CONDITIONS

9.3 Agreement has been reached between PoTLL and the owner of Land at Church Hall Farm, Paglesham (see letter at Appendix 5) for use of some 48ha of low-lying coastal farmland for the following off-site compensation purposes (as shown at Figures 2, 3 and 4):

- Creation of some **30-37ha of coastal grazing marsh** (coastal and floodplain grazing marsh priority habitat) from arable reversion;
- Creation of between **5 and 6ha of scrub habitat**; and
- Creation of circa **10ha** of ungrazed or lightly grazed grassland habitats (including coastal grazing marsh) **as receptor areas for reptiles**.

9.4 The land has no extant nature conservation designation and the habitat quality starts from a 'low base'. In large part this is due to the intensive nature of the arable farming operations to date, and the high levels of sheep grazing of the grassland habitats. To the south-east is 'Paglesham Seawall' LoWS (see Figure 2), which is managed by the Environment Agency and comprises a portion of seawall with a rich flora and associated invertebrate community. The scope for enhancing connectivity between the compensation site and the LoWS (including via use of green hay arisings from the sea wall to boost grassland development within the compensation site) and for maximising the potential benefits to local invertebrate communities is currently being explored with the Environment Agency.

9.5 The pre-existing baseline conditions on this land are described in more detail below drawing on the results of an extended Phase 1 habitat survey carried out in March 2018 and with reference to Figure 3. Interventions by agreement with the landowner commenced in May 2018 (with removal of livestock) and the intended habitat changes are now underway.

9.6 In the baseline site, the land at Paglesham supports the following habitats:

- Arable land
- Improved grassland
- Species-poor semi-improved grassland
- Drainage ditches
- Waterbody
- Hedgerows
- Self-sown scrub
- Non-woodland trees
- Tall ruderal
- Disturbed ground habitats

9.7 The distribution and extent of all of the above habitats is shown on Figure 3. Summary descriptions of each are provided below, with reference to dominant or notable species or communities of vascular plants.

Arable

9.8 Around three-quarters of the land is currently in arable cultivation, predominantly for cereals. Other than crop species, there appears to be only a very restricted complement of arable plants typical of high nutrient conditions. Examples noted include scentless mayweed *Tripleurospermum inodorum*, cleavers *Galium aparine*, field speedwell *Veronica persica*, dove's-foot crane's-bill *geranium molle* and black grass *Alopecurus myosuroides*. The nature and high fertility of the soils precludes scarcer arable plant communities and no uncommon arable associates have been noted.

Improved grassland

9.9 Three adjoining field units in the central part of the land are currently under pasture and closely grazed by sheep. The grassland vegetation is typical of reclaimed grazing marsh habitats that have been 'improved' by re-seeding and/or the application of fertilisers or herbicides. Grasses are overwhelmingly dominant, with the bulk comprising crested dog's-tail *Cynosurus cristatus*, perennial rye grass *Lolium perenne*, smooth meadow grass *Poa pratensis* and creeping bent *Agrostis stolonifera*. Herbs are very sparse, with species such as creeping thistle *Cirsium arvense* and common mouse-ear *Cerastium fontanum* no more than occasional in occurrence.

Photograph 1. Improved grassland at Church Hall Farm, Paglesham



Species-poor semi-improved grassland

- 9.10 This habitat occurs in uncultivated margins around the edges of most of the arable fields. It is a mixed community of coarser grasses and ruderals reflecting high nutrient soils that have not been cultivated for a time. Typical species include false oat-grass *Arrhenatherum elatius*, couch *Elytrigia repens*, cock's-foot *Dactylis glomerata* and creeping bent with ruderal species including cleavers, white dead-nettle *Lamium album*, broad-leaved dock *Rumex obtusifolius*, curled dock *Rumex crispus* and cow parsley *Anthriscus sylvestris*.

Drainage ditches

- 9.11 As befits the coastal marshland location, the field units are almost universally defined by incised drainage channels. The deeper of these hold standing or running water permanently or semi-permanently, while the more shallow features are likely to dry out in the summer months. The two types are mapped separately on Figure 3.
- 9.12 In general, both types of feature are characterised by a fairly linear formation and steep banks. Where not overshadowed by adjoining hedgerows or denser scrub, dense and tall macrophyte vegetation is generally present. In the main, this comprises stands of common reed *Phragmites australis*, although species such as greater reedmace *Typha latifolia*, great willowherb *Epilobium hirsutum* and soft rush *Juncus effusus* occur more locally, and the local abundance of sea club-rush *Bolboschoenus maritimus* picks out those channels with a greater brackish influence.

Waterbody

- 9.13 In the south-east of the land is a linear pond or small lake, artificial in origin and surrounded by raised banks comprised of the excavated spoil which support closely grazed grassland. This has a fringe of macrophyte vegetation with some localised wetland scrub. Species include common reed, sea club-rush, greater reedmace, soft rush and great willowherb with the scrub including grey willow *Salix cinerea*.

Hedgerows and scrub

- 9.14 There are relatively few intact hedgerow features on the site, these being marked on Figure 3 as distinct from scattered scrub (which may in part derive from former hedgerows in places). These hedges are probably of 19th century origin and comprise only a very limited number of woody species, with hawthorn *Crataegus monogyna* typically dominant, localised thickets or specimens of blackthorn *Prunus spinosa* and scattered individuals of elder *Sambucus nigra* and dog-rose *Rosa canina*. No notable ground flora species were found in association with these features with cow parsley and common nettle *Urtica dioica* being typical.
- 9.15 None of the hedgerows on the site are sufficiently species-rich to qualify as 'Important' hedgerows under the ecological criteria to the 1997 Hedgerows Regulations, but all intact examples are likely to qualify as the Priority/Section 41 habitat 'hedgerows'.
- 9.16 Small pockets of self-sown scrub also occur along ditch-lines and in fenced-off field corners. Often these are dominated by blackthorn, although examples comprising all of the above-listed hedgerow species are present.

Non-woodland trees

- 9.17 Alongside some stretches of farm tracks there are rows of semi-mature or young-mature specimen trees, planted probably about 30 years ago.
- 9.18 A fairly broad palette of species has been used including natives such as ash *Fraxinus excelsior*, field maple *Acer campestre*, silver birch *Betula pendula*, rowan *Sorbus aucuparia*, white willow *Salix alba* and hornbeam *Carpinus betulus* along with non-natives such as grey alder *Alnus incana*, Norway maple *Acer platanoides*, horse chestnut *Aesculus hippocastanum* and sycamore *Acer pseudoplatanus*.

Tall ruderal

- 9.19 As well as providing a component of field edge and disturbed ground habitats, tall ruderal species form more continuous stands in a few defined areas of the site, generally associated with neglect of formerly cultivated areas.
- 9.20 Typical constituent species include bristly ox-tongue *Helminthotheca echinodes*, hoary mustard *Hirschfeldia incana*, black mustard *Brassica nigra*, charlock *Sinapis arvensis*, American willowherb *Epilobium ciliatum* and taller grasses such as couch, false oat and cock's-foot, albeit these are subordinate in cover.

Disturbed ground habitats

- 9.21 As well as occurring at the edges of tracks and around gateways, disturbed (as opposed to cultivated) ground occurs in a defined central area of the site which is used for stockpiling mounds of cockleshells. The more stable and compacted areas of this substrate have developed incipient vegetation comprising annuals such as knotgrass *Polygonum sp.*, ruderals such as American willowherb and weld *Reseda luteola* and a range of other species such as broad-leaved dock, groundsel *Senecio vulgaris* and white clover *Trifolium repens*. Adjoining the cockleshell storage area is an area where spoil has been mounded and this supports similar vegetation, albeit with a more significant component of docks, thistles and stinging nettle.

Invasive non-native species

- 9.22 No invasive non-native species were noted on the survey.

Fauna

- 9.23 In the process of conducting the Phase 1 survey searches were made for field-sign evidence of protected species such as badgers and water voles, and of habitat or structures capable of supporting protected species such as reptiles and bats. All bird or mammal species heard or seen on the site during the survey were also noted.
- 9.24 No badger setts were found during the survey, albeit that it is possible badgers use the site and push-throughs in fencing were noted that could have been created by badgers, or which might be used by them to access suitable foraging areas such as the existing grasslands.
- 9.25 Evidence of water voles (droppings, tracks and feeding remains, with one or two burrow entrances also noted) was found in most of the more permanently wet ditches concentrated in the central part of the site. Field sign evidence was sparse or absent in the drier ditches away from this core. The presence of this species is not surprising, given that the Essex coastal marshes remain one of their national strongholds.
- 9.26 Suitable reptile habitat is in short supply on the site, but occurs more extensively on adjoining areas, particularly along the sea wall to the north and east and on adjoining grasslands fringing the borrow dykes and which appear to escape regular mowing. There are records for all four of the more common species from the immediate locality and thus transient use of the site is expected, albeit resident populations of species may be precluded by the preponderance of arable cultivation and/or heavy grazing.
- 9.27 Most of the trees on the site are too young to have yet developed features such as rot holes, splits, tear-out wounds or other cavities that could be capable of harbouring bat roosts. The most likely candidates are the white willows around the waterbody in the southernmost part of the land, some of which are showing nascent development of such features.
- 9.28 A broad range of bird species was noted during the course of the survey. Of most note was the presence of good numbers of corn bunting, with some birds showing signs of establishing breeding territories on the site. Other species of note include reed bunting and skylark (several territories each), linnet and (in

the waterbody on the site), potentially breeding little grebe. Residual winter flocks of fieldfare and redwing were present during the survey, along with flocks of starling. Other species noted included wren, blackbird, woodpigeon, chaffinch, buzzard, pheasant, red-legged partridge, mallard, mute swan, coot, moorhen, magpie, carrion crow, blue tit, meadow pipit, stock dove, greenfinch, dunnoek and grey heron.

- 9.29 Current use of the Paglesham site by wintering geese/waders appears to be very limited, and no dark-bellied Brent goose *Branta bernicla bernicla* (i.e. the sole citation species for the adjacent Crouch & Roach Estuaries SPA⁷) have been seen during visits to the site in either January or March 2018. However it is understood from the landowner that this species does make occasional use of the site. To the extent that the land can be regarded as occasionally 'functionally-linked' to the SPA, that relationship has the potential to be significantly enhanced following the net increase in habitat suitable for this species as a consequence of the expansion of grazing marsh habitat from the creation works proposed below.
- 9.30 Numbers of brown hare on the site were comparatively high, and evidence of fox and rabbit was also observed.

PAGLESHAM OFF-SITE COMPENSATION SITE: NEW/ENHANCED HABITAT CREATION

- 9.31 Figure 4 shows the proposed habitat enhancements and land-use break down for the 48ha of low-lying coastal farmland at Paglesham to be appropriated for the following off-site compensation purposes:
- Creation of some 30-37ha of coastal and floodplain grazing marsh from arable reversion
 - Creation of between 5 and 6ha of scrub habitat
 - Creation of circa 10ha of ungrazed or lightly grazed grassland habitats (including coastal grazing marsh) as receptor areas for reptiles
- 9.32 **Principles of coastal & floodplain grazing marsh creation.** Arable reversion will be achieved by means of cessation of arable cultivation and either natural regeneration to a grassland sward (incorporating a 'set-aside' phase) or expedited by active seeding of an appropriate grassland mixture and/or application of green hay from a locally appropriate source. Discussions are ongoing with the Environment Agency about the use of green hay from species-rich sea wall habitats in the locality (including the Paglesham Seawall Local Wildlife Site) for this purpose, and this has now been agreed in principle, subject to checks of the donor sward for INNS. The methodology will be decided based upon the best compromise between addressing matters of soil fertility and the desirability of creating a semi-natural grassland community, having regard to timescales for delivery of compensation and displaced grazing capacity. Consideration will also be given as to how arable reversion could best deliver habitat enhancements for Crouch & Roach Estuaries SPA citation species (i.e. dark-bellied Brent goose).

⁷ Crouch & Roach Estuaries (Mid-Essex Coast Phase 3) SPA citation accessed from: <http://publications.naturalengland.org.uk/file/6561884480208896>

- 9.33 **Principles of scrub habitat creation.** The delivery of scrub habitat on the site will be targeted for field corners and damper areas, to try and replicate the dense, damp scrub conditions extant on the Tilbury2 site which support species such as nightingale and Cetti's warbler. Again, preference will be given to natural regeneration where compatible with delivery aims and timescales, and at its simplest, scrub development will be allowed to occur through suckering or self-seeding in areas fenced off from livestock and wild grazing animals such as deer and rabbits. Additional interventions such as seeding posts (T-shaped posts placed in open habitats near to seed source shrubs such as hawthorn, which encourage birds to perch and set seed in their droppings), re-planting of translocated stock or active planting will be employed having regard to objectives and phasing.
- 9.34 **Principles of reptile habitat creation.** The areas targeted for the receipt of translocated reptiles have until recently been closely grazed grasslands. These are being allowed to 'grow out' to improve their reptile carrying capacity. Livestock were removed in May 2018 and reptile exclusion fencing erected around the edges of the field units to prevent uptake of created capacity by the known local reptile populations. The development of the habitat is likely to take 9-12 months and will be monitored in order to inform decisions on the need or otherwise for further interventions to maximise its suitability as a receptor site. Such interventions will include provision of additional refugia and hibernacula (such as log-piles) to enhance habitat structure and provide enhanced hibernation opportunities. Decisions on the amount of intervention and additional enhancement will be made on a reactive basis having regard to the results of developmental monitoring.
- 9.35 Once established, on-going habitat management would be required, the details of which are to be set out at section 12 below.
- 9.36 **In-Perpetuity Compensation Terms.** Management of the off-site compensation area will continue for a 30 year term by means of an agreement between PoTLL and the respective landowners.

2) MUCKING OFF-SITE COMPENSATION SITE: BASELINE CONDITIONS

- 9.37 Agreement has been reached between PoTLL and the owner and operator of Mucking Landfill Site (see letter at Appendix 6) for use of some 10ha of restoration-phase landfill for the following off-site compensation purposes (as shown at Figures 5, 6, 7 and 8):
- Creation of some **6.9ha of open mosaic habitat** over recently completed, capped and soiled landfill;
 - Retention/enhancement of an additional **3.1ha of existing open mosaic habitat** over pre-restoration landfill which would otherwise be restored to fertile grassland.
- 9.38 The land falls within the operational area of Mucking Landfill Site in Thurrock, which ceased receipt of waste on 31 December 2010, and is currently being

restored by the owner and operator (Enovert South Limited) under an approved restoration scheme⁸.

- 9.39 Under the extant restoration scheme (planning reference 06/00663/TTGCND) a number of grassland types are proposed for this area. The land which is proposed by the Applicant for receipt of brownfield substrates was intended to be largely restored to “amenity grassland”, i.e. species-poor fertile grassland. As such, there is considerable 'headroom' to deliver ecological enhancement and uplift over the consented scheme.
- 9.40 The current baseline conditions on this land are described in more detail below drawing on the results of an extended Phase 1 habitat survey carried out in May 2018 and with reference to Figure 6. A summary description of each habitat is provided below, with reference to dominant or notable species or communities of vascular plants.

General description

- 9.41 The identified land has no extant nature conservation designation and the greater part of it (the northern element) starts from a ‘low base’ of recently applied restoration soils now in the early stages of colonisation by ruderal vegetation (Compartment A as shown at Figure 7 – see also Photograph 3 below).
- 9.42 To the south of this area is a circa 3.5ha of existing brownfield habitat created as part of a previous habitat compensation scheme in 2014 in connection with the Port of Tilbury’s London Distribution Park (LDP) project. This does not form part of the Tilbury2 compensation proposals but its proximity and history is relevant to them. It comprises a base substrate derived from the deposition and spreading of chalk slurry from tunnel arisings, onto which have been placed a number of artificial ‘dunes’ created from imported PFA material. Further topographical variation is provided by peripheral chalk bunds and shallow ‘dune slack’ depressions that are seasonally damp (see Photograph 2 below). This area is in the first year of monitoring pursuant to post-construction commitments associated with the LDP planning consent and the first of several visits was made in May 2018. Incipient vegetation cover has established (including a high incidence of flowering legumes, and the uncommon species narrow-leaved pepperwort *Lepidium ruderae* and narrow-leaved bird’s-foot trefoil *Lotus tenuis*); and invertebrates of note that have already been recorded include the S41 species shrill carder bee *Bombus sylvarum*. The presence of this previous and apparently successful compensation habitat will complement the Tilbury2 compensation areas and assist with expediting their colonisation by target species. Further detail on how this habitat was created as part of a suite of compensatory measures for biodiversity connected with the London Distribution Park⁹ development can be found at Appendix 7.

