Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 42,to Deadline 1 Submission: Outline Landscape and Ecological Management Plan

Relevant Examination Deadline: 1

Submitted by Vattenfall Wind Power Ltd

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Revision A

Drafted By:	Vattenfall Wind Power Ltd
Approved By:	Daniel Bates
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Outline Landscape and Ecological Management Plan

January 2019, Revision B

Document Reference: 8.7

Pursuant to: APFP Reg. 5(2)(q)

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Outline Landscape and Ecological Management Plan

January 2019

Drafted By:	Duncan Watson / Stuart Cargill
Approved By:	Daniel Bates
Date of Approval	January 2019
Revision	B Incorporating comments from Natural England, Kent County Council and Kent Wildlife Trust and amended to reflect the removal of landfall option 2 from the Project.

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1 INTRODUCTION

1.1 Overview

1.1.1 In June 2018 Vattenfall Wind Power Ltd (VWPL) submitted an application to the Planning Inspectorate (PINS), on behalf of the Secretary of State for Energy and Climate Change, for a Development Consent Order (DCO) for the Thanet Extension Offshore Wind Farm (Thanet Extension) under the Planning Act 2008.

1.1.2 This Outline Landscape and Ecological Management Plan (OLEMP) (Document Ref: 8.7) sets out the in-principle measures which will be implemented by the Project to avoid, reduce or offset potential impacts on landscape and biodiversity resources due to the onshore elements of Thanet Extension. It also provides outline details of proposed biodiversity enhancements and proposed monitoring.

1.1.3 This OLEMP has been prepared by SLR Consulting and Optimised Environments (OPEN) on behalf of VWPL. The OLEMP is intended as a precursor to a more detailed LEMP, which would be produced and agreed with Thanet District Council (TDC) and Dover District Council (DDC), in consultation with Natural England and other relevant stakeholders, post consent but prior to any connection works commencing.

1.2 Scope of this Document

Spatial Scope

1.2.1 This OLEMP relates to the onshore elements of Thanet Extension. Except where stated otherwise this applies to the areas within the project Red Line Boundary (RLB) that lie above Mean High Water Springs (MHWS). Details of ecological mitigation measures relating to the offshore elements of Thanet Extension, including intertidal and subtidal environments, are provided in the Saltmarsh Mitigation, Reinstatement and Monitoring Plan and the Biogenic Reef Mitigation Plan (Document Ref: 8.13 and 8.15 respectively). The onshore RLB is shown in Figure 1, which also shows the locations of various different areas within the RLB, as referred to in this document.

1.2.2 The main exception to the above relates to measures to avoid disturbance to birds using intertidal habitats, which are also included in this OLEMP. This mirrors the approach taken in the Environmental Statement (ES) where potential impacts on birds using intertidal habitats are addressed in Volume 3, Chapter 5: Onshore Biodiversity (Document Ref. 6.3.5) whilst intertidal habitats and faunal communities (other than birds) are addressed Volume 2, Chapter 5 (Document Ref: 6.2.5).

1.2.3 Within the onshore environment, mitigation, compensation and enhancement measures, as defined in the ES, Volume 3, Chapter 5: Onshore Biodiversity (Document Ref: 6.3.5) (section 5.5), will be restricted to the area within the RLB wherever possible. However, it may be appropriate and beneficial for some biodiversity enhancements to be implemented on land outside the RLB. Such cases are highlighted within section 6 of this document. Further details of how mitigation, compensation[1] and enhancement measures will be secured are provided in section 1.5.

Temporal Scope

1.2.4 This OLEMP primarily relates to measures to be employed during the construction phase of Thanet Extension, or immediately thereafter (until such time as reinstatement measures are deemed to be successful). Where relevant however, measures to be employed during preventative (planned) maintenance throughout the Operation and Maintenance (O&M) phase are also included. Measures which relate to the O&M phase are highlighted in section 5.4. A programme will be provided in the detailed LEMP, once further details of all the relevant measures have been developed and agreed.

1.2.5 The extent or nature of any unplanned corrective maintenance required during the O&M phase can't be predicted at this stage as it is by its nature unplanned, and therefore mitigation requirements cannot be predicted. Mitigation measures relating to any unplanned corrective maintenance during the O&M phase are therefore not included within this document. If required, mitigation for unplanned corrective maintenance would be subject to agreement as part of the process of obtaining any necessary consents and following consultation with the relevant statutory nature conservation bodies and the detailed LEMP would be updated to include relevant details.

1.2.6 No decision has been made regarding the final decommissioning for the onshore components of Thanet Extension. It is anticipated that a separate LEMP would be produced to cover the decommissioning phase and the decommissioning phase is therefore not covered in this document. Measures to be included in the decommissioning phase LEMP would depend on the detailed activities and methodology for decommissioning, which will be determined later within the project lifetime. Measures would be based on updated ecological survey data and would adhere to relevant legislation and good practice guidelines in place at the time.

[1] Compensation applies in respect of open mosaic habitat at the substation site only.

Technical Scope

1.2.7 This OLEMP provides summary details of mitigation and compensation measures incorporated into the project (referred to in the ES as embedded mitigation) to address potential impacts on landscape and biodiversity resources. Potential impacts on these resources are considered in the ES Volume 3, Chapter 5: Onshore Biodiversity (Document Ref. 6.3.5) and Chapter 2: Onshore Landscape and Visual Impact Assessment (LVIA) (Document Ref. 6.3.2).

1.2.8 The measures covered by this OLEMP include:

- Proposals for reinstatement following construction;
- Proposals for screening planting at the substation;
- Proposals for the protection of retained habitats; and
- Proposals for measures to address potential impacts on protected or notable faunal species, including:
  - Terrestrial invertebrates;
  - Reptiles;
  - Birds (breeding birds and non-breeding waterbirds);
  - Bats; and
  - Other mammals.

1.2.9 Details of proposed measures to manage potential impacts due to accidental pollution, both airborne (including dust) and waterborne, are provided in the Code of Construction Practice (CoCP) (Document Ref. 8.1) and are not repeated here. The CoCP also includes details of measures to be employed to prevent the spread of invasive non-native species.

1.2.10 This OLEMP also includes initial proposals for biodiversity enhancements, in accordance with relevant planning policy. These proposals will be developed further in consultation with relevant stakeholders and details provided within the detailed LEMP, post consent.

1.2.11 This OLEMP also includes proposals for monitoring, where required. Relevant, appropriately timed monitoring is important to enable the success of the measures set out in the LEMP to be determined and to identify the need for measures to be altered, if required.

1.3 Relationship with other Documents

1.3.1 A number of the measures set out in the OLEMP overlap to some degree with measures detailed within other documents submitted as part of the DCO application. The OLEMP should therefore be read in conjunction with the following other documents:

- ES Volume 2 Volume 2, Chapter 5: Benthic, Subtidal and Intertidal Ecology (Document Ref: 6.2.5);
- ES Volume 3, Chapter 1: Project Description (Onshore) (Document Ref. 6.3.1);
- ES Volume 3, Chapter 2: Onshore Landscape and Visual Impact Assessment (LVIA) (Document Ref. 6.3.2);
- ES Volume 3, Chapter 5: Onshore Biodiversity (Document Ref. 6.3.5);
- Code of Construction Practice (Document Ref: 8.1);
- Outline Access Management Strategy (Document Ref: 8.4);
- Saltmarsh Mitigation, Reinstatement and Monitoring Plan (Document Ref: 8.13);

1.3.2 The development of the detailed LEMP will be cognisant of other relevant management plans that are in place at that time and relate to the land within the onshore RLB. These are likely to include a long term management plan for the Sandwich and Pegwell Bay National Nature Reserve (NNR) (currently in preparation by KWT) and any updates to the current management plan for Pegwell Bay Country Park (Blackwood Bayne, 2018).

1.4 Structure of this Document

1.4.1 This OLEMP is structured as follows:

- Section 2 sets out proposals for reinstatement following construction, with separate sub-sections provided outlining measures to be employed within designated sites, specifically Pegwell Bay Country Park and Stonelees Nature Reserve, and within other parts of the RLB;
- Section 3 outlines proposals for screening planting at the substation site;
- Section 4 provides details of proposals for the protection of retained habitats;
- Section 5 provides details of measures to address potential impacts on protected or notable species;
- Section 6 sets out initial proposals for biodiversity enhancements; and
- Section 7 outlines proposals for monitoring.

