



**AQUIND Limited**

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# **AQUIND INTERCONNECTOR**

**Denmead Meadows Position Paper: Impact  
Assessment and Mitigation**

The Planning Act 2008

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# 1. DENMEAD MEADOWS

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## 1.1. INTRODUCTION

### 1.1.1. PURPOSE OF THIS POSITION PAPER

1.1.1.1. This Position Paper sets out the Applicant's determination of potential effects on grassland habitat at the Denmead Meadows complex which partially lies within the Order limits of the AQUIND Interconnector.

1.1.1.2. The objectives of the Paper are to support and inform ongoing discussions with Natural England and in particular the Statement of Common Ground between Natural England and the Applicant.

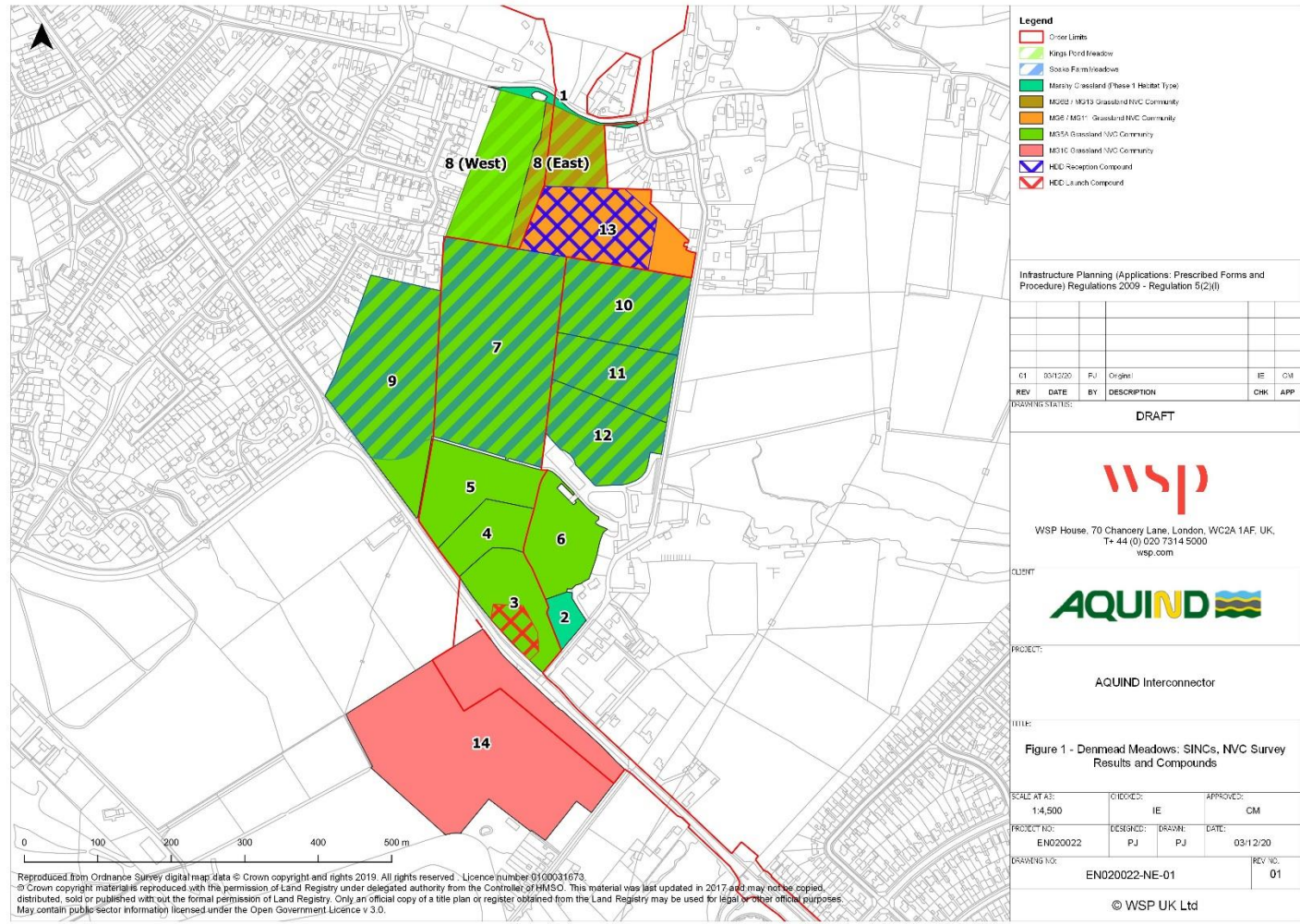
1.1.1.3. The Paper is structured to include the following:

- Introduction / Definition of Denmead Meadows components;
- Baseline surveys undertaken;
- Review of Onshore Cable Route Infrastructure;
- Summary of impact assessment undertaken in the Environmental Statement (ES);
- Complete detail of proposed mitigation and Applicants review of issues raised by Natural England and other parties; and
- Complete detail of proposed monitoring and management of the meadows.

1.1.1.4. The Paper therefore aims to detail that baseline surveys and the ES have appropriately characterised and assessed potential impacts on Denmead meadows. Furthermore, the Paper seeks to demonstrate that the mitigation and monitoring proposed is appropriate and proportionate to the predicted impacts.

### 1.1.2. DENMEAD MEADOWS DEFINITIONS AND COMPONENTS

1.1.2.1. The collection of 13 fields between Hambledon Road and Anmore Road, incorporating the Kings Pond Meadow Site of Importance for Nature Conservation (SINC) and Soake Farm Meadows SINC, is referred to as the Denmead Meadows. The site, partially covered by two non-statutory wildlife sites, comprises lowland meadow habitat highlighted as being of importance to nature conservation. Section 3 of the Proposed Development cross Denmead Meadows and the Onshore Cable Route will affect meadow habitat. The layout of Denmead Meadows and a numbering system identifying each field is shown in Figure 1.



1.1.2.2. As outlined in Figure 1 there are therefore the following defined components of Denmead Meadows:

- **Denmead Meadows** – full complex of 13 fields that lie between Hambledon Road at the south and Anmore Road to the north;
- **Soake Farm Meadows SINC** – covers fields 7,9, 10 11 and 12 (with field 7 lying with the Proposed Developments Order limits);
- **Kings Pond Meadows SINC** – Covers field 8 west and field 8 east (with a proportion of field 8 east lying within the Order limits);
- **Lowland meadow habitat** outside of SINC sites – covers fields 3, 4, 5 and 6 (all except field 6 are within the Order limits); and
- **Semi-improved grassland** – restricted to field 13 which lies within the Order limits.

## 1.2. BASELINE ECOLOGICAL SURVEYS

### 1.2.1. PHASE 1 HABITAT SURVEY

1.2.1.1. Broad classification of habitats using the Phase 1 Habitat survey methodology was undertaken as part of the Preliminary Ecological Appraisal<sup>1</sup> for the Proposed Development. Phase 1 habitat survey followed the method published by the Joint Nature Conservation Committee (JNCC)<sup>2</sup> and is a standard first step in identifying important ecological features for the impact assessment process<sup>3</sup>.

1.2.1.2. Field survey work was undertaken during April 2017 and periodically updated; firstly in October 2018 and then again in May 2019. Survey data was supported by desk study (initially undertaken in April 2017 and updated in April 2018 and September 2020) using both online databases and biological records from Hampshire Biodiversity Information Centre. These records identified statutory and non-statutory designated sites, Habitats of Principal Importance (HPI) and ancient woodland, as well as records of important plant and animal species.

1.2.1.3. The survey highlighted Denmead Meadows as a collection of important habitats, the majority of grasslands being classified as unimproved neutral grassland with semi-improved neutral grassland in its northern parts. This prompted further botanical survey to investigate the importance of the meadows.

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<sup>1</sup> CIEEM (2013) Guidelines for Preliminary Ecological Appraisal. Winchester: Chartered Institute of Ecology and Environmental Management.

<sup>2</sup> JNCC (2010) Handbook for Phase 1 habitat survey - a technique for environmental audit. Peterborough: Joint Nature Conservation Committee.

<sup>3</sup> CIEEM (2017) Guide to Ecological Surveys and Their Purpose, Winchester: Chartered Institute of Ecology and Environmental Management.