⁸ Consented under Thurrock Council planning reference 06/00663/TTGCND and subsequent related permissions including 13/01014/NMA.

⁹ London Distribution Park (LDP) planning reference 10/50157/TTGOUT and related applications. Creation of the invertebrate compensation site was a planning obligation under Section 106 of the Town and Country Planning Act 1990, as agreed between Thurrock Thames Gateway Development Corporation (now Thurrock Council) and Port of Tilbury London Limited on 27 March 2012, and its creation is documented in a Ecological Mitigation and Compensation Strategy (EMCS).

Photograph 2. Pulverised Fuel Ash (PFA) 'dune' and shallow wet slack, over exposed chalk, forming part of the existing LDP invertebrate compensation site (immediately adjacent to the proposed Tilbury2 receptor site).



- 9.43 The remaining land intended to be used for compensation is to the south of the LDP compensation land. It also has chalk and PFA substrates and some areas of more established vegetation which will either be retained *in situ* or reinstated following final landforming (dependant on compatibility with final restoration levels).

Compartment A - Disturbed ground habitats

- 9.44 The largest (northern) receptor parcel (labelled Compartment A on Figure 7) has only recently received a final spoil layer in anticipation of restoration under the permitted scheme and subsequent s73 variations. As of May 2018, this was still relatively bare (see Photograph 3 below), though had begun to colonise with ruderal species typical of high fertility such as bristly ox-tongue *Helminthotheca echinoides*, black mustard *Brassica nigra*, hoary mustard *Hirschfeldia incana*, scentless mayweed *Tripleurospermum inodorum*, spotted medick *Medicago arabica*, goat's-rue *Galega officinalis*, hemlock *Conium maculatum*, ragworts *Senecio spp.* sow-thistles *Sonchus spp.* and others with incipient grasses being barren brome *Anisantha sterilis*, creeping bent *Agrostis stolonifera* and cocksfoot *Dactylis glomerata*. The only species of even passing interest found here in May 2018 was tall rocket *Sisymbrium altissimum*.

Photograph 3. Topsoiled land within Compartment A showing initial vegetation colonisation.



Compartments B & C - Bare ground with ephemeral vegetation

- 9.45 The two smaller parcels of land shown on Figure 6 comprise surplus substrates left over from creation of the existing LDP invertebrate compensation site in 2014 (for further details of which, refer to footnote 9 above and Appendix 7). The dominant substrate is compacted chalk slurry, with a single heaped mound of excess PFA (up to ~3m in height) which was peppered with rabbit burrows. These areas are marked as Compartments B and C on Figure 7.
- 9.46 The chalk material has colonised with a high proportion of leguminous species such as common bird's-foot trefoil *Lotus corniculatus*, common vetch *Vicia sativa*, goat's-rue *Galega officinalis* and spotted medick *Medicago arabica*; as well as common bent *Agrostis capillaris*, Yorkshire-fog *Holcus lanatus* and weld *Reseda luteola*; and creeping thistle *Cirsium arvense* in marginal areas. By contrast the PFA is much barer with sparse colonisation by a limited suite of species, predominantly swine-cress *Coronopus* sp. but also occasional halophytic species such as sea beet *Beta vulgaris* subsp. *maritima*.
- 9.47 It should be noted that whilst Compartments B and C are ostensibly an extension of the existing LDP invertebrate compensation site, by virtue of being set outside of the LDP site boundaries, these areas are scheduled to be re-profiled and seeded to grassland under the consented restoration scheme.

Invasive non-native species

- 9.48 The presence of stands of Japanese knotweed *Fallopia japonica* (a species listed on Schedule 9 of the Wildlife and Countryside Act, 1981, as amended)

has been noted as small stands within the wider landfill site, albeit outside of the boundaries of the identified compensation areas. No other invasive non-native species were noted during the survey.

Fauna

- 9.49 In the process of conducting the Phase 1 survey, searches were made for field-sign evidence of and potential for protected species. All bird or mammal species heard or seen on the site during the survey were also noted.
- 9.50 No badger setts or signs of badger foraging were found during the survey. Whilst there are no known records for the site, the wider landfill area (in particular long-undisturbed areas or those with established grassland) offer suitable foraging habitat for this species. The compensation areas offer little or no habitat for badgers however.
- 9.51 There are no suitable features for roosting bats (such as trees, buildings or other structures) within or adjacent to the receptor areas; and in the absence of established vegetation, the habitats offer very poor opportunities for foraging at present.
- 9.52 Although there are understood to be records for water vole *Arvicola amphibius* within the wider landfill site, there are no areas of standing water within or immediately adjacent to the identified receptor areas which could support this species.
- 9.53 Similarly whilst there are older records for great crested newt *Triturus cristatus* for the wider landfill site, the ponds known to support this species are located outside of the active areas of the landfill and are understood to remain separated from it by herpetofauna exclusion fencing.
- 9.54 Whilst all four species of common reptiles are known to be present within the Thurrock Thames Nature Park, no reptiles were sighted during the survey visit, and the habitat within the large area of land which has recently been resurfaced (Compartment A) was seen to be unsuitable for reptiles at the time of survey in May 2018. The vegetation establishing on the chalk slurry substrates to the south (Compartments B and C) has begun to develop a sward which is becoming potentially suitable to support reptiles, although the area with most potential is limited to the southern margin where the sward is most dense.
- 9.55 A limited range of bird species was noted during the course of the May 2018 survey. Of most note was wheatear, initially thought to be present solely on a passage basis but actually constituting a pair which appeared to be tied to an area of rabbit burrows within the PFA spoil mound in Compartment B, with one bird observed carrying food at one point, potentially indicating breeding. Other species noted included meadow pipit, skylark, linnet and goldfinch.
- 9.56 Information on wintering bird use of the receptor and adjacent land is set out within a wintering bird survey report commissioned by the landfill operator to inform their operations. During these surveys, no Thames Estuary & Marshes SPA citation species¹⁰ were recorded within or adjacent to the receptor area,

¹⁰ Thames Estuary & Marshes SPA citation accessed from:
<http://publications.naturalengland.org.uk/file/6583903435358208>

and taken in combination with the nature of the habitats present, the land within the proposed compensation area is therefore assessed as being not 'functionally-linked' to the SPA.

MUCKING OFF-SITE COMPENSATION SITE: NEW/ENHANCED HABITATS

- 9.57 **Principles of open mosaic habitat creation/enhancement.** Figures 7 and 8 show the location and extent of the proposed habitat enhancements for the c.10ha of pre-restoration landfill which is to be appropriated for the following off-site compensation purposes:
- Creation of some **6.9ha of open mosaic habitat** over currently low value land to which a layer of restoration material has recently been applied (Compartment A);
 - Retention/enhancement of an additional **3.1ha of open mosaic habitat** over pre-restoration landfill which would otherwise be turned into fertile grassland under the current restoration scheme (Compartments B and C).
- 9.58 As set out at paragraphs 8.5 and 8.6 above, of the 9.3ha of open mosaic habitat identified within the Order Limits, approximately 5ha of this has been identified as practical to translocate to receptor locations. The 10ha receptor area (which accommodates some uplift over and above the calculated 9ha losses) will be used to receive this 5ha of translocated material. The remaining c.2ha of open mosaic habitat to be created is proposed to be delivered via virgin or recovered material from other sources, which may include elements of some or all of the following: Pulverised Fuel Ash (PFA), Furnace Bottom Ash (FBA), Incinerator Bottom Ash (IBA), Lytag, brick rubble, chalk slurry, and sand.
- 9.59 Initially, a layer of 'blinding material' would be installed over Compartment A to block influence on surface plant growth from more fertile materials in the recently applied substrates below. Different options for the blinding layer (including material composition, source and depth of application) are currently being explored and will be defined within the final technical design.
- 9.60 The translocated and imported material described above would then be deposited on this gently south-facing slope, and sculpted into a varied micro-topography (variance from finished contour no more than 2m), with some areas of compaction, and other areas of loosely-structured, friable soil (where this can be screened from the effects of wind-blow). Topographical features would include dunes with associated depressions or seasonally-damp 'slacks' (similar to that shown in Photograph 2 above and as shown on Figure 8). Windbreak bunds would be created perpendicular to the prevailing south-westerly wind direction, to offer sheltered conditions. The materials would not be 'smoothed off' so as to retain a rough / undulating quality. The intention would be to produce as much variation to the topography as possible in terms of juxtaposition of materials used, and size, shape, aspect and separation of dunes, thus simulating the wide variation in conditions and micro-habitats from which brownfield sites typically benefit.
- 9.61 For Compartments B and C (which under the current restoration scheme would be capped with topsoil and restored to fertile grassland) the existing

chalk and PFA substrates will instead be retained and where appropriate re-instated over finished restoration levels before being sculpted and supplemented with additional low-fertility materials, thereby enabling retention/enhancement of an additional 3.1ha of open mosaic habitat.

- 9.62 **Logistical delivery.** It is anticipated that the materials would be delivered to the Mucking Landfill site via barge from the existing Port of Tilbury (Tilbury1), arriving at the existing landfill jetty in the same manner as other restoration materials. The receipt and processing of the materials would fall under the remit of the existing Environmental Permit for the site¹¹.
- 9.63 **In-Perpetuity Compensation Terms.** At present, the receptor falls under the operational remit of Mucking Landfill, but following open mosaic habitat creation and restoration of the surrounding areas, the land will become part of the Thurrock Thames Nature Park (TTNP), as part of an existing 99-year-duration lease arrangement. Under the anticipated phasing of the lease arrangement (see Appendix 8), the compensation site will formally become part of TTNP no later than 2023.
- 9.64 **Management & Monitoring.** Following open mosaic habitat creation and restoration of the surrounding areas, the land will become part of TTNP and will be managed as a discrete part of that reserve over the 99-year secured term lease period. An attendant commuted sum will be provided, and held in trust (via the TTNP Fund), through which annual payments will be made to cover future management of the compensation site.
- 9.65 Management intervention is expected to be minimal for the first ten years, and only sporadic and intermittent thereafter. In the long-term (e.g. >20 years), scrub removal and/or renewed disturbance of substrates will need to be considered. Vegetation colonisation will be relatively slow due to the low fertility and droughty substrates being employed – this is an advantage as the site will be held in early succession stages for longer – thus extending its value for specialist invertebrates of those habitats. Suitable management prescriptions are set out at section 12.0 of this report.
- 9.66 Monitoring of habitat establishment and surveys of invertebrate interest will be undertaken as prescribed at section 13.0 of this report.
- 9.67 Currently the terrestrial habitats within TTNP are typically represented by relatively species-poor fertile grassland, as a consequence of their recent origin and the restoration materials used. The inclusion of this extensive area of high-quality open mosaic habitat within the TTNP, complementing that delivered via the LDP project and at a staggered phase of establishment, will create a unique and biodiverse area at the core of the TTNP (*in lieu* of what would otherwise have been species-poor fertile grassland). It is anticipated that the varied mosaic of micro-habitats will generate species-rich communities of brownfield wildflowers and invertebrates which have the potential to become a major asset to TTNP, and elevate it to being considered as a landmark brownfield reserve within the wider Thames Gateway.

¹¹ Permit reference EPR/QP3730DW issued by the Environment Agency under the Environmental Permitting (England & Wales) Regulations 2016. Available from: http://www.enovert.co.uk/files/image/LandfillSitePermits/Admin-EPR-QP3730DW-V003_AS.PDF

BALANCE OF BIODIVERSITY LOSSES VERSUS GAINS

- 9.68 Quantitative calculations of biodiversity loss versus gain, using the Defra-derived biodiversity offsetting metric, are presented at Appendix 10. These metrics were used to inform the final detail and explore the performance of various designs for the off-site compensation proposals.
- 9.69 The Essex County Council 'biodiversity validation checklist' contains a link to an on-line calculator hosted by a private company (the Environment Bank). This can be used to calculate the biodiversity value of the habitats to be lost to construction in 'units' that are required to be compensated in order to achieve no net loss. A simplistic measure of loss versus gain can be attained by comparing the scoring of habitats created (e.g. off-site and accounting for uplift from baseline conditions) as against those to be lost. However this approach does not allow the factoring in of delivery risk and other factors in order to achieve a fully tailored score without use of Environment Bank services. It is thus of limited use for the present purpose.
- 9.70 A more refined and accessible system is adopted by other Local Planning Authorities that piloted the biodiversity offsetting system (such as Warwickshire) and this is based on use of an interactive Excel spreadsheet calculator to determine losses and gains (including through habitat creation and enhancement). This does allow for delivery risk and lead-in time to be factored in. This system has also been used to test the performance of the Tilbury2 proposals against the objective of delivering no net loss. The results are presented at Appendix 10. The Environment Bank metric favoured by Essex has been used to calibrate bespoke inputs for certain priority habitats (such as open mosaic habitats on previously developed land) to ensure cross-compatibility between the two systems, as indicated in the notes. The notes also indicate how 'uplift' has been factored in by account for the value of existing habitats on the off-site compensation land at Mucking and Paglesham. The result of this exercise in terms of the calculator outputs is a clear net positive situation if losses are measured against gains. In large part this is due to the significant weighting attributed to the conversion from arable land to coastal and flood plain grazing marsh at Paglesham.
- 9.71 Both systems of quantitative calculation have their drawbacks and their outputs should not be treated as definitive. However the calculations are presented here in the context that relevant stakeholders such as Essex County Council endorse the use of such systems to measure biodiversity impact and also to provide a quantitative 'ready reckoner' for measuring the impact (solely in habitat loss/gain terms¹²) of the proposals on biodiversity.

¹² Neither system does or can account for species interest.

10.0 PHASING PLAN

PHASING OF MITIGATION/COMPENSATORY HABITAT CREATION

- 10.1 As far as possible the intention will be for new habitat areas on- and off-site to be created and 'fit for purpose', before the existing habitat is destroyed. For example, the on-site water vole receptor area is currently being created (within the Green Belt area) and allowed to mature before any water voles are translocated to it (see ES paragraph 10.321 [APP-031]); and similarly the on- and off-site reptile habitat has been secured/fenced and is in the process of establishment well in advance of relocating any reptiles to it. However, for 'Open Mosaic Habitat' and associated brownfield habitat translocation, the intention is for the substrate itself to be translocated (see ES paragraph 10.326 [APP-031]). This necessarily results in a situation where new 'Open Mosaic Habitat' cannot be created without partial-destruction of the existing resource: the process cannot be phased to fully avoid this situation. However, given that translocation of substrates will not be comprehensive, (i.e. it will not be possible to extract all the brownfield substrate from the site), the process will involve temporary retention of some of the existing resource *in situ* whilst the off-site habitat begins to develop. Ultimately the temporarily retained brownfield areas would be lost to construction works. The slight lag in phasing will result in some additional net continuity of the resource. Off-site creation of Coastal Grazing Marsh priority habitats is likely to involve a greater or lesser lag-time depending on the mode of creation. For creation via 'arable reversion' for example, natural (unassisted) reversion may be employed which will naturally take longer to achieve target condition than interventions such as seeding.
- 10.2 Phasing of the on- and off-site mitigation for protected species is driven by the requirements of the relevant method statements. For water vole, badger and bats, once the final method statements have been approved by Natural England, they will be appended to the EMCP at Appendix 1-3 on completion of the licensing process, which will necessarily be after the DCO is made. Therefore, prior to these method statements being fully finalised, outline phasing information is set out to demonstrate how the delivery of the enhanced and new habitats, and protected species mitigation and compensation measures, is intended to be sequenced.
- 10.3 **NESTING BIRDS.** Clearance of on-site vegetation with the potential to support nesting birds will be sequenced to avoid the peak nesting months of mid-February to July wherever possible (see section 6 above). Clearance will include the removal of scrub from the path of proposed reptile or water vole exclusion fencelines.
- 10.4 **INNS.** In advance of commencing any ground-works in the vicinity of identified invasive non-native plant species, these will either be removed from the site, treated, or otherwise marked out and cordoned off, so as to ensure that they are not spread or otherwise 'cause[d] to grow in the wild'.
- 10.5 **REPTILES.** On- and off-site compensatory reptile habitat has been secured/fenced and is in the process of establishment well in advance of relocating any reptiles to it. Trapping will commence no earlier than mid-February (for adders and common lizard) and mid-March (for other species) in

any trapping year and will continue no later than October, to ensure it occurs at times when the target species are out of hibernation and active (see section 5 above). Destructive phase search not to be undertaken until INNS satisfactorily managed as per 10.4 above.