1.5 Mechanisms for Delivery

1.5.1 The production, agreement and implementation of the detailed LEMP form the subject of a DCO Requirement (Document Ref: 3.1). The detailed LEMP will be produced in accordance with the measures set out in this OLEMP and will be subject to agreement by the relevant planning authorities, in consultation with Natural England and other relevant stakeholders (see paragraph 1.1.3). Under the DCO the Project will be required to implement the measures set out in the agreed LEMP. Details of how the measures will be implemented, including an implementation timetable, will be provided in the detailed LEMP.

1.5.2 Following its initial agreement, it is envisaged that the detailed LEMP will represent a working document, subject to regular review and updates (as required) during the construction and operation of the Project. Updates to the detailed LEMP will be subject to agreement with relevant stakeholders, as set out in paragraph 1.1.3.

1.5.3 Any biodiversity enhancements to be implemented outside the project RLB could only be delivered subject to agreement with the relevant land owner/ manager(s).

1.6 Ecological Clerk of Works

1.6.1 A suitably qualified and experienced[2] Ecological Clerk of Works (ECoW) will be employed for the duration of the construction period (and any subsequent reinstatement works), although this may not necessarily be a full-time role throughout. The ECoW will oversee the implementation of the detailed LEMP during this period.

1.6.2 Thereafter, the implementation of the detailed LEMP will be overseen by a suitably qualified environmental professional, appointed by VWPL or their contractors.

[2] The ECOW should be a member of an appropriate professional body, e.g. the Chartered Institute of Ecology and Environmental Management (CIEEM) and/ or the Association of Environmental and Ecological Clerks of Works (AEECOW) and should have experience working on similar projects.

2 REINSTATEMENT

2.1 Pegwell Bay Country Park

Landfall and Cabling Options

2.1.1 Three different options for the landfall and onward cabling within Pegwell Bay Country Park were included within the Application, further details of which are provided in the ES, Volume 3, Chapter 1: Project Description (Onshore) (Document Ref. 6.3.1). Since the Application was submitted Landfall Option 2 (involving an extension to the existing seawall and the location of Transition Joint Bays (TJBs) and cabling above ground within the Country Park) has been removed from the Project. The two remaining options for the landfall are summarised below.

2.1.2 Landfall Option 1: TJBs would be located below ground within the Country Park, up to 350 m from the existing sea wall and cables would cross the sea wall by Horizontal Directional Drilling (HDD). This Option requires a larger onshore temporary works area (50 m x 60 m) than Option 3 in order to house the HDD rig and associated equipment but does not require excavation and reinstatement of the sea wall. Under this Option HDD would be undertaken from land to sea, with an initial bore undertaken prior to a wider drill profile and installation of ducts to house the cables. The HDD ducts would be installed from the TJB location, out to a punch-out location at least 100 m seaward of the sea wall. As a result of the uncertainty associated with the contents of the landfill there may be a need to control the HDD works in order to prevent the introduction of a pathway for the contaminants present.

2.1.3 Landfall Option 3: TJBs would be located below ground within the Country Park before trenching the remainder of the route. This option requires the installation of a temporary cofferdam before excavating through from the upper intertidal, through the existing sea wall. For this Option the cofferdam is required to ensure no release of contaminants from the landfall into the marine environment. The offshore cables would be trenched from the intertidal area through this cofferdam and seawall area onshore into the TJB area. The cofferdam would then be removed, and the seawall would be reinstated.

2.1.4 For both Options 1 and 3, onward cables would be buried below ground along the entire cable route.

2.1.5 The final solution for the landfall and onshore cabling within Pegwell Bay Country Park will be informed by detailed Site Investigation (SI) works and will be determined during the detailed design phase, i.e. post consent but prior to connection works commencing. The detailed LEMP will be developed based on the final design. Outline reinstatement proposals are provided for both remaining options below.

Reinstatement of TJBs and Cable Route

2.1.6 Habitats will be reinstated following construction of the landfall and installation of the cables. The overall aim of the reinstatement will be to enable either the re-establishment of existing grassland habitats or the creation of species-rich grassland.

2.1.7 Where possible, excavated soils will be carefully stored and reinstated as soon as possible. Soils will be reinstated in a way that is suitable for the chosen method of vegetation establishment (see below), including any necessary soil preparation. Should contaminated material be excavated this would be disposed of and suitable soil would be imported to facilitate reinstatement. The precise nature of any soil imported will depend on availability and would be specified within the detailed LEMP. Any imported soil would be nutrient-poor, which is essential for the successful establishment of species-rich grassland.

2.1.8 Revegetation of reinstated soils is most likely to take place via natural colonisation but could also take place via seeding or the use of green hay collected from a suitable local donor site (to be agreed in consultation with relevant stakeholders). If seeding is undertaken a native species-rich grassland mix, of local provenance and which is appropriate to the site and the reinstated soils, will be used.

2.1.9 Reinstated habitats will be subject to an aftercare period of up to three years following reinstatement (or if seeding is used, following seeding), to be extended (if required) if reinstatement is not deemed to have been successful. The methods of aftercare will be agreed in the final LEMP and subject to the results of monitoring (see section 7) but are likely to include the management of undesirable weeds and (if seeding is used) at least two cuts during the initial 12 month period plus at least one cut annually thereafter, with the cuttings removed. During the aftercare period, seeded areas are likely to need protection from disturbance by people or grazing animals. The precise methods for protection will be agreed as part of the detailed LEMP but may involve the temporary cessation of grazing within the relevant compartments and/ or the use of temporary fencing and signage. If grazing management has to be temporarily halted, The Project would be responsible for the management of the relevant grazing compartments, during the aftercare period, by mechanical means.

2.1.10 Reinstatement and aftercare would be the responsibility of VWPL or their appointed contractors and would only be undertaken by suitably experienced contractors. Following the aftercare period it is envisaged that ongoing management would revert back to the existing management regimes, e.g. grazing and cutting. Ongoing management would be the responsibility of the land owner/ manager, in accordance with the existing management plan (Blackwood Bayne, 2018).

2.1.11 Following the aftercare period it is intended that public access will be maintained in line with existing access arrangements and that all existing footpaths will continue to be used. Management of access during construction is beyond the scope of this OLEMP and is covered in detail within the Outline Access Management Strategy (Document Ref: 8.4) with broad principles provided within the CoCP (Document Ref. 8.1). Management of access during construction will include the maintenance of vehicular access for graziers to grazing compartments not directly affected by the works.

Reinstatement of Temporary Works Area

2.1.12 The temporary works area in the western part of Pegwell Bay Country Park will be fully reinstated following construction using similar methods to those set out in relation to the reinstatement of TJBs and Cable Route. The aim for the reinstatement of this area will be to create species-rich grassland using similar methods to those described in relation to the TJBs and Cable Route.

2.1.13 The temporary access from Sandwich Road, at the northern end of the temporary works area, will be reinstated to trees and scrub, replacing those removed during construction of the access. This will be achieved by planting of native species appropriate to the site, with the detailed mix of species and other planting details specified in the detailed LEMP.

2.1.14 Reinstated trees and shrubs will be subject to an aftercare period of five years following seeding. During this period weed control will be applied as appropriate and any failures will be replaced. Further management should not be required following the end of the five year aftercare period.

2.2 Stonelees Nature Reserve

2.2.1 Within Stonelees Nature Reserve excavated soils will be carefully stored and reinstated as soon as possible following cable installation. Soils would be reinstated in a way that is suitable for the chosen method of vegetation establishment, as described in section 2.1 with respect to Pegwell Bay Country Park. Further details regarding soil storage and reinstatement will be provided in the detailed LEMP.

2.2.2 Revegetation of reinstated soils is most likely to take place via natural colonisation but could also take place via seeding or the use of green hay from a suitable local donor site if required. If seeding is undertaken a native species-rich grassland mix, of local provenance and which is appropriate to the site and the reinstated soils, will be used. If green hay is used the location of a donor site would be agreed with relevant stakeholders.

2.2.3 Reinstated habitats will be subject to an initial aftercare period of up to three years following reinstatement (or if seeding is used, following seeding), to be extended (if required) if reinstatement is not deemed to have been successful, as described in section 2.1 with respect to Pegwell Bay Country Park.

2.2.4 Reinstatement and aftercare would be the responsibility of VWPL or their appointed contractors and would only be undertaken by suitably experienced contractors. Following the aftercare period it is envisaged that ongoing management would revert back to the existing management regimes, e.g. grazing/ non-intervention. Ongoing management would be the responsibility of the land owner/ manager, in accordance with any existing management plan(s).