## 1.2.2. DETAILED BOTANICAL SURVEYS

- 1.2.2.1. To thoroughly determine the importance of Denmead Meadows, National Vegetation Classification (NVC) survey, a core standard method of ecological survey and the most common and widely used botanical survey method used to support impact assessments<sup>4</sup>, was undertaken. NVC comprises the botanical survey methods within the UK Government’s Common Standards Monitoring approach<sup>5</sup>. It is used to link the plant species present within a habitat to a standard classification of the botanical community present. Natural England were consulted upon these proposed methods during a consultation meeting undertaken on the 6<sup>th</sup> February 2019.
- 1.2.2.2. NVC surveys of Denmead Meadows were undertaken in July 2019 to determine and map habitats within the site. Surveys revealed the majority of the fields are hay meadows that are botanically diverse and can be categorised as being Habitat of Principal Importance (HPI) quality under Section 41 of the NERC Act<sup>6</sup>, conforming to “Lowland Meadow” designation<sup>7</sup>. Thus, the site and its habitats are considered to be of ecological importance.
- 1.2.2.3. However, three fields within Denmead Meadows are of lesser botanical quality<sup>8</sup>, being grazed by horses or used for agriculture. These are Field 2 (south-east of Denmead Meadows), the eastern half of Field 8, and Field 13. Grassland in these fields is not of HPI quality.
- 1.2.2.4. The botanical surveys undertaken were fit for purpose in providing data on baseline conditions at Denmead Meadows. They identified botanical communities throughout the area to UK national monitoring standards, and also identified important botanical species, including green-winged orchid, adders tongue fern and strawberry clover, using the DAFOR scale to estimate their abundance in individual fields. Together, the data collected provided information on communities and species present, their distribution throughout Denmead Meadows and the abundance of individual plant species. This baseline was more than adequate to inform the assessment of ecological impacts and development of mitigation within ES Chapter 16 (Onshore Ecology) (APP-131).

## 1.3. ONSHORE CABLE ROUTE INFRASTRUCTURE

### 1.3.1. OVERVIEW

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<sup>4</sup> Hill D, Fasham M, Tucker P, Shewry M and Shaw P (eds) (2005) Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring. Cambridge University Press, Cambridge.

<sup>5</sup> <https://jncc.gov.uk/our-work/nvc/>

<sup>6</sup> Natural Environment and Rural Communities Act 2006 (as amended).

<sup>7</sup> Specifically surveys revealed this grassland to be unimproved neutral grassland of NVC type MG5.

<sup>8</sup> Classed as semi-improved grasslands of NVC types MG1 and MG6b.



- 1.3.1.1. The Onshore Cable Corridor represents the maximum extent of the area within which the Onshore Cables may be located, otherwise described as the limits of deviation. It is necessary to ensure flexibility for the siting of the Onshore Cables within the limits of deviation so as to ensure that the installation of the Onshore Cables can be optimised by the chosen contractor following the making of the Order. The final siting will be required to be confirmed for each part of the Onshore Cables in accordance with requirements provided for in the Order.
- 1.3.1.2. Two HVDC Circuits, each comprising two HVDC Cables and a Fibre Optic Cable, are proposed to be installed in the Onshore Cable Corridor between the Converter Station and the Landfall, the length of these circuits will be approximately 20km.
- 1.3.1.3. For the majority of the Onshore Cable Route the HVDC Cables will be installed in excavated trenches. Rather than being laid in the trench, a form of housing (known as cable ducts) will be installed in the trenches. At a later date after sections of ducts have been installed, lengths of cables will be pulled through the ducts.
- 1.3.1.4. Joint Bays, within which sections of cable are joined together, will be required at points along the route, and these will be used for pulling the cable through the cable ducts before joining one section of cable to another. The number of joint bays along the length of the cable route is dictated by the length of cable that can fit on a cable drum (the drum-shape reel on which the cable is stored prior to installation) and limits to the pulling tension required to pull the cable through the ducts. Joint Bays are likely to be required every 600m to 2000m along the HVDC Circuits and will be positioned in highway verges, fields or car parks, where possible, to limit the need for road closures. The distance between Joint Bays will depend on the detailed design undertaken by the appointed contractor and therefore flexibility as to the number and location of Joint Bays is sought in the Order.
- 1.3.1.5. Section 3 of the Onshore Cable Route encompasses the area between Anmore Road and the junction of Hambledon Road and Soake Road. Section 3 is therefore the area of interest discussed in this Position Paper.