- 10.6 **BROWNFIELD HABITATS.** Removal of brownfield substrates from the site for translocation will be sequenced to take place once reptiles have been captured from the Lytag Brownfield and TEEC LoWS substrate donor areas (see section 9 above), so as to obviate any risk to this protected species group during the process.
- 10.7 **WATER VOLES.** The on-site water vole compensation area is being prepared within the Green Belt land¹³ in 2018 (see section 2 above) and allowed to mature before any water voles are translocated to it. Capture of water voles will take place during either the spring window (mid-February to mid-April) or autumn window (mid-September to end-October). Selected use of the displacement method (e.g. for works adjacent to the A1089) would be limited to the same time-windows. Capture or displacement of water voles cannot commence until after the grant of DCO and formal issue of the licence from Natural England (at which point the final method statement will be incorporated into the EMCP at Appendix 1).
- 10.8 **BADGER.** An artificial badger sett is being prepared on-site within the Green Belt land¹⁴ in 2018 (see section 3 above). Measures will be pursued to encourage uptake of the artificial sett and use by badgers prior to closure of existing sett/s. Badgers will only be excluded from any active sett/s during the less sensitive months of July – December, following which the sett/s would be subject to supervised mechanical destruction in line with the terms of a licence. Closure of existing active sett/s cannot take place until after grant of the DCO and formal issue of the licence from Natural England (at which point the final method statement will be incorporated into the EMCP at Appendix 2).
- 10.9 **BATS.** Bat boxes will be erected on retained mature trees at the western boundary of the Tilbury2 site, in advance of licenced destruction of the existing common pipistrelle roost (see section 4 above). As the roost is assessed to be of no higher than low-medium conservation status, there are no associated restrictions on timing and building demolition could therefore take place in any month of the year. However, the licensed destruction of the roost cannot take place until after grant of the DCO and formal issue of a licence from Natural England (at which point the final method statement will be incorporated into the EMCP at Appendix 3).

¹³ In accordance with planning consent 18/00448/FUL as granted by Thurrock Council on 22 June 2018.

¹⁴ In accordance with planning consent 18/00448/FUL as granted by Thurrock Council on 22 June 2018.

11.0 INVASIVE NON-NATIVE SPECIES (INNS)

- 11.1 Chapter 10 of the ES [APP-031], and the CEMP [REP6-008], set out the baseline position as regards INNS and the measures that will be taken to identify and control INNS on the Tilbury2 project site and infrastructure corridor through the construction phase.
- 11.2 In the post-construction phase, ongoing vigilance for INNS in these areas will form part of the annual walkover surveys set out in section 5 of the LEMP [REP6-041] and at section 11 of this EMCP. Where identified, appropriate controls will be put in place to ensure control and eradication, in line with prevailing best practice standards and legal requirements.
- 11.3 The following provisions for long term monitoring and control of INNS, both on-site and off-site, are proposed to be secured:
- **On-site.** Provisions for post-construction monitoring and control of INNS on-site are already secured by the LEMP. This states that: *“Vigilance for INNS will form part of the annual walkover surveys ... and where identified, appropriate controls will be put in place to ensure control and eradication, in line with prevailing best practice standards and legal requirements... an annual monitoring report will be produced detailing any remedial actions or interventions determined to be necessary.”*
 - **Off-site.** No INNS have been identified to date within the off-site ecological mitigation and compensation areas, although they have been noted just outside the compensation site at Mucking landfill. Provisions for monitoring and control of INNS within the off-site receptor areas are not dealt with in any submitted document. The following general provisions for long term monitoring and control of INNS on off-site compensation site/s are therefore proposed:
 - Pre-commencement. Prior to undertaking any habitat creation which is outside the scope of standard agricultural management (e.g. requiring movement of spoil or other groundworks, or works directly affecting wetland features), the compensation areas will be surveyed by a suitably qualified ecologist and the presence of any INNS will be recorded and mapped. If INNS are found to be present, then appropriate isolation, removal and post-habitat creation control measures will be drawn up and implemented in conjunction with prevailing best-practice protocols.
 - Short term (1-5 years). During the first five years after habitat creation (establishment phase), the off-site ecological mitigation and compensation areas will be subject to surveys, the frequency of which will be determined by the nature of the habitat creation works. These surveys will include checks for the presence of INNS and if found the same approach to control as discussed above to ensure full statutory compliance will be applied.
 - Medium/long term (5+ years). As the habitat establishes, the off-site ecological mitigation and compensation areas will continue to be subject to surveys, albeit the need for these checks will be less frequent

checks as the habitat matures. If INNS are found the same approach to control as discussed above to ensure full statutory compliance will be applied.

- 11.4 It is proposed that the above general measures for the identification, control and/or prevention of problems with INNS will be refined having regard to the specifics of additional off-site compensation sites and matters such as substrate source at Mucking. Subsidiary management plans agreed with the owner of the off-site compensation sites will set out any additional bespoke measures identified as necessary in order to ensure legal compliance and adherence to industry best practice.

12.0 OFF-SITE HABITAT MANAGEMENT

GENERAL MEASURES

- 12.1 The following measures apply to all management prescriptions outlined in this section.

New planting

- 12.2 Planting is only proposed for certain areas at Paglesham in order to 'kick-start' scrub creation in the agreed areas. Where nursery stock is used, aftercare and establishment works are to be carried out by an approved landscape contractor in accordance with good horticultural practice or the current British Standard with reference to:

- BS 4428: Code of practice for general landscape operations;
- BS 7370: Grounds maintenance;
- BS 8545: Trees: from nursery to independence in the landscape – recommendations.

- 12.3 Three broad aftercare and establishment periods for new planting are identified below, these are not mutually exclusive and a programme of monitoring will be necessary to ensure the landscape objectives are met.

Short term (1-5 years). The initial establishment period will require more frequent maintenance operations. Replacement planting and remedial works will be carried out and planting sundries maintained in good condition.

Medium term (5-10 years). As the planting establishes during this period, less frequent maintenance will be required. Initial thinning may be necessary to ensure planting thrives without competition.

Long term (10-25 + years). As the planting matures, continual monitoring (see Section 5) will inform a rolling maintenance programme, to ensure that effective maintenance is carried out at the appropriate time to meet health and safety requirements.

- 12.4 During the Short Term (initial establishment) period, inspections shall take place annually in October/November to determine the effectiveness of the establishment and aftercare provisions to that point, paying particular attention to:

1. Planting disease, damage or death;
2. Vandalism;
3. General appearance and condition;
4. Any invasive or non-native species;
5. Any evidence of protected species (such as nesting birds).

- 12.5 If required, the EMCP (and subsidiary management plans agreed with the owner of the off-site compensation site) will be revised and forthcoming maintenance operations adjusted accordingly.
- 12.6 Reviews will continue to take place beyond the initial 5-year period subject to an assessment of the prevailing conditions on site as part of the periodic review and assessment processes. These shall also identify any necessary remedial works on planting.

Works to ditches and ponds

- 12.7 Maintenance works to controlled watercourses are not currently envisaged. If such works need to be carried out, this will be done in accordance with approvals from the Environment Agency.
- 12.8 Management of any ditches created with ecological or landscape objectives overriding in the design (and independent of controlled watercourses) can be carried out without recourse to permitting regimes and thus such works fall fully within the ambit of this EMCP. Standard best practice procedures shall apply to such activities^{15,16}, and species-specific guidance shall be taken into account where relevant, such as for water vole^{17,18}.

MANAGEMENT OF CREATED AND RETAINED HABITATS TO DELIVER OFF-SITE COMPENSATION OBJECTIVES

- 12.9 The success of off-site compensation in counterbalancing net-negative ecological effects within the proposed Order Limits will be dependent on appropriate aftercare and management.
- 12.10 Each off-site compensation site will be divided into compartments under which management measures will be grouped in the final iteration of this EMCP at Deadline 7.

PAGLESHAM: SITE-SPECIFIC MANAGEMENT MEASURES

- 12.11 With regard to the secured site at Paglesham, the final management prescriptions are the subject of ongoing discussions with the landowner hence these too will be presented in the final iteration. Each management compartment will be briefly described and the prescriptions for it outlined (including management objectives with measures for success), following the format set out in the example text below:

¹⁵ For example: Essex County Council Flood and Water Management Team, (November 2014). *Guide to Ordinary Watercourse Maintenance*. [Accessed from: <https://www.essex.gov.uk/Environment%20Planning/Environment/local-environment/flooding/Watercourse-regulation/Documents/ditch-maintenance.pdf>]

¹⁶ Buisson *et al.* (2008). *The Drainage Channel Biodiversity Manual: Integrating Wildlife and Flood Risk Management*. Association of Drainage Authorities and Natural England, Peterborough.

¹⁷ Strachan, Moorhouse & Gelling, (2011). *Water Vole Conservation Handbook*, 3rd edition. WildCRU.

¹⁸ Dean, Strachan, Gow and Andrews, (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds. F Mathews & P Chanin. The Mammal Society, London.

Compartment 1

Summary Description

- 12.12 Coastal grazing marsh, with some boundary scrub and adjoining drainage ditches. The grassland will be allowed to continue to develop an appropriate structure in order that it can maintain the reptile population moved from the Tilbury2 development. The boundary wetland habitat will be left as existing in order to prevent disturbance to the established population of water voles and other species. Field corner scrub development will be encouraged in the locations shown on Figure 4.

Management Objectives

- 12.13 Encourage development of suitable tussocky grassland structure in the land areas to maximise reptile carrying capacity, and thereafter maintain in optimum condition, allowing some limited development of bramble or woody scrub throughout to provide shelter, scrub-interface conditions and sun-traps, and development of denser scrub for overwintering sites and nesting habitats for birds in the field corner locations shown. Maintain adjacent waterbodies as well vegetated channels.

Management Prescriptions

- 12.14 Inspect grassland areas every three to five years to assess sward structure and scrub development and address excess of either with management interventions, to include localised hand strimming in relation to the former and hand cutting in relation to the latter. Operations to be carried out in accordance with prevailing best practice at all times to avoid impacts on reptiles or nesting birds and ensure legal compliance.
- 12.15 After year 5, and dependent on levels of grazing by lagomorphs and deer, consider introduction of short periods of light grazing by stock to suppress scrub development and create a diverse vertical structure. If this is introduced, consider fencing off field corners to prevent browsing of developing scrub in the locations shown at Figure 4.

Compartment 2

Summary Description

Arable land in the process of reversion to coastal grazing marsh, with some boundary scrub and adjoining drainage ditches.

Management Objectives

- 12.16 Encourage development of suitable tussocky grassland structure in the land areas to maximise reptile carrying capacity, and thereafter maintain in optimum condition, allowing some limited development of bramble or woody scrub to provide shelter, scrub-interface conditions and sun-traps. Maintain adjacent waterbodies as well vegetated channels.

Management Prescriptions

- 12.17 The grassland will be monitored for problem species during the establishment phase (estimated years 1-3) and cuts taken in March and October to foster the development of a diverse flower-rich sward and address problem species such as bristly ox-tongue. After removal of the reptile fencing around Compartment 1, cutting regimes will be adapted to minimise the potential for impacts on reptiles (via setting cut heights and timing to avoid periods when animals may be torpid) or grazing will be introduced. After year 2 or 3, grazing will be re-introduced with stocking density no higher than 0.75 LU/ha between April and October and no higher than 1 LU/ha at other times. This will encourage grassland waders such as lapwing and redshank to breed and will encourage floral diversity. No fertilisers will be applied. If required, supplementary feeding stations will be at pre-agreed locations close to gates and away from boundary drainage ditches or areas identified as developing habitats of value. The boundary wetland habitat will be left as existing in order to prevent disturbance to the established population of water voles and other species. Field corner scrub development will be encouraged in the locations shown by protecting from grazing, with electric or permanent fencing as necessary.

Compartment 3

Summary Description

- 12.18 Existing artificial waterbody with surrounding grassland on raised topography and a number of mature boundary trees.

Management Objectives

- 12.19 This landward parts of this area will initially be used as a receptor area for translocated reptiles but will be allowed to develop in time into dense scrub transitional to wet woodland for the benefit of species such as nightingale, turtle dove and Cetti's warbler. The waterbody will be maintained as existing with management interventions necessary as the scrub becomes dense to ensure sufficient light penetration to maintain marginal and emergent vegetation.

Management Prescriptions

Essentially 'laissez faire' for years 1-10 and thereafter based on such interventions as are rendered necessary to address undesirable or problem species, maintain dense scrub structure and maintain the margins of the waterbody clear of dense overshadowing in order to permit retention of macrophyte fringes. These interventions will be reactive and based on the results of inspections every three to five years to assess scrub development and extent of overshadowing of water margins. Interventions are likely to comprise localised hand strimming/brushcutting and hand cutting in relation to the latter. Operations to be carried out in accordance with prevailing best practice at all times to avoid impacts on reptiles, water voles or nesting birds and ensure legal compliance.

MUCKING: SITE-SPECIFIC MANAGEMENT MEASURES

- 12.20 The final aftercare and management prescriptions at Mucking are the subject of ongoing discussions with the landowner and future managers. High level detail on the intended aftercare and future management of the site is however provided below, and will be implemented by the future site manager following integration into the Thurrock Thames Nature Park:

Summary Description

- 12.21 Open mosaic habitats, spread over three compartments, and comprised of mixtures of translocated material from Tilbury2 site and imported anthropogenic and low-fertility, naturally occurring materials formed into a varied micro-topography and with localised areas of ephemeral standing water.

Management Objectives

- 12.22 Encourage slow development of sparse, species-rich vegetation with a high component of annuals, nectar and pollen-bearing plants and stress-tolerant species, as well as specialist lichens and bryophytes. Seek to secure an appropriate balance of sparse vegetation and bare ground, with localised areas of more robust vegetation (including tall ruderals and grasses) and (in time) some scrub. Monitor for colonisation (or successful translocation) by target species of invertebrate, vascular plant and lichen, and of the appearance of other species of conservation interest, in order to assess long-term success of compensation, having regard to the baseline resource at Tilbury2.

Management Prescriptions

- i) Management will be low-intervention for at least the first few years and unless issues are identified that are problematic for achieving the objectives set out above.
- ii) If issues are identified, address reactively and in liaison with appropriate specialists. Examples in years 1-10 might include over-dominance of a particular species such as goat's-rue to the detriment of overall diversity. Appropriate reactive response may be to undertake repeated strimming of stands of goat's-rue to encourage the development of a more diverse mixture of plant species in such areas. Examples in years 10-99 might include monitoring and ultimately (e.g. after 25 years or so) seeking to arrest scrub development and control it at a fixed percentage.
- iii) Other than intermittent habitat management interventions, the main management activity in years 0-25 is likely to be suitable control of public access to the site once it becomes part of the wider Thurrock Thames Nature Park, and the maintenance of interpretation material such as sign-boards which explain the interest and improve the visitor experience. Stone-finished and waymarked footpaths will be created to guide visitors through the site (to be 1.5m wide and 1500m minimum) thereby offering high-quality visitor access. These would preferentially route users away from sensitive areas (such as banks of loosely consolidated substrate used by nesting solitary bees). In view of the

site's location relatively remote from urban centres and within a large managed wildlife reserve that offers broad recreational opportunities, it is not envisaged that impacts from public use and appreciation (e.g. erosion or damage from foot traffic) are likely to require significant management. Indeed limited scale habitat disturbance and erosion are more likely to be beneficial than otherwise in maintaining the site in early successional phases, and maintaining openness and bare ground.

13.0 MONITORING & REVIEW

GENERAL

- 13.1 Management of the off-site compensation areas will continue for 30 (Paglesham) and 99 (Mucking) years by means of agreements between PoTLL and the respective landowners. Management of the on-site areas will continue indefinitely, i.e. for the life of the Port. As the habitats develop over this timescale, the management prescriptions in the preceding section of this EMCP (and any subsidiary management plans) will need to be reviewed. This will be informed by the results of regular monitoring of the condition of the habitats, and by relevant species monitoring. Details of this are set out below.