2.2.5 Following the aftercare period it is intended that public access and access for graziers would be maintained in line with existing access arrangements. Management of access during construction is beyond the scope of this OLEMP and is covered in the Outline Access Management Strategy (Document Ref: 8.4).

Replacement of Ephemeral Pools

2.2.6 As set out in the ES, Volume 3, Chapter 5: Onshore Biodiversity (Document Ref. 6.3.5) it is understood that natterjack toads (*Epidalea calamita*) were reintroduced to a number of specially created ephemeral pools within Stonelees Nature Reserve by KWT between 2003 and 2005. Natterjack toad was not recorded here in 2016 however, with the last known record dating from 2014 and it is considered unlikely that natterjack toad is still present here.

2.2.7 At least one of the ephemeral pools is located within the RLB and may therefore be lost during construction (no other pools appear to be present within the RLB based on aerial photos and initial walkovers, although identification was made difficult as all pools were dry at the time aerial photos were taken and walkover surveys were carried out). Despite the lack of recent natterjack toad records these pools are of value in their own right and therefore any pools which can't be avoided by the cable routing will be replaced with new pools on a 2:1 basis (i.e. two new pools for each one lost). This will also enable the maintenance of suitable habitat for natterjack toad, either in the unlikely event that the species is still present or if there were any future reintroduction scheme.

2.2.8 The number of pools to be replaced will be determined during a walkover survey, at a time when water levels are high and existing pools are evident, prior to construction. Replacement pools will be of a similar size and depth to the pools which are lost and will be located within the RLB or adjacent to it (in agreement with the landowner) in similar locations to the pool(s) to be lost. New pools will not be located directly above the cables themselves but will be located adjacent to the cable route in areas subject to temporary disturbance during construction works. The precise location of any replacement pools will be set out in the detailed LEMP. At this stage it is envisaged that the replacement pools will be allowed to colonise naturally, although the introduction of plant matter from other nearby pools may also be considered.

2.3 Other Areas

2.3.1 To the south of Stonelees Nature Reserve the cable route largely passes through habitats of low conservation value, i.e. amenity grassland, hardstanding and bare ground. These will be reinstated to their previous state following construction.

2.3.2 The cable route passes through three lines of trees within or on the boundaries of the Baypoint Sports Club site and a small number of trees will also be lost during construction of the proposed new access into that area. The number of trees which need to be removed will be kept to a minimum but these trees will not be replaced for operational reasons (i.e. because access to the cable route is required). Most of the trees to be lost are introduced non-native species, e.g. Lombardy poplar (*Populus nigra 'Italica'*) and white poplar (*Populus alba*), of low ecological value.

2.3.3 Compensation for the loss of trees in these areas (and for the loss of trees within Pegwell Bay Country Park and Stonelees Nature Reserve) will be provided by the proposed screen planting at the substation (see section 3). If the number of trees to be removed is greater than the number of trees to be planted at the substation, additional tree planting would take place within the RLB (away from buried cables) or adjacent to it, in locations agreed with the relevant landowner/ manager(s). Any additional planting would involve native species appropriate to the site. Measures to mitigate for possible impacts on nesting birds and bat roosts during felling are outlined in section 5.3.

3 SCREENING PLANTING AT THE SUBSTATION

3.1 Introduction

3.1.1 Whilst not considered to be necessary due to the industrial context of the substation site and absence of sensitive receptors, it is noted through consultation with Dover District Council, that tree planting to the north of the substation site could be proposed as specific visual enhancement. Screen planting at the substation site could be proposed mainly to screen views of the substation experienced by motorists and walkers from the Richborough Roundabout/Ramsgate Road (A256) (Viewpoint 1), including the England Coastal Path which passes viewpoint 1. Screen planting would lessen the visual impact of the substation upon users of the England Coastal Path and would also strengthen existing screening from more distant views further to the north such as from Pegwell Promenade (Viewpoint 9) and to the east on other sections of the England Coastal Path on Sandwich Flats (Viewpoint 4). Whilst there is restricted public access to the northernmost part of Shell Ness, the proposed screen planting would also strengthen existing screening from a northern point on the now closed Stour Valley Walk should this be re-opened. Views from these viewpoints are illustrated in the ES, Volume 3, Chapter 2: Onshore LVIA (Document Ref. 6.3.2), Figures 2.11, 2.14 and 2.19.

3.1.2 Landscape and visual effects change over time as mitigation measures establish and mature (such as planting and restoration of habitat types included as part of the proposed development) and/ or the existing landscape external to the proposed development evolves. Vegetation and habitat loss across the site area will be kept to a minimum and proposed landscape mitigation planting will ensure that the character of the local area is retained and enhanced for future benefit. As the proposed landscape matures, the degree of adverse effect would reduce.

3.2 Baseline Situation

3.2.1 The existing tree planting around the proposed substation site is substantial, and together with other vegetation and built elements in the wider landscape, provides visual screening for the majority of visual receptors in the area. The primary view into the substation site that is considered for visual enhancement is from the Richborough Port roundabout which has a view along the existing access road to the British Car Auctions (BCA) gate and would form the principal means of access from the A256 into the proposed substation site. The specific location of the proposed substation entrance from this road has not been determined at this stage and will be agreed at the detailed design stage. Much of the strip of planting between the substation site and the A256 consists of deciduous trees, however some of the bushy understorey is evergreen and the tree cover appears denser due to ivy growing on tree trunks and branches. There is still partial visibility

through the woodland belt from the A256 through the gaps between trees in the winter months.

3.3 Key Objectives of Landscape Planting

3.3.1 Mitigation planting for the substation should comprise the establishment of woodland belts in strategic locations around the site where practicable. These could complement existing woodland blocks and belts, increasing their depth and extent to ensure robust screening, and eventually form enclosure from almost all visual aspects.

3.3.2 In order to mitigate the effect of the substation on views from the Richborough Port roundabout, proposed screen planting could either be designed to be situated across the north-west corner of the substation site and continue eastwards along the access road where the site would be accessed (see Figure 2: Outline Landscape Mitigation Plan Option A). Alternatively, if the access is closer to the Richborough Port roundabout, the proposed screen planting along the access road could be increased in size, where practicable, to screen some of the potential views into the substation site through the point of entrance (see Figure 3: Outline Landscape Mitigation Plan Option B). The final choice of option will be set out in the form of a landscape plan for the substation as required within the draft DCO (Document Ref: 3.1).

3.3.3 Screen planting around the substation site could ensure that views into the site from the A256, distant views from the north and views of the substation components during winter months are minimised and the visual amenity of nearby visual receptors is enhanced.

3.4 Landscape Planting

3.4.1 Screen planting could be designed to comprise a mix of fast growing species typical to the area specifically selected for their long-term screening potential. Tree species could also be selected for site suitability, local species context and biodiversity value. A larger percentage of evergreen species could be included in the areas defined specifically as screening woodland with a more balanced mix of deciduous / evergreen native species in other areas of proposed woodland, increasing the biodiversity value of the planting. A dense understorey of shrubs including a high percentage of evergreen species could also be included throughout the woodland structure.

3.4.2 Proposed screen planting is considered to be effective and deliverable on the proposed substation site. Whilst the specific growth rates will depend on site conditions and the detailed substation design and layout, it is assumed that screen planting would be sufficiently fast growing to provide substantial screening of the substation structures and building within between 15 and 25 years. Using an average and approximate growth rate for tree and shrub species that may be used (see below), the height of the screen planting should reach approximately 8-10 m after 15 years and 13 - 15 m after 25 years.

3.4.3 Tree and shrub species will be selected for site suitability, screening potential (strengthening the existing screening around the substation site), local species context (appropriate within existing coastal woodland mix local to the site area) and increased biodiversity (supporting ecological objectives). An example planting mix could include the following species - Hawthorn (*Crataegus monogyna*), Willow (Salix sp.), Blackthorn (*Prunus Spinosa*), Dog Rose (*Rosa canina*), Hazel (*Corylus avellana*), Bird Cherry (*Prunus padus*), oak (*Quercus robur*), Privet (*Ligustrum vulgare*) and Scots pine (*Pinus sylvestris*).

