AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 1 – Chapter 16 Onshore Ecology

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Document Ref: 6.1.16

PINS Ref.: EN020022

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PINS REF.: EN020022

DOCUMENT: 6.1.16

DATE: 14 NOVEMBER 2019

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DOCUMENT

Document	6.1.16 Environmental Statement – Volume 1 – Chapter 16 Onshore Ecology
Revision	001
Document Owner	WSP UK Limited
Prepared By	P. Joyce
Date	6 November 2019
Approved By	I. Ellis
Date	6 November 2019

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16. ONSHORE ECOLOGY

16.1. SCOPE OF THE ASSESSMENT

16.1.1. INTRODUCTION

16.1.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon Onshore Ecology. The Proposed Development that forms the basis of this assessment is described in Chapter 3 (Description of the Proposed Development) of the Environmental Statement ('ES') Volume 1 (document reference 6.1.3).

16.1.1.2. Appendix 16.3 (Arboriculture Report) of the ES Volume 3 (document reference 6.3.16.3) provides the Arboricultural Impact Assessment and is to be read in conjunction with this Chapter. Intertidal and marine ecology is addressed separately within Chapters 8 to 11 of this ES, covering Intertidal and Benthic Habitats (Chapter 8), Fish and Shellfish (Chapter 9), Marine Mammals (Chapter 10) and Marine Ornithology (Chapter 11). Chapter 15 (Landscape and Visual Amenity) of the ES Volume 1 (document references 6.1.8, 6.1.9, 6.1.10, 6.1.11 and 6.1.15) (including the associated Landscape Mitigation Plans (Figures 15.48-50 of the ES Volume 2 (document reference 6.2.15.48 – 6.2.15.50)) and Outline Landscape and Biodiversity Strategy (document reference 6.10)) are also of relevance when considering the proposals to retain and provide landscape and ecological features.

16.1.1.3. This Chapter is also co-ordinated with the Habitat Regulations Assessment ('HRA') Report (document reference 6.8) to ensure consistency of the assessments, which accompanies the ES as stand-alone documents.

16.1.1.4. This Chapter:

- Presents the existing onshore ecology baseline established from desk studies, dedicated onshore surveys and consultation;
- Presents the potential effects on ecology and nature conservation arising from the Proposed Development, based on the information gathered and the analysis and assessments undertaken to date;
- Identifies any assumptions and limitations encountered in compiling the environmental information; and
- Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible ecology and nature conservation effects.

16.1.1.5. For the purpose of providing the above information this Chapter includes the following elements:

- A description of designated and otherwise notable sites located within the ecology study area;
- A description of the habitat types located within the ecology study area;
- An assessment of the intrinsic value, as well as the (potential) value to protected or otherwise notable species or habitats recorded;
- An assessment of features of particular ecology and nature conservation concern that might be affected by development proposals; and
- An assessment of the likely impacts of development on particular features of ecology and nature conservation concern, taking into account mitigation measures adopted as part of the Proposed Development to address these impacts.

16.1.1.6. For the purposes of this assessment, the Proposed Development has been split and grouped into sections as follows:

- Section 1 – Lovedean (Converter Station Area):
  - The northern section of the Proposed Development comprising the Converter Station and associated infrastructure, the works to connect the Converter Station to the National Grid Lovedean substation, the access road, telecommunications equipment, security fencing, temporary construction compound, car park and laydown areas.
- Sections 2 to 9 - The Onshore Cable Corridor:
  - The Cable Corridor from the Converter Station Area at Lovedean to the Landfall at Eastney within which the High Voltage Direct Current ('HVDC') Onshore Cables will be laid.
- Section 10 – Eastney (Landfall):
  - The Landfall area including the construction of underground infrastructure and the two Optical Regeneration Station(s) ('ORS'), temporary vehicular routes for construction vehicles, temporary construction compound, car park and laydown areas and construction vehicle movements.

16.1.1.7. The above sections of the Proposed Development are shown in Figure 16.1 of the ES Volume 2 (document reference 6.1.16.1).

16.1.1.8. The assessment reported in this Chapter of the ES considers the potential impacts associated with the Proposed Development's activities during construction, operation and decommissioning. It assesses effects of the Proposed Development on ecological features, covering designated sites, habitats, and species of importance to nature conservation and has been informed by both ecological desk study and site-specific survey work undertaken to inform the Proposed Development.

16.1.1.9. The assessment considers baseline ecological conditions within the Order Limits and the surroundings. Ecological features that are considered important, which may include those which receive protection through legislation or those that are subject to provisions in planning policy, have been identified and the likely effects of the Proposed Development on them has been assessed.

16.1.1.10. This chapter assesses the impacts arising from the Proposed Development within the Onshore Components of the Order Limits and the Site only (above Mean Low Water Springs ('MLWS')). Refences to the Order Limits and the Site in this chapter, any appendices to it and plans enclosed to it, is only in relation to the Order Limits and the Site as applicable to the Onshore Components as illustrated in Figure 3.9 of the ES Volume 2 (document reference 6.2.3.9) Figure 3.9.

16.1.1.11. Mitigation measures to prevent, minimise or control likely significant effects have been proposed where appropriate, and the benefits of ecological enhancements included as part of the Proposed Development have been discussed.

16.1.1.12. The Onshore Ecology assessment will consider the potential impacts associated with the following activities:

- Installation of the HVDC Onshore Cable within the Onshore Cable Corridor, the construction of the Converter Station, associated works and the substation connection works within the Converter Station Area and the carrying out of construction works at the Landfall, which has the potential to impact on ecology and biodiversity through the:
  - loss or degradation of habitats and the disturbance of protected and notable species;
  - Increase of noise and vibration and disturbance of protected species;
  - Increase in pollutants – dust, deposition and waterborne pollutants;
  - Increased light spill (including during night time working); and
  - Increased works traffic and air pollution.
- Operation of the Converter Station at Lovedean and ORS at the Landfall, with potential increases in light spill, noise and vibration; and
- Decommissioning of the HVDC Onshore Cable and Converter Station.

16.1.2. STUDY AREA

16.1.2.1. The zone of influence has been used to define Study Areas for ecological features based on their importance and sensitivity, and these have been defined below. These were used for all 10 Sections of the Proposed Development, and subject to consultation with relevant statutory consultees, particularly Natural England ('NE'). The Study Areas were used by the Preliminary Ecological Appraisal ('PEA');

Appendix 16.2 (PEA/Phase 1 Habitat Survey Report) of the ES Volume 3 (document reference 6.3.16.2)) and

- Internationally Important Statutory Designated Sites – A Study Area of 10 km from the Order Limits has been used.
- Nationally Important Statutory Designated Sites – A Study Area of 2 km from the Order Limits has been used.
- Non-statutory Designated Sites - A Study Area of 100 m from the Order Limits has been used.
- Species Records – A Study Area of 1 km from the Order Limits has been used during the desk study search of species records. This was increased to 2 km for bats to take into account the greater mobility of these species.
- Priority Habitats[1] and Ancient Woodland[2] - A Study Area of 100 m from the Order Limits has been used for Priority Habitats and Ancient Woodland.
- Habitats (non-Priority) and Species – A Study Area of the Order Limits and the immediate surrounding area has been used for species surveys (excluding great crested newts) and evaluation of habitats. Breeding bird surveys were undertaken covering the Converter Station Area, Land West of Fort Cumberland Site of Nature Conservation Interest ('SINC'), Milton Common SINC and Langstone Harbour. Wintering bird surveys were undertaken along the Onshore Cable Corridor adjacent to Langstone Harbour, including the two SINC covered by breeding bird surveys. Dormouse, reptile and badger surveys were undertaken around the Converter Station Area and around the northern section of the Onshore Cable Corridor.
- Great crested newt – A Study Area of 250 m from the Order Limits has been used to search for waterbodies in the assessment of great crested newts.

16.1.2.2. Study Areas for international and national-scale designated sites (10 km and 2 km from the Order Limits respectively) reflected the sensitivity of their qualifying features and the fact they often support species that are mobile and widely ranging, such as birds and bats (CIEEM 2013, 2018).

16.1.2.3. The Study Area used for non-statutory sites, Habitats of Principal Importance ('HPI') and Ancient Woodland (100 m from the Order Limits) reflected their highly modified

[1] Analogous to HPI, using locations and extents made available by Natural England on its OpenData service; https://naturalengland-defra.opendata.arcgis.com/datasets/priority-habitat-inventory-south-england

[2] Using data from the Ancient Woodland Inventory as made available by Natural England on its open data service; https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodland-england. No blocks of ancient woodland smaller than 2 ha and not listed on this inventory exist within the study area, as discussed in the response to scoping consultation question 4.14.8 (see Appendix 16.1).

nature (and thus more limited sensitivity), lack of mobile and widely ranging features, and that the effect pathways between the Proposed Development were limited by barriers (residential and commercial development, roads). In many areas the Proposed Development is localised to public roads and urbanised, previously developed land.

16.1.2.4. For protected species records, study areas reflect the mobile nature of the species recorded, in particular bats which undertake nightly foraging trips, even across urban and developed areas. Ponds and water courses were mapped within 250 m of the Order Limits to inform the assessment of great crested newt habitat, this distance being that which these animals migrate between breeding ponds.

16.1.2.5. The onshore ecology assessment outlined in this chapter extends to the MLWS, with the marine assessments ecological components extending to the MHWS. This results in a limited overlap in the areas of assessment between this Chapter and Chapter 8 (Intertidal and Benthic Habitats), Chapter 9 (Fish and Shellfish), Chapter 10 (Marine Mammals and Basking Sharks and Chapter 11 (Marine Ornithology) which assess ecological features located in the marine environment associated with the marine elements of the Proposed Development. This chapter should be referred to for all ecological features (namely bird features of the adjacent Chichester and Langstone Harbour Special Protection Area ('SPA')) that utilise areas of sand and mudflat habitat. The Application is to be supported by the HRA Report which has assessed whether the Proposed Development has adverse impacts on the integrity of relevant European sites.

16.1.2.6. The Study Areas for the various aspects of ecology and nature conservation considered in this chapter are shown on Figure 16.1 to 16.4 of the ES Volume 2 (document reference 6.2.16.1 to 6.2.16.4).

16.2. LEGISLATION, POLICY AND GUIDANCE

16.2.1.1. This assessment has taken into account the current legislation, policy and guidance relevant to onshore ecology. These are listed below.

16.2.1. LEGISLATION

The Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations'):

- The Habitats Regulations which implement the Habitats Directive (EC Directive 92/43/EEC) in the United Kingdom, and in particular regulation 63 require the competent authority consenting a development (in the case of the Proposed Development, the competent authority is the Secretary of State ('SoS')) before deciding whether to give consent, permission or other authorisation for plan or project which:
  - is likely to have a significant effect on a European Site (either alone or in combination with other projects)[3]; and
  - is not directly connected with or necessary to the management of that site;
  - must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.
  - To enable the competent authority to determine whether an appropriate assessment is necessary a person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for this purpose.
- In the event that a plan or project may negatively impact a European Site regulation 64 of the Habitats Regulations provides that the competent authority may agree to the plan or project notwithstanding that negative assessment of the implications for the European Site only where it is satisfied that:
  - there is no alternative solution to the plan or project to avoid the negative impact; and
  - the plan or project must be carried out for imperative reasons of overriding public interest including those of a social or economic nature;

[3] European sites include: Special Areas of Conservation, Special Protection Areas, sites of Community importance ('SCIs'), and candidate SACs.
UK Government policy (ODPM Circular 06/2005) states that internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites and potential Ramsar sites) are afforded the same protection as SPAs and SACs, for the purpose of considering development proposals that may affect them (and so are considered in this report as "European sites")

- Where the site to be negatively impacted hosts a priority natural habitat type[4] or a priority species, the imperative reasons of overriding public interest must be either:
  - reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or
  - any other reasons which the competent authority, having due regard to the opinion of the European Commission, considers to be imperative reasons of overriding public interest[5].

Wildlife and Countryside Act 1981 ('WCA'):

- This is the primary legislation in the United Kingdom for the protection of animals, plants and habitats in the UK. This legislation covers three main areas:
  - Wildlife protection, including protection of wild birds, their eggs and nests, protection of other animal and protection of plants;
  - Nature Conservation, Countryside and National Parks; and
  - Public Rights of Way;

The Natural Environment and Rural Communities Act 2006 ('NERC'):

- The NERC was designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. The NERC established a new independent body – NE - responsible for conserving, enhancing, and managing England's natural environment for the benefit of current and future generations, thereby contributing to sustainable development.
- The NERC made amendments to both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way ('CROW') Act 2000.

[4] See Article 1(d) of EC Directive 92/43/EEC
[5] See Article 1(h) of EC Directive 92/43/EEC

- Section 40 of the NERC imposes a duty on public authorities "*In exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*".
- Section 41 of the NERC requires the SoS to: "*publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity*." These are referred to as Habitats/Species of Principal Importance.

The Countryside and Rights of Way Act 2000 ('CRoW')

- The CRoW Act, in Part III, gives greater protection to wildlife and natural features by making provision for the conservation of biological diversity, and by improving protection for Sites of Special Scientific Interest (SSSIs) in England and Wales and the enforcement of wildlife legislation.

The Hedgerows Regulations 1997

- These regulations are designed to protect hedgerows in England and Wales and regulate their removal and replacement. The regulations apply to any hedgerow growing in, or adjacent to any common land, protected land, or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys that have a continuous length of at least 20 metres, or if less than 20 metres, meets another hedgerow at each end.
- A higher level of protection is afforded to "important" hedgerows, with a hedgerow being classified as important if it, or the hedgerow of which it is a stretch, has existed for 30 years or more and satisfies other specified criteria provided for by those regulations[6].

The Protection of Badgers Act 1992

- Under the Protection of Badgers Act 1992 It is an offence to wilfully take, kill, injure (or attempt to do so), possess or ill-treat a badger. Under this Act their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and NE interprets this definition to include seasonally used setts that are not occupied but that show signs of recent use by badgers.

[6] See Part II of Schedule 1 to the Hedgerow Regulations 1997

16.2.2. PLANNING POLICY

National Policy

1.1.1.1. The National Policy Statement for Energy (EN-1) provides national planning policy that the SoS must have regard to when deciding the Application, in addition other prescribed matters.

1.1.1.2. EN-1 contains the following policy statements which are considered to be of key relevance for the purpose of the assessment of environmental impacts on ecological features:

- *"The Secretary of State must consider whether a project may have a significant effect on a European Site, or any site to which the same protection must be made under the Conservation of Habitats and Species Regulations 2017 (paragraph 4.3.1)".*
- *"As a general principle, and subject to the specific policies below, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives…where significant harm cannot be avoided, then appropriate compensation measures should be sought (paragraph 5.3.7)".*
- *"The most important sites for biodiversity are those identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for these sites but do not provide statutory protection for potential Special Protection Areas ('pSPAs') before they have been classified as a SPA. For the purposes of considering development proposals affecting them, as a matter of policy the Government wishes pSPAs to be considered in the same way as if they had already been classified. Listed Ramsar sites should, also as a matter of policy, receive the same protection (paragraph 5.3.9)".*
- *"Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect, after mitigation, on the site's notified species interest feature is likely, an exception should only be made where the benefits (including need) of the development, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs (paragraph 5.3.11)".*
- *"Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Sites, have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education (paragraph 5.3.13)".*

- *"Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Aged or 'veteran' trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided (paragraph 5.3.14)".*
- *"Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales and thereby requiring conservation action…these species and habitats are protected from the adverse effects of development by using requirements of planning obligations (paragraph 5.3.17)".*

National Planning Policy Framework

16.2.2.1. The revised 'NPPF published in February 2019 (Ministry of Housing, Communities and Local Government), whilst not containing specific policies for nationally significant infrastructure projects, sets out the Government's planning policies for England and how these are expected to be applied and the policies contained therein may be a matter which the SoS considers to important and relevant to their determination of the Application.

16.2.2.2. The NPPF contains the following policy statements which are of relevance to the assessment of impacts on ecological features (which is not an exhaustive list, but includes those considered to be most relevant to the Proposed Development):

- Section 15, paragraph 170 states that the planning system should contribute to and enhance the natural and local environment by: "*minimising impacts on biodiversity and providing net gains in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*";
- Section 15, paragraph 175 states that: "*When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles: if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused*". It also states that: "*planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of ancient or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss and a suitable compensation strategy exists*".

Regional Policy

The Hampshire Biodiversity Action Plan

16.2.2.3. The Hampshire Biodiversity Action Plan sets out a strategic plan by identifying habitats and species of priority concern. There are individual plans for priority habitats, species and topics which detail progress towards previous Biodiversity Action Plan ('BAP') targets and current conservation action. Each plan details future objectives, targets and actions to be taken.

Local Policy

Portsmouth City Council

16.2.2.4. The Portsmouth Plan (Portsmouth's Core Strategy) Adopted January 2012 (PCC, 2012). The relevant policy PCS13 is detailed below:

- The City Council will work collaboratively to protect, enhance and develop the green infrastructure network in the following ways:
  - Protect green infrastructure by:
    - "*Refusing planning permission for proposals which would result in the net loss of existing areas of open space, as shown on map 21, and those which would compromise the overall integrity of the green infrastructure network in the city, unless there are wider public benefits from the development which outweigh the harm".*
  - For European sites:
    - "*Requiring a project level Habitat Regulation Assessment on any development likely to have an adverse effect on a European site either alone or in combination with other plans and projects and refusing developments which would have an adverse effect on a European site;*
    - *recognising the importance of currently important brent goose feeding sites and high tide wader roosts outside the site boundaries to the ecological integrity of the European sites; and*
    - *responding to the emerging evidence from the SDMP, the published findings and recommendations and future related research."*
  - For nationally designated SSSIs:
    - "*The city council has a duty to further the conservation and enhancement of SSSIs under the Countryside and Rights of Way Act."*
  - For Local Wildlife Sites and LNRs:
    - *"Recognising the benefits of local sites for nature conservation and its enjoyment for residents and visitors;*

- *Designating sites through the Site Allocations Plan;*
- *Resurveying designated sites periodically as well as others which could meet the criteria for selection. Such sites will be adopted through refreshes of the Site Allocations Plan and given 'candidate' status prior to that;*
- *Ensuring that the intrinsic habitat value of the site can be retained or enhanced through development proposals; and*
- *Allowing development only if it clearly outweighs the substantive nature conservation value of the site, an impact on the site cannot be avoided or mitigated and compensatory measures are provided."*

- *"Ensuring that development retains and protects the biodiversity value of the development site and produces a net gain in biodiversity wherever possible. Any unavoidable negative impacts on biodiversity as a result of development should be appropriately mitigated."*
- *"Ensuring that development is informed and influenced by the presence of trees on site, particularly those protected by a TPO or within a conservation area. If the removal of any tree is unavoidable because it would be in best arboricultural practice a replacement tree of at least equal value to that lost should be planted on site unless it is shown to be impractical to do so."*

Havant Borough Council

16.2.2.5. Havant Borough Local Plan (2011) Core Strategy. The relevant policy CS11 Protecting and Enhancing the Special Environment and Heritage of Havant Borough is detailed below:

- Planning permission will be granted for development that:
  - *"1. Ensures the key landscape and built form principles set out in the Havant Borough Townscape, Landscape and Seascape Character Assessment are protected and where possible enhanced by partnership working with developers, groups and the wider community.*
  - *2. Protects and where possible enhances the borough's statutory and non-statutory designated landscape, habitats and features of biological, hydrological or geological interest. Protection and enhancement will be achieved by appropriate adaptation and mitigation measures including wardening, education and information and the creation of new habitats, water bodies/courses planting of new trees and woodland.*
  - *3. Has particular regard to the following hierarchy of nature conservation designations within the borough (as identified on the Proposals Map):*

- *(i) Special Protection Areas ('SPA'), Special Areas of Conservation ('SAC') and Ramsar [International].*
- *(ii) Sites of Special Scientific Interest ('SSSI') and National Nature Reserves [National] ('NNR').*
- *(iii) Sites of Importance for Nature Conservation ('SINC'), LNRs, other Ancient Woodland not identified in (ii) above [Local].*
- *4. Protects and where appropriate enhances the borough's statutory and non-statutory heritage designations by appropriately managing development in or adjacent to conservation areas, listed buildings, scheduled ancient monuments, historic parks and gardens, archaeological sites, buildings of local historic or architectural interest.*
- *5. Supports an ongoing programme of survey of habitats and species and designation of Sites of Importance for Nature Conservation.*
- *6. Incorporates partnership working with conservation organisations to improve public understanding of biodiversity and to manage public access to designated sites, particularly on the coast, to reduce harm to nature conservation interests.*
- *7. Incorporates partnership working with landowners and developers to ensure land management practices restore, enhance and where appropriate create new valued landscapes, habitats and their soil structure, particularly the ancient woodland remnants of the Forest of Bere and coastal salt marsh.*
- *8. Protects wildlife habitats and wildlife corridors to prevent the fragmentation of existing habitats and to allow species, for example brent geese, to respond to the impacts of climate change by making provision for habitat adaptation e.g. coastal managed realignment and species migration.*
- *9. Maintains undeveloped gaps between the settlements of Emsworth/Havant; Havant/Waterlooville; Havant/Portsmouth; Emsworth/Westbourne and Leigh Park/Rowlands Castle as shown on the Proposals Map.*
- *10. Protects the best and most versatile agricultural land that has the greatest potential for local food security.*
- *11. Responds to the emerging evidence from the Solent Disturbance and Mitigation Project, the published recommendations, and future related research."*

Winchester City Council

16.2.2.6. Winchester City Council (2013) Local Plan Part 1 Joint Core Strategy Adopted March 2013 and Local Plan Review 2006. The relevant policy CP16 Biodiversity is detailed as follows.