### 1.3.2. SECTION 3

- 1.3.2.1. The Onshore Cable Corridor runs as trenching south from Anmore Road through the Kings Pond Meadow SINC (field 8 east) and also comprises field 13 located east of the SINC which will accommodate the northern compound of HDD 5. The Onshore Cable Route would then be installed by a 500m stretch of HDD to the preferred location of the southern compound north of Hambledon Road (Figure 1).
- 1.3.2.2. The chalk bedrock in this area is an aquifer and water extracted is used as a source for drinking water. Consequently, HDD works will not be allowed to create a pathway between the overburden and underlying Chalk aquifer. The HDD will therefore be required to be entirely located within the overburden, and targets clays within the Lambeth Group. As the rockhead level rises to the north, with overburden thickness reducing, HDD-5 is proposed to be completed between Soake and Anmore only. A longer HDD terminating north of Anmore, in the vicinity of Shafters Farm, was

considered but discounted due to the significant shallowing-up of the chalk to the north of Anmore. This created a high risk of puncturing the chalk aquifer, which was deemed to not be an acceptable environmental risk.

1.3.2.3. Horizontal Directional Drilling (HDD) is proposed to avoid the need for open trenching and to preserve meadow habitat. The entry compound has been reviewed and minimised in size to reduce the impact on the lowland meadow habitat, whilst providing the minimum space for the above. It is anticipated to cover approximately 3000m<sup>2</sup>.

1.3.2.4. Moving the compound and entry point to the South of Hambledon Road will present difficulties cable installation as additional bends are being introduced, which lead to additional joint bays potentially being needed along Hambledon Road. Furthermore, a large section of hedgerow on the South side of Hambledon will also need to be removed to allow the ducts to gradually re-enter the highway

1.3.2.5. The length of HDD5 dictates the need for a larger exit side compound, as an area with sufficient space to facilitate manoeuvring of the pipe string must be available in respect of pipe welding. The pipes will be welded before being bundled into the required figuration in preparation for the pullback phase. Accordingly, the exit compound has been indicatively sized at 16,000m<sup>2</sup>. This area would only be required temporarily whilst the pipe string is being fabricated and then pulled into the bores drilled by the HDD drilling rig.

### **1.3.3. PROGRAMME**

1.3.3.1. The indicative programme of works in Section 3 includes the following elements:

- HDD works – 13 week programme between 1st August and 29th October 2022 including:
  - HDD;
  - Launch compound;
  - Receptor compound;
- Trenching to Anmore Road – 3 week programme undertaken within 1<sup>st</sup> August and 29<sup>th</sup> October 2022.

## **1.4. IMPACT ASSESSMENT**

### **1.4.1. APPROACH**

1.4.1.1. The aim of the assessment within Chapter 16 of the ES was to identify the impacts of the Proposed Development, the effects of those impacts on important ecological features (as identified through analysis of desk study and field survey data) 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.

1.4.1.2. Impacts of the Proposed Development were 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 ES Chapter 4 (EIA Methodology) (APP-119). 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.

#### **1.4.2. LOWLAND MEADOW HABITAT**

1.4.2.1. 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 launch site and work compound within the southern-most paddock adjacent to Hambledon Road cannot be avoided, and approximately 3000 m<sup>2</sup> 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.

1.4.2.2. The Onshore Cable Corridor leaves Denmead Meadows in open-cut trench and turns east along Hambledon Road. The magnitude of direct impacts would be limited as much of the lowland meadow habitat within Denmead Meadows remains outside of work areas with the cables installed at depth under the vast majority of the area identified within the Order Limits.

#### **1.4.3. KINGS POND SINC**

1.4.3.1. 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 reception site will be positioned within the SINC.

1.4.3.2. 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 1.7ha of this habitat type, and potential alterations to soil structure which could affect the botanical community in the long-term.

#### 1.4.4. **SOAKE FARM MEADOWS SINC**

1.4.4.1. Habitats within this SINC are avoided through the use of HDD techniques. HDD will take the cable under the ground from Field 3 to south of Soake Farm Meadows SINC to Field 13 to its north.