3.4.4 Proposed tree and shrub planting could be spaced to maximise growth rate and ultimate screening potential. An example of this would be approximately one plant per m^2 in natural groups and not too regimented (i.e. in randomly spaced species groups of 3, 5 and 7 plants), however the precise detail of these spacings should form part of the planting schedule in the detailed LEMP. The proposed tree and shrub planting could strengthen lines of existing wooded strips, connecting to established coastal shelterbelt/ amenity planting in the area, fitting in to the existing landscape structure.

3.4.5 The quality of the topsoil on the site is not known at this stage and may be subject to further investigation. If the topsoil is of poor quality or insufficient, then the structure may need to be improved. To allow a suitable growing medium, imported topsoil or topsoil found elsewhere within the development site could be redistributed to the planting areas, if required.

3.4.6 In relation to preparation of the planting areas the following guidelines could be followed: ensure area is weed free prior to planting; apply suitable herbicide if required, where practicable and in line with the wider ecological strategy; and break existing ground identified for tree planting to a suitable depth, harrow and remove large stones.

4 PROTECTION OF RETAINED HABITATS

4.1 Habitats within Designated Sites

Protection of Retained Habitats during Construction

4.1.1 Working areas within designated sites will be kept to the minimum area necessary with the extent of the working area dependent upon the final design solution adopted. Working areas will be enclosed within temporary fencing (e.g. Heras fencing) to avoid inadvertent damage to adjacent habitats. Fencing locations will be designed in consultation with relevant stakeholders to minimise disruption to existing site users, e.g. Park Run, as far as possible, with locations specified in the detailed LEMP.

4.1.2 All retained trees located directly adjacent to working areas will be protected by Root Protection Areas (RPAs) during construction, in accordance with BS 5837:2012 (British Standards Institution, 2012). The location and extent of any RPAs will be specified in the detailed LEMP.

Protection of Retained Habitats during O&M

4.1.3 Regular inspections of any joint pits located within Stonelees Nature Reserve will be undertaken on foot and damage to retained or reinstated habitats within the onshore parts of the Thanet Coast and Sandwich Bay Special Protection Area (SPA)/ Ramsar and Sandwich Bay to Hacklinge Marshes Site of Special Scientific Interest (SSSI) is therefore not likely. Routine maintenance is not anticipated however any emergency/ non-routine maintenance within Stonelees Nature Reserve would only be undertaken following discussions with the relevant Statutory Nature Conservation Bodies, with the detailed LEMP updated as necessary.

4.1.4 Regular inspections of the TJBs and joint pits within Pegwell Bay Country Park will be undertaken on foot or using a light vehicle only, that latter will be restricted to existing tracks.

4.2 Open Mosaic Habitat at the Substation

4.2.1 The area of open mosaic (ephemeral/ short perennial) habitat to be retained, to the east of the substation site within the Richborough Port area of the site (see section 5.3), will be enclosed within temporary fencing (e.g. Heras fencing) to avoid inadvertent damage during construction of the substation.

4.3 Other Habitats

4.3.1 Working areas will be enclosed within temporary fencing (e.g. Heras fencing) to avoid inadvertent damage to adjacent habitats. All retained trees will be protected by Root Protection Areas (RPAs) during construction, as set out in section 4.1.

5 MEASURES TO ADDRESS POTENTIAL IMPACTS ON PROTECTED AND NOTABLE SPECIES

5.1 Background

5.1.1 This section provides outline details of measures to minimise potential impacts on protected and notable species and ensure compliance with relevant wildlife-related legislation, e.g. the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

5.1.2 Protected and notable species which could potentially be affected by the proposed development are set out in the ES, Volume 3, Chapter 5: Onshore Biodiversity (Document Ref. 6.3.5) and mitigation measures for those species are included here. Based on current information mitigation measures are not required for any other species or species groups.

5.2 Pre-construction Surveys

5.2.1 Due primarily to the time that will have elapsed since the last surveys and the possibility that species presence or activity could have changed in the intervening period, pre-construction surveys will be undertaken for a number of species/ species groups. These include certain species which, based on current information, will not be affected by the proposed development (and are therefore not subject to the mitigation measures set out in this document) but which could potentially (re)colonise the site prior to construction commencing.

5.2.2 The results of the pre-construction surveys will be used to identify whether any changes to the measures proposed in section 5.3 are required and the detailed LEMP will be updated to reflect the survey results, as required.

5.2.3 Table 5-1 provides further details of the pre-construction surveys proposed, including details of proposed survey areas (focussing on the areas likely to be affected by the works), timings and methodologies. All surveys will be undertaken by suitably experienced/ licensed ecologists who are members of an appropriate professional body, e.g. CIEEM.

Table 5-1 Pre-construction Surveys

Species / Group	Survey Area	Survey Timing	Survey Methods
Terrestrial invertebrates	All habitats of potential value to terrestrial invertebrates within the onshore RLB, i.e. Pegwell Bay Country Park, Stonelees Nature Reserve and areas of open mosaic habitat at the substation site. Saltmarsh habitats to be affected will also be included.	May to September, prior to development of detailed LEMP	Bespoke – four visits undertaken by a specialist entomologist, spread across the season and using a range of sampling techniques. All groups to be targeted but specific attention to be focussed on species forming part of the notified Ramsar and SSSI invertebrate assemblages. Methodology to be agreed with Natural England and other relevant stakeholders.
Great crested newt (GCN) (*Triturus cristatus*)	The pond in the southern part of Pegwell Bay Country Park (water body 196 in ES Volume 5, Annex 5-3: Great Crested Newt Survey Report (Document Ref. 6.5.5.3) will be subject to a pre-construction survey. Although it is not likely to support GCN it was not able to be surveyed in 2017 or 2018 due to a lack of access so a survey is proposed to confirm absence.	April 15th – June 30th (eDNA survey) and mid-March to mid-June for population surveys (if required) during the season prior to construction commencing	eDNA survey to be carried out in accordance with Biggs *et al*. (2014). In the unlikely event that GCN are present a population survey would be carried out in accordance with English Nature (2001).
Natterjack toad	Ephemeral freshwater pools within Stonelees Nature Reserve.	April – August during the season prior to construction commencing	Combination of torchlight surveys, refuge searches, egg (spawn) searches and listening for calls (as per Natural England, 2015).
Breeding birds (Schedule 1 and other notable species particularly	Suitable habitat within 500 m of the RLB (peregrine *Falco peregrinus* and marsh harrier *Circus aeruginosus).* Suitable habitat within 250 m of the RLB (other	March to July immediately prior to and during the construction period	Surveys prior to construction to follow appropriate methods for the relevant target species, as specified by Gilbert *et al*. (1998) and Hardey *et al*. (2013).

Species / Group	Survey Area	Survey Timing	Survey Methods
sensitive to disturbance)	disturbance-sensitive species, e.g. Cetti's warbler *Cettia cetti*, kingfisher *Alcedo atthis*, redshank *Tringa totanus*). Survey areas to be agreed with Natural England and other relevant stakeholders.		Regular checks to be carried out by the ECoW during construction (see section 5.3).
Badger (*Meles meles*)	All terrestrial habitats within 50 m of the RLB	3-6 months prior to construction commencing	In accordance with Harris *et al*. (1989).
Water vole (*Arvicola aquatica*)	All water courses within or immediately adjacent to the RLB (100 m upstream/ downstream of RLB)	April to September during the season prior to construction commencing	In accordance with Dean *et al*. (2016).
Otter (*Lutra lutra*)	All water courses within or immediately adjacent to the RLB (250 m upstream/ downstream of RLB)	3-6 months prior to construction commencing	In accordance with Chanin (2003).

5.3 Measures to Address Potential Impacts on Protected and Notable Species during Construction

Terrestrial Invertebrates

5.3.1 Three species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage and 21 species forming part of the Sandwich Bay to Hacklinge Marshes SSSI invertebrate assemblage could potentially be present within the onshore RLB (see ES, Volume 5, Annex 5-6: Terrestrial Invertebrate Assessment (Document Ref. 6.5.5.6)). In addition one species forming part of the Ramsar wetland invertebrate assemblage, the bug *Orthotylus rubidus*, may be present in saltmarsh habitats within the RLB, although its presence is considered unlikely. The sections of Pegwell Bay Country Park and Stonelees Nature Reserve within the RLB are considered to be of local or potentially district significance for invertebrates and the open mosaic habitats in the proposed substation site could potentially support an invertebrate assemblage of county value. No legally protected invertebrate species are likely to be affected.