ANNUAL WALKOVER – YEARS 1-5

- 13.2 All on and off-site management compartments and their constituent habitats will be subject to annual walkover inspections by suitably qualified ecologists for years 1-5. These inspections will be additional to those required to ensure establishment of created habitats (as discussed in sections 10 and 12) and/or further to the applicable post-translocation or post-displacement protocols for reptiles, water voles, bats and badgers.
- 13.3 In addition, whilst intertidal habitats do not require management, monitoring will nonetheless be undertaken for coastal saltmarsh mitigation areas (compartment 10) during the establishment phase in order to determine whether the measures are working as anticipated such that they can be modified if required.
- 13.4 The objective of the annual walkovers will be to assess the condition of retained, created and translocated habitats against target objectives, including those for the individual management compartment and (where relevant) the requirements of protected species and approved translocation strategies.
- 13.5 Following the walkover inspections, an annual monitoring report for each of the on-site mitigation and compensation areas, and the two off-site compensation areas will be produced detailing any remedial actions or interventions determined to be necessary in order to meet the relevant species or habitat objectives. Examples may include:
- Scrub control or cutting back of adjoining scrub where threatening to overshadow open mosaic habitats (unlikely to be required before year 10);
 - Disturbance interventions to create or maintain bare ground for annual plants, other early succession species and thermophilic invertebrates;
 - Weed control including addressing any INNS noted to have colonised the site in accordance with section 11.

FIVE-YEARLY SURVEY AND REVIEW

- 13.6 The performance of the on-site retained, created and translocated habitats, and the off-site created and translocated habitats in relation to their target objectives, including in providing alternative habitat for key species impacted

by the development, will be assessed by means of more involved surveys at five-yearly intervals, the first to be undertaken five years after the completion of habitat creation activities in all management compartments.

13.7 The following surveys, at minimum, will be included in the five-year reviews:

- Protected species surveys (in particular reptiles);
- Breeding and/or non-breeding birds surveys, with particular focus on any use of the management compartments by nightingale, Cetti's warbler, barn owl and long-eared owl;
- Botanical surveys, focusing on early season surveys of open mosaic habitats on previously developed land and including sampling of lichens;
- Intertidal habitat surveys, to map extent of saltmarsh cover, and record the species composition of the areas affected (including translocated turves and any new areas of colonisation). Results would be compared with those from annual photographic monitoring (e.g. at years 1-4), to document extent of the saltmarsh cover. The species composition of the areas affected (including translocated turves and any new areas of colonisation) would be recorded at five year intervals;
- Invertebrate surveys.

13.8 The results of the surveys will be analysed in order to identify any revisions to the management prescriptions deemed to be required in order to meet the objectives for each compartment and/or address any problems over the subsequent five years. Revised prescriptions would then be produced to guide that subsequent five year period. This information would be presented as a 'Five Year Monitoring Report' to be shared with relevant stakeholders, including Natural England, the Environment Agency and any others deemed relevant. Feedback and suggestions from these stakeholders would be used to guide the next five-year plan.

13.9 Nothing in the preceding paragraphs precludes PoTLL seeking to change the prescriptions set out in this EMCP prior to the end of each five year period. Such changes would be able to take place with the approval of the relevant landowner and in consultation with Natural England, the Environment Agency and any other conservation stakeholders deemed relevant.

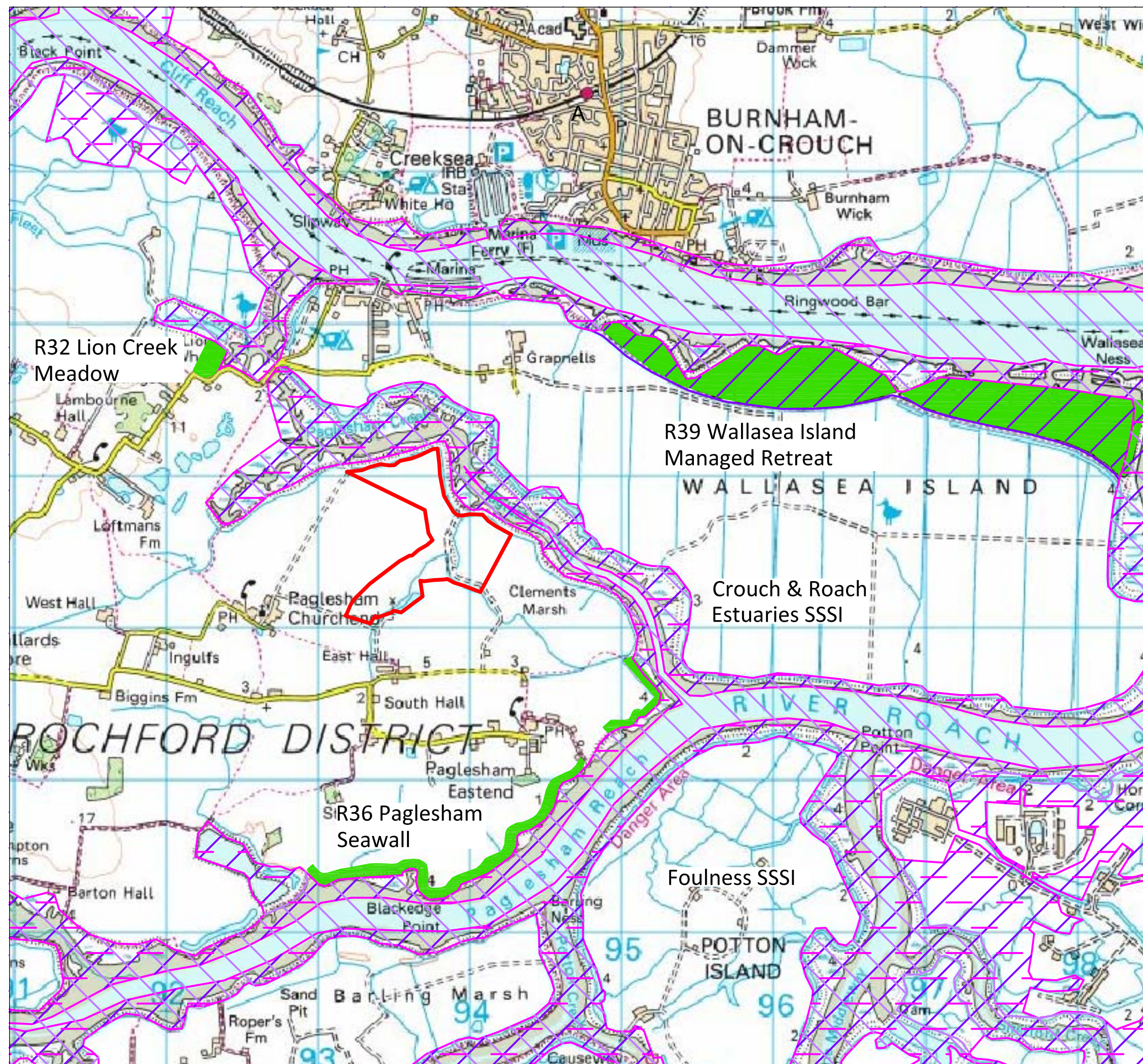
Figure 1

On-site protected species mitigation and compensation

Figure 2

Paglesham: Off-site Compensation Site

Location Map and Nearby Designations



- OFF-SITE COMPENSATION SITE
- LOCAL WILDLIFE SITE (LoWS)
- CROUCH & ROACH ESTUARIES SPA AND RAMSAR SITE
- SSSI
- ESSEX ESTUARIES SAC

REV	DATE	DESCRIPTION
		DRAWING TITLE
		Off-site Compensation Site (Paglesham) Location Map and Nearby Designations
SCALE		DRAWN
NOT TO SCALE		STM
DATE		CHECKED
AUGUST 2018		DW

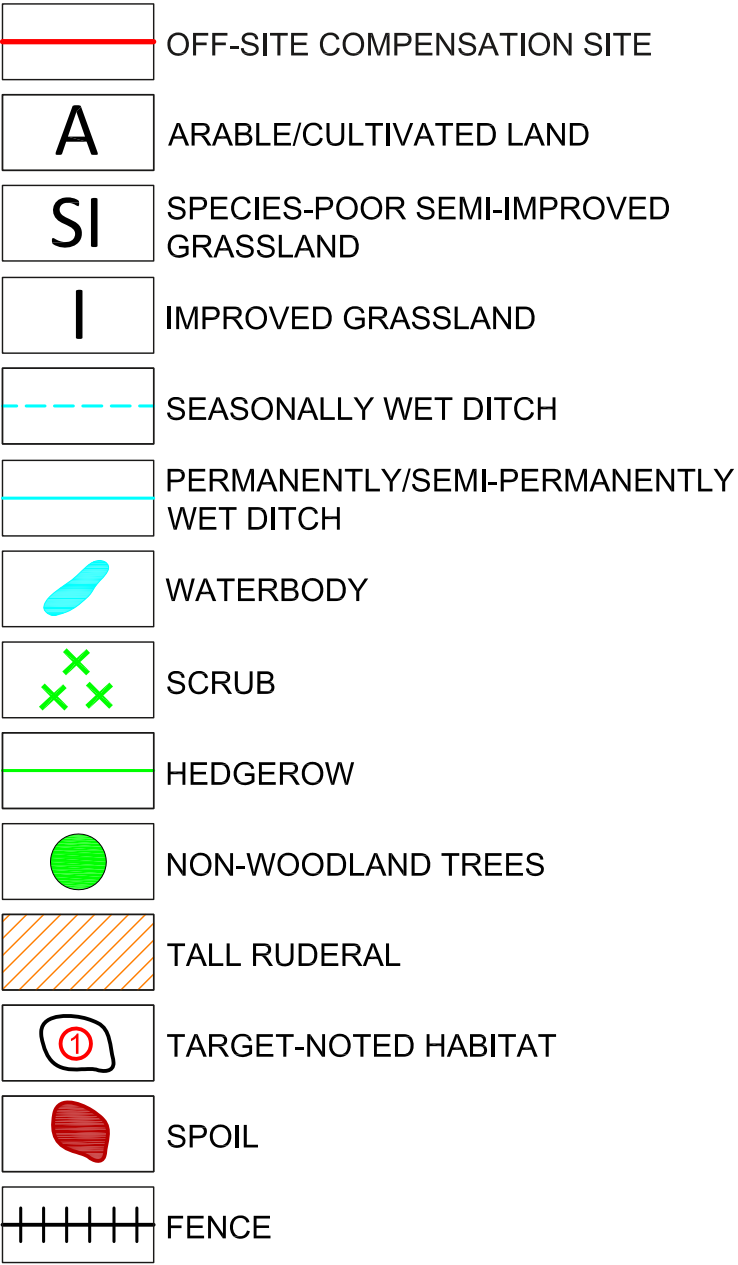
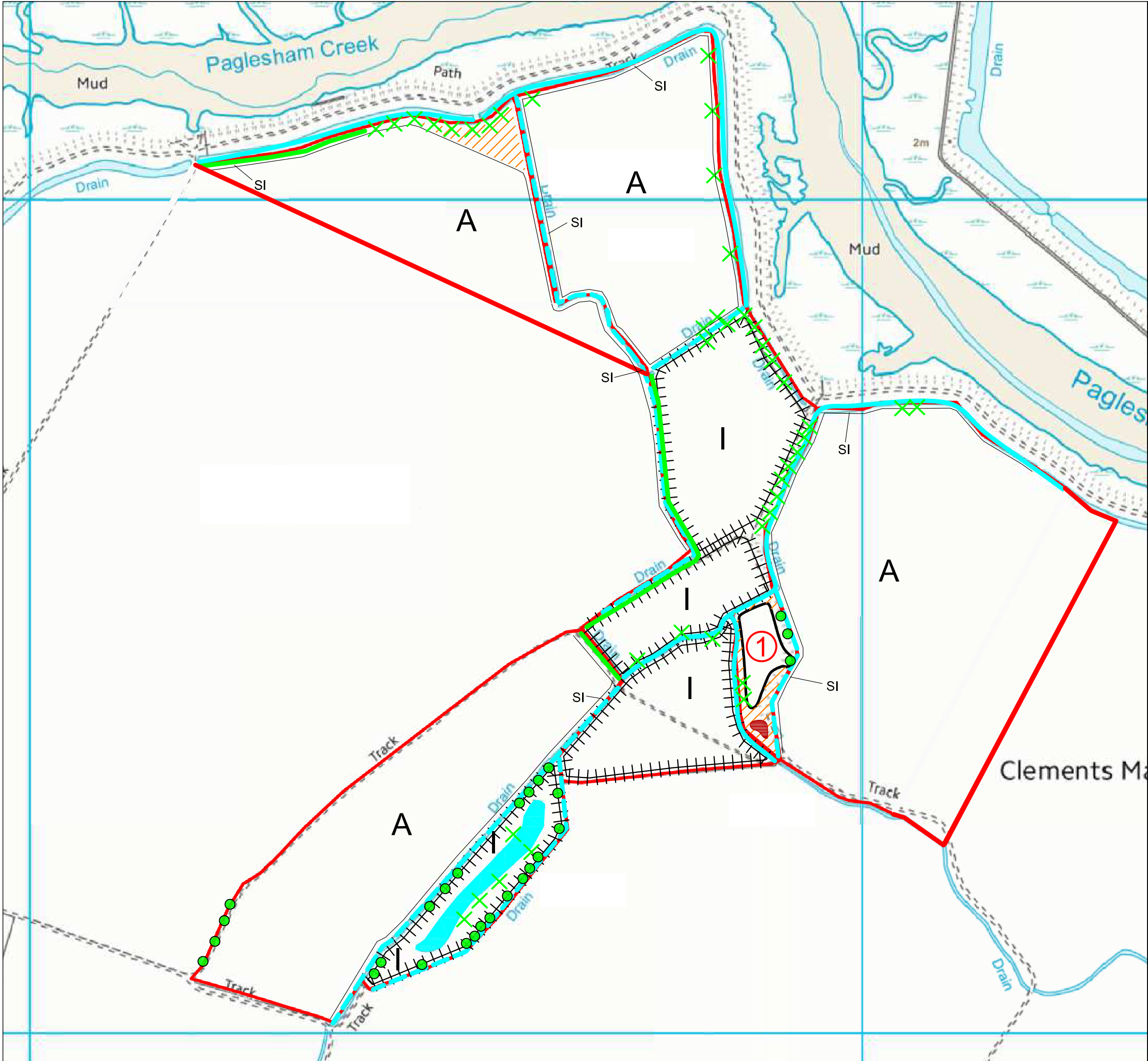
EMCP FIG.2



Figure 3

Paglesham: Off-site Compensation Site

Phase 1 Habitat Map



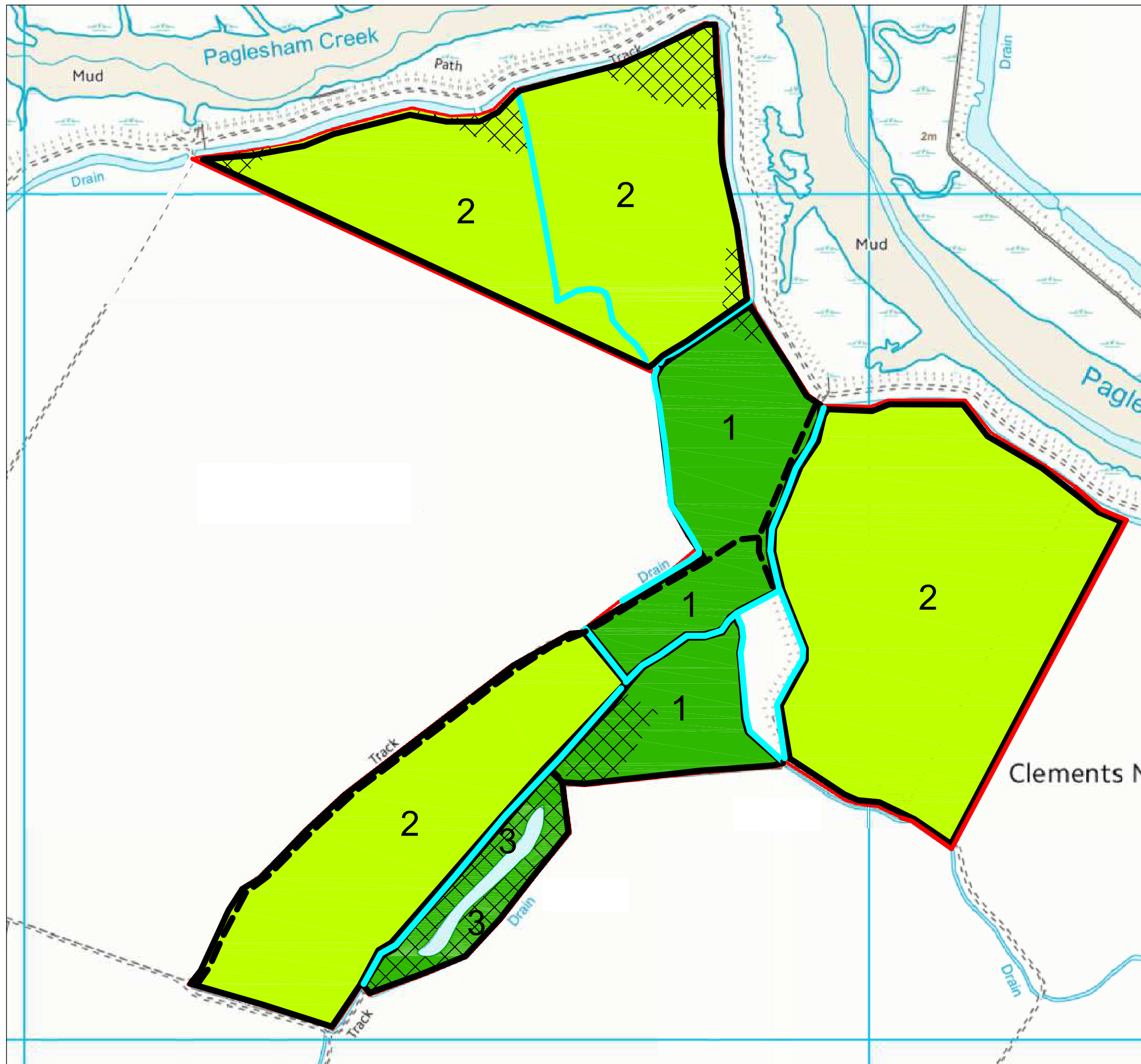
REV	DATE	DESCRIPTION
DRAWING TITLE		
Off-site Compensation Site (Paglesham) - Baseline Conditions		
SCALE		
NOT TO SCALE		STM
DATE		CHECKED
AUGUST 2018		DW
EMCP FIG.3		