- The Local Planning Authority will support development which maintains, protects and enhances biodiversity across the District, delivering a net gain in biodiversity, and has regard to the following:
  - *"Protecting sites of international, European, and national importance, and local nature conservation sites, from inappropriate development.*
  - *Supporting habitats that are important to maintain the integrity of European sites.*
  - *New development will be required to show how biodiversity can be retained, protected and enhanced through its design and implementation, for example by designing for wildlife, delivering BAP targets and enhancing Biodiversity Opportunity Areas.*
  - *New development will be required to avoid adverse impacts, or if unavoidable ensure that impacts are appropriately mitigated, with compensation measures used only as a last resort. Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.*
  - *Maintaining a District wide network of local wildlife sites and corridors to support the integrity of the biodiversity network, prevent fragmentation, and enable biodiversity to respond and adapt to the impacts of climate change.*
  - *Supporting and contributing to the targets set out in the District's BAP for priority habitats and species."*
- Planning proposals that have the potential to affect priority habitats and/or species or sites of geological importance will be required to take account of evidence and relevant assessments or surveys.

East Hampshire District Council

16.2.2.7. East Hampshire District Council (2014) Local Plan: Joint Core Strategy. The relevant policies CP21 Biodiversity and CP22 Internationally Designated Sites are detailed below:

- "*Development proposals must maintain, enhance and protect the District's biodiversity and its surrounding environment.*
- *New development will be required to:*

- *Maintain, enhance and protect district wide biodiversity, in particular the nature conservation designations.*
  - *SPAs, SACs and Ramsar (International);*
  - *SSSIs and NNRs (National);*
  - *SINCs (Hampshire) and LNRs).*
- *Extend specific protection to, and encourage enhancement of, other sites and features which are of local value for wildlife, for example important trees, rivers, river corridors and hedgerows, but which are not included in designated sites.*
- *Contribute towards maintaining a district–wide network of local wildlife sites, wildlife corridors and stepping stones between designated sites and other areas of biodiversity value or natural green space. This will help to prevent the fragmentation of existing habitats and allow species to respond to the impacts of climate change by making provision for habitat adaptation and species migration. This is supported by Policy CP28 (Green Infrastructure) and the District's Green Infrastructure work.*
- *Ensure wildlife enhancements are incorporated into the design to achieve a net gain in biodiversity by designing in wildlife and by ensuring that any adverse impacts are avoided where possible or, if unavoidable, they are appropriately mitigated for, with compensatory measures only used as a last resort.*
- *Protect and, where appropriate, strengthen populations of protected species;*
- *Protect and enhance open spaces in accordance with the District's 'Open Space, Sports and Built Facilities Study', Policy CP17 (Protection of open space, sport & recreation) and Policy CP28 (Green Infrastructure). The provision of open space should be in advance of the relevant new developments being occupied.*

- *To help protect the Solent SPA, SAC and Ramsar sites along the coast, the Council will work with local authorities to monitor the progress of ongoing assessments and recreational management studies being undertaken by the Solent Forum on these sites. Planning permission will only be granted for development that responds to the emerging evidence from the Solent Disturbance and Mitigation Project, the published recommendations, and future related research."*

16.2.3. GUIDANCE

Defra (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services.

- This Strategy builds on the Natural Environment White Paper and sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea, providing a comprehensive picture of how the Government is implementing both international and EU commitments in England.

Natural Environment White Paper (2011)

- The White Paper sets out a clear framework for protecting and enhancing the natural environment, backed up with practical action. It details how the Government will take forward the Biodiversity Challenge to halt the loss of UK and International species and habitats and how to "*mainstream the value of nature across our society*"; "*promote an ambitious, integrated approach, creating a resilient ecological network across England*" and "*move from net biodiversity loss to net gain*".

The UK Post-2010 Biodiversity Framework 2012

- The UK Post-2010 Biodiversity Framework was published on 17 July 2012. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group ('4CBG'), through which the environment departments of all four governments in the UK work together.
- The Framework covers the period from 2011 to 2020, and was developed in response to two main drivers: The Convention on Biological Diversity's ('CBD's') Strategic Plan for Biodiversity 2011-2020 and its 5 strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010; and the EU Biodiversity Strategy, released in May 2011.
- The Framework shows how the work of the four UK countries joins up with work at a UK level to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy. It identifies the activities required to complement the country biodiversity strategies, and where work in the country strategies contributes to international obligations.

16.2.4. PROTECTED SITES

European Sites

- The Habitats Directive requires EU Member States to maintain or restore natural habitats and wild species listed in the Annexes to the Habitats Directive to a favourable conservation status.

- As detailed above, the Habitats Regulations transpose the requirements of the Habitats Directive into national law.
- Special Areas of Conservation ('SACs') are designated as European Sites in recognition of their value as best representatives of the range and variety within the EU of habitats and (non-bird) species listed on Annexes I and II to the Habitats Directive.
- Directive 2009/147/EC on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended) ('Birds Directive;) provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. Mechanisms for the achievement of the objectives of the Birds Directive are set by each Member State (in the UK compliance is secured via the WCA and CRoW)).
- SPAs are designated as European Sites under the Birds Directive due to their value as areas of the most important habitat for rare and vulnerable birds (listed on Annex I of the Birds Directive), and for regularly occurring migratory bird species within the European Union.
- Together SAC's and SPA's make up the Natura 2000, a network of core breeding and resting sites for rare and threatened species.
- Although not a European site designation, Ramsar sites (as designated in accordance with the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, an international treaty for the conservation and sustainable use of wetlands) were originally designated to protect sites of importance as waterfowl habitat, and were later broadened to include all aspects of wetland conservation.
- The Solent Waders and Brent Goose Strategy ('SWBGS') is a conservation partnership, aiming to conserve the internationally important dark-bellied brent goose and wading bird populations within and around the SPAs and Ramsar wetlands of the Solent coast. The SWBGS provides a framework for identifying sites lying outside the physical boundaries of SPA/Ramsar sites but which are, or may be, used by bird species associated with the European Sites. These sites are termed as Functionally Linked Land (Natural England, 2016) and are considered functionally linked to the designated sites. There are an extensive number of SWBGS sites around Portsmouth and near Drayton and Farlington.

Sites of Special Scientific Interest

- Sites of Special Scientific Interest ('SSSIs') are designated to protect the best examples of the UK's flora, fauna, or geological or physiographical features. The designation may extend into intertidal areas out to the jurisdictional limit of local

authorities, generally Mean Low Water in England. SSSIs are notified under the WCA (as amended).

- National Nature Reserves ('NNRs') are established to conserve and enhance the most important habitats, species and geology, and to provide 'outdoor laboratories' for research. They promote public enjoyment and consider the social and economic well-being of those living within them.

Local Designations

- Local Nature Reserves ('LNR') are local authority designations under the National Parks and Access to the Countryside Act 1949. They are designated in consultation with relevant statutory nature conservation agencies and are managed for nature conservation and people.
- Further sites are designated at the local level by wildlife groups seeking to identify areas with importance for nature conservation not covered by statutory designations. In Hampshire these area Sites of Importance for Nature Conservation ('SINCs') and Roadside Verges of Ecological Importance ('RVEI'). Data regarding locations and designated features of these sites is held by local environmental data centres, in this case Hampshire Biodiversity Information Centre ('HBIC').

16.3. SCOPING OPINION AND CONSULTATION

16.3.1. SCOPING OPINION

As detailed within Chapter 4 (EIA Methodology) of the ES Volume 1 (document reference 6.1.16), a Scoping Opinion was received by the Applicant from PINS (on behalf of the SoS) on 7th December 2018. It included formal responses from consultees. The bullet points below summarise these responses and how they have been addressed.

- Survey methods and Study Areas should be clearly defined for ecological features, in particular wintering birds;
- HRA to represent all qualifying features of Natura 2000 sites and these data to be cross-referenced to the ES;
- Important ecological features to be clearly identified and evaluated; and
- Aquatic receptors and SWBGS sites to be included in scope.

16.3.1.1. Appendix 16.1 (Consultation Responses) of the ES Volume 3 (document reference 6.3.16.1) includes the responses to the PINS EIA Scoping Opinion.

16.3.2. CONSULTATION PRIOR TO PEIR

16.3.2.1. In February 2018 consultation with NE was initiated, covering potential effects on two sites; Denmead Meadows (which is adjacent to Kings Pond Meadow SINC) and Eastney Beach SINC. Further, more detailed consultation regarding Denmead Meadows was undertaken with NE in November 2018. Details of consultations undertaken prior to PEIR are provided in Appendix 16.1 (Consultation Responses).

16.3.3. STATUTORY CONSULTATION

16.3.3.1. No additional consultation with statutory authorities, other than identified in 16.3.2 above, was undertaken.

16.3.4. POST PEIR CONSULTATION

16.3.4.1. Consultation with NE was continued following publication of the Preliminary Environmental Information Report ('PEIR') (published in February 2019) and broadened to include South Downs National Park Authority ('SDNPA') and Winchester City Council ('WCC') to inform the assessment of impacts and develop avoidance and mitigation measures detailed within this chapter. A summary of this consultation, undertaken between February 2019 to the time of the Application submission, is provided in Appendix 16.1 (Consultation Responses).

16.3.4.2. Key issues raised by consultees were:

- Agreement on the scope of surveys to inform the assessment of impacts;
- Avoidance and mitigation proposals associated with Denmead Meadows, specifically Horizontal Directional Drilling ('HDD') proposals; and
- Potential effects of the construction and operation of the Converter Station, specifically in relation to habitat fragmentation;

16.3.4.3. Full details of consultation undertaken to date is presented within the Consultation Report (document reference 5.1).

16.3.5. ELEMENTS SCOPED OUT OF THE ASSESSMENT

16.3.5.1. The elements shown in Table 16.1 were not considered to give rise to likely significant effects at Scoping and as a result of the Proposed Development and have therefore not been considered within the ES:

Table 16.1 – Topics and elements scoped out of the assessment at Scoping

Element Scoped Out	Justification
Solent and Dorset Coast pSPA	The proposal for Solent and Dorset Coast is to create a new SPA protecting foraging habitat for internationally important populations of common tern *Sterna hirundo*, sandwich tern

Element Scoped Out	Justification
	Thalasseus sandvicensis and little tern *Sternula albifrons*. This area is particularly important to these birds as much of the sea around their breeding colonies is the ideal habitat for plunge diving for food. Due to the three tern species' restricted foraging range (Parsons et al., 2015), onshore activities are sufficiently distant from favoured foraging habitat within the pSPA to prevent the species' being exposed to both visual disturbance and unpredictable noise events during the construction of the onshore elements of the Proposed Development. It has therefore been scoped out of the Onshore Ecology impact assessment. Any impacts on this site as a consequence of the offshore elements of the Proposed Development are assessed in Chapter 11 of the ES (Marine Ornithology).
Portsmouth Harbour SPA/Ramsar **&** **Solent and Southampton Water SPA/Ramsar**	Portsmouth Harbour SPA, together with the adjacent Chichester and Langstone Harbours SPA, forms one of the most important sheltered intertidal areas on the south coast of England. It is composed of extensive intertidal mudflats and sandflats with seagrass beds, saltmarsh, shallow coastal waters, coastal lagoons and coastal grazing marsh. The estuarine sediments and areas of saltmarsh support rich populations of intertidal invertebrates, which provide an important food source for wintering birds, and also shelter roosting flocks, in particular black-tailed godwit *Limosa*, dark-bellied brent goose *Branta bernicla bernicla*, dunlin *Calidris alpina* and red-breasted merganser *Mergus serrator*. Solent and Southampton Water SPA/Ramsar comprises a series of estuaries and harbours with extensive mud-flats and saltmarshes together with adjacent coastal habitats including saline lagoons, shingle beaches, reedbeds, damp woodland and grazing marsh. The mud-flats support beds of *Enteromorpha spp*. and *Zostera spp.* and have a rich invertebrate fauna that forms the food resource for the estuarine birds. In summer, the site is of importance for breeding seabirds, including gulls and four species of terns. In winter, it holds a large and diverse

Element Scoped Out	Justification
	assemblage of water birds, including geese, ducks and waders. Dark-bellied brent goose *Branta b. bernicla* also feed in surrounding areas of agricultural land outside the SPA. The sites are 2 km and 7km away from the Proposed Development respectively on the other side of Portsmouth City, with no direct or indirect pathways that could affect their qualifying features. Therefore, potential effects on them will be avoided and the sites have been scoped out of the assessment. This conclusion is supported by the HRA for the Proposed Development (document reference 6.8).
Solent & Isle of Wight Lagoons SAC **&** **Solent Maritime SAC**	These Natura 2000 sites, adjacent to the Order Limits in Sections 7 to 10, and extending within Section 7, are designated for the coastal lagoon and intertidal habitat types they support, and for Desmoulin's whorl snail *Vertigo moulinsiana* which is found here. Both sites have been scoped out of the assessment as scheme design elements predict with certainty that the Proposed Development will have no effect on them or their qualifying features during any of the stages of development. Effects associated with direct impacts have been avoided by the use of HDD, taking the cable from Farlington playing fields (located at Farlington, north of A27) to Kendall's Wharf, under the intertidal habitats within Solent Maritime SAC. Indirect impacts would not lead to effects perceptible above the background effects associated within current use of Langstone Harbour boat traffic, as well as from roads, industrial/commercial sites, residential areas and use of the area for leisure (walking, running, dog walking, etc) that are a permanent feature of the area surrounding both SACs. In addition, noise from the Proposed Development's HDD would not elevate above that of ambient noise levels. Therefore, potential effects on these SACs will be avoided and the site has been scoped out of the assessment. This conclusion is supported by the HRA for the Proposed Development (document reference 6.8).
South Wight Maritime SAC	The South Wight Maritime SAC encompasses a range of reef types on the coast of the Isle of Wight. The site includes some

Element Scoped Out	Justification
	of the most important subtidal chalk reefs in Britain, supporting a diverse range of species in the subtidal and intertidal. Faces and crevices on the limestone reefs and areas of large boulders provide a range of habitats for a number of marine species. Exposed bedrock is extensively bored by bivalves and sponges adding to habitat diversity. Several nationally scarce seaweed biotopes are also present within the site, and rare fish species are often present in summer months. The SAC has been scoped out of the assessment due to its distance from the Order Limits and the barriers to impact pathways present. South Wight Maritime SAC is 8km away on the other side of the Solent. The Proposed Development will not affect traffic on the Isle of Wight, and therefore will not give rise to effects of air pollution associated with construction or decommissioning of the Proposed Development (Chapter 22 Air Quality).
Butser Hill SAC	Butser Hill is situated on the east Hampshire chalk which forms part of the South Downs. Much of the site consists of sheep's-fescue – meadow oat-grass (*Festuca ovina – Helictotrichon pratense*) grassland, and has a range of slope gradients and aspects which influences vegetation composition. A particular feature is its lower plant assemblage; it has a rich lichen flora and also supports the distinctive association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example. The site exhibits various transitions between semi-natural dry grassland, chalk heath, mixed scrub and yew *Taxus baccata* woods. The SAC has been scoped out of the assessment due to its distance from the Order Limits, and the barriers to impact pathways present. Butser Hill is over 5km away from the Order Limits to the north with intervening hills of the South Downs. It is also not considered likely that traffic associated with construction or decommissioning of the Proposed Development will give rise to any air quality impacts on the SAC (Chapter 22 Air Quality).

Element Scoped Out	Justification
Langstone Harbour SSSI	This SSSI shares the same boundaries as Chichester and Langstone Harbour SPA/Ramsar and part of Solent Maritime SAC, being within Sections 7 to 10. It is designated for the combination of intertidal habitats it supports and its importance to wintering waterbirds, but has been scoped out of the assessment using the same rationale as for the Natura 2000 sites considered above, namely by timing works to avoid disturbance of wintering birds and by the use of HDD. Scheme design elements and findings of surveys predict with certainty that the Proposed Development will have no effect it or its qualifying features
Sinah Common SSSI	Designated for its coastal shingle, saltmarsh and grassland habitats, Sinah Common is ~1 km from Section 10 of the Order Limits across the entrance to Langstone Harbour. It has been scoped out as this distance prevents impacts associated with all stages of the Proposed Development being transferred to the site, and thus there will be no effect on it or its qualifying features.
Portsdown SSSI	Portsdown SSSI is an isolated east-west chalk hillside with a long south-facing escarpment, supporting rich chalk grassland flora and having a diverse insect fauna. At over 300 m from the southern part of Section 6 of the Order Limits, its distance would prevent indirect impacts of all stages from leading to effects on the designated site, with the confidence of this conclusion strengthened by woodland and housing in the intervening landscape acting as barriers to effect pathways. Portsdown SSSI has therefore been scoped out of the assessment.
Catherington Down SSSI	Catherington Down is an area of chalk grassland and narrow fringing woodland belts on predominantly west-facing downland slopes near the southern extent of the main Upper Chalk outcrop in Hampshire. It is also designated as an LNR (see below). The site is over 1 km from the Order Limits to the north-east of the Converter Station area (Section 1). Its distance would prevent indirect impacts of all stages from leading to effects on the designated site, with the confidence of this conclusion strengthened by habitats and development in the

Element Scoped Out	Justification
	intervening landscape acting as barriers to effect pathways. Catherington Down SSSI has therefore been scoped out of the assessment.
LNR	The following SINCs and RVEIs, found between Sections 1 and 10 and described further in Appendix 16.4 and shown in Figure 16.2, have been scoped out of the assessment: • The Kench, Hayling Island LNR; • Farlington Marshes LNR; • Yeoll's Copse LNR; and • Catherington Down LNR. These sites lie between 43 m and 1.3 km from the Order Limits and there will be no effects associated with direct impacts on them. Farlington Marshes LNR, which is also designated as a SINC (see below) is the closest site at ~50m from the Order Limits in Section 7 of the Proposed Development, however the Onshore Cable Corridor here passes under LNR within HDD, emerging to the north of the A27. Distance and the barrier of the A27 will prevent transfer of effects of indirect impacts. In addition, it is also subject to existing effects associated with roads (namely the A27 which is adjacent, and use by the public for leisure (walking, running, dog walking, etc). Thus, there will be no perceptible effect of the Proposed Development on the LNR during construction, operation or decommissioning, and it has been scoped out of the assessment. The three other sites are further than 1 km from the Order Limits, a distance that prevents effects of indirect impacts associated with all stages of the Proposed Development being transferred to them, and therefore they have been scoped out of the assessment.
SINCs & RVEIs	The following SINCs and RVEIs, found between Sections 2 and 10 and described in Appendix 16.4, have been scoped out of the assessment (note Farlington Marshes SINC is concurrent with Farlington Marshes LNR, already considered above):

Element Scoped Out	Justification
	• Eastney Beach SINC; • Land West of Fort Cumberland SINC; • Melville Road Verge SINC and RVEI; • Milton Locks SINC; • Golf Course North of Burrfields Road SINC; • Farlington Marshes SINC; • Adjacent to Farlington Playing Fields SINC; • East and West of Gillman Road SINC; • Farlington Avenue SINC and RVEI; • Meadow West of Farlington Avenue SINC; • Land to the South of Portsdown Hill Road SINC; and • London Road Fen SINC. Both Eastney Beach SINC (Section 10) and Milton Locks SINC (Section 9) are concurrent with the Order Limits (Figure 16.2). However, neither site will be subject to effects during construction, operation or decommissioning and have been scoped out of the assessment. HDD will mean effects of direct impacts on Eastney Beach will be avoided. The effect of indirect impacts on the remainder of the site would not be perceptible above that of natural wave action that physically reshapes the beach constantly, and leisure uses such as dog walking. It should also be noted that shingle in the region of the landfall is not vegetated, thus ecological elements of the beach to not coincide with the works. For these reasons, the objectives of the Eastney Beach Habitat Restoration Management Plan Supplementary Planning Document (Portsmouth City Council, 2014) would not be contravened; the natural elements of the beach habitat will not be altered, and would not affect attempts to improve the ecological status of the beach.