5.3.2 A Terrestrial Invertebrate Mitigation Strategy (TIMS) will be developed following completion of pre-construction invertebrate surveys (see Table 5-1) and further development of the detailed project design. The TIMS will form part of the detailed LEMP.

5.3.3 The TIMS will include specific measures to be employed within Pegwell Bay Country Park, Stonelees Nature Reserve and affected areas of saltmarsh within Pegwell Bay to avoid or reduce effects on the following (if any such species are recorded during the pre-construction survey):

- species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage;
- species forming part of the Sandwich Bay to Hacklinge Marshes SSSI invertebrate assemblage; and
- any other nationally rare or scarce species which could be significantly affected, for example KWT has highlighted the presence of nationally rare micromoths associated with the plant tansy (*Tanacetum vulgare*) within Stonelees Nature Reserve.

5.3.4 The nature of any such measures will depend on the species involved and the extent of potential impacts and can't be determined at this stage. However, such measures may include micro-siting, the restoration or creation of specific micro-habitats following construction works and potentially translocation (if this is considered necessary and likely to be successful).

5.3.5 The TIMS will also include details of measures to maintain and enhance any important invertebrate populations associated with the open mosaic habitat within the proposed substation site within the old Richborough Port site. These measures will include the retention, enhancement and subsequent maintenance of an area of 0.4 ha on the eastern side of the substation site (see Figure 4). This area is currently characterised by a mosaic of ephemeral and short perennial vegetation with some scrub beginning to colonise. Detailed proposals for enhancements and subsequent management within this area will be developed following completion of the pre-construction survey in order to maximise the benefits to any particularly important species recorded there. At this stage however it is envisaged that enhancements are likely to involve the creation of a more varied topography and the possible creation of shallow water features. The nature of the final proposals will be subject to the results of Site Investigation works prior to construction (e.g. in case contaminated materials are identified). It is envisaged that any proposed enhancement works will take place during or immediately after construction works.

5.3.6 The constructed substation is likely to include substantial areas of open ground, although the extent and location of any such areas won't be known until the detailed design stage. Where possible, areas of open ground within the substation will be managed to promote the establishment and subsequent maintenance of open mosaic habitat. Details will be provided in the TIMS, once further information regarding the substation design is known and Site Investigation works have been completed.

5.3.7 If any other invertebrate species of significant conservation importance are recorded during the pre-construction survey these will also be considered as part of the development of the TIMS.

Reptiles

5.3.8 Surveys in 2017 indicated a good population of viviparous lizard (*Zootoca vivipara*) in Pegwell Bay Country Park and Baypoint Sports Club. A low population of slow-worm (*Anguis fragilis*) was recorded in Pegwell Bay Country Park and low populations of viviparous lizard were recorded in Stonelees Nature Reserve and at the proposed substation site. Both species are listed on Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and protected in respect of killing, injuring and sale or offering for sale. Both species are also species of principal importance for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and Kent Biodiversity Action Plan (BAP) priority species.

5.3.9 Reasonable measures will be employed to reduce the chances of inadvertently killing or injuring individual viviparous lizards or slow-worms during construction works in potentially suitable reptile habitat. Potentially suitable habitat is present throughout Pegwell Bay Country Park and Stonelees Nature Reserve, within areas of unmanaged vegetation at Baypoint Sports Club and around the periphery of the Richborough Port site (Figure 4).

5.3.10 Given that large areas of suitable habitat will remain unaffected by the works and most habitats will be reinstated or restored following construction, fencing and translocation are not considered appropriate. Mitigation will therefore involve the management of vegetation (e.g. strimming long grass) to discourage occupation by reptiles and the identification and removal of potential refugia and hibernacula (if present) prior to construction works taking place in the relevant areas. These works will be undertaken under the supervision of the ECoW.

5.3.11 The management of vegetation (by strimming or flailing) and removal of potential refugia will only be undertaken during the reptile active period of March to October and therefore may need to be carried out well in advance of construction in areas where work is scheduled to commence during the winter months. At least 24 hours will be left between vegetation management and construction works commencing.

5.3.12 To minimise the potential for reptiles to become trapped in excavations, during the reptile active season (March to October) all excavations left open outside normal working hours will include a ramp at one end to enable reptiles (and other animals) to escape.

5.3.13 The enhancement of an area of 0.4 ha on the eastern side of the substation site (see above in respect of terrestrial invertebrates) will be designed to also benefit viviparous lizard.

Breeding Birds

5.3.14 Four species listed on Schedule 1 of the Wildlife & Countryside Act 1981 were recorded breeding within the ornithological survey area (RLB plus at least 500 m) in 2017: peregrine, marsh harrier, kingfisher and Cetti's warbler. In addition, 12 species forming part of the Sandwich Bay to Hacklinge Marshes SSSI breeding bird assemblage plus a number of other bird species of conservation concern were recorded breeding within the same area. All wild birds are subject to protection under Section 1 of the Wildlife & Countryside Act 1981 (as amended), which makes it an offence to intentionally damage or destroy the nest of any wild bird while that nest is in use or being built. Bird species listed on Schedule 1 are also protected against intentional or reckless disturbance while building a nest; in, on or near a nest containing eggs or young; or with dependent young.

5.3.15 Wherever possible, vegetation which could support nesting birds (e.g. trees, scrub or long grass) will be cleared outside the main bird breeding season (March to August inclusive) to avoid damage to, or destruction of nests. Where this is not possible vegetation to be cleared will be checked for active nests by the ECoW no more than two days prior to clearance. If active nests are found vegetation clearance in the applicable area (to be determined by the ECoW on a nest-specific basis) will be delayed until the relevant nesting attempt(s) has finished. All cleared vegetation will be removed from the site unless agreed otherwise with the relevant landowner(s).

5.3.16 As set out in Table 5-1 surveys for Schedule 1 species and other breeding species of conservation concern which are likely to be particularly sensitive to disturbance, e.g. redshank, will take place prior to and during construction (as required, i.e. depending on the planned timing of construction works in the relevant areas). Avoidance of disturbance to these species whilst nesting (and therefore compliance with the relevant legislation) will be achieved through the implementation of disturbance-free buffer zones around active nests. The extent of any buffer zones will be species and location-specific and will be determined by the ECoW, taking into consideration relevant guidance (e.g. Ruddock and Whitfield, 2007) and site-specific factors, e.g. topography, screening and other potential sources of disturbance. The ECoW will then monitor any nesting attempts to determine when nesting attempts have finished and works may proceed and also to check that the buffer zones implemented are successful.

Non-breeding Waterbirds

5.3.17 Pegwell Bay supports important populations of a number of non-breeding waterbirds. These include: European golden plover (*Pluvialis apricaria*) (Thanet Coast and Sandwich Bay SPA qualifying species and Sandwich Bay to Hacklinge Marshes SSSI notified feature); ruddy turnstone (*Arenaria interpres*) (Thanet Coast and Sandwich Bay SPA and Ramsar qualifying feature); and grey plover (*Pluvialis squatarola*), ringed plover (*Charadrius hiaticula*) and sanderling (*Calidris alba*) (Sandwich Bay to Hacklinge Marshes SSSI notified features). It also supports nationally important numbers of lapwing (*Vanellus vanellus*).

5.3.18 Seasonal restrictions will be implemented to restrict works with potential to cause significant disturbance to non-breeding waterbirds utilising intertidal habitats in Pegwell Bay. These restrictions would apply to all construction works within intertidal habitats and at the shoreline, i.e. including all works on or within any cofferdam at the proposed landfall location (as required under Option 3 for the landfall) (see Figure 4). This would prevent any works taking place in these areas during the period October to March inclusive.

5.3.19 In addition, all driven/ percussive piling within Pegwell Bay Country Park, if required, would also be subject to a timing restriction and would not take place during the period October to March inclusive. Driven/ percussive piling is not likely to be required within Stonelees Nature Reserve.

5.3.20 Any works within 250 m of intertidal habitats (i.e. any works to the east of the black dashed line shown in Figure 4) that are in direct line of sight of intertidal habitats (e.g. works on the TJBs) would only take place during the period October to March following the erection of screening fencing to avoid visual disturbance to non-breeding waterbirds. Significant visual disturbance beyond 250 m is not likely (Cutts *et al*., 2009; and Collop *et al*., 2016) and therefore screening of works greater than 250 m from intertidal habitats is not considered necessary. Furthermore, it is considered very unlikely that any works beyond 250 m would be in direct line of sight from intertidal habitats.