Figure 4

Paglesham: Off-site Compensation Site

Management Compartments



- OFF-SITE COMPENSATION SITE
- ARABLE REVERSION TO COASTAL GRAZING MARSH
- EXISTING GRASSLAND GROWN OUT TO PROVIDE REPTILE RECEPTOR HABITAT (10HA)
- EXISTING DITCH
- SCRUB (SELF-SOWN OR PLANTED)
- EXISTING PATH/TRACK
- MANAGEMENT COMPARTMENTS

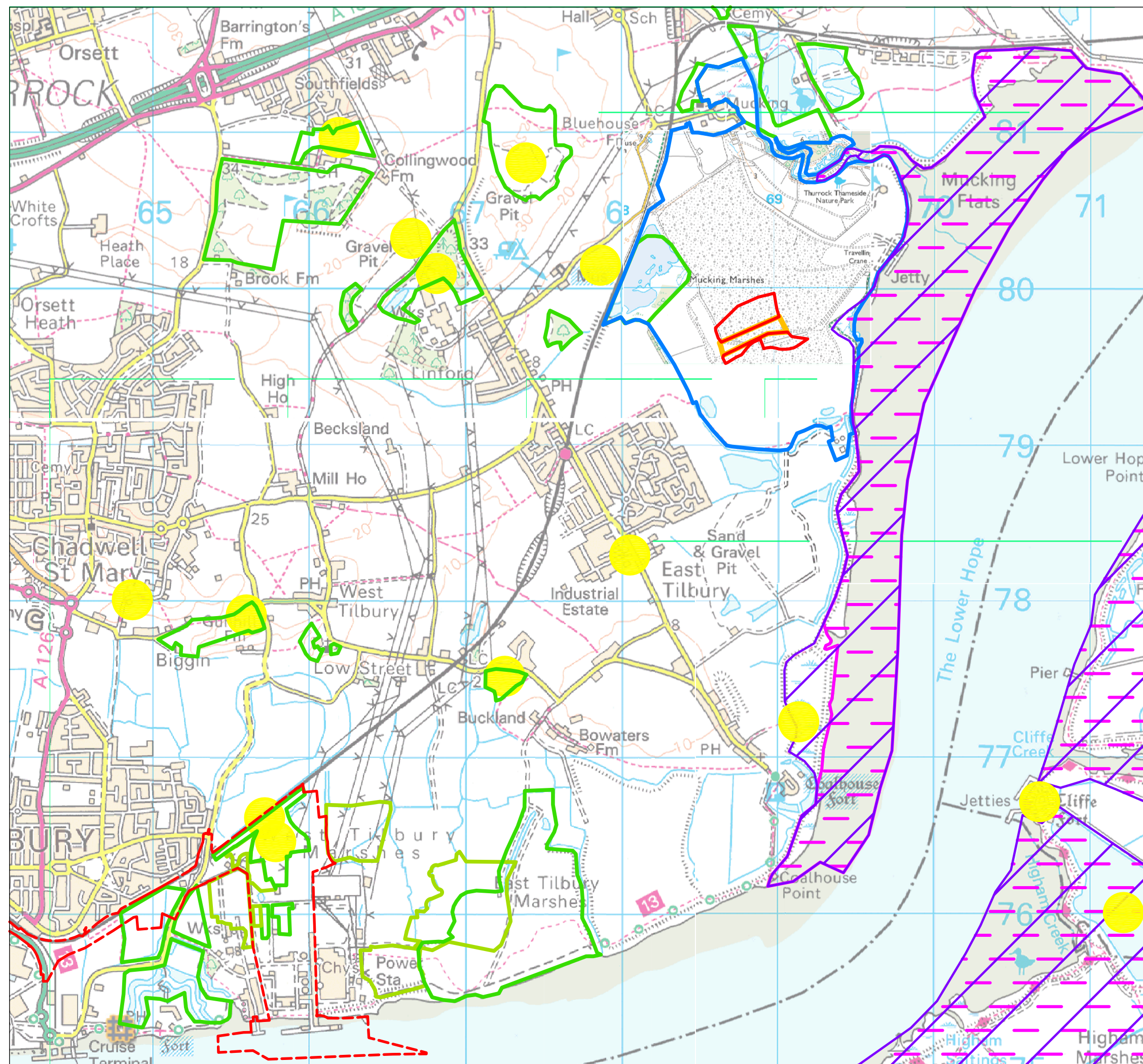
REV	DATE	DESCRIPTION
DRAWING TITLE		
Off-site Compensation Site (Paglesham) - Proposed Enhancements and Management Compartments		

SCALE	DRAWN	STM
NOT TO SCALE		
DATE	CHECKED	DW
AUGUST 2018		

EMCP FIG.4

Figure 5

Mucking: Off-site Compensation Site
Location Map and Nearby Designations



- TILBURY2 ORDER LIMITS
- MUCKING LANDFILL SITE OWNERSHIP BOUNDARY
- TILBURY2 BROWNFIELD HABITAT CREATION SITE
- EXISTING LDP INVERTEBRATE COMPENSATION SITE
- LOCAL WILDLIFE SITES (LoWS)
- DRAFT LoWS (UNADOPTED)
- MUCKING FLATS & MARSHES SSSI SOUTH THAMES ESTUARY & MARSHES SSSI
- THAMES ESTUARY & MARSHES SPA AND RAMSAR SITE
- SITES IDENTIFIED AS HIGH OR MEDIUM POTENTIAL FOR INVERTEBRATES - BUGLIFE 'ALL OF A BUZZ IN THE THAMES GATEWAY'

REV	DATE	DESCRIPTION
DRAWING TITLE		
Mucking: Off-site Compensation Site Location Map and Ecological Designations		
SCALE	DRAWN	STM
NOT TO SCALE		
DATE	CHECKED	DW
AUGUST 2018		

EMCP FIG.5

Figure 6

Mucking: Off-site Compensation Site

Phase 1 Habitat Map



- MUCKING LANDFILL SITE OWNERSHIP BOUNDARY
- TILBURY2 BROWNFIELD HABITAT CREATION SITE
- EXISTING LDP INVERTEBRATE COMPENSATION SITE
- DISTURBED GROUND HABITATS
- CHALK SLURRY SUBSTRATE WITH EPHEMERAL VEGETATION
- PFA MOUND WITH EPHEMERAL VEGETATION

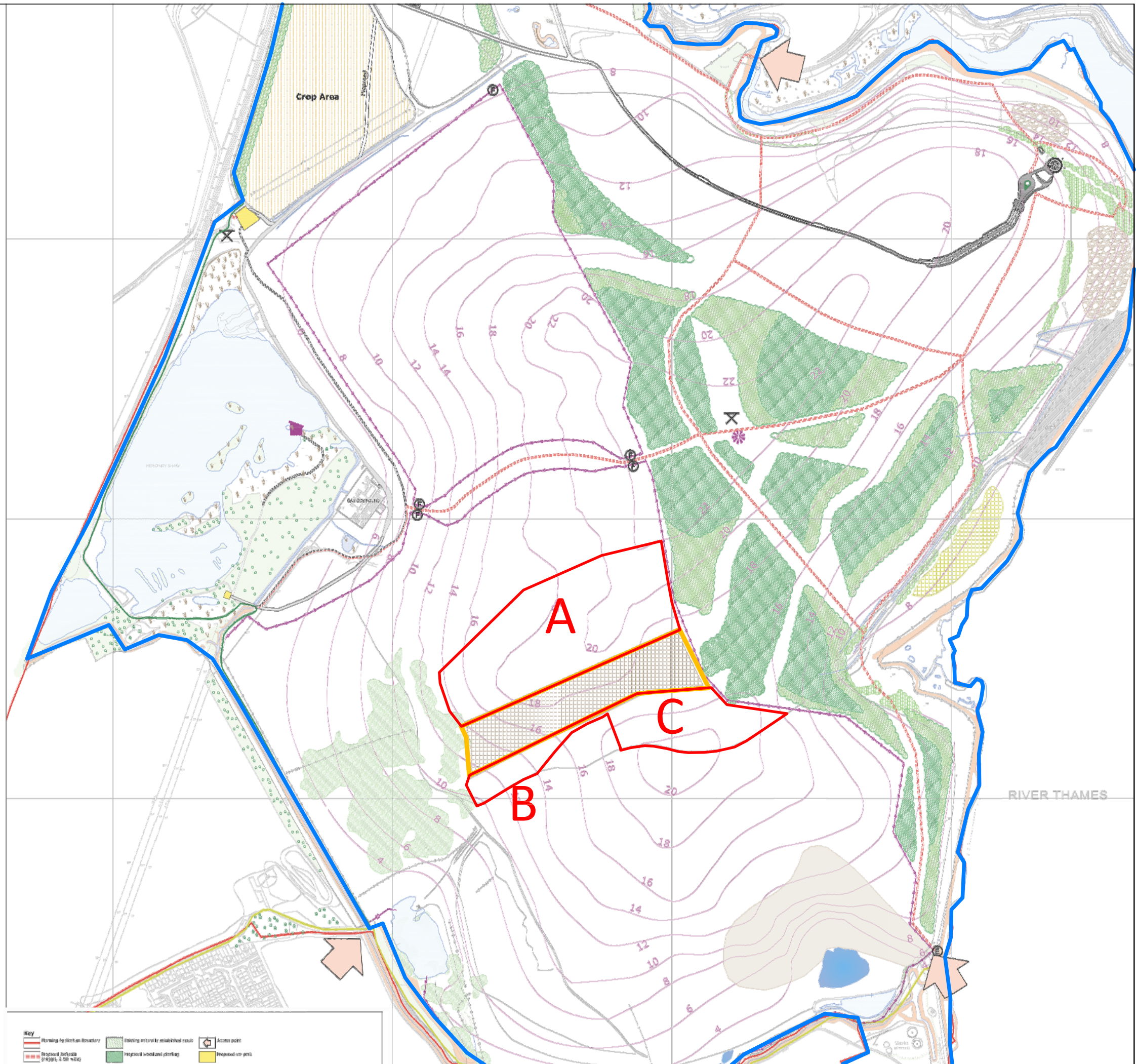
REV	DATE	DESCRIPTION
DRAWING TITLE		
Mucking: Off-site Compensation Site Phase 1		
Habitat Map		

SCALE	DRAWN	STM	EMCP FIG.6
NOT TO SCALE			
DATE	CHECKED	DW	
AUGUST 2018			



Figure 7

Mucking: Off-site Compensation Site
Management Compartments



- MUCKING LANDFILL SITE OWNERSHIP BOUNDARY
- TILBURY2 BROWNFIELD HABITAT CREATION SITE MANAGEMENT COMPARTMENTS A, B + C
- EXISTING LDP INVERTEBRATE COMPENSATION SITE

REV	DATE	DESCRIPTION
DRAWING TITLE		
Mucking: Off-site Compensation Site - Management Compartments		
SCALE		DRAWN
NOT TO SCALE		STM
DATE		CHECKED
AUGUST 2018		DW

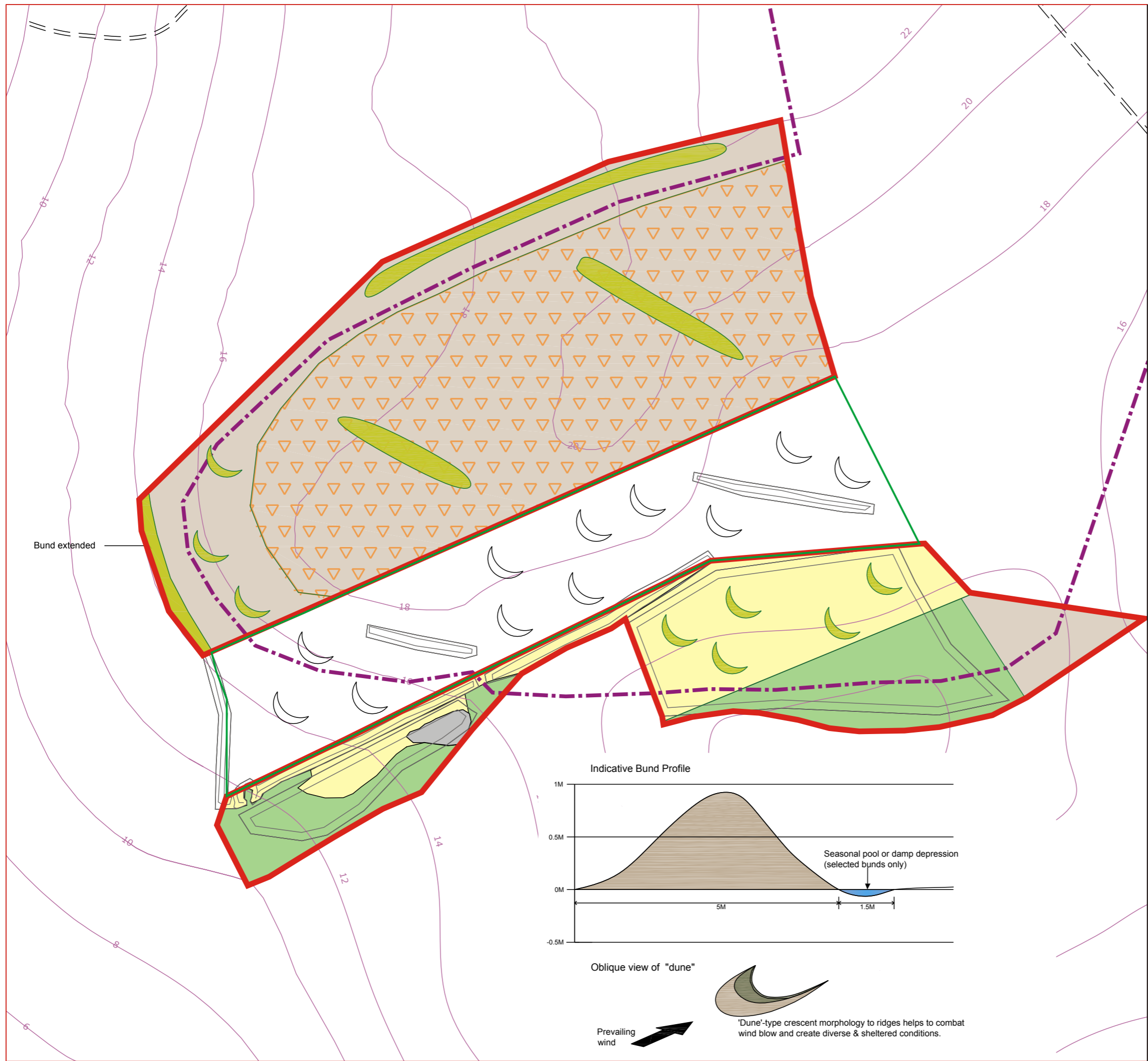
EMCP FIG.7



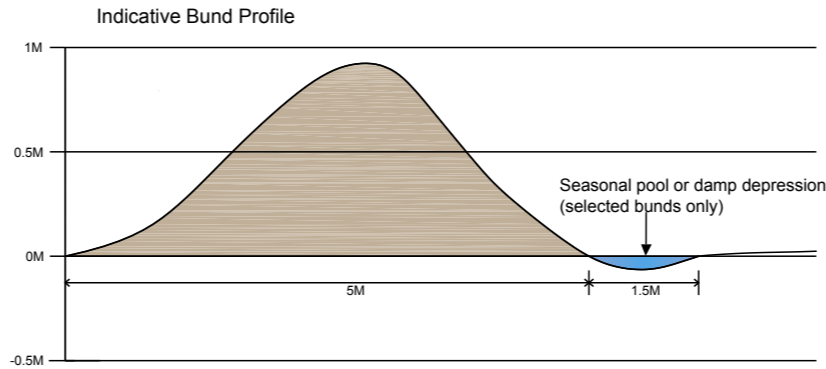
Figure 8

Mucking: Off-site Compensation Site

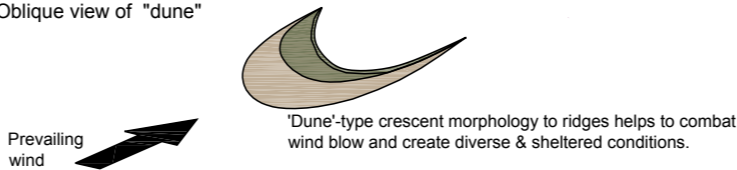
Habitat Creation/Enhancement Design Scheme