Element Scoped Out	Justification
	At Milton Locks (Section 9), HDD will be employed to take the cable under the SINC, thus avoiding direct and indirect impacts of the Proposed Development in all three of stages. Remaining SINC and RVEI sites lie adjacent to the Order Limits and there will be no effects of direct impacts of the Proposed Development on them (e.g. Land West of Fort Cumberland SINC and Melville Road RVEI, which lie adjacent to the Landfall, but will not be affected by works). They are subject to existing effects associated with roads, industrial/commercial sites, residential areas and some are used by the public for leisure (walking, running, dog walking, etc) that are a permanent feature of the wider area. There will be no perceptible effects of indirect impacts of the Proposed Development above this background. Therefore, they have been scoped out of the assessment.
Broadleaved semi-natural woodland	This habitat type, some of which is listed as HPI, has been avoided through scheme design, HDD and standard measures to be incorporated into the Proposed Development's Outline CEMP. No woodland will be felled or damaged to make way for the Proposed Development. The use of HDD will avoid stands of woodland along railway lines and at Kendall's Wharf located within Section 7. Therefore, broadleaved semi-natural woodland has been scoped out of the assessment as there would be no impact.
Broadleaved trees – Category B	Arboricultural surveys (Appendix 16.3 (Arboriculture Report)) identify 380 Category B or lower trees within 15 m of the Order Limits. Category B and below trees are aged ~20 years and younger, mainly comprising saplings and ornamental trees not of a native species, and are considered relatively insensitive to disturbance and replaceable. Thus they have been scoped out of the assessment.
Dense and scattered scrub	This habitat type is formed of overgrown hedges or land which has been left unmanaged for long periods of time, thus allowing a limited range of species to develop (including hawthorn, blackthorn and bramble). Other scrub and tree species occur infrequently. This type of habitat is widespread and common

Element Scoped Out	Justification
	throughout the UK, but plays an important role in providing shelter for protected species such as breeding birds, badgers, common reptiles and dormice. This habitat type has been considered with reference to these ecological features above, but in itself it does not have intrinsic ecological importance. Thus, it has been scoped out of the assessment.
Improved grassland, species-poor semi-improved grassland and marshy grassland	These habitats are highly modified by man due to nutrient enrichment and/or grazing and are common throughout the UK. They support a limited number of botanical species often selected artificially, or that are widespread hardy species found throughout the UK (Crofts and Jefferson, 1999). These types of grassland are not considered ecologically important and have been scoped out of the assessment.
Standing water	Comprising Kings Pond, adjacent to Anmore Road in Section 3 of the Proposed Development. This roadside eutrophic waterbody forms part of a ditch system used to manage storm water flows and has been enlarged by the Environment Agency in the past to increase its storage capacity. It has little natural character, and is of limited ecological importance. The Proposed Development will avoid the pond, with trenching occurring to the west, and thus is will not be affected. Standing water habitat at Kings Pond has therefore been scoped out (Great crested newts, which use ponds for breeding, are considered below).
Running water	Initial investigation during Phase 1 habitat survey (Appendix 16.2 (PEA/ Phase 1 Habitat Survey)) and scoping survey for aquatic features (Appendix 16.5 (Aquatic Ecology Scoping Assessment)) identified watercourses within Denmead Meadows (Section 3 of the Proposed Development). These were subject to detailed habitat assessment during a field survey of aquatic features (Appendix 16.6 (Aquatic Ecology Assessment – Tributaries of the North Purbrook Stream, Denmead)). Three sections of wet watercourse were identified within the Order Limits of the Proposed Development. They are interconnected and form part of the headwaters of the North Purbrook Stream (which does not lie within the Order Limits of the Proposed Development), that has been highlighted as a potential migratory route for European eel *Anguilla anguilla* by

Element Scoped Out	Justification
	NE. Of the three water courses identified, only one held water when surveyed. HDD under Denmead meadows will avoid effects on these water courses, and no others are present
Intertidal mud/sand, shingle and boulders	Located within Langstone Harbour and at Eastney Beach, with areas listed as HPI. Effects on these habitats associated with direct impacts have been avoided by the use of HDD, taking the Onshore Cable Corridor under them. Indirect impacts would not lead to effects perceptible above the background effects associated with current use of Langstone Harbour and the Solent by boat traffic, as well as from roads, industrial/commercial sites, residential areas and use of the area for leisure (walking, running, dog walking, etc) that are a permanent feature of the area bordering the harbour. Therefore, potential effects on these habitats will be avoided and the site has been scoped out of the assessment.
Arable	This habitat is comprises intensively farmed land within Sections 1 to 3 of the Proposed Development. Fields seeded with monocultural crops and without well-defined semi-natural border vegetation are present, of negligible ecological importance. Thus, arable land has been scoped out of the assessment.
Amenity grassland and introduced shrub	These artificial and heavily managed habitat types are common and widespread in the UK, primarily for leisure and as ornamental planting. They are found throughout the suburban and urban areas of the Proposed Development, mainly between Sections 4 and 10. They are not considered to have intrinsic ecological importance, although it is noted that some are SWBGS sites and are used for foraging by wintering dark-bellied brent geese (see Wintering Birds below). Amenity grasslands and introduced shrub and have been scoped out of the assessment.
Great Crested Newt	Desk study returned nine records of great crested newt within the Study Area; the most recent record is from 2015 in the Purbrook area (Appendix 16.2(PEA/Phase 1 Habitat Survey Report)). Ponds within the area were subject to Habitat Suitability Indices ('HSI'), eDNA and nocturnal field surveys

Element Scoped Out	Justification
	between 2017 and 2019. The three lakes on Milton Common and Great Salterns Lake received 'poor' HSI scores and were not surveyed as they were not considered safe to access. They are likely to be saline, due to their coastal location, and unsuitable for great crested newt breeding. The water body at Kings Pond, Denmead was desiccated when visited in 2018. Surveys did not identify great crested newt in any of the waterbodies surveyed and this species is thus considered absent from the Study Area (Appendix 16.9 (Great Crested Newt Report)). This species has therefore been scoped out of the assessment.
Other Amphibians	The desk study (Appendix 16.2 (PEA/Phase 1 Habitat Survey Report)) did not return records of other amphibians in the vicinity of the Converter Station Area. Terrestrial habitats could potentially support these species, but no water bodies were identified. The desk study returned two records of common toad *Bufo bufo*. This species is listed as a Priority Species in accordance with Section 41 of the NERC. Habitats along the route, including woodland, scrub, semi-improved grassland and coastal habitats are likely to support common toads. Desk study data indicates only small numbers of common toad are present. Due to the fact that for the most part the Order Limits avoid semi-natural habitat d through HDD and working within the road corridor, the proposed development is unlikely to affect these amphibians and they have been scoped out of the assessment.
Hazel Dormouse	One record of hazel dormouse *Muscardinus avellanarius* was returned within the vicinity of the Converter Station Area, from Stoneacre Copse in 2011 (Appendix 16.2 (PEA/Phase 1 Habitat Survey Report)). Habitats suitable for this species are present in the northern part of the Proposed Development at the Converter Station (Section 1) and Onshore Cable Corridor between this and Denmead Meadows (Sections 2 and 3). Suitable habitats present include semi-natural woodland and hedgerows

Element Scoped Out	Justification
	Hazel dormouse surveys were initially undertaken at the Converter Station Area and suitable habitat within Sections 2 and 3 in 2017 and 2018, all visits returning a negative result (Appendix 16.11 (Dormouse Survey Report)). Surveys did not identify dormice and this species is thus considered absent from the Study Area. Dormice have been scoped out of the assessment (Appendix 16.11 (Dormouse Survey Report))
Brown Hare	Records of brown hare, a Priority Species in accordance with Section 41 of the NERC, were returned by the PEA (Appendix 16.2). Suitable habitat for this species is found in agricultural land within Section 1-3, which are used for foraging and breeding; brown hare is a mobile species, and found roaming such habitat rather than localised to small areas (Mammal Society 2019). It is not considered sensitive to effects of the Proposed Development and has been scoped out. The temporary nature of the construction within the Onshore Cable Corridor and relatively small scale of permanent habitat loss at the Converter Station (which is balanced by habitat creation in landscape planting) would avoid direct impacts. Brown hare use agricultural land that is frequently disturbed by machinery and workers, avoiding these activities by day and feeding mainly at night when disturbance ceases (Mammal Society 2019), thus avoiding indirect impacts.
Otter and Water Vole	No records of otter were returned from the desk study (Appendix 16.2 (PEA/Phase 1 Habitat Survey Report)), however habitat in the wider area surrounding the Order Limits could support these species, including coastal areas adjacent to it where otters may forage. HDD will avoid impacts on such areas, and also running water at Denmead Meadows, and thus no suitable habitat for otter will be affected. There were forty records of water vole *Arvicola amphibius* recorded within the Study Area (Appendix 16.2 (PEA/Phase 1 Habitat Survey Report)). The most recent record was reported in 2012 and are all from Farlington Marshes from the north and south of the A27.

Element Scoped Out	Justification
	Desk study and field surveys showed there was no suitable habitat within or adjacent to the Proposed Development and they have been scoped out of the assessment. Suitable aquatic habitat and supporting terrestrial habitat is not present within the Order Limits (Appendix 16.2 (PEA/Phase 1 Habitat Survey Report)).
Aquatic Invertebrates	Watercourses at Denmead Meadows were surveyed for the fish they supported, there being no other water courses being within the Order Limits of the Proposed Development (Appendix 16.5 (Aquatic Ecology Scoping Assessment) and 16.6 (Aquatic Ecology Assessment – Tributaries of the North Purbrook Stream, Denmead). Only one of the three watercourses within the Order Limits held water when surveyed. Surveys of the single wet watercourse identified an aquatic invertebrate community composed of species that are common and widespread in lowland Britain; none of the species present are protected by law or policy and they are not of conservation concern. They are thus not considered to be ecologically important and have been scoped out of the assessment.
Freshwater Fish	Watercourses at Denmead Meadows were surveyed for the fish they supported, there being no other water courses being within the Order Limits of the Proposed Development (Appendix 16.5 (Aquatic Ecology Scoping Assessment) and 16.6 (Aquatic Ecology Assessment – Tributaries of the North Purbrook Stream, Denmead)). Only one of the three watercourses within the Order Limits held water when surveyed. The fish community of the single wet watercourse was restricted to coarse fish and minor species of three species (tench, minnow and 3-spined stickleback). None are protected by law or policy and they are not of conservation concern, and therefore freshwater fish have been scoped out of the assessment.
Invertebrates	The desk study did not return any notable invertebrate records from around the Converter Station Area, but returned a large number of invertebrate records, including records of species which are listed on Section 41 of the NERC Act. Sixteen records

Element Scoped Out	Justification
	of stag beetle *Lucanus cervus* were returned concentrated around Drayton, Cosham and Widley. Habitats within the survey area, including woodland, scrub, semi-improved grassland and inter-tidal habitats, are likely to support invertebrates, including notable species such as stag beetle. However, due to works being temporary and localised in nature and the majority being conducted within roads it was considered unlikely that invertebrate communities would be affected and they have been scoped out of the assessment.
Wintering Terrestrial Birds	There was one notable wintering bird record of a brambling *Fringilla montifringilla* to the south of the indicative Converter Station location (Appendix 16.2(PEA/Phase 1 Habitat Survey Report)). This species is listed on Schedule 1 of the Wildlife and Countryside Act (1981, as amended) by virtue of its small breeding population in northern Scotland. It is however a widespread and relatively common winter visitor to the rest of the UK. Wintering bird surveys were undertaken Land West of Fort Cumberland SINC and Milton Common SINC as these habitats were identified as potentially supporting important wintering bird species. Forty-two species of terrestrial bird were observed within Milton Common SINC, Land West of Fort Cumberland SINC and in terrestrial habitats along the intertidal bird survey transect route. Milton Common comprises a mix of small patches of grassland and scrub with scattered trees, and Land West of Fort Cumberland consists of gorse heathland and semi-improved grassland; both sites are heavily disturbed by the public (e.g. runners, dog walkers) throughout the day. Three noteworthy species are included on Schedule 1 of the Wildlife and Countryside Act (1981, as amended). Redwing are also listed on Schedule 1 of the Wildlife and Countryside Act but for its small UK breeding population in northern Scotland. It is a common and widespread winter visitor to lowland England. • **Black Redstart** - one individual (a male) was observed around derelict buildings along the eastern end of Eastney

Element Scoped Out	Justification
	Beach (Section 10), outside the Order Limits. Black redstart is a scarce species in the UK, resident only in urban areas of the midlands and southern England where is favours derelict areas which mimic its rocky natural habitat. It is BoCC red listed. A breeding pair were subsequently recorded during breeding bird surveys at the same location. • **Dartford Warbler** - a single individual was seen within Land at Land West of Fort Cumberland SINC, and site descriptions for this area indicate it likely breeds there. This is a scarce species restricted to heathlands in the south of England, and is also classified as Near Threatened by the IUCN red list, is an Annex 1 species on the Birds Directive and is BoCC amber listed. It was not identified in subsequent breeding bird surveys. • **Cetti's Warbler**. This species is a Wildlife and Countryside Act 1981 Schedule 1 species and was heard regularly calling from marginal vegetation around the ponds at Milton Common (Section 8). This species is unlikely to come into contact with the Proposed Scheme as these ponds are far from the cable route. It was observed during subsequent breeding bird surveys. Two further species of note were recorded that receive no special legislative protection:

Element Scoped Out	Justification
	• **Stonechat:** This species receives no conservation designations or special legislative protection, but is a heathland specialist and thus subject to restricted habitat availability within the survey area, being isolated to Land West of Fort Cumberland SINC (Section 10). It was not recorded during subsequent breeding bird surveys. • **House Sparrow**. Common throughout the UK, this species has seen marked decline in recent decades, making its relative abundance in the survey data (it was the most common terrestrial passerines with peak counts of 56 individuals) significant. It was common at the Land West of Fort Cumberland SINC (Section 10). House sparrow is a Species of Principal Importance for Nature Conservation, and is BoCC red listed. House sparrow were also recorded as a breeding bird. All five of the noteworthy species were identified from habitats outside the Order Limits. They were not observed using habitats within the Order Limits. Other species identified that receive conservation designations are starling, dunnock, linnet, meadow pipit, kestrel, song thrush, redwing, skylark. These are variously listed as BoCC amber and red species but remain common and widespread breeding birds in the UK. Wintering terrestrial birds have been scoped out of the assessment due to the limited extent of habitat loss for these species, that will mostly only be lost temporarily, compared to the availability of alternative habitat within the wider area surrounding the Order Limits. There will be no works within Land West of Fort Cumberland SINC where notable wintering birds were identified, and this site receives a high level of background disturbance from dog walkers and other leisure uses, with works not expected to provide additional disturbance above this background level.

16.3.6. IMPACTS SCOPED INTO THE ASSESSMENT

16.3.6.1. The assessment of effects has focused on impacts that would occur during the Proposed Development's Construction Stage (site preparation, trenching/HDD and Converter Station construction), its Operational Stage (from completion of the

Proposed Development), and Decommissioning Stage (when the site will be returned to a near-natural state). The impacts that have been identified at these stages are listed in Table 16.2.

16.3.6.2. The Construction Stage, will commence in Q3 2021 until a likely completion date in Q4 2023, following which the Proposed Development will be commissioned and become operational. No detail on decommissioning has been prepared. The Proposed Development will be designed to have a minimum operational lifespan of 40 years (Chapter 3 Description of the Proposed Development). In the absence of detail on this stage, impacts of decommissioning are assumed to be similar to that of construction, unless stated otherwise.

16.3.6.3. During the Operation Stage, small-scale maintenance tasks would need to be completed along the Onshore Cable Corridor. The effect of these tasks would not be perceptible above background effects already present in the environment, such as disturbance by the movements and daily activities of people and vehicles, and agricultural land uses. In particular, operation of the ORS would not lead to effects on ecological features (i.e. those at Land West of Fort Cumberland SINC) as it is located within an area with higher levels of background noise and visual disturbance from housing, vehicles, dog walkers and other sources, and is constantly lit by street lighting. Maintenance will for the most part be undertaken within the built environment or areas of farmland where they would not interact with sensitive ecological features. Maintenance activities during operation have therefore not been considered as likely to give rise to any potentially significant adverse environmental impacts.

Table 16.2 – Impacts associated with each stage of the Proposed Development

Section(s)	Stage	Impacts
1 Lovedean (Converter Station Area)	Construction	*Direct* • Loss or degradation of habitats and the disturbance of protected and notable species. *Indirect* • Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works.
	Operation	*Direct*

Section(s)	Stage	Impacts
		• None for this stage. No construction requiring interventions into habitats will occur. *Indirect* • Increases in light spill; and • Increases in noise and vibration.
	Decommissioning	*Direct* • Loss or degradation of habitats and the disturbance of protected and notable species. *Indirect* • Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works.
Sections 2- 9 (Onshore Cable Corridor)	Construction	*Direct* • Loss or degradation of habitats and the disturbance of protected and notable species; *Indirect* • Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works
	Operation	• None identified for this stage. The cable will be buried and will not interact with ecological features above ground.
	Decommissioning	*Direct* • Loss or degradation of habitats and the disturbance of protected and notable species; *Indirect*

Section(s)	Stage	Impacts
		• Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works.
Section 10 (Eastney)	Construction	*Direct* • loss or degradation of habitats and the disturbance of protected and notable species. *Indirect* • Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works.
	Operation	• None identified for this stage. The cable will be buried and will not interact with ecological features above ground.
	Decommissioning	*Direct* • loss or degradation of habitats and the disturbance of protected and notable species. *Indirect* • Increase of noise and vibration and disturbance of protected species; • Increase in pollutants – dust, deposition and waterborne pollutants; • Increased light spill (including during night time working); and • Air pollution through increased traffic associated with the carrying out of the works.

16.4. ASSESSMENT METHODOLOGY

16.4.1. AIMS

16.4.1.1. The aim of the assessment is to identify the impacts of the Proposed Development, the effects of those impacts on important ecological features, and identify suitable mitigation measures to be put in place to offset any adverse effects. Design of enhancement measures to raise the overall ecological value of the area has been advised by the findings of the assessment.

16.4.2. SCOPE OF ASSESSMENT

16.4.2.1. The assessment considers the likely effects of the Proposed Development on ecological features within Proposed Development's 'zone of influence'. The zone of influence is the area over which ecological features may receive impacts from a Proposed Development. It covers the Proposed Development footprint, and the wider landscape where pathways exist for the transfer of impacts away from the works area.

16.4.2.2. The sensitivity of ecological features present is also taken into account when determining the zone of influence, as it will be bigger where more sensitive ecological features are present. The Proposed Development's 'zone of influence' has been determined by:

- Consideration of the activities during construction and operation associated with the Proposed Development and the scale of the works;
- The duration and timing of the works; and
- Ecological data, including the use of online inventories of designated sites and habitats, aerial photography and OS mapping, records of protected and notable species, and findings from field survey work.

16.4.3. SURVEY METHODS AND BASELINE DATA

16.4.3.1. Data on ecological features from the Study Area was obtained through desk study and field surveys to develop the ecological baseline. Surveys were undertaken through 2017 to 2019, and are described in Table 16.3 which summarises the surveys undertaken, the dates they were undertaken, and a description of the methods used.

16.4.3.2. The scope of surveys was agreed with NE during a consultation meeting in February 2019.

16.4.3.3. Features have been considered in relation to the Section of the Proposed Development in which they occur; Section 1 Lovedean (Converter Station Area), Sections 2-9 (Onshore Cable Corridor) and Section 10 Eastney (Landfall). These three groups have been used as they represent three areas with distinctive and differing impacts on ecological features.

Table 16.3 – Summary of ecological surveys, dates and methods used

Survey	Date undertaken	Methods used
Terrestrial Habitats and Floral Communities		
PEA (Appendix 16.2)	April 2017, updated April 2018 (desk study), October 2018 (field survey) and May 2019 (field survey)	CIEEM PEA methodology (CIEEM 2013) and Phase 1 habitat survey methodology (JNCC 2010). Desk study identifying statutory and non-statutory designated sites, HPI, ancient woodland and biological records. Field survey mapping habitats (including hedgerows) and highlighting those suitable to support protected and notable species. Covering habitats within immediately adjacent to the Order Limits of the Proposed Scheme.
Arboricultural Impact Assessment (Appendix 16.3)	August 2017	BS5837: 2012 "Trees in Relation to Design Demolition and Construction – Recommendations". Desk study to identify TPOs and other significant trees, and field survey of the Order Limits and land to 15m (the limit of potential impacts due to root spread). Survey identified 436 individual trees/tree groups to determine their value and potential impacts.
Non-statutory Designated Sites Assessment (Appendix 16.4)	July/August 2019	Methodology described in Rodwell (2006). Detailed botanical surveys of Denmead Meadows (including Kings Pond Meadow SINC) and Milton Common SINC. Placement of quadrats and identification of plant species, determination of community types based on published National Vegetation Classification ('NVC') definitions.
Aquatic Habitats and Fauna		

Survey	Date undertaken	Methods used
Aquatic Ecology Scoping Assessment (Appendix 16.5)	May 2019	Assessment of watercourses between Anmore Road and Hambledon Road for their ecological importance, including one statutory watercourse, the Purbrook Stream.
Aquatic Ecology Assessment (Appendix 16.6)	July 2019	Covering tributaries of the North Purbrook Stream, Denmead. The assessment determined the importance of these watercourses for aquatic invertebrates and protected/notable fish. Macroinvertebrate sampling was undertaken. Methods followed WFD UKTAG (2014) and fish sampling complied with British Standards Institution (2003) and other documents describing electrofishing and fish surveys.
Terrestrial Fauna		
Badger Survey and Bait Marking (Appendix 16.7)	Walkover survey March 2019 Bait Marking April/May 2019	Search for field signs (paw prints, fur, latrines and scats) and setts using the methodology described in Harris et al. 1989. Focussed on habitats in Sections 1 to 3 which are outside of urban areas and incapable of supporting badgers, or where the Order Limits are entirely within road corridors. Follow up bait marking was undertaken to identify the number and territorial boundaries of badger clans. It followed the method described by Delahay et al. (2000).

Survey	Date undertaken	Methods used
Bat Survey (Appendix 16.8)	Transects and static detectors April-October 2017 and August-September 2019 Ground level roost assessment September 2017-May 2018 Climbing / emergence/return surveys of trees June-August 2018	Methods followed those within Bat Conservation Trust (2016) and focussed on rural areas in Sections 1-3 where suitable habitat was present within the Order Limits. Survey methods comprised transect walks and placement of static bat detectors (Wildlife Acoustics SM4 full audio spectrum recorders) to determine bat activity. Ground level assessments of trees for their potential to support roosting bats was followed up with tree climbing surveys and emergence/return surveys where roosts could have been present. In addition, several bat boxes found were checked for evidence of use by roosting bats.
Great Crested Newt Survey (Appendix 16.9)	April-June 2019	Survey methods followed English Nature (2001) and Oldham (1999). Covering ponds within 250m of the Order Limits. Pond sampling methods (torching, bottle trapping and netting) with Environmental DNA ('eDNA') testing.
Reptile Survey (Appendix 16.10)	June-July 2019	Methods followed Gent and Gibson (1998) Froglife (1999) and focussing on habitats within Sections 1-3 where suitable habitat is present. Placement of artificial refugia and checking for presence of reptiles. Presence/absence surveys completed in suitable habitats, with eight survey visits undertaken.
Hazel Dormouse (Appendix 16.11)	June-November 2017 September-November 2018	Methods used followed Bright et al. (2006) and PTES (2019) covering suitable habitat within and adjacent to the Order Limits.