5.3.21 Further details relating to restrictions on driven piling and screening fencing will be provided in the detailed LEMP, following confirmation of which landfall option is to be used and the location of the onward cable route.

5.3.22 Precautionary measures are also proposed to minimise disturbance to non-breeding waterbirds from recreational users who may be displaced from Pegwell Bay Country Park into other, more sensitive areas during construction works. The precise details of the measures to be employed would depend on the final design solution adopted, although at this stage it is considered likely that the measures would include:

- the erection of additional signs to discourage people from entering intertidal habitats during sensitive periods; and
- the ECoW (or temporary warden / natural ambassador) would monitor visitor disturbance to intertidal areas across all parts of Pegwell Bay during the sensitive October to March period and would speak to visitors to discourage them from entering intertidal habitats, if required.

5.3.23 Further details of measures to minimise disturbance to non-breeding waterbirds from any displaced recreational users of the Country Park will be included in the detailed LEMP. The measures to be adopted will be discussed and agreed with relevant stakeholders during the development of the detailed LEMP and will be designed to complement any other initiatives aimed at reducing visitor disturbance in place at that time.

Bats

5.3.24 No bat roosts have been recorded within or directly adjacent to the RLB, although a small number of trees with low bat roost potential around the edges of the Baypoint Sports Club will need to be felled during installation of cabling (see Figure 4). At least seven bat species were recorded during activity surveys. Activity of most species was relatively low, although common and soprano pipistrelles were recorded in reasonable numbers in some places, e.g. the southern end of Stonelees Nature Reserve. All bat species are protected under the Conservation of Habitats and Species Regulations 2017 and the Wildlife & Countryside Act 1981 (as amended). Noctule and soprano pipistrelle are also species of principal importance for the conservation of biodiversity in England under Section 41 of the NERC Act 2006 and Kent BAP priority species.

5.3.25 Precautionary measures will be employed during the felling of trees identified as having low bat roost potential, in line with current Bat Conservation Trust guidelines (Collins, 2016). All such trees will be felled under the supervision of the ECoW. The precise sensitive felling protocol will depend on the nature of the Potential Roost Features (PRFs) and will be agreed between the ECoW and the contractor on a tree-by-tree basis. However this is likely to involve removing limbs/ parts of the tree with PRFs carefully to the ground, and in accordance with best practice leaving in place for 24 hours before removal.

Other Mammals

5.3.26 No other protected or notable mammals are likely to be affected by construction works based on current survey data. However, a number of generic measures will be implemented to reduce the potential for accidental killing or injury of individual mammals, as follows:

- A maximum site speed limit of 15mph will be adopted during construction, which will reduce the likelihood of accidental injury/ killing of mammals by construction traffic.
- All potentially dangerous substances or materials will be carefully stored to prevent them causing any harm to animals which may enter working areas at night.
- To minimise the potential for mammals to become trapped in excavations, all excavations greater than 1m deep that are left open outside normal working hours will include a ramp at one end to enable animals to escape.

5.4 Measures to Address Potential Impacts on Protected and Notable Species during O&M

5.4.1 The locations of any protected and notable species that could potentially be adversely affected by planned inspections will be avoided as far as possible during preventative (planned) maintenance. Any such locations will be specified in the detailed LEMP based on the most up to date information available at that time and considering the final design solution adopted. Locations would be updated, as required, throughout the O&M period via regular consultation with the Sandwich and Pegwell Bay NNR site manager(s).

5.4.2 Planned inspections within intertidal habitats will avoid the period October to March inclusive (as for construction) in order to avoid disturbance to non-breeding waterbirds.

5.4.3 Management of the open mosaic habitats at the substation will take place, as required, throughout the O&M phase. Further details will be provided in the TIMS, as part of the detailed LEMP and/ or as part of the landscape plan for the substation.

6 BIODIVERSITY ENHANCEMENTS

6.1 Proposed Biodiversity Enhancements

6.1.1 A number of biodiversity enhancements, relevant to the effects of the project, will be provided as part of the proposed development in accordance with relevant planning policy. A number of the mitigation measures set out in sections 2, 3 and 5.3 may result in a net gain for biodiversity, depending on the details of the final proposals, e.g. where reinstatement leads to the establishment of more diverse grassland than that which is currently present. This section of the OLEMP, however, presents initial proposals for additional biodiversity enhancements that are clearly separate from proposed mitigation measures and are intended to provide a net gain for biodiversity. It is anticipated that most of these would take place within Pegwell Bay Country Park and/ or Stonelees Nature Reserve, although it is possible that some measures may take place elsewhere within the NNR. Any measures outside the RLB would be subject to agreement with the relevant land owner/ manager(s).

6.1.2 Detailed proposals for biodiversity enhancements will be provided in the detailed LEMP, following further discussions with relevant stakeholders. VWPL or its appointed contractors will be responsible for the delivery of the agreed enhancements, with the works themselves undertaken either by the relevant land manager(s) or suitably experienced contractors (to be agreed). A timetable for the implementation of the agreed enhancements will be provided in the detailed LEMP but at this stage it is envisaged that all measures would be delivered in parallel with construction or immediately thereafter, with any ongoing management the responsibility of the relevant land owner/ manager.

6.1.3 Initial proposals for additional biodiversity enhancements include:

- Creation of additional ponds/ pools and management of existing ponds;
- Management of roadside ditches for water vole;
- Measures to encourage dogs to exercise away from intertidal areas;
- Creation of reptile refugia/ hibernacula;
- Erection of bat and bird boxes;
- Scrub management to promote grassland habitat and benefit nightingale (*Luscinia megarhynchos*); and
- Creation of small areas of sacrificial crop for seed-eating birds, potentially including turtle dove (*Streptopelia turtur*).

6.1.4 The creation of additional ponds/ pools could include further ephemeral pools within Stonelees Nature Reserve (see Section 2.2) or more permanent features. Permanent ponds could be located either within Stonelees or the country park, although it is noted that any water features within the country park would need to be 'raised' to avoid the need for excavation of the landfill, as is the case with the existing pond there. The creation of wetland habitat should complement the existing mix of wetland habitats within the NNR and the wider Sandwich Bay to Hacklinge Marshes SSSI and may also contribute towards targets for wetland restoration and re-creation for the Lower Stour Wetlands Biodiversity Opportunity Area (BOA).

6.1.5 The existing pond in the southern part of Pegwell Bay Country Park is currently overgrown with emergent species such as reedmace (*Typha latifolia*). Management of emergent vegetation, with the primary aim of creating a larger area of open water, would therefore be beneficial for a range of aquatic species and may also contribute towards targets for wetland restoration for the Lower Stour Wetlands BOA. It is noted that this pond is lined and therefore management of emergent vegetation would likely need to take place by hand to avoid damaging the artificial liner.

6.1.6 Within Pegwell Bay Country Park the ditch running parallel with Sandwich Road has become shaded by trees and scrub and/ or choked with emergent vegetation and rubbish. This ditch formerly supported water vole but now provides suboptimal habitat for that species. Habitat management, including removal of shading scrub, initial clearance of aquatic vegetation and removal of historic fly-tipping would therefore be beneficial in allowing potentially suitable water vole habitat to re-establish.

6.1.7 Measures to encourage dog owners to exercise their dogs in an area of Pegwell Bay Country Park away from the intertidal habitats should have the benefit of reducing disturbance to non-breeding waterbirds using intertidal habitats in Pegwell Bay. As discussed with KCC, the clearance of scrub from the area immediately north of the temporary works area, along with the erection of suitable signage, fencing, bins and dog exercise equipment, should encourage a number of dog walkers to use this area to exercise their dogs rather than areas immediately adjacent to Pegwell Bay. It is anticipated that this area would be cleared prior to construction and therefore provide benefits both during and after construction.

6.1.8 Reptile refugia/ hibernacula could include brash and log piles or more engineered hibernacula. Hibernacula may be created using a range of materials, e.g. cut timber, inert stone, grubbed up tree roots or rubble, some of which may be able to be recycled following construction works, before being covered with turf or soil. Methods of construction would follow those set out by Edgar *et al*. (2010) or other relevant guidance.

6.1.9 Most of the trees within Pegwell Bay Country Park and Stonelees Nature Reserve are relatively young and therefore the erection of bird and bat boxes should provide valuable nesting/ roosting habitat for species which use holes in trees. The type of boxes used would target species of conservation importance which are known to be present in the area, whilst seeking to avoid the use of boxes that may be colonised by the non-native ring-necked parakeet (*Psittacula krameri*).