### 1.5. **MITIGATION**

#### 1.5.1. **APPROACH**

1.5.1.1. The Mitigation hierarchy<sup>9</sup> has been applied at Denmead Meadows to offset potential impacts of the Proposed Development. Work has been designed to first avoid effects on the site, then mitigate for those effects that remain<sup>10</sup>.

1.5.1.2. Avoidance has sought to both separate the works from Denmead Meadows, and where this is not possible reduce working areas such that as much of the site remains unaffected as possible. It has relied on modern engineering techniques, namely HDD (as described above), which avoids much of the impacts of the cable route through Denmead Meadows, and as the cable will be buried there will be no permanent habitat loss within the site.

1.5.1.3. For those areas where effects are unavoidable in light of required works, mitigation has taken the approach of preserving elements of the site that would be lost and using these as resources for restoration of the site's habitats upon completion of works. Mitigation plans have drawn upon knowledge and techniques used to restore lowland grassland habitat including MG5 Lowland Meadow, as well as research associated with translocation of turves.

1.5.1.4. The overall aims of mitigation can be summarised as follows, with sections 1.5.2 to 1.5.6 detailing the actions that will be taken to achieve those aims:

- to avoid potential effects through controlling working practices,
- to preserve turves and the physical structure of soils within the site; and
- to collect seed from the site itself to allow it to be restored using plants native to it.

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<sup>9</sup> CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. 2nd edn. Winchester: Chartered Institute of Ecology and Environmental Management.

<sup>10</sup> Compensatory habitat creation (the 3<sup>rd</sup> step of the hierarchy) has not been deemed necessary following the results of the Ecological Impact Assessment. Enhancement (the 4<sup>th</sup> step of the hierarchy) is provided by the Proposed Development's Outline Landscape and Biodiversity Strategy (OLBS).

## 1.5.2. AVOIDANCE & TIMING

- 1.5.2.1. Size of working areas, including compounds, will be kept to a minimum to reduce the effects of grasslands, especially in Field 3 where HPI lowland meadow habitat exists. Field 3's extent is 12,057m<sup>2</sup>. The design of this compound has minimised its size, and it is estimated to be approximately 3,000m<sup>2</sup>, although the final size will depend on the design submitted by the chosen contractor. Thus, the donor site represents ~25% of the total area of Field 3.
- 1.5.2.2. Works areas will be securely fenced (e.g. by the use of Heras fencing) and procedures put in place to prevent damage to grassland habitats adjacent to them. most prominently that works to be monitored by an Ecological Clerk of Works who will provide toolbox talks to contractors and staff working at the site about their responsibility to protect grassland adjacent to works areas.
- 1.5.2.3. Work will avoid key seasons for Denmead Meadows; these include the spring/early summer growing season when flowering occurs, but also the winter wet season which is key to the development of species of importance identified during botanical surveys (see ES Appendix 16.4 (Non-Statutory Designated Sites Report) (APP-412)).
- 1.5.2.4. Work will therefore take place in late summer and autumn, between the months of August and November as highlighted in section 1.3.3.

## 1.5.3. SEED HARVESTING

- 1.5.3.1. Collection of seed from plants growing at Denmead Meadows will be undertaken so that it can be used in post-construction restoration. 'Seed harvesting' typically involves collection using either suction, or large brushes to sweep seed from plants, into a collection receptacle. Once collected the seed can be dried and stored for use in restoration<sup>11</sup>.
- 1.5.3.2. Seed harvesting is increasingly being used as a conservation tool and brush harvesters have been used to collect seed for grassland restoration on a large scale by the Save Our Magnificent Meadows project, a collaboration between statutory and non-statutory conservation organisations and lead by Plantlife UK<sup>12</sup>.
- 1.5.3.3. For Field 3 only, where HPI habitat is present, seed will be harvested using a brush harvester prior to commencement of works and used to re-seed it following work, rather than buying in a commercial seed mix. This work will be undertaken by a specialist contractor with experience of using a brush harvester for lowland grassland restoration.
- 1.5.3.4. Seed will be harvested in the year prior to the onset of works (currently proposed to be 2021) or else in the year when works are proposed to take place (2022) and will

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<sup>11</sup> Crofts, A. and Jefferson, R. G. (1999) 'Mowing and Cutting', in *The Lowland Grassland Management*. Peterborough: English Nature / Wildlife Trusts.