Survey	Date undertaken	Methods used
	February 2019	Nest tube surveys were complemented with nut searches to determine presence/absence of this species.
Breeding Bird Survey (Appendix 16.12)	April-June 2018	Common Bird Census ('CBC') following methods in Bibby et al. (2000). Covering areas where the Order Limits fall outside of roads and urban development – Sections 1-3 and SINCs/semi-natural habitat within Sections 7-10.
Wintering Bird Survey (Appendix 16.13)	October 2017-March 2018	Wetland Bird Survey ('WeBS') methods described in BTO (2010). Covering Sections 7-10 adjacent to Langstone Harbour.

16.4.4. ECOLOGICAL IMPACT ASSESSMENT

16.4.4.1. Potential impacts have been identified using the design and construction methods of the Proposed Development as set out in Chapter 3 (Description of the Proposed Development). This includes the extent of the Onshore Cable Corridor within which layout of trenches will be undertaken, access roads, HDD sites and the Converter Station, as well as compound locations and temporary working areas during construction and decommissioning.

16.4.4.2. Identified impacts have been assessed in accordance with guidance provided by The Chartered Institute for Ecological and Environmental Management ('CIEEM'): Guidelines for Ecological Impact Assessment in the UK (2018), in addition to the Project specific methodology detailed in Chapter 4 (EIA Methodology). CIEEM emphasises the identification of important ecological features regardless of their level of statutory protection. Therefore, features with no specific protection or no specific mention in policy can be important to an area. Where appropriate, such features have also been considered.

16.4.4.3. The methodology used to assess the likely effects on ecology is the same for all three stages of the Proposed Development; Construction, Operation and Decommissioning, and has taken the following approach:

- Determine the importance of ecological features affected, through survey and/or research;

- Assess impacts potentially affecting important features;
- Characterise the impacts by describing their extent, magnitude, duration, reversibility, timing and frequency;
- Identify cumulative impacts;
- Identify significant effects of impacts in the absence of any mitigation;
- Incorporate measures to avoid and mitigate (reduce) these impacts;
- Assess the significance of any residual effects after mitigation;
- Identify appropriate compensation measures to offset significant residual effects (if any); and
- Identify opportunities for ecological enhancement.

16.4.4.4. For adverse impacts, CIEEM's approach to impact assessment has been adapted to classify the magnitude of impacts by a matrix approach to determine significance of effects. This is based on the approach used for road schemes in the UK by Volume 11 of the Design Manual for Roads and Bridges (Highways England, 2008). Although this guidance has been drafted for road assessments it provides a robust methodology for assessing impacts to onshore ecology and is considered suitable for this assessment.

16.4.5. SIGNIFICANCE CRITERIA

16.4.5.1. In determining the significance of a potential effect, the magnitude of impact arising from the Proposed Development is correlated with the sensitivity of the particular environmental attribute or process under consideration.

Magnitude

16.4.5.2. The magnitude relates to the level at which the receptor will be impacted, using the duration of the impact, timing, scale, size and frequency to determine the magnitude of the impact to each receptor. Magnitude of impact is evaluated in accordance with the definitions set out in Table 16.4 below.

16.4.5.3. The following characteristics have been used to assess the magnitude of the impact on ecological features as a result of the Proposed Development:

- Type of impact – beneficial or adverse;
- Extent or spatial scope of the impact;
- Reversibility of impact – whether the impact is naturally reversible or reversible through mitigation measures;
- Timing and frequency of the impact, in relation to ecological changes; and

- Likely duration of the impact - short-term (< 1 year), medium-term (1 - 5 years) or long-term (5 or more years).

Table 16.4 - Definitions of Magnitude of Impact

Magnitude of impact	Definition
High	Total loss or large alteration to key elements/features of the baseline (i.e. pre-development) conditions.
Medium	Partial loss or alteration to one or more key elements/features of the baseline (i.e. pre-development) conditions
Low	Small shift away from baseline (i.e. pre-development) conditions.
Negligible	Very slight change from baseline (i.e. pre-development) conditions.

Value/Sensitivity

16.4.5.4. As described within Chapter 4 (EIA Methodology), sensitivity is a means to measure how affected receptors/processes and/or the receiving environment is to change. The sensitivity is assigned at the receptor/process level. This may be defined in terms of quality, value, rarity or importance, and be classed as negligible, low, medium, or high.

16.4.5.5. Table 16.5 summarises the ecological feature conservation value and/or sensitivity adapted from CIEEM for habitats and species which has been adapted for use in this assessment. CIEEM use the term "Importance" to reflect value and sensitivity, and this term has been adopted.

Table 16.5 - Description of Geographical Scales of Ecological Importance for Habitats and Species

Value/Sensitivity	Criteria
International	Habitats - An internationally designated site or candidate site SPA, candidate SPA, SAC, candidate SAC, Sites of Community Importance, Ramsar Site, Biogenetic/Biosphere Reserve, World Heritage Site) or an area that would meet the published selection criteria for designation. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. Species - A sustainable population of an internationally important species or species listed as occurring in 15 or fewer 10 km squares

Value/Sensitivity	Criteria
	in the UK (categories 1 and 2 in the UK BAP) which is listed in Annex IV of the Habitats Directive, or as being of unfavourable conservation status in Europe, of uncertain conservation status or of global conservation concern in the UK BAP. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements.
UK/National	Habitats - A nationally designated site, SSSI, NNR, Marine Nature Reserve or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A sustainable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A large area of a Habitat of Principal Importance, Ancient Woodland or Wood Pasture and Parkland HPI. Species - Any regularly occurring/large population of a nationally important species (e.g. England Red Data Book). A large population of a species identified as a Species of Principal Importance. A species population which would qualify for SSSI designation.
Regional/County	Habitats - viable areas of key habitat identified in Local BAPs, or smaller areas of such habitat which are essential to maintain the viability of a larger whole; Sites recognised by local authorities, e.g. LWSs. County sites that the designating authority has determined meet the published ecological selection criteria for designation. A diverse and/or hedgerow network comprised of mostly Important Hedges. Degraded areas of HPI (excluding Wood Pasture and Parkland HPI and Ancient Woodland Lowland Mixed Deciduous Woodland HPI which is Ancient Woodland Species - A regularly occurring, locally significant number of a nationally important species. Any regularly occurring, locally significant population of a SPI or a species listed in a county/district BAP (where available). A regularly occurring, locally significant population of a county/district important species. Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county, and not integral to maintaining those populations. Sites/features scarce in the county or that appreciably enrich the county habitat resource.

Value/Sensitivity	Criteria
District	Habitats - Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds). Sites that retain other elements of semi-natural vegetation that, due to their size, quality or the wider distribution within the local area, are not considered for the above classifications. Species - Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context. Sites supporting populations of county/district important species that are not threatened or rare in the region or county, and are not integral to maintaining those populations.
Local	Habitats - Common and widespread habitat, not meeting any of the above criteria. Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Species - Common and widespread species, not meeting any of the above criteria. Commonplace feature of little or no habitat/historical significance. Loss of such a feature would not be seen as detrimental to the ecology of the area.

Significance

16.4.5.6. The overall significance has been assessed using the matrix shown in Table 16.5, which has been modified to what is outlined in Chapter 4 (EIA Methodology). This uses sensitivity of the receptor and magnitude of change to determine significance. Where a range of significance of effect is presented in Table 16.5 the final assessment for each effect is based upon expert judgement.

16.4.5.7. For the purposes of this assessment, any effects with a significance level of Moderate or above have been concluded to be significant.

Table 16.6 - Significance of Effects Matrix

Value/Sensitivity	Magnitude of Impact				
		High	**Medium**	**Low**	**Negligible**
	International	Major	Major to Moderate	Moderate	Negligible
	UK/National	Major	Major to Moderate	Moderate	Negligible
	Regional/ County	Major to Moderate	Moderate	Minor to Moderate	Negligible
	District	Moderate	Minor to Moderate	Minor	Negligible
	Local	Minor	Minor	Negligible	Negligible

16.4.5.8. Where European Sites (i.e. internationally designated sites) are considered, this Chapter summarises the assessment of effects on the interest features of internationally designated sites, with the assessment on the designated site itself deferred to the HRA for the Proposed Development (document reference 6.8).

16.4.6. ASSUMPTIONS AND LIMITATIONS

- Where timing of elements of the construction programme for the Proposed Development were known (e.g. as detailed in Chapter 3 (Description of the Proposed Development)), they were used when assessing seasonal sensitivities of ecological features.
- In addition, where seasonal working restrictions have been requested by consultees and adopted by the Proposed Development, they were also used when assessing seasonal sensitivities of ecological features.
- Due to changes in the Order Limits between the PEIR and ES minor changes in the ecological features forming the baseline (e.g. habitats now not present within the order limits) have been made to update the ecological conditions of the assessment.
- Where sites or habitats overlap with HPI, this has been identified in their description.
- At the Converter Station, two options for its footprint exist; Option B(i) and Option B(ii). The final siting will be confirmed at a later date, and thus the full extent of

the footprint of both options have been analysed as to their impacts on ecological features to ensure a robust assessment of the worst-case.

- Records of common seal were returned by the PEA (Appendix 16.2). Impacts on these marine mammals have been assessed in Chapter 10 (Marine Mammals and Basking Sharks).

16.5. BASELINE ENVIRONMENT

16.5.1. IMPORTANT ECOLOGICAL FEATURES

Chichester and Langstone Harbour SPA (Sections 7-9)

16.5.1.1. Chichester and Langstone Harbour SPA is designated for its importance to wintering and breeding water birds, and lies adjacent to Sections 7 to 9 of the Proposed Development with horizontal directional drilling proposed beneath the SPA in Section 7. Important wintering bird communities are present, as evidenced by results of surveys (see detail within Appendix 16.13 (Wintering Bird Survey Report) of the ES Volume 3 (document reference 6.3.16.13)) and the fact they are listed as qualifying features within the SPA's citation. Internationally important numbers of water birds feed and roost within the harbour between October and March and also forage within surrounding habitats such as playing fields and public parks. These areas in particular support large flocks of dark-bellied brent geese *Branta bernicla bernicla*, prompting the development of the SWBGS (King, 2010). In spring and summer, the site supports internationally important colonies of common tern *Sterna hirundo*, sandwich tern *Thalasseus sandvicensis* and little tern *Sterna albifrons* that use salt marsh and shingle within the site to breed, and feed within the Solent to the south more widely.

16.5.1.2. The SPA is important at the International scale.

Denmead Meadows (Section 3)

16.5.1.3. Agricultural pasture south of Kings Pond Meadow SINC (see below for description) comprises unimproved grassland enclosed by species-rich hedgerows (some with trees), known as 'Denmead Meadows'. All fields within Denmead Meadows are hay meadows left un-grazed, and surveys by both WSP and wildlife groups (Appendix 16.4 (Non-Statutory Designated Sites Report) of the ES Volume 3 (document reference 6.3.16.4)) have revealed them to be botanically diverse, supporting important plants such as green-winged orchid and adders-tongue fern. In addition, plants characteristic of wet meadows are present due to the water course that flows through this area from Kings Pond SINC.

16.5.1.4. Botanical survey work undertaken in July 2019 (Appendix 16.4 (Non-Statutory Designated Sites Report)) showed the plant community in all fields comprising Denmead Meadows conforms to the "Lowland Meadow" HPI designation under Section 41 of the NERC Act 2006.

16.5.1.5. Denmead Meadows has been identified as an area of high ecological value through the results of surveys, it is therefore considered on a precautionary basis to be important at the National scale.

Milton Common SINC (Section 8)

16.5.1.6. Milton Common SINC comprises a mixture of grassland, scrub, open water and footpaths within Section 8 of the Order Limits. On the sea wall side of the SINC habitat comprises closely-mown amenity grassland where there is a well-used public footpath frequently disturbed by dog walkers. There are more natural and diverse habitats further to the east, including semi-improved grassland, scrub and occasional mature trees. Opposite the entrance to Hayling Avenue there is an area of immature woodland with a sparse ground layer. Open water brackish ponds are present along the eastern side of the SINC.

16.5.1.7. Habitat within this SINC is identified as HPI by NE.

16.5.1.8. The northern end of the SINC consists of a narrow strip of amenity grassland, managed as part of the roadside/seawall soft estate. An area of re-seeded grassland runs north-south through the SINC supporting a diverse mix of lowland meadow grasses and forbs conforming to the "Lowland Meadow" HPI designation under Section 41 of the NERC Act 2006. This artificial seeding has taken place following coastal defence repair and enhancement work in the area and such regeneration is expected to occur following the construction of the Proposed Development.

16.5.1.9. Other than the recently seeded area, the composition of botanical communities within the SINC is limited mainly to common and widespread species that show influence of disturbance from sources such as dog walkers; the site is frequently used for leisure. However, such a large area of mixed habitat is uncommon within the context of its developed surroundings, and has importance for this reason.

16.5.1.10. Milton Common SINC supports large thorn moth, a species classed as Nationally Scarce B, and an important feature supported by habitats present.

16.5.1.11. The SINC forms a network of important wildlife sites across Hampshire, smaller and with more anthropogenic influence that larger sites more natural in character. Thus, Milton Common is important at the County scale.

Kings Pond Meadow SINC (Section 3)

16.5.1.12. This SINC consists of agricultural pasture to the south of Kings Pond and Anmore Road and the Order Limits are concurrent with part of the SINC. Two habitat types are present; semi-improved grassland which comprises approximately 64% of the SINC, and unimproved grassland which comprises approximately 36% of the SINC.

16.5.1.13. The semi-improved grassland is closely grazed by horses restricting its botanical diversity; however, an important species, strawberry clover, is abundant in this habitat type. The unimproved grassland is botanically diverse un-grazed hay meadow, and surveys by both WSP and wildlife groups (Appendix 16.4 (Non-Statutory Designated

Sites Report)) identify this area to be botanically diverse, supporting important plants such as green-winged orchid. In addition, plants characteristic of wet meadowland are present due to the watercourse that flows through this area from Kings Pond.

16.5.1.14. Botanical survey work (Appendix 16.4 (Non-Statutory Designated Sites Report)) showed the plant community conforms to the Lowland Meadow HPI designation under Section 41 of the NERC Act 2006.

16.5.1.15. Due to the wide application of fertilisers and intensification of farming, unimproved lowland grassland meadows are relatively rare habitats that are difficult to recreate, and are subject of conservation effort for their preservation and recreation. Agricultural improvement, including grazing, promotes the presence of common and widespread species limiting the botanical diversity of the sward present, and thus semi-improved grasslands as far less important and far more common in the landscape.

16.5.1.16. This SINC forms a network of important wildlife sites across Hampshire, smaller and with more anthropogenic influence that larger sites more natural in character. Thus, Kings Pond Meadow is important at the County scale.

Crabden's Copse SINC & Crabden's Row SINC (Section 1)

16.5.1.17. There are two SINCs comprising areas of ancient woodland within the study area; Crabden's Copse and Crabden's Row. Both woodlands are also listed as Priority Habitats. They are located adjacent to the Order Limits within the vicinity of the Converter Station Area (Figure 16.2). They are predominately composed of English oak, ash and beech, all native species that are central to the integrity of lowland woodlands in the UK. Both sites have a well-developed understorey shrub layer with bluebell present.

16.5.1.18. Ancient woodland is land that has had a continuous woodland cover since at least 1600 AD. They support more species than any other habitat in the UK and are irreplaceable due to the long period of time required for their development. Larger ancient woodlands (e.g. the Forest of Dean, >100 km^2) could be considered of regional or national importance because few ancient woodlands of this scale exist; they are distinct within the UK.

16.5.1.19. Both Crabden's Copse and Crabden's Row are relatively small and encompass 12.2 ha and 12.1 ha respectively. Similar sized patches which represent relicts of more extensive woodland that would have been present historically, are present fairly widely within Hampshire, and contribute to the national ancient woodland resource.

16.5.1.20. Crabden's Copse SINC & Crabden's Row SINC are considered important at the County scale.

Great Salterns Lake SINC (Section 8)

16.5.1.21. This comprises an expanse of open water and wetland influenced by tidal inflow of sea water from Langstone Harbour, and surrounded by extensive fringing reed beds.

It is located adjacent to the eastern-side of the Order Limits within Section 8. Within the southern section of the reed bed there is a small, isolated section of saltmarsh vegetation. To the east of the lake and reed beds there is a narrow non-metalled footpath allowing public access, and beyond the footpath there is a pumping station, with gabion baskets and a line of hawthorn-dominated scrub either side of the gabions.

16.5.1.22. This SINC forms a network of important wildlife sites across Hampshire, smaller and with more anthropogenic influence that larger sites more natural in character. Thus, Great Salterns Lake is important at the County scale.

Ancient Woodland (Section 1)

16.5.1.23. In addition to Crabden's Copse SINC & Crabden's Row SINC, one additional piece of ancient woodland is found at the converter station area in Section 1; Stoneacre Copse. It is 1.49 ha in size and adjacent to Crabdens Copse SINC, on its western side. It represents a relic of more extensive woodland that would have been present historically, are present fairly widely within Hampshire, and contribute to the national ancient woodland resource. It is also listed as a Priority Habitat.

16.5.1.24. Stoneacre Copse is considered important at the County scale.

Habitats (Sections 1-10)

16.5.1.25. The Order Limits cover an area which changes from being dominated by arable agriculture in the north (Sections 1-3), passing through suburban development and areas devoted to transportation links (Sections 4-7) to a highly urban environment in the south (Sections 8-10). Habitats scoped into the assessment represent semi-natural features within agricultural areas (hedgerows and grasslands), but in developed areas individual trees are the only important habitats outside designated sites such as Milton Common SINC. Habitats are shown in Figures 16.3 (habitat areas) and 16.4 (hedgerows).

16.5.1.26. The following important habitats were identified:

- **Broadleaved trees** – Individual trees outside of woodlands are frequently found within agricultural land, as roadside tree lines and patches planted within residential and commercial development for amenity purposes. The Arboricultural Impact Assessment (Appendix 16.3) identified 289 individual trees and 147 groups of trees within Order Limits and adjacent land to the 15m impact zone that are distinct from hedgerows (considered below) and woodland (ancient woodland is considered above, other woodland has been scoped out of the assessment). Of these 54 are listed as having TPO status, an amenity designation that does not infer ecological value. No veteran trees identified by the assessment. Category B (those aged ~20 years and younger, mainly comprising saplings and ornamental trees not of a native species) have been scoped out of the assessment. Category A trees are older, mainly native species in rural settings,

more sensitive to disturbance, replaceable only on a long timescale and likely to support other ecological features such as birds, invertebrates or bats; they are considered important at the District Scale. There are 56 Category A trees/tree groups susceptible to impacts of the Proposed Development; they are located within 15 m of Sections 1-6 of the Order Limits.

- **Species-rich hedgerows, with and without trees** – Hedgerows within Sections 1 to 3 (between the Converter Station and Denmead Meadows) are for the most part species-rich, with more than five woody species present. These have intrinsic ecological importance as they have the potential to support a wide diversity of invertebrate and botanical species. However, their function as a highly connected habitat corridor and refuge network for many taxa (e.g. badgers, bats, breeding birds) suggests their value extends beyond the immediate habitats they connect. They are important at the District scale. They can be classed as 'Important Hedgerows' under the Hedgerow Regulations
- **Species-poor hedgerows, with and without trees** – These comprise hedgerows with fewer than five woody species present, but are mostly monocultural field margin hedges that are mechanically cut and managed, or ornamental within residential areas where they can include or be entirely composed of non-native species. They occur both in agricultural areas in Sections 1-3 and within more urban areas throughout other sections. They have lower intrinsic importance than species-rich hedgerows, especially where they occur in dense areas of development. However, where they connect to the wider hedgerow network they function as a refuge and commuting route for animals moving through the landscape. They are important at the Local scale.
- **Unimproved neutral grassland** - Occurring as part of Denmead Meadows and Kings Pond Meadows SINC and classified as Lowland Meadow HPI. The importance of this habitat type has been discussed with reference to these two sites in 16.5.1.
- **Semi-improved neutral and calcareous grassland** - Where modifications have been made to grassland that reduces its floral diversity, semi-improved grassland results, and several patches of this habitat are present in the Study Area. Both neutral and calcareous grassland exists, each supporting plant species characteristic of such substrate types. Areas of this habitat type within Kings Pond Meadows SINC (Section 3) are discussed in 16.5.1, and those in Milton Common SINC (Section 8) in 16.5.1. Remaining areas within the Order Limits are found at the Converter Station Area (Section 1), south of Hambledon Road (Section 3) and along Portsdown Hill Road (Section 4). Such grasslands are uncommon in the wider landscape, but are widespread and develop where human activities are

relaxed allowing a more natural botanical community to develop. They are important at the District scale.

Badgers (Section 1)

16.5.1.27. Surveys identified two badger clans using habitat in the locality of the proposed Converter Station Area. The territory of the first Clan (Clan 1) is throughout this area, and a number of setts used by this clan are present within and adjacent to the Proposed Development. The territory of the second Clan (Clan 2) could not be fully determined due to restrictions in land access for survey, but includes land away from the proposed Converter Station (Appendix 16.7 (Badger Survey and Badger Bait Marking Survey Report) of the ES Volume 3 (document reference 6.3.16.7)).