6.1.10 The current Pegwell Bay Country Park Management Plan (Blackwood Bayne, 2018) includes an objective to avoid scrub encroachment onto areas in which chalk substrate is present to promote grassland diversity. It also includes objectives for control of bramble and other developing scrub in other areas to prevent trees from maturing and potentially damaging landfill capping. These areas include part or all of Fields 1, 2, 3, 5 and 6, as shown in Drawing 2 in Blackwood Bayne, 2018). If appropriate to do so, scrub clearance undertaken prior to works within the RLB could be extended to include other parts of the country park (or Stonelees Nature Reserve). As well as contributing to objectives for the country park this could potentially also contribute towards targets for species-rich grassland enhancement for the Lower Stour Wetlands BOA.

6.1.11 Small numbers of nightingale are currently present within Stonelees Nature Reserve and Pegwell Bay Country Park (see ES Volume 5, Annex 5-4: Ornithology Baseline Report (Document Ref. 6.5.5.4)). Nightingale is a conservation priority, included on the red list of Birds of Conservation Concern following a 48% decline between 1995 and 2015. Nightingale requires structurally diverse areas with patches of scrub at different stages of growth and would therefore potentially benefit from scrub management. Scrub patches of at least half a hectare are needed to allow rotational cutting to be employed (BTO, 2015). This is most likely to be relevant in Stonelees (or other parts of the NNR) and is not considered appropriate within Pegwell Bay Country Park where current management proposals are aimed more at recreating grassland habitats and open views.

6.1.12 The creation and management of small areas of sacrificial crop should benefit seed-eating birds, potentially including turtle dove, which is a current conservation priority, having suffered a 94% decline between 1995 and 2015 but is still present at Stonelees Nature Reserve (see ES Volume 5, Annex 5-4: Ornithology Baseline Report (Document Ref. 6.5.5.4). Small plots of wild bird cover can be created using a biennial mix of seed-bearing plants such as kale, cereal and quinoa. For turtle doves, at least two plots should be created in alternate years so some seed is available in the spring every year (RSPB, no date). This is not considered to be consistent with current management proposals within Pegwell Bay Country Park but may be appropriate within Stonelees Nature Reserve or elsewhere within the NNR.

7 MONITORING

7.1 Monitoring of Reinstated Habitats

7.1.1 Monitoring of reinstated habitats is proposed within Pegwell Bay Country Park, Stonelees Nature Reserve and at the substation site. The purpose of the monitoring will be to determine whether the habitat reinstatement has been successful and to identify the need for remedial measures, if required.

7.1.2 Detailed objectives for habitat reinstatement will be informed by initial monitoring prior to construction (see below) and will be set out within the detailed LEMP. The detailed objectives will form the basis against which the success of the reinstatement will be measured.

7.1.3 VWPL or its appointed contractor will be responsible for the delivery of the proposed monitoring. All monitoring surveys will be undertaken by suitably experienced ecologists who are members of an appropriate professional body, e.g. CIEEM. All monitoring data will be made available to the relevant biological records centre, i.e. Kent and Medway Biological Records Centre (KMBRC).

Pegwell Bay Country Park and Stonelees Nature Reserve

7.1.4 All reinstated grassland will be subject to monitoring. Monitoring will also include new ephemeral pools.

7.1.5 Initial monitoring will take place during the year prior to construction taking place in order to provide an up to date baseline against which to measure changes post-reinstatement. Monitoring will then take place annually for the first three years following construction. The need for further monitoring, e.g. if remedial measures are needed, will be reviewed following completion of the monitoring in Year 3.

7.1.6 Monitoring methods will depend on the nature of the measures employed and will be specified in the detailed LEMP. Monitoring is likely to involve two visits per year with the methodology designed to enable a rapid assessment of habitat condition and the quick identification of any potential issues.

Open Mosaic Habitat at the Substation

7.1.7 Monitoring of open mosaic habitats at the substation will be undertaken in conjunction with the monitoring of terrestrial invertebrates (see section 7.2).

7.2 Monitoring of Terrestrial Invertebrates

7.2.1 The need for monitoring of species forming part of the designated site invertebrate assemblages will depend on whether any such species will be affected and the nature of any measures employed to reduce impacts upon them. Likewise, monitoring methods will depend on the species involved and the nature of the relevant mitigation measures.

7.2.2 Monitoring of terrestrial invertebrates will take place within the retained and created areas of open mosaic habitat at the substation site (where safe access is possible). Monitoring methods will depend on the particular species groups targeted and the nature of the enhancement measures employed. A simple assessment of habitat condition will also be included in the monitoring methodology.

7.2.3 In order to determine whether mitigation has been successful monitoring of terrestrial invertebrates will be undertaken annually for the first three years following construction with results compared against pre-construction survey results. The need for further monitoring, e.g. if remedial measures are needed, will be reviewed following completion of the monitoring in Year 3.

7.2.4 Detailed proposals for monitoring of terrestrial invertebrates will be included in the TIMS, which will form part of the detailed LEMP. The TIMS will also include detailed objectives against which the success of the mitigation measures for terrestrial invertebrates will be measured.

7.3 Additional Monitoring of Biodiversity Enhancements

7.3.1 The need for monitoring of biodiversity enhancements can only be determined once further details have been developed and agreed as part of the detailed LEMP. If necessary, monitoring of biodiversity enhancements will be carried out prior to their implementation (to provide an up to date baseline) and for three years thereafter, with the need for further monitoring reviewed following completion of the monitoring in Year 3. Detailed objectives, against which the success of biodiversity enhancements will be measured, will be provided in the detailed LEMP.

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FIGURES

THANET EXTENSION OFFSHORE WIND FARM OUTLINE LEMP

Figure 1
Onshore Site Boundary

Legend

- ONSHORE SITE
- NEMO INTERCONNECTOR

Pegwell Bay Country Park

Stonelees Nature Reserve

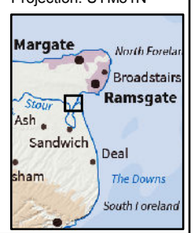
Baypoint Sports Club

British Car Auctions

Richborough Energy Park

Richborough Port

Datum: OSGB 1936
Projection: UTM31N



Notes
[1]© Crown copyright [and database rights] (2015) 0100031673 Expires 06/11/2018

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Drg No	5356.00003 1 Onshore Red Line Boundary		
Rev	0.1	Date	18/05/2018
By	AGB	Layout	N/A

Figure 1

633200 633400 633600 633800

162000 161800 161600

N

Existing trees

Existing trees retained and protected

Proposed screen planting
To mitigate views from Richborough Roundabout

Access Option A

Richborough Roundabout

Existing trees

Proposed screen planting
To mitigate distant views from the north

Habitat Enhancement
Open Mosaic habitat of value to terrestrial invertebrates.

Existing trees retained
Existing trees retained to ensure long term screening potential.

Existing planting retained
Existing planting along the A256 will continue to grow and should be managed to ensure its long term screening potential

Planting Notes

Tree and shrub species will be selected for site suitability, screening potential (strengthening the existing screening around the substation site), local species context (appropriate within existing coastal woodland mix local to the site area) and increased biodiversity (supporting ecological objectives). An example planting mix could include the following species - Hawthorn (Crataegus monogyna), Willow (Salix sp.), Blackthorn (Prunus Spinosa), Dog Rose (Rosa canina), Hazel (Corylus avellana), Bird Cherry (Prunus padus), oak (Quercus robur), Privet (Ligustrum vulgare) and Scots pine (Pinus sylvestris). Ultimately, the tree and shrub specification should prioritise screening and biodiversity in its selection of species.