<sup>12</sup> [magnificentmeadows.org.uk](http://magnificentmeadows.org.uk)

be dried and stored until required; these actions will follow current best practice guidance<sup>13</sup>.

- 1.5.3.5. 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<sup>11</sup>.

#### 1.5.4. TURF STRIPPING AND STORAGE

##### Rationale

- 1.5.4.1. Lowland Meadow turf from Field 3 at Denmead Meadows will be preserved so it can be used in restoration of habitats post-construction. The technique proposed modifies turf translocation techniques, which rely on movement of cut turfs from a donor site to a receptor site<sup>14</sup>. In this case, the donor site is defined as Field 3 prior to the onset of works, and the receptor site being Field 3 following the completion of works.
- 1.5.4.2. Cutting, storage and return of turves presents a favourable alternative to stockpiling of topsoil for the duration of the HDD work and presence of the launch compound in Field 3. Stockpiling would involve digging out the topsoil layer and storing it in a heap, a process which leads to long-term negative effects on the plant communities it supports<sup>15,16,17</sup>. By contrast the use of translocated turves in grassland restoration has been shown to enable recreation of botanical communities which resemble their pre-translocated state<sup>18</sup>.
- 1.5.4.3. Translocation of lowland grassland turves has not typically involved long term storage. No examples of storage longer than 24 hours could be found in reviewed literature. However, comparisons can be made to the treatment of peat turves and their cover vegetation during construction projects, where excavation, storage and

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<sup>13</sup> Magnificent Meadows (2017) *Guidance Note: Lessons learnt harvesting, storing and spreading seed*. Available at: <http://magnificentmeadows.org.uk/advice-guidance/section/technical-information-for-advisers>.

<sup>14</sup> recent examples of successful translocation projects that have used this method include:

- Mudrák, O. *et al.* (2017) 'Restoring species-rich meadow by means of turf transplantation: long-term colonization of ex-arable land', *Applied Vegetation Science*, 20(1), pp. 62–73.
- Trueman, I., Mitchell, D. and Besenyeyi, L. (2007) 'The effects of turf translocation and other environmental variables on the vegetation of a large species-rich mesotrophic grassland', *Ecological Engineering*, 31(2), pp. 79–91.
- Good, J. E. G. *et al.* (1999) 'Translocation of herb-rich grassland from a site in Wales prior to opencast coal extraction', *Restoration Ecology*, 7(4), pp. 336–347.

<sup>15</sup> Dhar, A., Comeau, P.G. and Vassov, R. (2019), Effects of cover soil stockpiling on plant community development following reclamation of oil sands sites in Alberta. *Restor Ecol*, 27: 352-360.

<sup>16</sup> Abdul-Kareem, A.W. & McRae, S.G. 1984. The effects on topsoil of long-term storage in stockpiles. *Plant and Soil Journal* 76: 357-363.

<sup>17</sup> Visser, S., Fujikawa, J., Griffiths, C.L., & Parkinson, D. 1984. Effect of topsoil storage on microbial activity, primary production, and decomposition potential. *Plant and Soil Journal* 82: 41-50.

<sup>18</sup> Bullock, J. M. (1998) 'Community translocation in Britain: Setting objectives and measuring consequences', *Biological Conservation*, 84(3), pp. 199–214. doi: 10.1016/S0006-3207(97)00140-7.

replacement following construction (a period of weeks or months) represents current best-practice for developments in Scotland as part of Peat Management Plans<sup>19</sup>.

1.5.4.4. It is recognised that removal and storage of turves for the period proposed (~13 weeks), followed by their return to their original location, will not leave them unaffected<sup>18</sup>. Preservation of all living vegetative parts of plants supported by the turves is unlikely as removal and storage would expose plants to a wider range of conditions (temperature, wet/dry cycles etc) as a result of their removal from the soil. Removal is expected lead to plants dying back.

1.5.4.5. However cutting and storage will retain the structure of the soil within the turves, and consequently greatly reduce the disturbance experienced by plant propagules such as seeds and below ground rhizomes when compared to stockpiling which has adverse effects on plant communities<sup>15</sup>. Stockpiling will only be used for topsoil in Field 8 and 13 as these soils are heavily modified by grazing and are not HPI quality Lowland Meadow habitat. Once replaced and supported by the other mitigation measures (e.g. augmentation with seed collected prior to stripping of the turves), regrowth and restoration of lowland meadow would be achieved.