16.5.1.28. Clan 1 has two main setts within the Order Limits, and one was shown to be used for breeding by the presence of badger cubs at the sett. The location of main setts used by Clan 2 are unknown but outside the Order Limits. Further setts were identified within the Order Limits, including outlier, subsidiary and annexe setts.

16.5.1.29. Badgers are generally common and widespread throughout the British Isles, with recent estimates of badger abundance indicating there are around 485,000 badgers in England and Wales (Judge et al. 2017). They are not considered to be threatened. Thus, badgers are important at the Local scale.

16.5.1.30. In the UK badgers receive a high level of legal protection with individual elements of legislation drawn together under the Protection of Badgers Act 1992.

16.5.1.31. No further badger setts were found elsewhere within the Order Limits.

Bats (Section 1-10)

16.5.1.32. The desk study returned records of eleven bat species within the study area, which comprised 588 individual bat records since 2000. This included records for serotine *Eptesicus serotinus*, brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Daubenton's *Myotis daubentonii*, Natterer's bat *Myotis natteri* and whiskered bat *Myotis mystacinus*. There were two records for Bechstein's bat *Myotis bechsteinii* and single records for Alcathoe bat *Myotis alcathoe* and parti-coloured bat *Vespertillio murinus*.

16.5.1.33. Bechstein's bat are known within the Forest of Bere, a large area of ancient woodland and a Forestry Commission site 3 km southeast of Lovedean. The two records for Bechstein's bat from the desk study are from approximately 1.8 km east of the Order Limits (to the east of the A3 and Waterlooville), and from Hayling Island, approximately 1.8 km to the east of the Order Limits.

16.5.1.34. The closest record to the Converter Station Area (Section 1) was a brown long-eared approximately 250 m to the north-east of the Order Limits. Habitats at this location, including buildings and trees (both those occurring individually and within woodland or hedgerows), have the potential to support roosting bats. Ancient woodland

surrounding the Lovedean Substation and associated hedgerows are suitable to support roosting, foraging and commuting bat species.

16.5.1.35. Survey work comprised identification of tree roosts throughout the Proposed Development through ground level appraisal, tree climbing and emergence return surveys. Activity surveys were also undertaken that focussed around the Converter Station Area due to the suitable habitat within this area, but covered habitat in other sections where suitable roosting trees fell within the Order Limits. No buildings were included within the survey as none will be demolished to make way for the Proposed Development.

16.5.1.36. Surveys identified a minimum of nine species of bat, the uncertainty in number of species being due to the difficulty in identifying bats in the genus *Myotis* and *Plecotus* to species using handheld and automated bat detectors. The species identified were:

- *Myotis* species;
- *Plecotus* species;
- barbastelle;
- noctule;
- serotine;
- Leisler's bat;
- common pipistrelle;
- soprano pipistrelle; and
- Nathusius' pipistrelle.

16.5.1.37. No tree roosts were found although evidence of soprano pipistrelle presence was identified through in a tree mounted box at approximately 90 m to the north-west of the existing Order Limits in Section 1. However, bats occupy roosts in trees in a transitional manner, using one tree for one night and another on a following night.

16.5.1.38. Bat activity was dominated by common pipistrelle and soprano pipistrelle using the areas of mature woodland and hedgerows surrounding the existing Lovedean substation and hedgerows to the west, running southwards from Hillcrest, Old Mill Lane (Section 1). Foraging and commuting bats were observed here.

16.5.1.39. Common and soprano pipistrelle are regarded as common and widespread and as such construction of the Proposed Development is expected to have a limited effect on the overall conservation of bats in this area. Roosts of common species are considered to be of local importance. Barbastelle, Nathusius' pipistrelle, serotine, *Myotis* sp., *Plecotus* sp. and noctule are considered rarer, with individuals of up to county importance .

16.5.1.40. The community of bats is important at the County scale.

Hedgehogs (Sections 1-3)

16.5.1.41. The PEA (Appendix 16.2 (PEA / Phase 1 Habitat Survey Report)) identified records of hedgehog from within the Study Area, indicating their presence in parks, gardens and agricultural areas in the area surrounding the Proposed Development. Suitable habitat is present within the Order Limits in Sections 1-3 where the Onshore Cable Corridor passes through grassland, hedgerows and agricultural land, and in similar habitat at the Converter Station Area. In Sections 4-10 the Order Limits are within road corridor or developed, urban areas with no suitable habitat for hedgehogs present, and HDD will be used to avoid woodland and other corridors of suitable habitat here. No incidental sightings or evidence of hedgehogs was recorded during field surveys.

16.5.1.42. Hedgehog is a widespread mammal species in the UK, but populations are in decline and estimated to have fallen by 66% in the last 20 years (Morris 2018). They do not receive strict legal protection under UK law, but are listed as Priority Species under Section 41 of the NERC Act. They are important at the District scale.

Reptiles (Sections 1-10)

16.5.1.43. Survey was undertaken around the Converter Station Area (Section 1) where most suitable habitat exists within the order limits. No widespread reptile species were found; no sightings of common lizard, slow-worm, adder and grass snake were made by surveyors. Suitable habitat for smooth snake and sand lizard is not found in the Study Area, and these animals have restricted distribution to certain heathland sites in the UK. However, their absence cannot be shown with confidence due to the extensive area covered and many potential refuges which have prevented their detection. The lack of sightings indicates that if reptiles are present, it is only likely to be in small numbers.

16.5.1.44. Widespread reptile species are found throughout the south of England, and could be found in suitable habitat within and adjacent to the Order Limits. This would be outside of the developed areas within Sections 4 to 10 which do not present suitable habitat, and limited to the rural grasslands and field margins found between Sections 1 to 3.

16.5.1.45. Reptiles are important at the Local scale.

16.5.1.46. Reptiles receive protection under Section 9(1) of the Wildlife and Countryside Act, 1981 (as amended), making it an offence to intentionally or recklessly kill or injure any of the above animals. It is therefore a potential criminal offence to undertake major works on a site that results in the death or injury of native reptiles where these animals are known to be present without due care.

Wintering Intertidal Birds (Sections 7-9)

16.5.1.47. Intertidal bird surveys were undertaken over the winter of 2017-2018 (Appendix 16.13 (Wintering Bird Survey Report)). In summary the surveys included the following components:

- Intertidal surveys following Wetland Bird Survey ('WeBS') methodology covering western perimeter of the Chichester and Langstone Harbours SPA from Farlington Marshes to Fort Cumberland with five survey visits with counts at both high and low tide;
- Vantage point surveys at Eastney Beach and Farlington Marshes with aim of describing the exchange of birds between intertidal habitat and the surrounding areas;
- Survey of SWBGS sites in parallel with intertidal surveys; and

16.5.1.48. A maximum count of 1,598 dark-bellied brent geese observed using SWBGS Sites. Peak counts on the intertidal surveys highlighted differences in the abundance of bird species across the whole survey area, and identified those species which are dominant in the winter bird community, separating them from those which are represented only by small numbers or by single birds. The data shows there are three highly abundant species (dark-bellied brent goose, dunlin *Calidris alpina* and black-headed gull *Chroicocephalus ridibundus*), with numbers of observations significantly greater than the remaining 42 species recorded.

16.5.1.49. Twenty-nine species of bird were observed at the vantage points comprising 3515 individual bird observations. These were dominated by dark-bellied brent geese, gulls and waders, with other birds represented in significantly lower numbers. At the northern vantage (Farlington Marshes) point the majority of birds were observed flying north out of the harbour, with dark-bellied brent geese and gulls the dominant bird groups. This was considered likely to be due to a strong northerly movement of these birds off of roost sites within the harbour at dawn to feeding sites inland to the north. Data does not indicate a return flight into the estuary as few of the vantage point counts were undertaken at dusk, whereas one was always undertaken at close to dawn. The northerly movement takes birds across the A27, a busy carriageway.

16.5.1.50. The southern vantage point showed a roughly equal east-west movement of birds along Eastney Beach, with the bird community dominated by dark-bellied brent geese and waders (namely large groups of dunlin), with a significant passage of gulls also. The data show that although some birds fly across the beach to reach the harbour behind, most prefer to follow the coastline to access the harbour via Fort Cumberland/Gunner Point.

16.5.1.51. Wintering birds using intertidal habitats and SWBGS sites form part of the internationally important wintering bird assemblage for which Chichester and

Langstone Harbour SPA is designated. They therefore have importance at the International scale.

Breeding Birds (Sections 1-10)

16.5.1.52. The desk study returned 155 species of bird within the study area. Fifty-one of these species are listed under Annex 1 of the Birds Directive including amongst others: bittern *Botaurus stellaris*. osprey *Pandion haliaetus*, red kite *Milvus milvus*, avocet *Recurvirostra avosetta*, woodlark *Lullula arborea*, and Dartford warbler. A total of sixty-two species are listed under Schedule 1 of the Wildlife and Countryside Act 1981, with this including species such as little ringed plover Charadrius dubius, firecrest *Regulus ignicapilla*, hobby *Falco subbuteo* and barn owl *Tyto alba* which are not listed under Annex 1. It should be noted that these records do not distinguish between those species known to or likely to be breeding and those wintering or on passage.

16.5.1.53. Twenty-nine of the 155 species are listed as Priority Species on Section 41 of the NERC Act representing widespread but declining species such as cuckoo and yellowhammer *Emberiza citronella*.

16.5.1.54. In addition, the desk study returned records of peregrine *Falco peregrinus* (Schedule 1) and house sparrow *Passer domesticus* (Priority Section 41 species) to the south-west of the Converter Station Area. Habitats in the vicinity of the Converter Station Area, including woodland, scrub and hedgerows are suitable to support a range of breeding birds.

16.5.1.55. For the Onshore Cable Corridor and at Eastney (Landfall), the desk study returned records of Schedule 1 species including Dartford Warbler and black redstart. Mediterranean gull *Larus melanocephalus*, common tern *Sterna hirundo*, sandwich tern *Sterna sandvicensis* and little tern *Sternula albifrons* have confirmed breeding records within Chichester and Langstone Harbours SPA but these are located over 500 m buffer from the Order Limits.

16.5.1.56. Surveys were undertaken where the Order Limits cross semi-natural habitats and designated sites; where the Order Limits follow road corridors no surveys were undertaken as works in such areas do not threaten breeding birds. Breeding bird surveys were therefore carried out in 2018 following Common Bird Census (CBC; Bibby et al., 2000) methodology.

16.5.1.57. Twenty-one species of bird were confirmed to breed in the Study Area, with the overall breeding bird community typical of the semi-natural suburban and agricultural habitats present and composed of common and widespread UK species.

16.5.1.58. Black redstart, a Wildlife and Countryside Act 1981 species, is an exception. This species is restricted to brownfield and urban areas in the UK, and was recorded at the derelict Fraser Range naval installation adjacent to Eastney Beach, adjacent to

Section 10 of the Proposed Development and outside of the Order Limits. No sightings of this species were made from within the Order Limits.

16.5.1.59. The overall breeding bird community is important at the Local scale.

16.5.1.60. All wild birds are covered by Part 1 of the Wildlife and Countryside Act 1981 which makes it an offence to intentionally kill, injure or take any wild bird; take, damage or destroy the nest of any wild bird while it is in use or being built; and take or destroy the egg of any wild bird. Birds listed under Schedule 1 of this act receive further protection, it being an offence to disturb Schedule 1 birds at the nest or disturb their dependent young.

Summary of Important Ecological Features

16.5.1.61. Table 16.7 summarises important ecological features and the scale at which they are important.

Table 16.7 – Summary of Important Ecological Features

Feature	Section	Importance
Chichester and Langstone Harbour SPA	7-9	International
Milton Common SINC	8	County
Kings Pond Meadow SINC	3	National
Denmead Meadows	3	National
Crabden's Copse SINC	1	County
Crabden's Row SINC	1	County
Ancient Woodland	1	County
Great Salterns Lake SINC	8	County
Broadleaved trees	1-6	District
Species-rich hedgerows, with and without trees	1-4	District
Species-poor hedgerows, with and without trees	1-10	District
Semi-improved neutral and calcareous grassland	1, 3, 4, 8	District
Badgers	1	Local
Bats	1	County
Hedgehogs	1-3	District
Reptiles	1-3	Local
Wintering intertidal birds	7-9	International

Feature	Section	Importance
Breeding birds	1-10	Local

16.5.2. FUTURE BASELINE

Overview

16.5.2.1. The EIA Regulations require consideration of the likely evolution of the baseline conditions over time, without the implementation of the Proposed Development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

16.5.2.2. Climate change is the single most prevalent factor when attempting to predict the future baseline of an ecosystem or species community. Climate change affects ecology via multiple pathways. Impacts on species are considered to include changes in distribution and abundance, the timing of seasonal events and habitat use and, as a consequence, there are likely to be changes in the composition of plant and animal communities. Habitats and ecosystems are also likely to change in character.

16.5.2.3. In order to assess the potential impacts of climate change on ecological features is problematic as species trends in distribution and population size are influenced by other factors. These include environmental considerations (such as atmospheric pollution and land use) and population biology (such as density dependence). These different factors can work in combination to bring about change. Moorcroft & Speakman (2015) present a study which summarises key research on the impacts of climate change on habitats and species in the UK. They conclude that there is strong evidence that climate change is affecting UK biodiversity. Importantly, impacts are expected to increase as the magnitude of climate change increases.

16.5.2.4. The distributions of many species are shifting northwards, including some species which have colonised the UK from mainland Europe while some species are seen to be utilising habitats at a higher altitude than known previously.

16.5.2.5. With regards to the key ecological features known to be present in the Order Limits, it is difficult to predict with considerable confidence as to their likely response to climatic change. However, the following section presents known information on the medium and long-term trends in distribution and abundance for such features.

Habitats

16.5.2.6. Grassland habitats are widespread in the Site. Such areas are considered to be highly sensitive to changes in rainfall. An increase in summer drought conditions has the potential to lead to a decline in wet grassland communities including rush pastures and water meadows. Woodlands are also considerable sensitive to drought

conditions. Increased frequency of droughts may lead to a change in species composition in woodland extents.

Breeding Birds

16.5.2.7. The British Trust for Ornithology breeding farmland bird index shows a decline of 56% since 1970. This pattern of long-term decline has been apparent for many years. However, the breeding bird community within the Study Area for these animals is more characteristic of disturbed and developed habitats (e.g. urban areas, intensive agriculture) which are not exposed to such steep declines.

Bats

16.5.2.8. Collins (2016) examined trends in 11 species compared to a baseline year of 1999. This found that these species were either stable or increasing. Climate change may however affect bat populations through changes in their annual hibernation cycle, breeding success and food availability.

Badger

16.5.2.9. The Badger population in England and Wales has recently been estimated to be 485,000 in 2011 – 2014 and is considered to have increased rapidly since the 1980s (Judge et al., 2017). Mild winters have the potential to lead to increases in badger populations through more widespread and abundant food resource and the potential for consistently earlier onset of Spring.

Wintering Intertidal birds

16.5.2.10. A number of wintering wildfowl and wader species have declined significantly in their abundance in the UK, particularly in west coast estuaries, as they migrate shorter distances in the non-breeding season and many have shifted north-eastwards to new feeding grounds. The main wintering bird species considered in this chapter is dark-bellied brent goose. This species has increased in numbers in Britain (long-term trend (1989/90 – 2014/15): 17% increase; ten-year trend (2004/05- 2014/15): 42% increase (Frost *et al.* 2019), and therefore, based on current evidence, does not appear to be exhibiting a negative response to climate change.

Summary

16.5.2.11. Whilst there may be some changes in species populations and distribution in the longer term, land management is likely to have a greater influence on biodiversity over much of the study area within the timescale of construction of the Proposed Development, which is when the majority of effects from the Proposed Development would occur. It is considered that land use is likely to be the key predictor of species distributions over the lifetime of the Proposed Development, given that the majority of habitats affected by the works are urban habitats.

16.5.2.12. To provide information on medium-term changes in species distribution, and due to the mobile nature of several species of conservation concern which may be impacted by the Proposed Development, pre-construction surveys are likely to be necessary for certain species prior to the commencement of construction works.

16.6. PREDICTED IMPACTS

16.6.1. SECTION 1 – LOVEDEAN CONVERTER STATION AREA

Construction Stage

Embedded Mitigation

16.6.1.1. Measures have been included within the design of the Proposed Development to mitigate impacts associated with the construction stage and their effects on ecological features. The design parameters and principles of the Converter Station (see Chapter 3 (Description of the Proposed Development) for further information) and the outline landscaping and biodiversity strategy (document reference 6.10) has been informed by ecological baseline data to minimise effects of impacts. Embedded mitigation measures include the following:

- **Ancient woodland buffer** – the Proposed Development has incorporated a 15 m buffer between works and Stoneacre Copse, Crabden's Copse and Crabden's Row to avoid direct effects on this feature. No ancient woodland is present within the Order Limits.
- **Landscaping at the Converter Station Area** – Landscape planting (Chapter 15 Landscape and Visual Amenity) around the Converter Station will incorporate ecologically important habitats to offset those lost due to construction work. Planting will include mixed woodland, scrub, hedgerow, scattered trees and marshy grassland associated with flood attenuation features. Sections of hedgerows removed to accommodate the installation of the Onshore Cable Route will be replanted. These planting measures are designed to enhance biodiversity within the Converter Station Area, and will replace grassland which has developed on arable land that is no longer farmed.

Outline Construction Environmental Management Plan (CEMP)

16.6.1.2. Measures have been included within the Proposed Development's Onshore Outline CEMP (document reference 6.9) in addition to those embedded within the design to mitigate impacts associated with the construction stage and their effects on ecological features. Mitigation measures within the Onshore Outline CEMP comprise the following:

- **Waterborne pollution prevention measures** – Standard best practice methods that minimise the risk of pollution through accidental spillage of materials or surface runoff during construction works will be implemented. These measures are described in the "Pollution Prevention for Businesses" guidance published by

the UK Government[7]. When working near water, pollution prevention methods will be incorporated into site-specific guidance notes provided to the site operatives as part of a method statement. All vehicles will carry spill kits and all staff be trained in how to use emergency response equipment. A contingency plan in the event of contamination of watercourses will be established and strictly adhered to in such an event. Site compounds and materials storage areas will not be located adjacent to watercourses. Potentially contaminating materials will be stored appropriately in accordance with current guidelines to minimise pollution risk, including bunding fuel and chemical storage areas and generators. Site procedures will be carefully managed to avoid discharges to watercourses, in particular those involving cement and concrete.

- **Dust suppression measures** – Water sprays will be used to manage dust and prevent it drifting from the construction site to surrounding areas where sensitive habitats are present.
- **Timing of vegetation clearance** - Trees, scrub, hedgerows and other nesting bird habitat will be cleared outside of the bird breeding season, considered to be between March to August, to avoid killing or injuring breeding birds or their young.
- **Restriction of night working** – construction work will be restricted to daylight hours between dawn and dusk within areas without public street lighting (e.g. Denmead Meadows, Farlington Playing Fields and the Converter Station Area) during the bat active season (April to October) to avoid disturbance effects of noise and lighting on bats
- **Environmental Clerk of Works** - Implementation of the measures identified above will be monitored by an Environmental Clerk of Works with the power to stop work and change site practices as required.

Impacts

Crabden's Copse SINC and Crabden's Row SINC

16.6.1.3. Both SINCs lie outside the Order Limits, separated from works by a 15 m buffer zone, and not subject to loss or degradation as a result of construction; direct impacts would be of **negligible** magnitude, with **negligible** effects that are **non-significant**. Neither are they susceptible to indirect noise and vibration, and increased light spill (although protected species using them may be, as discussed below). These indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **non-significant**.

16.6.1.4. Increases in pollutants, namely airborne dust and chemicals in waterborne run-off could lead to effects during the construction stage, but would be controlled effectively

[7] https://www.gov.uk/guidance/pollution-prevention-for-businesses

by the implementation of the standard best practice methods above, which are to be secured as part of the Onshore Outline CEMP and within the CEMP for the works.

16.6.1.5. Nitrogenous air pollution in the area around the Converter Station Area will increase during construction through emissions from vehicles. This would lead to deposition of nitrogen compounds leading to nutrient enrichment of the SINCs, and changes in the botanical community to species that favour high nutrient soils.

16.6.1.6. However, concentration of airborne pollutants reduce strongly with distance and both SINCs will be relatively far from sources of air pollution; Crabden's Row SINC will be approximately 450 m from the construction area, and Crabden's Copse SINC approximately 100 m away. In addition, nitrogen emissions by construction vehicles will be temporary and low level, and would not lead to perceptible changes above background levels (construction stage nitrogen emissions at the Converter Station Area are considered an impact of negligible significance by Chapter 23 (Air Quality) of the ES Volume 1 (document reference 6.1.23) in Section 1). The critical nitrogen load of woodland within both SINCs would not surpass thresholds at which nitrogen sensitive habitat types in the UK lose one species due to increased nutrient loading (Caporn et al. 2016). The magnitude of air pollution as an impact would therefore be of **negligible** magnitude**,** with **negligible** effects that are **non-significant**.

Ancient Woodland

16.6.1.7. Stoneacre Copse lies outside the Order Limits, separated by a 15 m buffer zone, and not subject to loss or degradation as a result of construction; direct impacts would be of **negligible** magnitude**,** with **negligible** effects that are **non-significant**. Neither are they susceptible to indirect noise and vibration, and increased light spill (although protected species using them may be, as discussed below). These indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **non-significant**.