Proposed tree and shrub planting could be spaced to maximise growth rate and ultimate screening potential. An example of this would be approximately one plant per m2 in natural groups and not too regimented (i.e. in randomly spaced species groups of 3, 5 and 7 plants), however the precise detail of these spacings should form part of the planting schedule in the detailed LEMP. The

633200 633400 633600 633800

open optimised environments

VATTENFALL

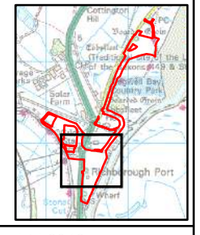
THANET EXTENSION OFFSHORE WIND FARM

Figure 2
Substation Area - Option A Landscape Mitigation

Legend

- Red Line Boundary (Cable corridor)
- Indicative Substation Location
- Indicative Cable Trench
- Existing trees retained
- Proposed Habitat Enhancement
- Proposed Screening Planting

Datum: OSGB 1936
Projection: BNG



1:2,500 0 50 100 Meters

Drg No	...LEMP_Fig2_LM_OptionA_v2		
Rev	2	Date	19/10/2018
By	JM	Layout	THET2018

Figure 2

633200 633400 633600 633800

162000 161800 161600

N

Existing trees

Existing trees retained and protected

Proposed screen planting
To mitigate views from Richborough Roundabout

Access Option B

Richborough Roundabout

Existing trees

Proposed screen planting
To mitigate distant views from the north

Habitat Enhancement
Open Mosaic habitat of value to terrestrial invertebrates.

Existing trees retained
Existing trees retained to ensure long term screening potential.

Existing planting retained
Existing planting along the A256 will continue to grow and should be managed to ensure its long term screening potential

Proposed screen planting
This area of planting introduced to screen views through access Option B

Planting Notes

Tree and shrub species will be selected for site suitability, screening potential (strengthening the existing screening around the substation site), local species context (appropriate within existing coastal woodland mix local to the site area) and increased biodiversity (supporting ecological objectives). An example planting mix could include the following species - Hawthorn (Crataegus monogyna), Willow (Salix sp.), Blackthorn (Prunus Spinosa), Dog Rose (Rosa canina), Hazel (Corylus avellana), Bird Cherry (Prunus padus), oak (Quercus robur), Privet (Ligustrum vulgare) and Scots pine (Pinus sylvestris). Ultimately, the tree and shrub specification should prioritise screening and biodiversity in its selection of species.

Proposed tree and shrub planting could be spaced to maximise growth rate and ultimate screening potential. An example of this would be approximately one plant per m2 in natural groups and not too regimented (i.e. in randomly spaced species groups of 3, 5 and 7 plants), however the precise detail of these spacings should form part of the planting schedule in the detailed LEMP. The

633200 633400 633600 633800

open optimised environments

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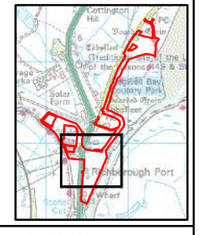
THANET EXTENSION OFFSHORE WIND FARM

Figure 3
Substation Area - Option B Landscape Mitigation

Legend

- Red Line Boundary (Cable corridor)
- Indicative Substation Location
- Indicative Cable Trench
- Existing trees retained
- Proposed Habitat Enhancement
- Proposed Screening Planting

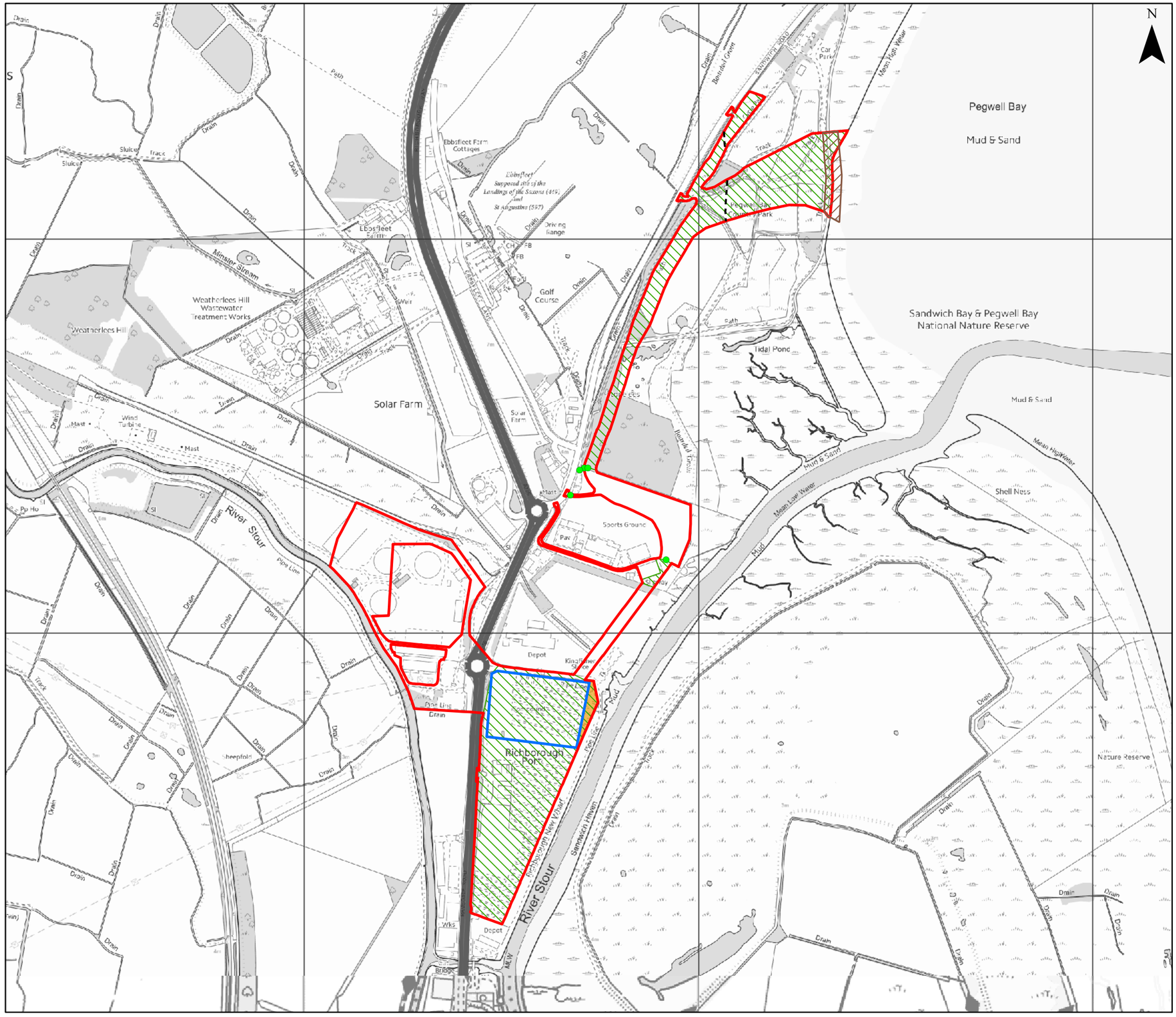
Datum: OSGB 1936
Projection: BNG



1:2,500 0 50 100 Meters

Drg No	...LEMP_Fig3_LM_OptionB_v2		
Rev	2	Date	19/10/2018
By	JM	Layout	THET2018

Figure 3



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THANET EXTENSION OFFSHORE WIND FARM OUTLINE LEMP

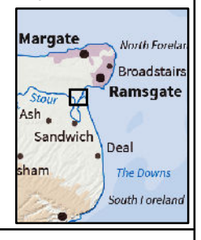
Figure 4

Measures Relating to Protected and Notable Species

Legend

- ONSHORE SITE BOUNDARY
- POTENTIAL ZONE OF SEAWALL COFFER DAM - NO WORKS TO BE CARRIED OUT HERE OCTOBER - MARCH INCLUSIVE
- 250m BUFFER FROM LANDFALL – VISUAL SCREENING TO BE USED AS REQUIRED
- AREAS CONTAINING SUITABLE REPTILE HABITAT WHERE MITIGATION WILL BE EMPLOYED TO AVOID ACCIDENTAL KILLING OR INJURY TO REPTILES
- OPEN MOSAIC HABITAT TO BE CREATED TO BENEFIT TERRESTRIAL INVERTEBRATES (WHERE POSSIBLE) WITHIN SUBSTATION SITE
- AREA OF OPEN MOSAIC HABITAT TO BE RETAINED AND ENHANCED FOR TERRESTRIAL INVERTEBRATES AND REPTILES
- TREES WITH LOW BAT ROOST POTENTIAL WHICH MAY REQUIRE SENSITIVE FELLING PROTOCOL

Datum: OSGB 1936
Projection: UTM31N



Notes
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1:10,000 0 0.1 0.2 km 0 0.055 0.11 nm

Drg No	5356.00003 4 Protected and Notable Species		
Rev	0.1	Date	04/06/2018
By	AGB	Layout	N/A

Figure 4