- Key**
- APPLICATION SITE
 - LONDON DISTRIBUTION PARK COMPENSATION AREA (13/01014NMA)
 - INDICATIVE FOOTPATH ROUTE
 - EXISTING BUND / STOCKPILE / DUNE
 - BLINDING LAYER (LOW FERTILITY MATERIAL)
 - TRANSLOCATED LYTAG SUBSTRATE OVERLAYING BLINDING LAYER
 - UPSTANDING TOPOGRAPHICAL FEATURES (MOUNDS / DUNES)
 - BARE CHALK SUBSTRATE (TO BE RETAINED)
 - EXISTING PFA MOUND (TO BE RETAINED)
 - RETAINED VEGETATION
 - PROPOSED FINAL CONTOURS



Oblique view of "dune"



REV	DATE	DESCRIPTION
DRAWING TITLE		

Mucking: Off-site Compensation Site
- Proposed Compensation Site Layout

SCALE	DRAWN	STM
NOT TO SCALE		
DATE	CHECKED	DW
AUG 2018		

EMCP FIG.8



Appendix 1

Water Vole Translocation Licence Method Statement

[Final version to be appended to EMCP document subsequent to grant of DCO.]

Appendix 2

Badger Sett Interference Licence Method Statement

[Final version to be appended to EMCP document subsequent to grant of DCO.]

Appendix 3

Loss of Bat Roost Licence Method Statement

[Final version to be appended to EMCP document subsequent to grant of DCO.]

Appendix 4

Letters of No Impediment (LoNI)

Date: 14 December 2017
Our ref: DAS/11835/227719
(NATIONALLY SIGNIFICANT INFRASTRUCTURE
PROJECT)



Dominic Woodfield CEcol CEnv MCIEEM
Director
Bioscan (UK) Ltd
Sent by e-mail only

Dear Dominic

DRAFT MITIGATION LICENCE APPLICATION STATUS: Email outlining the proposed mitigation strategies at a high level has been provided to Natural England (dated 29th September 2017)
LEGISLATION: THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 / THE PROTECTION OF BADGERS ACT 1992 (as amended) / THE WILDLIFE AND COUNTRYSIDE ACT 1992 (as amended)
NSIP: Tilbury 2, Port of Tilbury, Tilbury, Essex, RM18 7EH
SPECIES: Badgers, bats and water voles.

Thank you for your email outlining the proposed mitigation strategies for badgers, bats and water voles in association with the above NSIP site, received in this office on the 29 September 2017. As stated in our published guidance, once Natural England is content that the draft licence application is of the required standard (once submitted and assessed), we will issue a 'letter of no impediment'. This is designed to provide the Planning Inspectorate and the Secretary of State with confidence that the competent licensing authority sees no impediment to issuing a licence in the future, based on information assessed to date in respect of these proposals.

Assessment

Following our assessment of the email outlining the proposed mitigation strategies, I can now confirm that, on the basis of the information and proposals provided, Natural England sees no in principle impediment to a licence being issued, should the DCO be granted.

However, please note the following issues have been identified within the email outlining the proposed mitigation strategies that will need to be addressed before the licence application is formally submitted. Our Wildlife Adviser, Sonya Gray discussed this matter with Dominic Woodfield on the 10 October 2017 where it was confirmed that the necessary amendments would be made. Please do ensure that the Method Statement includes these changes prior to formal submission. For clarity these include:

- An appropriate lead-in time being allowed for in respect of compensatory habitat creation for water voles, to enable immediate soft release of captured voles. This avoids the need for water voles (which have a short life expectancy) to spend a significant part of their life in captivity.

- Compensatory artificial sett creation suitably located to enable excluded badgers to locate and use the sett.

As no draft licence application has been submitted, it is strongly advised that you obtain pre-licensing species advice and pre-planning submission advice at an early stage to further reduce uncertainty and reduce the risk of delay at the formal application stage. The [Pre-submission Screening Service](#) (PSS) provides advice for protected species mitigation licence applications. We note that you already have an undefined scope Discretionary Advice Service (DAS) contract set-up with Natural England under which this further assessment work would be provided.

Next Steps

Should the DCO be granted then the mitigation licence application must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works, e.g. due to ecological requirements of the species concerned, must be made and agreed with Natural England before a licence is granted. Please note that there will be no charge for the formal licence application determination, should the DCO be granted, or the granting of any licence.

If other minor changes to the application are subsequently necessary, e.g. amendments to the work schedule/s then these should be outlined in a covering letter and must be reflected in the formal submission of the licence application. These changes must be agreed by Natural England before a licence can be granted. If changes are made to proposals or timings which do not enable us to meet reach a 'satisfied' decision, we will issue correspondence outlining why the proposals are not acceptable and what further information is required. These issues will need to be addressed before any licence can be granted.

Full details of Natural England's licensing process with regards to NSIP's can be found at the following link:

http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wml-q36_tcm6-28566.pdf

As stated in the above guidance note, I should also be grateful if an open dialogue can be maintained with yourselves regarding the progression of the DCO application so that, should the Order be granted, we will be in a position to assess the final submission of the application in a timely fashion and avoid any unnecessary delay in issuing the licence.

I hope the above has been helpful. However, should you have any queries then please do not hesitate to contact me.

Yours sincerely

David Brown
Tel: 07775 843496
E-mail: David.Brown@naturalengland.org.uk

Date: 20 March 2018
Our ref: DAS2865/11835/227719
(NATIONALLY SIGNIFICANT INFRASTRUCTURE
PROJECT)



Dominic Woodfield CEng MCIEEM
Director
Bioscan (UK) Ltd
Sent by e-mail only

Dear Dominic Woodfield.

DRAFT MITIGATION LICENCE APPLICATION STATUS: Email outlining the bat survey results and proposed compensation for building B7 The Northern Degreasing Shed (dated 15 March 2013). **LEGISLATION:** THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 (as amended) / THE WILDLIFE AND COUNTRYSIDE ACT 1992 (as amended)
NSIP: Tilbury 2, Port of Tilbury, Tilbury, Essex, RM18 7EH
SPECIES: Bats

Thank you for your Email outlining the bat survey results and proposed compensation for building B7 The Northern Degreasing Shed in association with the above NSIP site, received in this office on the 16 March 2018. As stated in our published guidance, once Natural England is content that the draft licence application is of the required standard we will issue a 'letter of no impediment'. This is designed to provide the Planning Inspectorate and the Secretary of State with confidence that the competent licensing authority sees no impediment to issuing a licence in future, based on information assessed to date in respect of these proposals.

Assessment

Following our assessment of the resubmitted draft application documents, I can now confirm that, on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted.

However, please note the following issues have been identified within the current draft of the method statement that will need to be addressed before the licence application is formally submitted. Our Wildlife Adviser, Sonya Gray discussed this matter with Rebecca Reid on the 16 March 2018 where it was confirmed that the necessary amendments would be made. Please do ensure that the Method Statement is revised to include these changes prior to formal submission. For clarity these include:

- An updated survey should be conducted within the current and/or previous optimal season prior to the destructive works. i.e., in the summer prior to works scheduled for that autumn and previous summer/ autumn for works being undertaken in the spring.

Next Steps

Should the DCO be granted then the mitigation licence application must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works, e.g. due to ecological requirements of the species concerned, must be made and agreed with Natural England before a licence is granted. Please note that there will be no charge for the formal licence application determination, should the DCO be granted, or the granting of any licence.

If other minor changes to the application are subsequently necessary, e.g. amendments to the work schedule/s then these should be outlined in a covering letter and must be reflected in the formal submission of the licence application. These changes must be agreed by Natural England before a licence can be granted. If changes are made to proposals or timings which do not enable us to meet reach a 'satisfied' decision, we will issue correspondence outlining why the proposals are not acceptable and what further information is required. These issues will need to be addressed before any licence can be granted.

Full details of Natural England's licensing process with regards to NSIP's can be found at the following link:

http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wml-g36_tcm6-28566.pdf

As stated in the above guidance note, I should also be grateful if an open dialogue can be maintained with yourselves regarding the progression of the DCO application so that, should the Order be granted, we will be in a position to assess the final submission of the application in a timely fashion and avoid any unnecessary delay in issuing the licence.

I hope the above has been helpful. However, should you have any queries then please do not hesitate to contact me.

Yours sincerely

Sonya Gray
Tel: 07833 400 695
E-mail: sonya.gray@naturalengland.org.uk

Date: 20 March 2018
Our ref: DAS2865/11835/227719



(NATIONALLY SIGNIFICANT INFRASTRUCTURE)

Dominic Woodfield CEng MCIEEM
Director
Bioscan (UK) Ltd
Sent by e-mail only

Dear Dominic Woodfield

<p>DRAFT MITIGATION LICENCE APPLICATION STATUS: INITIAL DRAFT APPLICATION LEGISLATION: THE WILDLIFE AND COUNTRYSIDE ACT 1992 (as amended) NSIP: Tilbury 2, Port of Tilbury, Tilbury, Essex, RM18 7EH SPECIES: Water vole</p>
--

Thank you for your subsequent draft water vole mitigation licence application in association with the above NSIP site, received in this office on the 5 March 2018. As stated in our published guidance, once Natural England is content that the draft licence application is of the required standard, we will issue a 'letter of no impediment'. This is designed to provide the Planning Inspectorate and the Secretary of State with confidence that the competent licensing authority sees no impediment to issuing a licence in future, based on information assessed to date in respect of these proposals.

Assessment

Following our assessment of the resubmitted draft application documents, I can now confirm that, on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted.

However, please note the following issues have been identified within the current draft of the method statement that will need to be addressed before the licence application is formally submitted. Our Wildlife Adviser, Sonya Gray discussed this matter with Rebecca Reid on the 15 March 2018 where it was confirmed that the necessary amendments would be made. Please do ensure that the Method Statement is revised to include these changes prior to formal submission. For clarity these include:

- Autumn trapping must start as soon as possible after 15 September and be completed by 31 October.
- Traps used must NOT be of a type fitted with a spring loaded mechanism.
- The water vole fencing along the eastern boundary of the compensation site will be removed upon completion of the destructive search.
- Prior to undertaking any displacement of activities along Pinnocks Trough, there must be sufficient available adjacent habitat for water voles to move into.

Next Steps

Should the DCO be granted then the mitigation licence application must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works, e.g. due to ecological requirements of the species concerned, must be made and agreed with Natural England before a licence is granted. Please note that there will be no charge for the formal licence application determination, should the DCO be granted, or the granting of any licence.

If other minor changes to the application are subsequently necessary, e.g. amendments to the work schedule/s then these should be outlined in a covering letter and must be reflected in the formal submission of the licence application. These changes must be agreed by Natural England before a licence can be granted. If changes are made to proposals or timings which do not enable us to meet reach a 'satisfied' decision, we will issue correspondence outlining why the proposals are not acceptable and what further information is required. These issues will need to be addressed before any licence can be granted.

Full details of Natural England's licensing process with regards to NSIP's can be found at the following link:

http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wml-q36_tcm6-28566.pdf

As stated in the above guidance note, I should also be grateful if an open dialogue can be maintained with yourselves regarding the progression of the DCO application so that, should the Order be granted, we will be in a position to assess the final submission of the application in a timely fashion and avoid any unnecessary delay in issuing the licence.

I hope the above has been helpful. However, should you have any queries then please do not hesitate to contact me.

Yours sincerely

Sonya Gray
Tel: 07833 400 695
E-mail: sonya.gray@naturalengland.org.uk

Annex - Guidance for providing further information or formally submitting the licence application.

Date: 20 March 2018
Our ref: DAS2865/11835/227719



(NATIONALLY SIGNIFICANT INFRASTRUCTURE)

Dominic Woodfield CEcol CEnv MCIEEM
Director
Bioscan (UK) Ltd
Sent by e-mail only

Dear Dominic Woodfield

DRAFT MITIGATION LICENCE APPLICATION STATUS: INITIAL DRAFT APPLICATION
LEGISLATION: THE PROTECTION OF BADGERS ACT 1992 (as amended)
NSIP: Tilbury 2, Port of Tilbury, Tilbury, Essex, RM18 7EH
SPECIES: Badger

Thank you for your subsequent draft badger mitigation licence application in association with the above NSIP site, received in this office on the 5 March 2018. As stated in our published guidance, once Natural England is content that the draft licence application is of the required standard we will issue a 'letter of no impediment'. This is designed to provide the Planning Inspectorate and the Secretary of State with confidence that the competent licensing authority sees no impediment to issuing a licence in future, based on information assessed to date in respect of these proposals.

Assessment

Following our assessment of the resubmitted draft application documents, I can now confirm that, on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted.

However, please note the following issues have been identified within the current draft of the method statement that will need to be addressed before the licence application is formally submitted. Our Wildlife Adviser, Sonya Gray discussed this matter with Rebecca Reid on the 15 March 2018 where it was confirmed that the necessary amendments would be made. Please do ensure that the Method Statement is revised to include these changes prior to formal submission. For clarity these include:

- The grid references for Setts S1, S2 and S3 and the Artificial sett must be provided
- The distance of Artificial sett from the existing main sett S1 must be provided
- Size of the chambers in the Artificial sett must be specified, as follows:
Small square nesting chambers measuring L610mm X W610mm x H475mm (roofs measuring 650mm by 610mm),
Large rectangular chambers measuring L900mm long x W601mm x H475mm (roofs measuring 900mm by 640mm).

- The Artificial Setts must be designed to enable future expansion by badgers i.e. open ended tunnels incorporated into the design and no below ground badger proof fencing the sett.
- The Artificial Setts must show signs of use before closing the existing main sett S1.
- The formal licence application should not be submitted until all consents have been granted and the development can proceed. Licences prior to receipt of consent cannot be granted merely because delaying works would cause greater inconvenience or cost to the licensee. Therefore unless a robust argument and evidence is provided in support of any request for a licence prior to a consent, the site works within the vicinity of the badger setts and the sett exclusions should be re - scheduled accordingly.

Next Steps

Should the DCO be granted then the mitigation licence application must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works, e.g. due to ecological requirements of the species concerned, must be made and agreed with Natural England before a licence is granted. Please note that there will be no charge for the formal licence application determination, should the DCO be granted, or the granting of any licence.

If other minor changes to the application are subsequently necessary, e.g. amendments to the work schedule/s then these should be outlined in a covering letter and must be reflected in the formal submission of the licence application. These changes must be agreed by Natural England before a licence can be granted. If changes are made to proposals or timings which do not enable us to meet reach a 'satisfied' decision, we will issue correspondence outlining why the proposals are not acceptable and what further information is required. These issues will need to be addressed before any licence can be granted.