16.6.1.8. Increases in pollutants, namely dust and chemicals in waterborne run-off could lead to effects during the construction stage, but would be controlled effectively by standard measures as part of the Onshore Outline CEMP.

16.6.1.9. Air pollution in the area around the Converter Station Area will increase during construction through work traffic and vehicle movements. This would lead to deposition of nitrogen compounds leading to nutrient enrichment of the ancient woodland, and changes in the botanical community to species that favour high nutrient soils.

16.6.1.10. Stoneacre Copse is closer than the two other ancient woodlands in the area at 50m from the converter station footprint. However, nitrogen emissions by construction vehicles will be temporary and low level, and would not lead to perceptible changes above background levels (construction stage nitrogen emissions at the Converter Station Area are considered an impact of negligible significance by Chapter 23 (Air Quality) in Section 1). The critical nitrogen load of woodland within both SINCs would

not surpass thresholds at which nitrogen sensitive habitat types in the UK lose one species due to increased nutrient loading (Caporn et al. 2016). The magnitude of air pollution as an impact would therefore be of **negligible** magnitude**,** with **negligible** effects that are **non-significant**.

Broadleaved trees

16.6.1.11. Category A broadleaved trees will be felled to make way for the proposed development, leading to loss of these ecological features. The number to be lost is unknown and will be determined through the detailed design process. Their loss will be mitigated through landscape planting (shown in Indicative Landscape Mitigation Plans Figures 15.48 and 15.49) which will, in time, lead to replacement of these more mature trees. There will be a period following the completion of construction and landscaping where trees will be immature and it will take up to 40 years for them to reach Category A status again. During this time the replacement trees would not contribute to biodiversity at the same level of importance, an adverse impact of **low** magnitude, leading to **minor** effects that are **non-significant**.

16.6.1.12. Ecological clerk of works supervision leading to protection of trees and establishment of root protection areas (Appendix 16.3) will prevent direct and indirect impacts on retained trees of **negligible** magnitude**,** with **negligible** effects that are **not significant**.

Species-rich hedgerows, with and without trees

16.6.1.13. The direct impacts of construction of the Converter Station will lead to the permanent loss of 410 m of species-rich hedgerow within Section 1. In addition, a small section (~25 m) of hedgerow will be temporarily removed to make way for the Onshore Cable Corridor to the south of the Converter Station Area. Both these would will lead to the temporary loss and fragmentation of habitats.

16.6.1.14. Embedded mitigation in the form of landscape planting will offset ecological effects associated with the loss of hedgerows (shown in Indicative Landscape Mitigation Plans Figures 15.48 and 15.49). Landscaping will lead to a net increase in the overall area of habitat in the long term. As hedgerows and other planting provide corridors around the Converter Station Area the integrity of the hedgerow network will be maintained, avoiding habitat fragmentation following construction and in the long term.

16.6.1.15. However, there will be a period following the completion of construction and landscaping where planting will be immature and will need time to grow-in. During this time habitat would be of a lower quality to that lost, an adverse impact of **low** magnitude, **minor** effects that are **not significant**.

16.6.1.16. Embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would ensure species-rich hedgerows would receive indirect impacts of the Proposed

Development, thus they would be of **negligible** magnitude**,** with **negligible** effects that are **not significant.**

Species-poor hedgerows, with and without trees

16.6.1.17. One small section of species-poor hedgerow will be removed to make way for the Onshore Cable Corridor trenching in this section. This will be replaced by landscape planting as embedded mitigation, but due to the grow-in period required to replace represent an adverse impact of **low** magnitude, **minor** effects that are non-significant.

16.6.1.18. Embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would ensure species-poor hedgerows would receive indirect impacts of the Proposed Development of **negligible** magnitude**,** with **negligible** effects that are **not significant**

Semi-improved neutral and calcareous grassland

16.6.1.19. Construction of the Converter Station will lead to the direct, permanent loss of 4.2 ha of semi-improved calcareous grassland, and further habitat will be converted from to other habitats for landscaping in this area. Trenching for the Onshore Cable Corridor, installation of access routes, laydown areas and compounds will lead to further direct, temporary loss and degradation of neutral and calcareous semi-improved grassland. This will lead to loss of vegetation and alterations to the soil structure, likely lowering its botanical diversity. Direct impacts would be adverse and of **medium** magnitude, and with **minor to moderate** effects that are **not significant**.

16.6.1.20. Embedded mitigation measures would ensure semi-improved neutral and calcareous grassland (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would receive indirect impacts of the Proposed Development of **negligible** magnitude**,** with **negligible** effects that are **not significant**

Badgers

16.6.1.21. Direct impacts of the Proposed Development through loss and/or degradation of habitats according to Option B(i) of the Converter Station will lead to the loss of two badger setts, an annexe and an outlier. The siting of the Converter Station option B(i) will therefore place badgers at risk of death of injury in the absence of mitigation. Option B(ii) is to the east of Option B(i) and would lead to disturbance of the setts, but they would not be lost. The worst-case scenario has been assessed here, Option B(i).

16.6.1.22. Loss of the setts will affect the ability of badgers to find places of shelter and to breed. Although badgers can make new setts, the available habitat for such sites is limited in the Study Area and thus the loss of such sites will constitute a permanent impact.

Badgers could also be killed or injured during construction of the Proposed Development by falling into open trenches or when they occasionally seek shelter under materials to be used during construction. Although the badger clans living in the study area could replace losses, they reproduce slowly and if many badgers were lost there could be long-term effects clans living close to the Proposed Development.

16.6.1.23. Landscape planting will provide new opportunities for badger sett construction and also provide commuting and foraging areas for badgers, offsetting the effects of habitat loss on them. However, immediate risks associated with removal of the setts and to badgers as a result of the presence of the construction area, direct impacts are **medium** in magnitude, and constitute an **negligible** effect that are **not significant**.

16.6.1.24. As animals that live in close proximity to developed areas such as residential development and agriculture, badgers will receive indirect impacts such as noise (which is already present from farm machinery and movements of vehicles) that are of **negligible** magnitude**,** with **negligible** effects that are **not significant**.

Bats

16.6.1.25. No features that could be used by roosting bats (trees, buildings, etc.) will be lost as a result of direct impacts of the Proposed Development. Although trees will be removed, no trees that could support roosts are present, and no buildings are present within the Order Limits. There will therefore be no effect on roosting bats during the construction stage.

16.6.1.26. Avoidance of night working during the bat active season (April-October) would avoid disturbance effects on free-flying bats which are negatively affected by night-time lighting (Stone, 2014).

16.6.1.27. Bats would be affected by the loss of hedgerows and trees at the Converter Station Area as they use these features to commuting between foraging areas and roosting sites, and removal of such features affects the ability of bats to feed and find places of rest or shelter (Collins, 2016). Survey work showed that species of bat use the species-rich hedgerows found at the Converter Station Area for these purposes (Appendix 16.8). Option B(i) leads to the removal of two hedgerows, one providing connectivity north to south found along the western edge of the Converter Station footprint, and the second west-east connectivity that crosses the footprint. Option B(ii) is positioned approximately 35 m to the east of Option B(i) and retains the north-south hedgerow.

16.6.1.28. Embedded mitigation in the form of landscape planting will offset effects on bats associated with habitat loss at the Converter Station Area. Landscaping will lead to a net increase in the overall area of habitat in the long term. As hedgerows and other planting provide a commuting route around the Converter Station the connectivity of

the landscape will be maintained, avoiding fragmentation of commuting routes following construction and in the long term.

16.6.1.29. However, there will be a period during construction where the hedgerows will have been removed, and following the completion of construction and landscaping where planting will be immature and will need time to grow-in. During this time bats may be restricted in the commuting routes available to them, forcing bats to use other hedgerows and habitat features such as woodland edges to find their way. However, the effects would be limited due to the alternative commuting routes available along the edge of Stoneacre Copse and hedgerows to the west and north of the Converter Station. Therefore, the impact of fragmentation would be of **low** magnitude, and **negligible** effects that are **not significant**.

16.6.1.30. Embedded mitigation measures would ensure bats would receive indirect impacts of **negligible** magnitude**,** with **negligible** effects that are **not significant**.

Hedgehogs

16.6.1.31. Habitat loss due to construction of the Converter Station will be balanced by creation due to landscaping leading to no overall effect on the resources available to hedgehogs. However, clearance of habitats such as hedgerows and scrub (used for foraging and shelter) to make way for construction could lead to killing or injuring individual hedgehogs, lowering their numbers in the wider landscape around the Converter Station Area. Direct adverse impacts would be **low** in magnitude, and **minor** effects that are **not significant**.

16.6.1.32. No indirect effects on hedgehogs are anticipated. Embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would maintain their habitats adjacent to the Order Limits in which they would be found and ensure they remain suitable for foraging and other uses that support the lifecycle of hedgehogs. Thus, there would be subject to impacts of **negligible** magnitude**,** with **negligible** effects that are **not significant**.

Reptiles

16.6.1.33. Widespread reptiles could be killed or injured during the construction stage due to loss and degradation of semi-natural habitat, as such habitats are used by reptiles for foraging and shelter. No reptiles were identified during survey, and it has been assumed that only small numbers are present, limiting effects on reptiles. Direct adverse impacts would be **low** in magnitude, and constitute **negligible** effects that are **not significant**.

16.6.1.34. No indirect effects on reptiles are anticipated. Embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would maintain adjacent habitats and ensure

they remain suitable for reptiles. Direct adverse impacts would be **negligible** in magnitude, and constitute **negligible** effects that are **not significant**.

Breeding birds

16.6.1.35. Timing of works to avoid the bird nesting season will avoid effects of direct impacts of the Proposed Development on breeding birds. As the breeding bird community is composed of common and widespread species acclimated to the human influences found in suburban and agricultural areas, it is not considered sensitive to indirect impacts of construction, laydown and other activities.

16.6.1.36. The loss of hedgerow habitat associated with option B(i) of the Converter Station will temporarily reduce the quantity of breeding bird habitat within the Order Limits although it is considered that landscape planting within the embedded measures will more than offset this loss.

16.6.1.37. Breeding birds will therefore not be affected by the construction stage of the Proposed Development. Direct and indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Operational Stage

Embedded Mitigation

16.6.1.38. The following operational measures will be put in place at the Converter Station to mitigate impacts and their effects on ecological features:

- **Converter Station will not be lit at night** – Lighting will only be turned on at night during exceptional circumstances, such as urgent maintenance activities that are rare events, and there will be no permanent nocturnal lighting of the Converter Station. This will avoid indirect disturbance impacts associated with the Converter Station's operation on ecological features (e.g. bats).

Crabden's Copse SINC and Crabden's Row SINC

16.6.1.39. These sites would not be affected by light spill due to embedded mitigation, and are not susceptible to disturbance from noise and vibration, which will be limited to infrequent maintenance operations. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Ancient Woodland

16.6.1.40. Stoneacre Copse would not be affected by light spill due to embedded mitigation, and are not susceptible to disturbance from noise and vibration. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Broadleaved Trees

16.6.1.41. Trees would not be affected by light spill due to embedded mitigation, and are not susceptible to disturbance from noise and vibration, which will be limited to infrequent

maintenance operations. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Hedgerows (species-rich and species-poor), with and without trees

16.6.1.42. Hedgerows would not be affected by light spill due to embedded mitigation, and are not susceptible to disturbance from noise and vibration, which will be limited to infrequent maintenance operations. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Semi-improved neutral and calcareous grassland

16.6.1.43. Grassland would not be affected by light spill due to embedded mitigation, and are not susceptible to disturbance from noise and vibration, which will be limited to infrequent maintenance operations. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Badgers

16.6.1.44. Embedded mitigation will maintain darkness around the Converter Station and its surroundings and thus badgers will not be affected by light spill. Noise and vibration from the Converter Station will be low-level (see Chapter 24 Noise and Vibration). Occasional percussive noise and vibration from maintenance activities during the day when badgers are within their setts, and noise from the transformers in the Converter Station will be very limited.

16.6.1.45. Both sources of noise and vibration will not be above levels from the current substation and surrounding land uses including use of agricultural machinery, to which badgers are already acclimated. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Bats

16.6.1.46. Embedded mitigation will maintain dark flight corridors around the Converter Station and its surroundings and thus bats will not be affected by light spill. Noise and vibration from the Converter Station will be low-level. Occasional percussive noise and vibration from maintenance activities during the day when bats are at roost, and noise from the transformers in the Converter Station will be slight.

16.6.1.47. Both sources of noise and vibration will not be above levels from the current substation, and surrounding land uses including use of agricultural machinery, to which bats are already acclimated. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Hedgehogs

16.6.1.48. Embedded mitigation will maintain darkness around the Converter Station and its surroundings and thus hedgehogs foraging in the area will not be affected by light spill. Noise and vibration from the Converter Station will be low-level (see Chapter 24 Noise and Vibration). Occasional percussive noise and vibration from maintenance activities during the day when hedgehogs are hidden and inactive, and noise from the transformers in the Converter Station will be very limited.

16.6.1.49. Both sources of noise and vibration will not be above levels from the current substation and surrounding land uses including use of agricultural machinery, to which hedgehogs are already acclimated. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Reptiles

16.6.1.50. These animals are diurnal and therefore not susceptible to disturbance from nocturnal light spill. Noise and vibration from the Converter Station will be low-level, with occasional percussive noise and vibration from maintenance activities during the day. Neither would affect reptiles which are not susceptible to disturbance from such sources noise and vibration as they live within dense vegetation, often close to agriculture and developed areas. In addition, reptiles within the area are already acclimated to noise and vibration from the existing substation, and agricultural land use. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Breeding birds

16.6.1.51. The majority of breeding birds in the Study Area are diurnal and would not be affected by light spill. Nocturnal birds such as owls may use woodlands, but due to the embedded mitigation that the Converter Station will not be lit at night, these birds will not be affected.

16.6.1.52. Noise and vibration from the Converter Station will be low-level. Occasional percussive noise and vibration from maintenance activities will occur during the day, and noise from the transformers in the Converter Station will be slight. Both sources of noise and vibration will not be above levels from the existing substation, and surrounding land uses including use of agricultural machinery, to which breeding birds are already acclimated. Thus, indirect impacts would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Decommissioning Stage

16.6.1.53. Impacts associated with decommissioning of Section 1 of the Proposed Development would have similar effects on ecological features as the construction stage. Embedded mitigation would also be similar, including replacement of landscaping using the same proposals as for the construction stage following dismantling of the Converter Station. It is likely the HVDC Onshore Cables would be left in-situ however (Chapter 3: Description of the Proposed Scheme).

16.6.2. SECTIONS 2-9 – ONSHORE CABLE CORRIDOR

Construction Stage

Embedded Mitigation

16.6.2.1. Measures have been included within the Proposed Development's design to mitigate impacts associated with the construction stage and their effects on ecological

features. Design of the Onshore Cable Corridor has been informed by ecological baseline data to minimise effects of impacts. Embedded mitigation measures include the following:

- **Horizontal Directional Drilling** - To avoid loss of important habitats within the Order Limits, HDD is proposed to avoid the need for open trenching and to preserve habitats. Key locations where HDD will be used are at Denmead Meadows, between Farlington and Kendall's Wharf (under Langstone Harbour) and at Milton Common. HDD requires entrance and exit sites and associated construction compounds for the duration of the drill, but does not require clearance or disturbance of above-ground habitats.
- **Replanting of hedgerows** – Following construction hedgerow planting will be undertaken to repair gaps where the corridor required their removal. Replanting will use native plant species, and will provide a diverse range of woody species to maintain the species-rich nature of hedgerows.
- **Timing of vegetation clearance** - Trees, scrub, hedgerows and other nesting bird habitat will be cleared outside of the bird breeding season, considered to be between March and August, to avoid killing or injuring breeding birds or their young, unless surveyed and approved by a qualified ecologist.

Mitigation Within Outline Construction Environmental Management Plan (CEMP)

16.6.2.2. Measures have been included within the Proposed Development's Onshore Outline CEMP in addition to those embedded within the design to control impacts associated with the construction stage and their effects on ecological features. Mitigation measures within the Onshore Outline CEMP comprise the following:

- **Waterborne pollution prevention measures** – Best practice methods that minimise the risk of pollution through accidental spillage of materials or surface runoff during construction works will be implemented. These measures will follow those within measures are described in the "Pollution Prevention for Businesses" guidance published by the UK Government[8]. When working near water, pollution prevention methods will be incorporated into site-specific guidance notes provided to the site operatives as part of a method statement. All vehicles will carry spill kits and all staff be trained in how to use emergency response equipment. A contingency plan in the event of contamination of watercourses will be established and strictly adhered to in such an event. Site compounds and materials storage areas will not be located adjacent to watercourses. Potentially contaminating materials will be stored appropriately in accordance with current guidelines to

[8] https://www.gov.uk/guidance/pollution-prevention-for-businesses

minimise pollution risk, including bunding fuel and chemical storage areas and generators. Site procedures will be carefully managed to avoid discharges to watercourses, in particular those involving cement and concrete.

- **Dust suppression measures** – Water sprays will be used to manage dust and prevent it drifting from the construction site to surrounding areas where sensitive habitats are present.
- **Restriction of night working** – construction work will be restricted to daylight hours between dawn and dusk within areas without public street lighting (e.g. Denmead Meadows and the Converter Station Area) during the bat active season (April to October) to avoid disturbance effects of noise and lighting on bats.
- **Environmental Clerk of Works** - Implementation of the measures identified above will be monitored by an Environmental Clerk of Works with the power to stop work and change site practices as required.

Impacts

Chichester and Langstone Harbour SPA

16.6.2.3. The site is designated for its internationally important wintering intertidal bird community, and breeding tern colonies (common, sandwich and little tern). Chapter 11 Marine Ornithology has assessed effects on SPA birds below the MHWS (i.e. those dependent on habitats outside of the intertidal zone) and should be cross-referenced with the below assessment. This includes assessment of impacts on the three SPA qualifying tern species whilst foraging.

16.6.2.4. Effects associated with direct impacts on Chichester and Langstone Harbour SPA have been avoided by the use of HDD to take it from Farlington playing fields (located at Farlington, north of A27) to Kendall's Wharf, under the intertidal habitats within the Langstone Harbour. Other than where HDD routes underlie the SPA, the Order Limits do not coincide with the SPA itself. Direct impacts on the SPA would be of **negligible** magnitude, with **negligible** effects that are **not significant** effects on both the wintering and breeding bird communities.

16.6.2.5. However, the Order Limits pass through six SWBGS sites where trenching, laydown and HDD compounds will be located:

- P25 – University of Portsmouth, Langstone Campus;
- P23B – University of Portsmouth;
- P23A – Milton Common north 1;
- P23R – Milton Common north 2;
- P11 – Kendall's Wharf playing fields; and
- P08A – Farlington playing fields.

16.6.2.6. These sites are grasslands used primarily by grazing dark-bellied brent geese, but also other waterbirds such as waders (curlew *Numenius arquata* were commonly observed in P23B for example) as winter foraging areas (Appendix 16.13); such birds are qualifying features of the SPA and the SWBGS sites are functionally connected to the SPA's overall function, ecological importance and integrity (King, 2010).

16.6.2.7. Construction stage work within the SWBGS sites will reduce the availability grassland foraging habitat where the stage overlaps with the winter season when dark-bellied brent geese and other wintering birds that are qualifying features of the SPA are present, nominally October to March (Carboneras et al. 2019). Work within the sites during winter would produce direct disturbance of the sites from noise and movements of construction vehicles and machinery, further restricting the availability of remaining grassland within the sites as foraging areas. However, it should be noted that the Proposed Development would not lead to the total clearance of any SWBGS site. Thus, direct impacts on the SWBGS sites, as supporting habitat for qualifying features of the SPA, would lead to adverse impacts of **medium** magnitude, and with **major to moderate** effects that are **significant**.

16.6.2.8. Measures incorporated into the Proposed Development's CEMP would avoid indirect impacts associated with pollutants, including accidental spills and litter which may be generated by construction. Dust suppression measures will prevent deposition of airborne particulates affecting the SPA and its supporting SWBGS sites, and waterborne pollutants prevented from reaching the SPA and SWBGS sites by pollution prevention measures. Ambient levels of light pollution within and surrounding the SPA are high, and therefore no effects are expected from lighting of works during the evening, morning and hours of darkness as light spill onto the SPA and SWBGS sites would not be perceptible above current lighting levels. Indirect impacts associated with pollution and light spill would therefore lead to **negligible** magnitude, with **negligible** effects that are **not significant.**

16.6.2.9. Nitrogen emissions by construction vehicles will be temporary and low level, and would not lead to perceptible changes in the critical loading of the SPA above background levels (construction stage nitrogen emissions are considered an impact of negligible significance by Chapter 23 (Air Quality)). Effects of Air pollution will therefore be of **negligible** magnitude, with **negligible** effects that are **not significant**.

16.6.2.10. Noise and vibration impacts associated with the Proposed Development present a potentially adverse effect on SPA bird communities. Disturbance or displacement may be a response to the construction noise associated with people and machinery. A disturbance event may cause birds to take flight (either returning to the same area or departing entirely), or to cease feeding or roosting. A single instance of taking flight or ceasing to feed does not have an immediate effect on the survival or productivity

of an individual bird. Repeated disturbance, or disturbance over an extended period, can affect the survival and productivity of a bird.