#### **Donor Site and its Preparation**

1.5.4.6. Turves will be cut from Field 3 (Figure 1), which supports Lowland Meadow habitat, from under the footprint of the HDD launch compound proposed for this location. To prepare the site for turf cutting, vegetation within the footprint of the HDD launch compound will be cut using powered hand tools (e.g. petrol strimmer or a commercial mower) to a height of 5 cm to reduce the overall mass of vegetation supported by the turves. Arisings will be removed from Field 3 and, where possible will be used as green hay elsewhere within the Proposed Development's landscaping proposals.

1.5.4.7. Obvious invasive plants such as bramble *Rubus fruticosus*, ragwort *Senecio jacobea* and creeping thistle *Cirsium arvense* will be removed at this stage also by hand pulling and arising removed from Field 3 and disposed of. This process will be overseen and directed by an Ecological Clerk of Works (ECoW).

#### **Turf Cutting and Movement**

1.5.4.8. 'Macro-turfing'<sup>18,20</sup> techniques will be used to cut and remove turves from Field 3. Turves will be neatly and vertically cut along their edges and be as large as practically possible, typically 20m x 1m.

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<sup>19</sup> Scottish Renewables and Scottish Environment Protection Agency (2012) 'Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste - Version 1', Management, (January 2012), pp. 1–23.

<sup>20</sup> Good, J.E.G., Wallace, H.L., Stevens, P.A. & Radford, G.L. (1999) Translocation of herb-rich grassland from a site in Wales prior to opencast coal extraction. *Restoration Ecology*, 7, 336–347.

- 1.5.4.9. Cutting to utilise low ground pressure machinery with an operator with appropriate experience. Specialist machinery capable of cutting and lifting such large pieces of earth will be used.
- 1.5.4.10. The turves will be cut to a consistent depth and will include the whole soil profile as a single turf. Depths will be approximately 200-250mm as this is where the seedbank and plant propagules are located<sup>21,22</sup> but will be dependent on existing soil depth and site conditions. This will enable the retention of the plant roots, organic layer, seed bank and soil invertebrates. Crucially, it will ensure transfer of key plant species including green winged orchid, whose below ground tubers (from which it grows) are located within the top 3-10cm of the soil<sup>23</sup>.
- 1.5.4.11. Turves will be moved using a telehandler or similar heavy machinery to the storage site on the day of removal from the donor site to minimise risk of drying out and water stress affecting the turves.

#### **Storage Site and its Preparation**

- 1.5.4.12. The storage site for turves is located adjacent to Field 3, comprising grazing pasture within the Order limits to the south of Hambledon Road (~60m away). The storage site will be prepared to receive turves for storage in the following manner:
- Vegetation will be cut to ground level and arisings removed and disposed of to create a smooth surface for turf storage.
  - An impermeable membrane will be placed over the storage area to prevent turves, which will not benefit from direct hydrological connection to the soil below, from drying out. This is common practice in storage of turves removed to allow peat excavations<sup>19</sup>.
  - A water bowser will be supplied and an automatic irrigation system, to be controlled and monitored by the ECoW, installed to prevent the turves drying out.
- 1.5.4.13. There will be no stacking of turves which will be spread out on the ground in a single layer. There will be minimal or no gap between them so as to reduce the overall surface area for evaporation and reduce the risk of them drying out.

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<sup>21</sup> Ash, H. J. *et al.* (1992) *Flowers in the grass : creating and managing grasslands with wild flowers*. Peterborough: English Nature.

<sup>22</sup> Crofts, A. and Jefferson, R. G. (1999) 'Grassland Creation', in *The Lowland Grassland Management*. Peterborough: English Nature / Wildlife Trusts.

<sup>23</sup> Jacquemyn, H. *et al.* (2009) 'Biological Flora of the British Isles: *Orchis mascula* (L.) L.', *Journal of Ecology*, 97(2), pp. 360–377.