Full details of Natural England's licensing process with regards to NSIP's can be found at the following link:

http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wml-g36_tcm6-28566.pdf

As stated in the above guidance note, I should also be grateful if an open dialogue can be maintained with yourselves regarding the progression of the DCO application so that, should the Order be granted, we will be in a position to assess the final submission of the application in a timely fashion and avoid any unnecessary delay in issuing the licence.

I hope the above has been helpful. However, should you have any queries then please do not hesitate to contact me.

Yours sincerely

Sonya Gray
Tel: 07833 400 695
E-mail: sonya.gray@naturalengland.org.uk

Appendix 5

Confirmation of landowner agreement: Paglesham, Essex

CALEB RAYNER LIMITED
CHURCH HALL
PAGLESHAM
ROCHFORD
ESSEX SS4 2DP

Robert Ranger
Case Manager
The Planning Inspectorate
National Infrastructure
Temple Quay House
Temple Quay
Bristol
BS1 6PN

~~DATE~~ 15/8/18

Dear Robert,

Tilbury2 DCO – Ecological Mitigation Site, Paglesham, Essex

The revised draft DCO submitted at Deadline 7 includes a requirement that the applicant, Port of Tilbury London Limited ('PoTLL'), must comply with a document it has prepared known as the 'Ecological Mitigation and Compensation Plan' ('EMCP').

The EMCP prescribes the location of off-site ecological compensation areas (at Mucking and Paglesham); and describes how they must be created (including phasing), managed and monitored. In particular the EMCP prescribes that the management of the sites will be undertaken for 30 years for Paglesham, and 99 years for Mucking.

As has been previously indicated to you, PoTLL and Caleb Rayner Limited ('the Company') have reached agreement in relation to the use of land owned by the Company at Paglesham as an ecological compensation site.

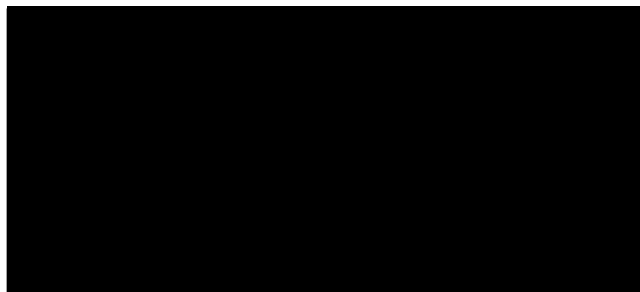
Following further discussions between the parties, I can now also confirm that Heads of Terms have now been signed between the parties and good progress has been made on fully agreeing all the necessary documentation.

To assist the Examining Authority, a redacted copy of these Heads of Terms is attached to this letter.

All commercial and ecological technical points are agreed between the parties, and we therefore consider that full agreement should be able to be reached in short order.

If you have any further questions on this matter, please do not hesitate to contact us.

Yours sincerely,



DEBORAH REID
DIRECTOR

Appendix 6

Confirmation of landowner agreement: Mucking, Essex

14th August 2018

Robert Ranger
Case Manager
The Planning Inspectorate
National Infrastructure
Temple Quay House
Temple Quay
Bristol
BS1 6PN

Dear Robert,

Tilbury2 DCO – Ecological Mitigation Site, Mucking, Essex

The revised draft DCO submitted at Deadline 7 includes a requirement that the applicant, Port of Tilbury London Limited ('PoTLL'), must comply with a document it has prepared known as the 'Ecological Mitigation and Compensation Plan' ('EMCP').

The EMCP prescribes the location of off-site ecological compensation areas (at Mucking and Paglesham); and describes how they must be created (including phasing), managed and monitored. In particular the EMCP prescribes that the management of the Mucking site will be undertaken for 99 years.

As has been previously indicated to you, PoTLL and Enovert South Limited ('the Company') have reached agreement in relation to the use of land owned by the Company at Mucking as an ecological compensation site.

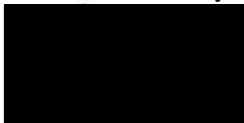
Following further discussions between the parties, I can now also confirm that Heads of Terms have now been signed between the parties and good progress has been made on fully agreeing all the necessary documentation.

To assist the Examining Authority, a redacted copy of these Heads of Terms is attached to this letter.

All commercial and ecological technical points are agreed between the parties, and we therefore consider that full agreement should be able to be reached in short order.

If you have any further questions on this matter, please do not hesitate to contact us.

Yours sincerely,



Alistair Holl
Director, Enovert South Limited

14th June 2018

Mr P Ward,
Commercial Director,
Port of Tilbury London Ltd.,
Leslie Ford House,
Port of Tilbury,
Tilbury,
Essex. RM18 7EH.

Dear Mr Ward,

Tilbury2 DCO - Ecological Compensation Site, Mucking Landfill, Thurrock, Essex

This letter confirms that, subject to finalisation of commercial terms, Enovert South Limited have reached agreement with the Port of Tilbury London Limited, the applicants for the Tilbury2 development, to use some 10 hectares of land at Mucking landfill site for brownfield habitat creation. This will include the receipt of translocated substrates from the Tilbury2 site. Enovert South Limited are the freehold owner of the Mucking site.

In principle an agreement has been reached between the parties to conclude formal documentation to cover a period of not less than 99 years from the date of the completion of the brownfield habitat at Mucking.

Enovert look forward to working with the Port of Tilbury again after their past successful collaboration on compensatory habitat creation for invertebrates in connection with the London Distribution Park development.

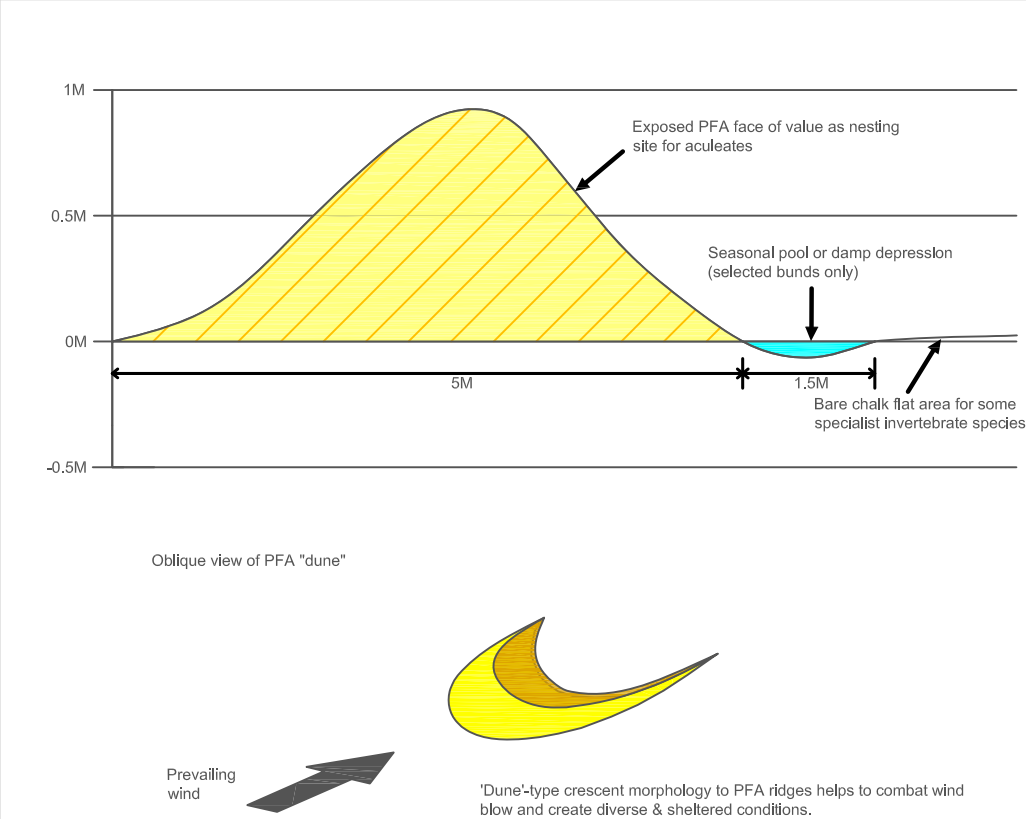
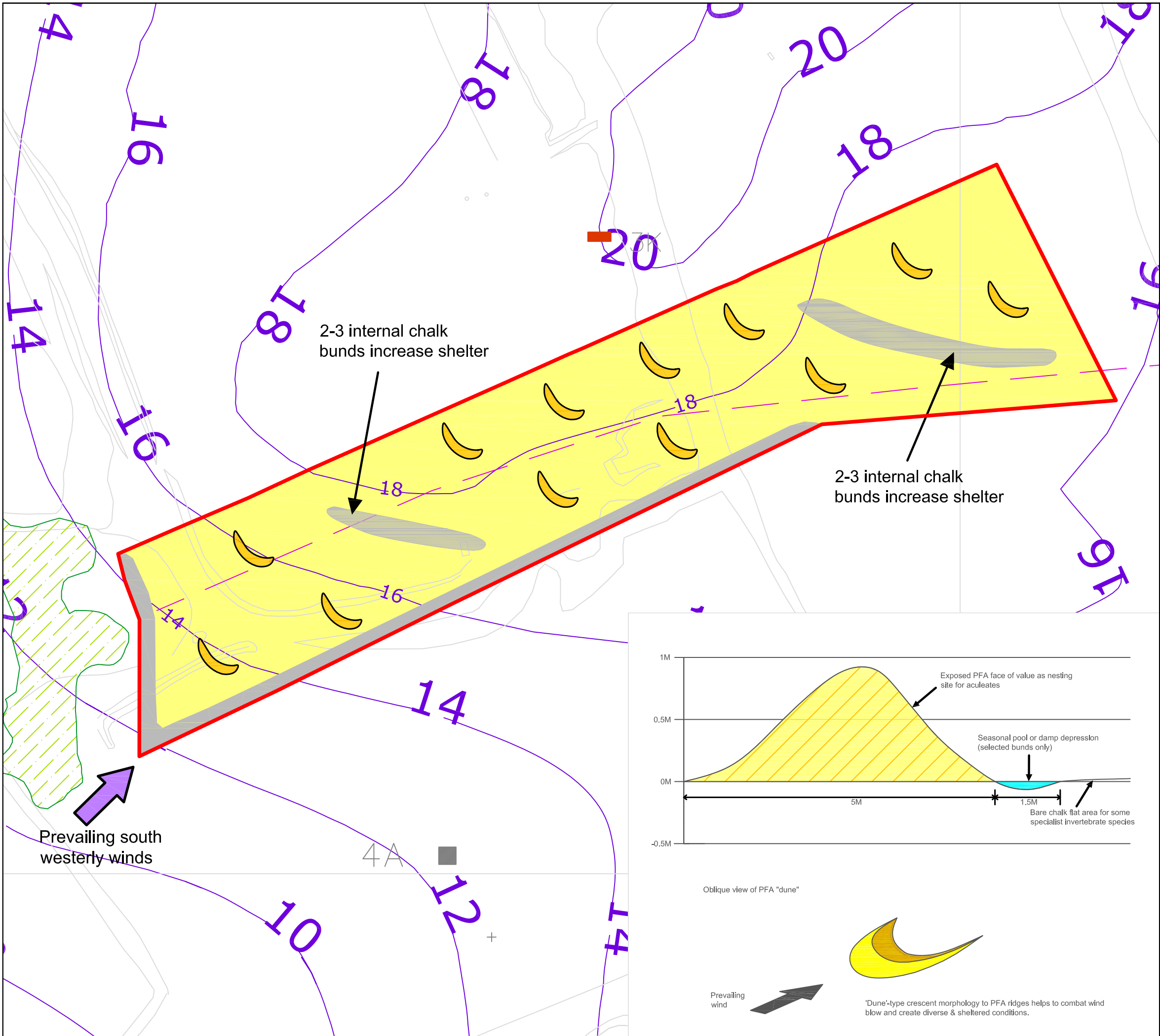
Yours sincerely,



Alistair Holl
Managing Director
Enovert South Limited

Appendix 7

Adjacent pre-existing LDP invertebrate compensation site at Mucking



Key

- Compensation area
- Exposed chalk
- PFA mound or dune (0.5-1m high)
- Chalk bunds (1-2m high)



DO NOT SCALE

Title

Compensation Site

Project

London Distribution
Park, Tilbury

Client

Port of Tilbury London
Ltd.

Drawing No.

Figure 4

Revision

5

Project No.

E1575

Drawn

KP

Checked

DW

Date

September 2013

Bioscan (UK) Ltd

The Old Parlour,
Little Baldon Farm,
Little Baldon,
Oxford,
OX44 9PU.

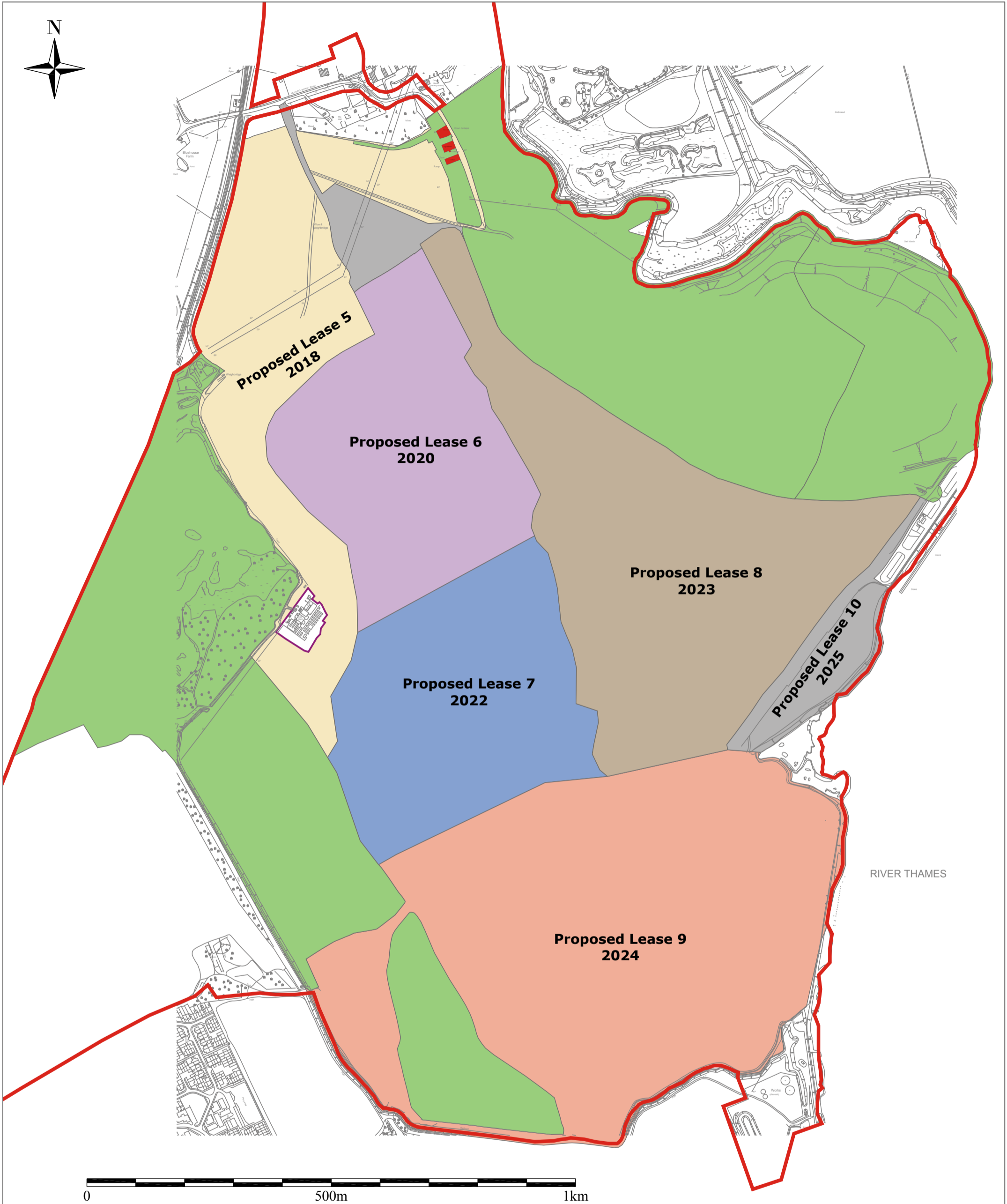
T: +44 (0) 1865 341321
F: +44 (0) 1865 343674
bioscan@bioscanuk.com
www.bioscanuk.com













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Appendix 8

Thurrock Thames Nature Park (TTNP) Proposed Lease Phasing



Key

 Planning Application Boundary	 Buildings Leased	 Proposed Lease Area 5 2018	 Proposed Lease Area 7 2022	 Proposed Lease Area 9 2024
 Remediation Area	 Current Lease Areas	 Proposed Lease Area 6 2020	 Proposed Lease Area 8 2023	 Proposed Lease Area 10 2025

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Site: MUCKING			
Title: Indicative Lease Areas and Proposed Lease Areas			
Drawn: TJG	Date: 19-4-18	Scale @A3: NTS	FIGURE 3

Appendix 9

Reptile Translocation Method Statement

Appendix 9: Tilbury2 Reptile Translocation Method Statement

1. On-site Baseline Reptile Populations

- 1.1 Within the proposed Order Limits are populations of four reptile species: common lizard *Zootoca vivipara*, slow worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*. These species are distributed across the site, within a range of habitats including: coarse grassland, ephemeral/short-perennial and skeletal grassland, the less frequently mown grassland, scrub-edge habitats, tall ruderal vegetation, wetland habitats, and the vegetated margins to hardstanding. Reptiles may also make use of less open habitats, i.e. within dense scrub, where these conceal refuge features such as rubble piles/mounds.
- 1.2 The baseline status of these species within the Order Limits is described in detail within ES Chapter 10: Terrestrial Ecology (in particular paras 10.262 to 10.268 and Tables 10.35 and 10.36) [APP-031] and the associated Figures 10.10a [APP-136] and 10.10b [APP-137]. Surveys undertaken in accordance with best practice guidance^{1,2} during 2016 and 2017 recorded population size classes which ranged from 'low' to 'good' or even 'exceptional'. Although 'low' population size classes were most typically recorded, for many areas of the site (notably the 'Lytag Site' or northern area) where habitat quality is excellent, this is likely to represent an underestimate, as a consequence of reptiles preferentially utilising natural refugia (rather than the artificial survey refugia) during the survey.