16.6.2.11. Sound created by the operation of machines and vehicles during the construction phase has the potential to cause birds to cease feeding, or to fly away from the area of influence. Disturbance depends on the nature or type of sound and the strength of the sound on reaching birds using intertidal habitat around the site. It is recognised that very loud and short, sharp 'percussive' sounds, most familiar as gunshot but also produced during construction activity, for example the hammering in of metal piles, have the greatest potential to cause disturbance to birds (e.g., Madsen and Fox, 1995; Mahaulpatha et al., 2000; Riddington et al., 1996). No piling associated with the installation and burial of the export cable, but sheet piling using a vibrohammer will be used to secure machinery at HDD Site 1 (onshore landfall works), HDD Site 2 (Milton Lock/Milton Piece allotments) and HDD Site 3 (Kendall's Wharf; Langstone Harbour crossing).

16.6.2.12. Loud but discontinuous sounds, such as those produced by machinery during construction processes, have been shown to cause disturbance when that sound is above certain recorded levels (e.g., Conomy et al., 1998; Fleming et al., 2000; Goudie and Jones, 2004; Ward et al., 2000; West et al., 2007). Such studies provide a strong evidence base for a threshold of 80 dB(A) (at the bird, not at the source) to be set, above which disturbance of waterbirds may occur. Based upon a literature review of waterbird response to construction disturbance, Cutts et al. (2009) recommend ambient construction sound levels should be restricted to below 70 dB(A), and where possible, sudden irregular sounds above 50 dB(A) should be avoided as this causes maximum disturbance to birds. The latter review included several studies from the Humber Estuary where Wright et al. (2010) also reported that temporary flight responses of shorebirds (golden plover, lapwing and curlew) could be expected a result of 'percussive' (impulsive) sound levels of 62.4–73.9 dB(A) and abandonment of the site as a result of sound levels of 67.9–81.1 dB(A).

16.6.2.13. Cutts, Hemingway and Spencer (2013) present an assessment of waterbird response to construction disturbance from reviewing the literature and field observations, categorises sounds of less than 55 dB(A) as unlikely to cause response in birds using intertidal areas. Sounds between 55-72 dB(A) in some highly disturbed industrial areas was categorised to a low level of disturbance (such as causing a 'heads up' response) where the sound level is regular as birds will often habituate to a constant sound level, and elsewhere categorised to a moderate level of disturbance (such as causing a 'heads up' response).

16.6.2.14. Sources of noise and vibrational disturbance associated with the Proposed Development fall into two broad categories. These are based on analysis of data within Chapter 24 (Noise and Vibration) and descriptions of construction equipment

provided by the Proposed Development's principal contractor (Watson & Hillhouse Ltd., 2019):

- '*Regular'* construction noise associated with trenching, jointing and movement of equipment around the order limits; analogous with ambient construction noise levels as described by Cutts et al. (2009) – will be <70dB L_{Aeq} at between 25 m and 35 m from the Order Limits; and
- '*Irregular'* construction noise associated with vibropiling to install sheet pile anchor walls at HDD sites - <90dB L_{Aeq} at 5 m from source.

16.6.2.15. No tern breeding colonies are located within or adjacent to the Order Limits. The closest little tern colony is at Baker's Island approximately 2 km from the Order Limits at its closest point, and the closest common and sandwich tern colony is at Hayling Island approximately 4 km from the Order Limits at its closest point (see Chapter 11 Figure 3.2). Sound pressure decreases by 6 dB(A) with every doubling of distance, and thus the loudest irregular construction noise would be heard above ambient sources of noise from the industrialised areas of Langstone Harbour and its surroundings by the time it reaches the colonies. Impacts of noise on breeding tern colonies will therefore be of **negligible** magnitude, with **negligible** effects that are **not significant**.

16.6.2.16. Chichester and Langstone Harbour SPA will potentially receive regular construction noise >70dB L_{Aeq} at five locations; south of Milton Piece Allotments, south of Milton Lock, east of University of Portsmouth, east of Eastern Road and at Kendall's Wharf (Appendix 16.14 (Winter Working Restriction for Features of Chichester & Langstone Harbours SPA) of the ES Volume 3 (document reference 6.3.16.14), Figure 2). Table 16.8 lists SPA qualifying bird species identified using these locations

Table 16.8 – Locations within Chichester and Langstone Harbour SPA potentially receiving noise >70dB LAeq and SPA qualifying birds identified within them

Location	Qualifying Bird Species Present
South of Milton Piece Allotments (0.18 ha)	Low tide: None High tide: None
South of Milton Lock (0.64 ha)	Low tide: dark-bellied brent goose, redshank *Tringa tetanus*, turnstone *Arenaria interpres*. High tide: dark-bellied brent goose
East of University of Portsmouth (0.05 ha)	Low tide: None High tide: None
East of Eastern Road (3.33 ha)	Low tide: dark-bellied brent goose, redshank, turnstone, curlew *Numenius arquata*,

Location	Qualifying Bird Species Present
	High tide: dark-bellied brent goose, redshank, turnstone, ringed plover *Charadrius hiaticula*, dunlin *Calidris alpina*
Kendall's Wharf (0.19 ha)	Low tide: None High tide: None

16.6.2.17. Three of the five locations within the SPA potentially subject to disturbing regular construction noise supported no SPA qualifying bird species. The location south of Milton Piece Allotments is small and a large part is composed of rock armour revetment limiting available intertidal foraging habitat. The location east of University of Portsmouth is also small, comprising a thin strip of intertidal habitat adjacent to the sea wall, and frequently disturbed by dog walkers and other activities occurring on the footpath there. Kendall's Wharf is an active industrial site and noise and visual disturbance at this location limits its use by intertidal birds.

16.6.2.18. The remaining two locations (south of Milton Lock and East of Eastern Road) support SPA qualifying birds at both high and low tide. Birds use the locations to forage and would be subject to noise disturbance associated with winter works at these locations for their duration. Thus, indirect impacts of regular construction noise and vibration at these two locations would lead to adverse impacts of **medium** magnitude, and with **major to moderate** effects that are **significant**.

16.6.2.19. Irregular noise and vibrational disturbance associated with vibropiling at the three HDD sites would exceed 70dB L_{Aeq} well into the Langstone Harbour at Milton Lock/Milton Piece allotments and Kendall's Wharf (HDD 2 and HDD 3 respectively) as both are directly adjacent to the SPA boundary. HDD 1 is approximately 200 m from the SPA and at this distance the 50dB L_{Aeq} threshold for bird disturbance through irregular construction noise would still be exceeded. However, intervening buildings would screen the noise, ameliorating its effects, along with masking by ambient noise as the site is located within a developed area. Piling to support HDD work will be short term, lasting several days at most (individual piles are driven in within 2 hours). Thus, indirect impacts of irregular noise and vibration at HDD sites would lead to adverse impacts of **low** magnitude, and with **moderate** effects that are **significant**.

Kings Pond Meadow SINC

16.6.2.20. Grassland at Kings Pond Meadow SINC comprises both unimproved HPI-quality Lowland Meadow habitat and lesser-quality horse-grazed semi-improved grassland. The Onshore Cable Corridor enters the SINC in trench on its northern boundary and continues to the south via HDD. The work compound associated with the HDD entry site will be positioned within the SINC (Appendix 16.4 (Non-statutory Designated Sites Report)).

16.6.2.21. HPI-quality Lowland Meadow will be avoided as trenching and the HDD entry site will not overlap with this habitat type. Trenching and the work compound will be located within semi-improved grassland of lower quality, and direct impacts will lead to the temporary loss of approximately 1.7 ha of this habitat type, and potential alterations to soil structure which could affect the botanical community in the long-term. Thus, magnitude of direct adverse impacts will be **medium**, and **major to moderate** effects that are **significant**.

16.6.2.22. Effects of indirect impacts, namely dust and waterborne pollution would be offset by embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision), leading to impacts of **negligible** magnitude on HPI-quality Lowland Meadow habitat and remaining semi-improved grassland. Indirect **negligible** effects of the Proposed Development will be **not significant**.

Denmead Meadows

16.6.2.23. The Onshore Cable Corridor runs through this site, which is composed of unimproved HPI-quality Lowland Meadow habitat. Embedded mitigation in the form of HDD will avoid the need for trenching within Denmead Meadows and thus many of the potential effects of the Proposed Development. However, positioning the HDD exit site and work compound within the southern-most paddock adjacent to Hambledon Road cannot be avoided, and up to 0.5 ha of HPI-quality Lowland Meadow habitat at this location will be temporarily removed to make way for this activity, with associated potential changes to soil structure which could affect the botanical community here in the long-term.

16.6.2.24. The Onshore Cable Corridor leaves Denmead Meadows in open-cut trench and turns along Hambledon Road. The magnitude of direct impacts would be **medium** with much of the lowland meadow habitat within Denmead Meadows remaining outside of work areas, thus effects of direct impacts will be of **major to moderate** and **significant**.

16.6.2.25. Effects of indirect impacts, namely dust and waterborne pollution would be offset by embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision), leading to impacts of negligible magnitude on the status of remaining lowland meadow habitat. Indirect effects will be **negligible** and **not significant.**

Great Salterns Lake SINC

16.6.2.26. This site lies adjacent to the Onshore Cable Corridor and could be subject to indirect impacts of the construction stage. However, embedded mitigation will prevent effects of indirect impacts including waterborne pollution and dust deposition, leading to impacts of **negligible** magnitude on its status. Effects of the Proposed Development on Great Salterns Lake SINC will be **negligible** and **not significant**.

Milton Common SINC

16.6.2.27. The Onshore Cable Corridor includes an option to run along a well-used path through Milton Common SINC heavily used by dog walkers and disturbed by people. This area has recently been cleared to allow construction of coastal defence work, and has been reseeded with a lowland meadow grassland mix. Construction access will also be required into the SINC, alongside trenching for the cable itself. Therefore, direct impacts of the Proposed Development will lead to the temporary loss of 10.5 ha of habitat within the SINC, 23% of the total SINC area, and potential alterations to soil structure which could affect the botanical community in the long-term. This comprises an impact of **medium** magnitude on Milton Common SINC, with the effects of the Proposed Development being **moderate** and **significant**.

16.6.2.28. Effects of indirect impacts, namely dust and waterborne pollution would be offset by embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision), leading to impacts of **negligible** magnitude on the status of habitat outside of work areas. Indirect effects of the Proposed Development will be **negligible** and **not significant**.

Broadleaved trees

16.6.2.29. Category A broadleaved trees will be felled to make way for the Proposed Development, leading to loss of these ecological features. The number to be lost is unknown and will be determined through the detailed design process. Their loss will be mitigated for through replanting which will, in time, lead to replacement of these more mature trees. There will be a period following the completion of construction and landscaping where trees will be immature and it will take up to 40 years for them to reach Category A status again. During this time the replacement trees would not contribute to biodiversity at the same level of importance, an impact of adverse **low** magnitude, and a **minor** effect that is **not significant**.

16.6.2.30. Ecological clerk of works supervision leading to protection of trees and establishment of root protection areas (Appendix 16.3 (Arboriculture Report)) will prevent direct and indirect impacts on retained trees, and they would be subject to impacts of **negligible** magnitude on their status, with **negligible** effects that are **not significant**.

Species-rich hedgerows, with and without trees

16.6.2.31. The direct impacts of construction within the Onshore Cable Corridor will not lead to permanent loss of species-rich hedgerow. Two sections of species-rich hedgerow will be removed (approximately 50 m total length) along the Onshore Cable Corridor to make way for trenching works, access routes and compounds. The sections removed coincide with trenching locations and will be small and temporary, but represent fragmentation of habitats in the absence of mitigation.

16.6.2.32. Embedded mitigation in the form of hedgerow re-planting to reinstate hedgerows lost will offset ecological effects associated with the temporary loss of hedgerows. As

hedgerows and other planting provide corridors through the landscape replanting will maintain the integrity of the hedgerow network will be maintained, avoiding habitat fragmentation following construction and in the long term.

16.6.2.33. However, there will be a period following the completion of construction and landscaping where planting will be immature and will need time to grow-in. During this time habitat would be of a lower quality to that lost, an impact of **low** magnitude, and **minor** effects that are **non-significant**.

Species-poor hedgerows, with and without trees

16.6.2.34. There will be no permanent loss of species-poor hedgerow. Temporary removal of three sections will make way for Onshore Cable Route trenching. Hedgerow replanting as described above will maintain connectivity in the landscape, but due to the grow-in period required to replace represent an impact of **low** magnitude, and an **minor** effect that are **not significant**.

Unimproved neutral grassland

16.6.2.35. This feature is a part of Kings Pond Meadow SINC and Denmead Meadows, and impacts on this habitat have been considered as part of these sites above.

Semi-improved neutral and calcareous grassland

16.6.2.36. Impacts on semi-improved neutral grassland habitat within Kings Pond Meadow SINC impacts have already been assessed above.

16.6.2.37. Construction of the Onshore Cable Corridor will lead to the temporary loss of 9.4 ha of semi-improved neutral grassland south of Hambledon Road within Sections 3 and 4. This will lead to loss of vegetation and alterations to the soil structure, likely lowering botanical diversity. However, semi-improved neutral grassland in this area is used as grazing land and thus subject to disturbance from agricultural sources, an effect lowering its botanical diversity. Direct impacts would therefore be of **low** magnitude, and with **minor** effects that are **not significant**.

16.6.2.38. Construction of the Onshore Cable Corridor will lead to the temporary loss of 1.1 ha of semi-improved calcareous grassland adjacent to Portsdown Hill Road within Section 4. This will lead to loss of vegetation and alterations to the soil structure, likely lowering botanical diversity. The area of temporary loss is relatively small relative to the extent of calcareous grassland habitat adjacent to the Order Limits, and adjacent to a road so disturbed and of lower quality than that further afield. Direct impacts would therefore be of **low** magnitude, and with **minor** effects that are **not significant**.

16.6.2.39. Effects of indirect impacts, namely dust and waterborne pollution would be offset by embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision), leading to impacts of **negligible** magnitude on the status of habitat outside of work areas. Indirect effects of the Proposed Development will be **negligible** and **not significant**.

Bats

16.6.2.40. No features that could be used by roosting bats (trees, buildings, etc.) will be lost as a result of direct impacts of the Proposed Development. Although trees will be removed, no trees that could support roosts are present, and no buildings are present within the Order Limits. There will therefore be no effect on roosting bats during the construction stage.

16.6.2.41. Avoidance of night working during the bat active season (April-October) would avoid disturbance effects on free-flying bats which are negatively affected by night-time lighting (Stone 2014). However, 24 hour working during the bat active season will be undertaken at Farlington Playing Fields (Section 7) to permit HDD microtunnelling under the London to Portmouth railway mainline, HDD work between the playing fields and Kendall's Wharf, and trenching between these two HDD sites (see Chapter 3 (Description of the Proposed Development)). Lighting of the HDD compounds and trenching area could disturb bats from their regular commuting routes and foraging areas within the normally dark playing fields. The impact of lighting would be of **medium** magnitude, constituting a **moderate** effect that is **significant.**

16.6.2.42. Small lengths (<20m) of hedgerow will be removed in agricultural land in Section 2 and Section 3 to make way for the Onshore Cable Corridor, creating gaps that will be present for the duration of construction and until regrowth after replanting occurs. Bats use hedgerows as commuting corridors between foraging areas and roosting sites (Collins 2016), and even small gaps of <10 can fragment such corridors (Entwistle 2001).

16.6.2.43. Embedded mitigation in the form of hedgerow replanting will offset fragmentation effects on bats associated with hedgerow removal in the long-term as replacement will ensure commuting routes are retained. However, there will be a period during construction where the hedgerows will have been removed, and following the completion of construction and replacement where planting will be immature and will need time to grow-in. During this time bats may be restricted in the commuting routes available to them, forcing bats to use other hedgerows and habitat features such as woodland edges to find their way. However, the effects would be limited due to the alternative hedgerow commuting routes. Therefore, the impact of fragmentation would be of **low** magnitude, and a **negligible** effect that is **not significant**.

16.6.2.44. Other than at Farlington Playing Fields, embedded mitigation measures would ensure bats would not be affected by indirect impacts of negligible magnitude, with **negligible** effects that are **not significant**.

Hedgehogs

16.6.2.45. Habitat loss due to construction of within the Onshore Cable Corridor will be temporary, with replanting leading to no overall effect on the resources available to hedgehogs. However, clearance of habitats such as hedgerows and scrub (used for

foraging and shelter) to make way for construction could lead to killing or injuring individual hedgehogs, lowering their numbers in the wider landscape around the Onshore Cable Corridor in Sections 2-3. Direct impacts would be **low** in magnitude, and constitute a **minor** effect that is **non-significant**.

16.6.2.46. No in-direct effects on hedgehogs are anticipated. Embedded mitigation measures (waterborne pollution prevention measures, dust suppression measures and Ecological Clerk of Works supervision) would maintain their habitats adjacent to the Order Limits in which they would be found and ensure they remain suitable for foraging and other uses that support the lifecycle of hedgehogs. Thus, impacts would be of **negligible** magnitude, with **negligible** effects that are **non-significant**.

Reptiles

16.6.2.47. Widespread reptiles could be killed or injured during the construction stage due to loss and degradation of semi-natural habitat, as such habitats are used by reptiles for foraging and shelter. No reptiles were identified during survey, and it has been assumed that only small numbers are present, limiting the effect on reptiles in the Study Area and further afield. Direct impacts would be **low** in magnitude, and constitute a **minor** effect that is **non-significant**.

16.6.2.48. Embedded mitigation measures would ensure reptiles would not be affected by indirect impacts of **negligible** magnitude, with **negligible** effects that are **non-significant**.

Wintering intertidal birds

Important wintering intertidal birds are associated with Chichester and Langstone Harbour SPA and its supporting SWBGS sites. Impacts and potential effects are the same as discussed above for this site above.

Breeding Birds

16.6.2.49. Timing of works to avoid the bird nesting season will avoid effects of direct impacts of the Proposed Development on breeding birds. As the breeding bird community is composed of common and widespread species acclimated to the human influences found in suburban and agricultural areas, it is not sensitive to indirect impacts.

16.6.2.50. Breeding birds will therefore not be affected by the construction stage of the Proposed Development. Direct and indirect impacts would be of **negligible** magnitude, **negligible** effects that are **not significant**.

Operational Stage

16.6.2.51. As the operational cable will be below ground within this section, it will not lead to impacts that could affect ecological features. Occasional maintenance operations that may occur would not lead to impacts above background levels already

experienced by current human uses of the landscape, and would not be perceptible as effects on ecological features.

Decommissioning Stage

16.6.2.52. Impacts associated with decommissioning of Sections 2-9 of the Proposed Development could have similar effects on ecological features as the construction stage but depends on the decommissioning option chosen. It is likely the cable will be left in-situ (Chapter 3 (Description of Proposed Development)), meaning the cable would not be dug up, and in this case effects of this stage would be more limited that the construction stage.

16.6.3. SECTION 10 – EASTNEY (LANDFALL)

Construction Stage

Species-poor hedgerows, with and without trees

16.6.3.1. There will be no permanent loss of species-poor hedgerow. Temporary removal of three sections will make way for Onshore Cable Route trenching. Hedgerow replanting as described above will maintain connectivity in the landscape. The few hedges within this section are part of an urban landscape and placed for amenity purposes as boundaries. Thus, their removal and replacement would lead to impacts of negligible magnitude on species-poor hedgerows, with **negligible** effects that are **not significant** effects.

Bats

16.6.3.2. No features that could be used by roosting bats (trees, buildings, etc.) will be lost as a result of direct impacts of the Proposed Development. Although trees will be removed, no trees that could support roosts are present, and no buildings are present within the Order Limits. In addition, Section 10 is located in a developed area of Southsea subject to disturbance from lighting and noise that limits the area's potential overall value as habitat for bats. There will therefore be no effect on roosting bats during the construction stage.

16.6.3.3. No hedgerow removal will take place in this section and therefore there will be no effect of fragmentation of flight lines.

16.6.3.4. Avoidance of night working during the bat active season (April-October) would avoid disturbance effects on free-flying bats which are negatively affected by night-time lighting (Stone 2014).

16.6.3.5. Embedded mitigation measures would ensure bats would not be affected by indirect impacts, which would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Breeding birds

16.6.3.6. Timing of works to avoid the bird nesting season will avoid effects of direct impacts of the Proposed Development on breeding birds. As the breeding bird community is

composed of common and widespread species acclimated to the human influences found in suburban and agricultural areas, it is not sensitive to indirect impacts.

16.6.3.7. Breeding birds will therefore not be affected by the construction stage of the Proposed Development in this location. Direct and indirect impacts on breeding bird community would be of **negligible** magnitude, with **negligible** effects that are **not significant**.

Operational Stage

16.6.3.8. As the operational cable will be below ground within this section, it will not lead to impacts that could affect ecological features.

Decommissioning Stage

16.6.3.9. Impacts associated with decommissioning of Section 10 of the Proposed Development could have similar effects on ecological features as the construction stage but depends on the decommissioning option chosen. It is likely the cable will be left in-situ (Chapter 3 (Description of the Proposed Development)), meaning the cable would not be dug up, and in this case effects of this stage would be more limited that the Construction Stage.

16.7. CUMULATIVE EFFECTS

16.7.1. CONSTRUCTION STAGE

16.7.1.1. Appendix 16.15 (Onshore Ecology Cumulative Effect Assessment Matrix (Stage 1 & 2)) and 16.16 (Onshore Ecology Cumulative Effect Assessment Matrix (Stage 3 & 4)) of the ES Volume 3 (document reference 6.3.15.15 and 6.3.15.16) details schemes which could act in-combination with the construction stage to cumulatively affect onshore ecological features. One scheme could interact, proposals for a battery storage plant by Pivot Power (ref 19/01071/FUL). This would act in-combination with loss of semi-improved calcareous grassland attributed to the Converter Station Area. The effect on this feature would remain **moderate** and **significant** however as together the proposals would only lead to partial loss of semi-improved calcareous grassland.