2. Reptile Mitigation Rationale

- 2.1 There will be a need to trap and relocate reptiles to pre-prepared receptor habitats (both on and off-site) prior to and/or during the construction phase in order to ensure legal compliance. This activity does not require a licence, but best practice protocols will be followed and the methodology to be employed is described here.
- 2.2 The reptile species present are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and are protected from killing and injury under Section 9(1) of that Act. The methodology set out below is intended to demonstrate reasonable effort, in preventing harm to these species during the programme of capture and translocation. There are three elements to the mitigation programme as follows:
- i) to ensure that all possible individuals of the reptile species present are physically captured and removed from the development footprint for translocation to the receptor areas;
 - ii) to take measures to prevent reptiles from adjoining areas re-colonising the site;
 - iii) to take steps, through habitat manipulation, to reduce the site's attractiveness to reptiles following completion of the capture process.

¹ Population size classes follow Froglife, (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10.

² Herpetofauna Groups of Britain and Ireland (1998) Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards. HGBI advisory notes for Amphibian and Reptile Groups

3. Translocation Methodology

i) Exclusion Measures

- 3.1 The trapping and translocation process itself will follow best practice standards in accordance with prevailing guidance and supporting information.^{3,4}
- 3.2 Prior to the commencement of full site clearance or other development-related activities, reptile-proof fencing will be deployed in order to separate the construction zone from areas of connected reptile habitat (for example, to separate the main site from retained reptile habitat within the Green Belt). In addition, reptile-proof fencing will be used to partition the site into manageable trapping units or 'compartments' (ensuring these are capable of sustaining contained populations for the duration of the translocation). The reptile exclusion fencing will be of a sufficient height to act as a barrier to movement of all reptiles, including snake species. Fencing separating the construction zone from areas of retained habitat will be left *in situ* until construction works are complete, or until the ecologist otherwise deems any risk to reptiles from removing the fence to be negligible.
- 3.3 The reptile exclusion fencing will need to be installed within habitats which are suitable for both reptiles and nesting birds (in season), in particular within mosaics of coarse grassland and bramble scrub. Measures to obviate or reduce the risk to nesting birds are set out within the EMCP [REP5-042] at section 6, and at the CEMP [REP3-011] at paragraph 6.10, which states:

“Over and above the requirement for advance translocation and/or displacement of legally protected species, the times when clearance of vegetation is possible will also be subject to seasonal constraints. In particular, clearance of vegetation with the potential to support nesting birds should aim to avoid the peak nesting months of mid-February to July wherever possible.”

- 3.4 In order to minimise the risk to these protected species groups during fence installation, (and in line with the recommendations of relevant certified documents⁵, i.e. the CEMP and EMCP) it is proposed that wherever possible, the route of fences will be marked out and the vegetation removed via brushcutting and/or phased strimming to ground-level, following a check for nesting birds where seasonally relevant. Any features which could be used as hibernation sites (such as railway sleepers, partially-buried piles of rubble and/or timber, tree roots, and edges of concrete slabs) will be disassembled by hand outside the reptile hibernation season. Following this, the exclusion fencing can be installed, under a watching brief for reptiles. By undertaking this task during the season when reptiles are active (and outside of the core nesting season for birds) the risk of harm to both species groups is minimised via this best practice approach.

ii) Reptile Capture Process

- 3.5 Artificial refugia (sometimes known as 'tins', although in reality comprising a mixture of corrugated tin, roofing felt mats and corrugated bitumen sheets) will be placed in all habitats capable of supporting reptiles, at approximate densities of 100 per hectare in

³ Herpetofauna Groups of Britain and Ireland (1998). *Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards*. HGBI advisory notes for Amphibian and Reptile Groups.

⁴ Natural England (2015). *Reptiles: surveys and mitigation for development projects*. Available from: <https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences>

⁵ Note also that within the dDCO [PoTLL/T2/EX/203], paragraph 18 of Schedule 2 sets out that anticipatory steps towards compliance with the requirements of the DCO (including compliance with enforceable documents such as the CEMP and the EMCP), may be taken prior to the Order coming into force.

line with best practice guidance, and allowed to 'bed in' to the vegetation for several weeks in advance of trapping commencing.

- 3.6 Trapping will commence no earlier than mid-February (for adders and common lizard) and mid-March (for other species) in any trapping year; and will continue no later than October, to ensure it occurs at times when the target species are out of hibernation and active. Artificial refugia will be checked at least daily, and possibly more frequently, by trained and experienced herpetologists, during suitable weather conditions (as defined by best practice guidance and with regard to seasonal differences).
- 3.7 Any reptiles found will be captured and transferred by hand to temporary receptacles for transit to the receptor site. For the duration of trapping visits or 'rounds', these are likely to be suitably deep plastic buckets furnished with vegetation to maintain temperatures, provide cover and reduce stress, although cloth bags may also be used (e.g. for snake species). Adders will be held singly, i.e. one animal per cloth bag. The herpetologists involved will be required to be trained in the safe capture and handling of adders, and will use snake gauntlets for this species, as required.
- 3.8 When conditions allow, having regard to temperature, humidity/rainfall, daylight hours and forecast conditions, transport of captured reptiles to and release at the receptor site will occur the same day. There may be instances (e.g. by reference to paragraph 3.10 below) where 'overnighting' is required, although these will be kept to a minimum. When it is necessary, suitable vivaria will be used to house reptiles, having regard to the needs of species separation, avoiding overcrowding, and provisioning with appropriate food items and a water source.
- 3.9 Trapping will continue until suitable confidence levels are attained that all reptiles have been removed from a trapping unit, or that only small numbers remain such that proceeding onto habitat manipulation is sufficiently low-risk. Habitat manipulation will then be deployed, as appropriate, to maximise trapping efficiency for the final proportion of the population. Translocation effort will be deemed to have reached 'reasonable' levels when a minimum number of capture days in suitable conditions has passed, **and** there has subsequent to that point been a suitable period of no captures. In no cases will trapping effort be less than 30 suitable trapping days and in no instance will the translocation be rendered complete in a trapping compartment unless five consecutive clear days of nil captures in suitable season and weather conditions and on the basis of daily checks, have passed.
- 3.10 Release of animals at the receptor sites will be into suitably structured vegetation and/or into or near constructed temporary or permanent refugia/hibernacula. Release will only take place in suitable conditions with due care taken to ensure released animals have sufficient daylight hours to settle in, and are not exposed to heightened risk of exposure to poor conditions or predation.

iii) Habitat manipulation

- 3.11 Habitat manipulation techniques will be employed in tandem with the capture programme to progressively render the site/capture area less suitable for reptiles, thus encouraging them to use the refugia or to move into areas where capture is easier. The approach and phasing will depend on the nature of the habitat present, but is likely to involve progressive cutting of vegetation in more open areas to approximately 150mm to 200mm in height. As the capture programme progresses, further and shorter cuts may be undertaken.

- 3.12 Following the required numbers of trapping days and clear capture days (i.e. once an area is deemed 'clear' of reptiles) then those areas may be subject to a 'destructive search'. During a destructive search, features which could conceal reptiles (such as railway sleepers, partially-buried piles of rubble and/or timber, tree roots, and edges of concrete slabs) may be dismantled by hand (or if using a machine then under direct ecological supervision). In addition, tussocky vegetation may be carefully stripped back by use of an excavator with a toothed bucket, again, under direct ecological supervision. The supervising ecologist will attempt to capture any remaining reptiles, for translocation and release (as set out above).
- 3.13 Following completion of the capture phase, the compartments deemed 'clear' of reptiles will be maintained in a state inhospitable to reptiles by regular maintenance involving a programme of cutting and mowing.

4. Receptor Areas

- 4.1 Receptor habitat is being prepared both on- and off-site in advance of this exercise to ensure that it is suitably vegetated and mature to support the translocated population.

i) Location

- 4.2 **On-site:** On-site receptor habitat has been prepared by restoring the exclusion fencing surrounding the pre-existing c.1.5ha reptile receptor in the north-eastern part of the land contained within the proposed Order Limits (Green Belt land). This was put in place by RWE in c.2012 in advance of a reptile translocation that never occurred. Although the exclusion fencing was subsequently compromised by the activities of feral grazing ponies, only small numbers of reptiles colonised due to the heavy grazing that ensued. These low numbers have since been trapped out and released outside the enclosure, and the exclusion fencing restored. The fence continues to be subject to regular maintenance in order to maintain carrying capacity.
- 4.3 **Off-site:** In addition to the above, a minimum of 10 hectares of off-site receptor habitat for reptiles is being prepared at the off-site compensation site at Church Hall Farm, Paglesham, South Essex (as shown within the EMCP [PoTLL/T2/EX/212] at Figures 2, 3 and 4) and an agreement has been reached with the landowner to that end (EMCP Appendix 5). The land identified for this primary purpose (fields shown dark green at EMCP Figure 4) comprised a mixture of heavily sheep-grazed coastal grassland until early-2018; at which point the livestock were removed. The grassland sward has since been in the process of being allowed to develop a coarse, tussocky structure. Reptile exclusion fencing was put in place at the time the livestock was removed, and will be subject to regular maintenance in order to maintain carrying capacity. The receptor areas adjoin grassed sea wall embankments known to support existing populations of all four of the species that also occur at the Tilbury2 site, therefore allowing scope for population dispersal, interchange and genetic flow following removal of the exclusion fencing at completion of the translocation. Additional reptile capacity will be provided by the land identified for arable reversion to coastal and floodplain grazing marsh (fields shown light green at EMCP Figure 4).

ii) Habitat Quality & Enhancements

- 4.4 **On-site:** The on-site receptor already benefitted from a varied topography, including two south-facing bunds and a large pond with marginal wetland vegetation. In order to reinstate full carrying capacity during 2018, the vegetation within the receptor was enhanced by overseeding with a tussocky grassland and wildflower seed mix, and by applying supplementary irrigation during dry weather, so as to encourage the sward to

develop a coarse, tussocky structure. Substantial hibernacula have been created within the receptor (see Photograph 1), and piles of cut vegetation have been amassed in order to provide egg-laying sites for grass snake. Pre-existing scattered scrub and hedgerows have been allowed to mature.

- 4.5 Aftercare and future management of the on-site receptor area (for the life of the Tilbury2 proposals) will be tailored to maintaining the reptile population, as set out at section 4 of the LEMP [REP6-041], and specifically in relation to 'Compartment 6'.

Photograph 1: Hibernaculum created within the on-site receptor area



- 4.6 **Off-site:** The reptile receptor site at Paglesham already benefits from a large pond with sloping banks within the southern-most field. However, the reptile receptor fields at Paglesham are otherwise relatively flat as a result of their origin as former grazing-marsh, and initially lacked features which could be used as refuges and/or hibernation sites. Therefore in order to maximise reptile carrying capacity, a programme of enhancement is being embarked upon, including creation of hibernacula within each field (similar to Photograph 1), and addition of features such as excavated tree roots, and piles of cut vegetation. Scattered scrub will also be planted and allowed to mature. The grassland sward will be allowed to 'grow out' and develop a coarse, tussocky structure in the absence of grazing or cutting. Decisions on the level of additional enhancement will be made on a reactive basis having regard to the results of developmental monitoring.
- 4.7 Aftercare and future management of the off-site receptor areas over a 30-year term will be tailored to maintaining the reptile population at Church Hall Farm in Paglesham, as set out in sections 12-13 of the EMCP.

iii) Reptile Capacity

- 4.8 No assessment has been made of prey availability, but as the habitat features are suitable for reptiles, it is considered that the habitat is also suitable for reptile prey. Following the enhancements to habitat quality as described above, it is anticipated that the receptor areas will have capacity to accommodate reptiles translocated from the Tilbury2 construction areas, as follows:
- **On-site receptor:** No more than 375 adult reptiles (all species) to be translocated to the on-site receptor.

- **Off-site receptor:** The receptor is separated via the reptile exclusion fencing into four discrete exclosures, which will allow for phasing of release into these areas. It is envisaged that a maximum of 1,500 adult reptiles (all species) will be translocated to the receptor site at Paglesham; however, should additional enhancement measures be delivered which enable the carrying capacity to be satisfactorily increased to accommodate release of 2,000 adult reptiles (all species), then this would supersede 1,500 reptiles as the maximum figure.

4.9 In the longer-term, the off-site land at Paglesham identified for arable reversion to coastal and floodplain grazing marsh will also offer additional reptile carrying capacity once this is opened up and made accessible by the removal of the exclusion/containment fencing.

5. Summary & Conclusion

5.1 The trapping and translocation process for reptiles will follow best practice standards in accordance with prevailing guidance and supporting information.

5.2 It is considered that the above strategy meets the aims of the translocation as follows:

- i) to ensure that all possible individuals of the reptile species present are physically captured and removed from the development footprint for translocation to the receptor areas;
- ii) to take measures to prevent reptiles from adjoining areas re-colonising the site; and
- iii) to take steps, through habitat manipulation, to reduce the site's attractiveness to reptiles following completion of the capture process;

thereby minimising any risk of killing or injury of reptiles, any related risk of an offence under the Wildlife and Countryside Act 1981 and fulfilling the obligations attendant with the status of the affected species as Species of Principal Importance under sections 40-41 of the NERC Act 2006;

5.3 The quantum of proposed compensatory habitat, both on- and off-site, is considered sufficient to support the translocated population; and the location of the receptors in a Thames-side South Essex setting, connected to existing reptile population networks and thus adequate to deliver no net loss or denudation to reptile conservation status within Essex.

Appendix 10

Biodiversity Offsetting Calculations

v. 18.3 08/08/2014

Amendment from v18.2 only affects green roofs, for other habitats v18.2 still usable.
Please fill in both tables

KEY	
	No action required
	Enter value
	Drop-down menu
	Calculation
	Automatic lookup
	Result

Local Planning Authority:	Thurrock
Site name:	Tilbury2
Planning application reference number:	
Assessor:	
Date:	

Please do not edit the formulae or structure
To condense the form for display hide vacant rows, do not delete them
If additional rows are required, or to provide feedback on the calculator please contact WCC Ecological Services

[illegible]

Before											
After											
Before											
After											
	Total	0.00	M						0.00	HIS = J + M	
									Habitat Impact Score (HIS)	405.95	

CAUTION - Destruction of habitats of high distinctiveness, e.g. lowland meadow or ancient woodland, may be against local policy. Has the mitigation hierarchy been followed, can impact to these habitats be avoided?

Any unavoidable loss of habitats of high distinctiveness must be replaced like-for-like.

[illegible]

KEY			
	No action required		
	Action required		
	Drop-down menu		
	Calculation		
	Automatic lookup		
	Overall Result		Loss to biodiversity
			Gain to biodiversity