16.7.1.2. No further cumulative effects, including intra-project effects, of the construction stage have been identified.

16.7.2. OPERATIONAL STAGE

16.7.2.1. No cumulative effects are expected, from other plans or projects or from intra-project interactions in the Proposed Development's Zone of Influence during the operational stage. During this time, the cable will be buried and will not influence surrounding ecological features. The operation of the Converter Station will have no ecological effects, and thus will not interact with plans or projects in the Zone of Influence.

16.7.3. DECOMMISSIONING STAGE

16.7.3.1. It is unknown whether cumulative effects will arise from the Proposed Development acting in-combination with others within the Zone of Influence during the decommissioning stage. This is due to the long-time period between construction and likely decommissioning (at least 40 years).

16.8. PROPOSED MITIGATION AND ENHANCEMENT

16.8.1. WINTER RESTRICTION OF WORKS ADJACENT TO CHICHESTER AND LANGSTONE HARBOUR SPA

16.8.1.1. Features requiring mitigation measures:

- Chichester and Langstone Harbour SPA
- Wintering Intertidal Birds

16.8.1.2. Effects of the construction stage on Chichester and Langstone Harbour SPA and it's wintering intertidal bird community will be avoided by restricting works within the winter season, defined as October to March (the period when SPA birds such as dark-bellied brent goose arrive from their breeding grounds; Snow and Perrins, 1998). Details of the working restriction are provided in Appendix 16.14 (Winter Working Restriction for Features of Chichester & Langstone Harbours SPA), and comprise 8 principles that will be incorporated into working methods:

- **Principle 1**: Construction works cannot take place in SWBGS (those categorised as either core, primary or secondary) sites that overlap with the Proposed Developments Order Limits during October – March. An exception is the gravel car park, boat yard and linking roadway within site P11 that is already disturbed by movements of cars, lorries and plant, and offers no functional habitat for brent geese or other waterbirds associated with Chichester and Langstone Harbour SPA. Work to establish and dismantle an HDD compound will be undertaken here during this time, but will not involve piling whose percussive sounds would disturb birds using the adjacent playing fields.
- **Principle 2**: No buffer zones are applied to SWBGS sites to limit works away from their boundaries, while those sites categorised as 'low use' are also not part of working restrictions.
- **Principle 3**: Where HDD works are to take place underneath the SWBGS site (e.g. at Eastney Landfall) no direct impacts are considered to occur and the restriction does not apply. The following SWBGS sites overlap with the Proposed Developments Order Limits, running from South to North as follows:
  - P25 – University of Portsmouth, Langstone Campus;
  - P23B – University of Portsmouth;

- P23A – Milton Common north 1;
- P23R – Milton Common north 2;
- P11 – Kendall's Wharf playing fields; and
- P08A – Farlington playing fields.

- **Principle 4**: Elements of the Onshore Cable Route that are over 400 m from the SPA are not included in any restriction.
- **Principle 5**: Construction noise events of <55 dB can occur unrestricted.
- **Principle 6**: Construction works of 55 – 72 dB L_{Aeq} immediately adjacent to a major road and/or adjacent to industrial sites with notable levels of ambient noise can be undertaken unrestricted. It is considered that noise levels from the Proposed Development would be masked in these instances.
- **Principle 7**: Regular/consistent construction noise (>70dB L_{Aeq}) and irregular/sudden construction noise 60-72 dB L_{Aeq} implies potential for impacts on the more sensitive species (e.g. dark-bellied brent geese) and can only occur if effects do not overlap with areas of the SPA identified as supporting this species.
- **Principle 8**: Irregular construction noise (>70dB L_{Aeq}) that is exposed to the SPA should be restricted during October – March. Vibropiling at HDD 2 and 3 will not be undertaken during the wintering period, with sheet piles inserted prior to the arrival of wintering SPA birds.

16.8.1.3. Adoption of these principles will offset direct effects on SWBGS sites (as these sites will not be subject to works in the winter period when they are used by SPA birds), and effects of noise and vibration on birds within the SPA itself. Additionally, principles mandate that piling associated with HDD sites 2 and 3 will not take place during the period where wintering birds are present (October to March), and therefore will not disturb them.

16.8.2. SOIL HORIZON PRESERVATION

Features requiring mitigation measures:

- Denmead Meadows;
- Kings Pond Meadow SINC;
- Milton Common SINC;
- Unimproved neutral grassland; and
- Semi-improved neutral and calcareous grassland.

16.8.2.1. Mitigation for temporary loss of important grassland will be to maintain soil horizons and preserve grassland turf. Mitigation will be put in place at Kings Pond Meadow

SINC, Denmead Meadows, Milton Common SINC and semi-improved grasslands in along the Onshore Cable Corridor.

16.8.2.2. Although growing vegetation would be lost to trenching work and the installation of construction compounds/access points, removal and preservation of turves so that they can be replaced when work is finished will retain the seed bank within them allowing regrowth. Maintaining soil conditions by maintaining soils structure (turf, top soil, subsoil) will maintain soil conditions for re-growth of meadow vegetation.

16.8.2.3. The following measures will be put in place:

- Separate turves, top soil and sub soil. Each will be stored separately with no mixing during works;
- Replace soil structure following completion of work with turves on top;
- Use low ground pressure machinery also to avoid compaction;
- Works areas will be securely fenced and procedures put in place to prevent damage to grassland habitats adjacent to them (e.g. by the use of Herras fencing);
- Works to be monitored by an Ecological Clerk of Works who will provide toolbox talks to contractors and staff working at the site; and
- At Kings Pond Meadow SINC and Denmead Meadows where vegetation has a wet meadow character, work will be programmed so as to avoid the plant growing season and winter wet season as both these are important for maintaining the conditions within the habitat. Work in this area will be begun in late summer (likely August) to allow for the programmed completion of the works in late autumn (November) to facilitate this. Surveys to inform the construction methodology for the works in this area may be carried out during the plant growing season/winter wet season to assist with the works being carried out outside of that period.

16.8.2.4. These mitigation measures apply to both the construction and decommissioning stages of the Proposed Development.

16.8.3. GROUND PROTECTION

Features requiring mitigation measures:

- Denmead Meadows;
- Kings Pond Meadow SINC;
- Milton Common SINC;
- Unimproved neutral grassland; and
- Semi-improved neutral and calcareous grassland.

16.8.3.1. Use of bog matting, temporary membranes with Type 1 aggregate or similar ground protection solutions will be used to prevent compaction of grassland soils at Kings

Pond Meadow SINC, Denmead Meadows, Milton Common SINC and semi-improved grasslands along the Onshore Cable Corridor. This mitigation measure will promote regrowth of vegetation to its original state.

16.8.3.2. Ground protection measures apply to both the construction and decommissioning stages of the Proposed Development. Maintenance is will be infrequent, and use light vehicles that would not lead to effects above those of regular use and management of the land as farmland; thus no mitigation is required for the Operational Stage.

16.8.4. SEED HARVESTING AND RESEEDING

Features requiring mitigation measures:

- Denmead Meadows;
- Kings Pond Meadow SINC; and
- Unimproved Neutral Grassland.

16.8.4.1. In addition to soil horizon preservation and ground protection, where particularly sensitive HPI-quality Lowland Meadow habitat is present at Denmead Meadows, regrowth will be promoted by collecting seed from plants already present and reseeding using this collected seed following work. This will preserve the local mixture of meadowland plants unique to Denmead Meadows.

16.8.4.2. Using a specialist contractor, a seed harvester will be used to collect seed in the year prior to the onset of works. Seed will be dried and stored until work is complete.

16.8.4.3. Two seed collection sweeps will be undertaken, one in late June/Early July to catch early flowering plants and one in late August/early September for late flowering plants.

16.8.4.4. Re-seeding will take place using collected seed in spring following the completion of construction and decommissioning stage works.

16.8.4.5. Subject to landowner permissions, monitoring at years 1, 3 and 5 post-development will be undertaken to inform potential management interventions at the site. The monitoring will comprise botanical survey of the reseeded areas, and will allow interventions that may be necessary to maintain HPI-quality grassland remains in the long-term.

16.8.5. IMPROVEMENT OF REMAINING CALCAREOUS GRASSLAND AT LOVEDEAN

Features requiring mitigation measures:

- Semi-improved calcareous grassland

16.8.5.1. At the Converter Station Area the botanical diversity of the semi-improved calcareous grassland (shown in Indicative Landscape Mitigation Plans Figures 15.48 and 15.49) will be improved by application of green hay. Green hay contains seed from a diversity of wildflower species and will inoculate retained grassland with new flora.

The green hay will be sourced from Denmead Meadows to ensure native plants of local provenance are used to colonise and increase the value of the grassland.

16.8.5.2. Improvement using green hay will take place in late spring (June-July) in the year following completion of construction work.

16.8.6. LIGHTING DESIGN FOR WORKS AT FARLINGTON PLAYING FIELDS

Features requiring mitigation measures:

- Bats

16.8.6.1. Farlington Playing Fields is unlit and construction lighting could result in disturbance of bat commuting routes and foraging areas located around the site's edge where scrub and woodland are located. These habitats are used by bats to navigate and find food; open areas are avoided as no physical features are present to reflect echolocation calls. Thus, to avoid effects on bats trenching areas and compounds for HDD work will be set back from the edge of the playing field by at least 10 m to maintain habitats there and preserve bat flight lines.

16.8.6.2. Lighting of construction work will be designed with reference to recommendations issued by The Bat Conservation Trust (2014) and Institute of Lighting Engineers (2009), and be cowled/hooded to avoid extraneous light spill, and focussed onto works areas only to maintain dark corridors on the edge of the playing fields and avoid disturbance of commuting and foraging bats.

16.8.7. CLOSURE OF BADGER SETTS UNDER LICENCE

Features requiring mitigation measures:

- Badgers

16.8.7.1. Badger setts to be lost to the Converter Station Area footprint (Option B(i)) will be closed using badger gates outside of the badger breeding season (June-November inclusive).

16.8.7.2. Setts will be closed using one-way gates so badgers can leave but cannot return to the sett. Following a 21-day period of monitoring to ensure badgers are not within them, the setts will be dug out.

16.8.7.3. This process will avoid potential death or injury to badgers as a result of development, and work will be undertaken under a NE licence to allow legal sett closure.

16.8.7.4. Badger sett closure applies only to the construction stage of the Proposed Development. Due to the mobile nature of badgers and their ability to dig new setts, a further plan of mitigation measures to offset effects on them may be necessary to permit decommissioning. Survey work and mitigation planning will be undertaken to inform this stage and ensure the Proposed Development will not affect badgers.

16.8.7.5. In addition, open excavations will be fitted with mammal ladders (planks of wood at either end) to allow animals to climb out if they fall in, and prevent the trapping of animals including badgers.

16.8.8. PRECAUTIONARY METHODS TO AVOID EFFECTS ON HEDGEHOGS

Features requiring mitigation measures:

- Hedgehogs

16.8.8.1. To avoid killing or injury to hedgehogs that may be present hedgerows, scrub and other dense vegetation within Sections 1-3 where suitable habitat is present will be hand-searched for hedgehogs prior to its clearance. Piles of cut vegetation such as brash piles will also be searched as they can harbour sheltering hedgehogs.

16.8.8.2. Hedgehogs found will be moved to a suitable release site away from the development within scrub, hedgerow or other dense cover.

16.8.8.3. In addition, open excavations will be fitted with mammal ladders (planks of wood at either end) to allow animals to climb out if they fall in, and prevent the trapping of animals including hedgehogs.

16.8.9. PRECAUTIONARY METHODS TO AVOID EFFECTS ON REPTILES

Features requiring mitigation measures:

- Reptiles

16.8.9.1. To avoid killing or injury to reptiles that may be present, a Precautionary Method of Works (PMoW) will precede vegetation clearance and earthworks in habitats which could support these animals. The PMoW will detail how working methods during the construction stage of the Proposed Development can minimise the risk of killing or injury to reptiles.

16.8.9.2. Such working methods likely to feature in a PMoW may include, but are not limited to, the following:

- Two stage vegetation clearance of fields, whereby areas of suitable habitat for reptiles are cut down to a height of 300 mm, left for a period to enable reptiles to disperse, and then cut to ground level under ecological supervision;
- Removal of natural refugia by hand where safe to do so, or otherwise undertaken methodically using plant under ecological supervision;
- Plant and machinery to be kept to defined access routes around the Survey Area which are unsuitable for reptiles, until suitable habitat in the works area has been removed; and
- Open excavations will be fitted with mammal ladders (planks of wood at either end) to allow animals to climb out if they fall in, and prevent the trapping of animals including reptiles.

16.9. RESIDUAL EFFECTS

16.9.1. CONSTRUCTION AND DECOMMISSIONING STAGES

16.9.1.1. Mitigation to preserve habitat within Kings Pond SINC, Denmead Meadows, Milton Common SINC and semi-improved grassland sites during the construction and decommissioning stages will offset the majority of effects on these features. However, as regrowth of habitat following work is required, there will be a period where grassland will need to recover from bare earth to its original state, and this represents a negative, temporary, direct residual **minor** effect that is **not significant** that will last into the medium term (i.e. the effect will extend beyond the works period, but regrowth to original condition of grassland is expected within three years).

16.9.1.2. Permanent loss of calcareous grassland underneath the footprint of the Converter Station will be mitigated by the improvement of remaining grassland soil horizon and ground protection measures will offset effects to remaining grasslands. This represents a negative, permanent, direct, long-term **negligible** residual effect that is **not significant**.

16.9.1.3. Replanting of hedgerows (both species-rich and species poor varieties) and broadleaved trees as embedded mitigation will offset long term effects of their removal to permit construction and decommissioning of the Onshore Cable Corridor. Hedgerow removal will result in a **minor** effect which will last into the medium term (i.e. the effect will extend beyond the works period, but regrowth to original condition of hedgerows is expected within three years of replanting). Therefore, this will result in a **non-significant** residual effect due to the small areas of hedgerow and relatively few trees concerned.

16.9.1.4. During the grow-in period of hedgerows fragmentation of habitats used by bats as foraging routes will occur and last into the medium term (i.e. the effect will extend beyond the works period, but regrowth to original condition of hedgerows is expected within three years). However, the large amount of alternative habitat in the area will provide other routes for bats to use and to forage in. In addition, only a relatively small number of hedgerows will be removed in short lengths. Once landscape planting and hedgerow regrowth has taken and matured, this effect will not be perceptible, resulting in a **negligible** residual effect that is **not significant**.

16.9.1.5. All other effects are avoided by scheme design and embedded mitigation, or offset by additional mitigation. Table 16.9 provides a summary of the findings of the assessment.

16.9.1.6. No residual effects are associated with the Eastney (Landfall) site.

16.9.2. OPERATIONAL STAGE

16.9.2.1. All impacts of the operational stage are offset by embedded mitigation and as such no residual effects are discussed in this section.

Table 16.9 – Summary of Effects Table for Onshore Ecology

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Construction Stage				
Work within SWBGS sites **(Sections 2-9 – Onshore Cable Corridor)**	Chichester and Langstone Harbour SPA, Wintering Intertidal Birds	Major to Moderate - / T / I / MT	Restriction of works during winter following disturbance avoidance principles	Negligible - / T / I / ST
Disturbance of intertidal birds within the SPA through regular construction noise **(Sections 2-9 – Onshore Cable Corridor)**	Chichester and Langstone Harbour SPA, Wintering Intertidal Birds	Major to Moderate - / T / I / MT	Restriction of works during winter following disturbance avoidance principles	Negligible - / T / I / ST

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Disturbance of intertidal birds within the SPA through irregular construction noise **(Sections 2-9 – Onshore Cable Corridor)**	Chichester and Langstone Harbour SPA, Wintering Intertidal Birds	Moderate - / T / I / ST	Restriction of works during winter following disturbance avoidance principles	Negligible - / T / I / ST
Loss of Category A broadleaved trees **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Broadleaved trees	Minor - / T / D / LT	Replacement of trees and other habitats by landscape planting, and protection of retained trees	Negligible - / T / D / LT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Loss of semi-improved grassland habitat to Onshore Cable Corridor and HDD site **(Sections 2-9 – Onshore Cable Corridor)**	Kings Pond Meadow SINC	Major to Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible - / T / D / MT
Loss of HPI-Quality Lowland Meadow habitat **(Sections 2-9 – Onshore Cable Corridor)**	Denmead Meadows	Major to Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection, seed harvesting and replanting	Negligible - / T / D / MT
Loss of SINC habitats to Onshore Cable Corridor	Milton Common SINC	Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
(Sections 2-9 – Onshore Cable Corridor)				
Fragmentation of hedgerows by Onshore Cable Corridor **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Species-rich hedgerows with/without trees	Minor - / T / D / MT	Replacement of hedgerows and other habitats by landscape planting	Negligible - / T / D / MT
Fragmentation of hedgerows by Onshore Cable Corridor **(Section 1 – Converter Station Area and**	Species-poor hedgerows with/without trees	Minor - / T / D / MT	Replacement of hedgerows and other habitats by landscape planting	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Sections 2-9 – Onshore Cable Corridor)				
Loss of habitat to Converter Station Area footprint **(Section 1 – Converter Station Area)**	Semi-improved Negligible and calcareous grassland	Minor to Moderate - / P / D / LT	Improvement of remaining calcareous grassland through application of green hay Preservation of soil horizons and turves, ground protection	Negligible - / P / D / LT
Loss of habitat to Onshore Cable Corridor **(Sections 2-9 – Onshore Cable Corridor)**	Semi-improved Negligible and calcareous grassland	Minor - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible - / T / D / MT
Loss of annexe and outlier to	Badgers	Negligible - / P / D / LT	Closure of setts under licence	Negligible

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Converter Station Area **(Section 1 – Converter Station)**				
Disturbance of commuting and foraging routes by nocturnal lighting at Farlington Playing Fields **(Sections 2-9 – Onshore Cable Corridor)**	Bats	Moderate - / T / I / ST	Design of construction lighting to avoid spill onto boundary of the playing fields where commuting and foraging routes would are present.	Negligible - / T / I / ST
Fragmentation of foraging and commuting habitat	Bats	Negligible - / T / D / MT	Replacement of hedgerows and other habitats by landscape planting	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)				
Killing or injury as a result of vegetation clearance **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Hedgehogs	Minor - / T / D / ST	Hand searching clearance areas and removal of hedgehogs to safe location	Negligible
Killing or injury as a result of construction activities	Reptiles	Negligible - / T / D / ST	Precautionary methods of working to avoid reptile mortality or injury	Negligible

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)				
Operational Stage				
No residual effects anticipated. All impacts offset by embedded mitigation				
Decommissioning Stage				
Nitrogen deposition associated with air pollution **(Section 1 - Converter Station Area)**	Crabdens Copse and Crabdens Row SINC	Negligible - / T / I / ST	None	Negligible - / T / I / ST

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Loss of semi-improved grassland habitat to Onshore Cable Corridor and HDD site **(Sections 2-9 – Onshore Cable Corridor)**	Kings Pond SINC	Major to Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible
Loss of HPI-Quality Lowland Meadow habitat **(Sections 2-9 – Onshore Cable Corridor)**	Denmead Meadows	Major to Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection, seed harvesting and replanting	Negligible - / T / D / MT
Loss of SINC habitats to Onshore Cable Corridor	Milton Common SINC	Moderate - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
(Sections 2-9 – Onshore Cable Corridor)				
Loss of Category A broadleaved trees **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Broadleaved trees	Minor - / T / D / LT	Replacement of trees and other habitats by landscape planting, and protection of retained trees	Negligible - / T / D / LT
Fragmentation of hedgerows by Onshore Cable Corridor **(Section 1 – Converter Station Area and**	Species-rich hedgerows with/without trees	Negligible - / T / D / MT	Replacement of hedgerows and other habitats by landscape planting	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Sections 2-9 – Cable Corridor)				
Fragmentation of hedgerows by Onshore Cable Corridor **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Species-poor hedgerows with/without trees	Minor - / T / D / MT	Replacement of hedgerows and other habitats by landscape planting	Negligible - / T / D / MT
Loss of habitat to Converter Station footprint **(Section 1 – Converter Station Area)**	Semi-improved Negligible and calcareous grassland	Minor to Moderate - / P / D / LT	Improvement of remaining calcareous grassland through application of green hay	Negligible - / P / D / LT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Loss of habitat to Onshore Cable Corridor **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Semi-improved Negligible and calcareous grassland	Negligible - / T / D / MT	Preservation of soil horizons and turves, ground protection	Negligible
Loss of setts potentially under footprint of decommissioning work **(Section 1 – Converter Station Area)**	Badgers	Negligible - / P / D / LT	Closure of setts under licence	Negligible
Fragmentation of foraging and	Bats	Negligible - / T / D / MT	Replacement of hedgerows and other	Negligible - / T / D / MT

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
commuting habitat **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**			habitats by landscape planting	
Killing or injury as a result of vegetation clearance **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Hedgehogs	Minor - / T / D / ST	Hand searching clearance areas and removal of hedgehogs to safe location	Negligible

Description of Effects	Receptor	Significance and Nature of Effects Prior to mitigation	Summary of Mitigation/Enhancement	Significance and Nature of Residual Effects following Mitigation / Enhancement
Killing or injury as a result of construction activities **(Section 1 – Converter Station Area and Sections 2-9 – Onshore Cable Corridor)**	Reptiles	Negligible - / T / D / ST	Precautionary methods of working to avoid reptile mortality or injury	Negligible

Key to table:

+ / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

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