1.5.4.14. Turves to be kept moist with watering as required; daily monitoring and potentially twice daily (morning and evening) watering required. Use of an automatic sprinkler system preferable.

#### **Replacement of Turves in Receptor Site**

1.5.4.15. Upon completion of HDD work and demobilisation of the compound a telehandler or similar machinery will be used to transfer the turves back to Field 3. This, now the receptor site, will have had the sub soil replaced (see below) and be ready to receive the turves.

1.5.4.16. Replacement to proceed from back of field towards the access point to avoid tracking over turves, and they will be watered in once in position, but will receive no further treatment beyond topdressing with existing topsoil and collected seed from the relevant area.

#### **Contracting**

1.5.4.17. Turf stripping and storage will be undertaken by an ecological services contractor with the equipment and experience to successfully undertake the work. The Applicant has made contact with three such contractors who have backgrounds in undertaking and delivering successful macroturf translocations and confirmed they could undertake the works as outlined above.

### **1.5.5. SOIL PROTECTION**

1.5.5.1. In addition to turf removal and storage in Field 3, the following measures will be employed to protect soils across Field's 3, 8 and 13:

- Turves (Field 3), topsoil (Fields 8 and 13) and sub soil (Fields 3, 8 and 13) removed as part of works will be stored with no mixing of these layers or mixing between locations (i.e. soil from affected areas of Fields 8 and 13 will not be moved to Field 3 and vice versa).
- Soil piles will not be stored on Lowland Meadow habitat within Denmead Meadows.
- Use ground protection (temporary membrane + type 1 aggregate or bog matting, decision to be informed by contractor) to prevent soil compaction.
- Replacement of soil structure (sub soil, topsoil/turves) will follow completion of work.

## 1.5.6. RESTORATION

- 1.5.6.1. Replacement of turves within Field 3 marks the first step in the habitat restoration process. Although some of the plants in the turves will have died back due to movement of the turves, the seedbank and other reproductive parts (e.g. tubers of green-winged orchids) will remain intact.
- 1.5.6.2. Re-seeding of Field 3 will then be undertaken using collected seed in spring following the completion of works following best practice guidance<sup>22,24</sup>. Fields 8 and 13 will be reseeded with any seed remaining from that harvested from Field 3, augmented by a commercially available lowland meadow seed mix as necessary should it be required.
- 1.5.6.3. The storage area will be reseeded with a seed mix appropriate for the land use (i.e. grazing land).

## 1.5.7. CONSULTATION TO DATE

### Natural England

#### Overview

- 1.5.7.1. Natural England have been consulted regarding the Proposed Development since 13<sup>th</sup> February 2018 and regular contact by the Applicant has been maintained since this time. The rationale for work at Denmead and mitigation proposals to offset effects have been discussed at length.
- 1.5.7.2. The following points summarise consultation with Natural England regarding Denmead Meadows and its habitats to date, and how advice from the consultation process has influenced the mitigation proposed as described above:
- 13<sup>th</sup> February 2018 (email contact between Applicant and Natural England) – Initial contact describing intention to use HDD to avoid majority of effects on Denmead Meadows.
    - This established the use of HDD as an avoidance mechanism at an early stage.
  - 5<sup>th</sup> November 2018 (meeting) – Due to the botanical richness of Denmead Meadows Natural England confirmed they would prefer the applicant to consider it is a SSSI and either avoid or HDD. Natural England confirmed the principle of using HDD to traverse the meadows was acceptable and would be their normal request if trenching was proposed, subject to further survey work.

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<sup>24</sup> Magnificent Meadows (2017) Guidance Note: Lessons learnt with seed sowing methods. Available at: <http://magnificentmeadows.org.uk/advice-guidance/section/technical-information-for-advisers>.

- The Applicant evaluated habitats at Denmead Meadows as of National importance in the ES, the same level as would be afforded an SSSI, in response to this consultation request.
- 6<sup>th</sup> February 2019 (meeting) - General Project design update given alongside an update on results of ecological surveys to date. Denmead Meadows was highlighted as an important site for survey and mitigation to inform the impact assessment process.
  - See above note about treatment of Denmead Meadows as described in the ES.
- 25<sup>th</sup> April (conference call) - Short update call to provide interim survey results and discuss outline proposals for landscaping in areas of permanent development at the converter station.
  - No decisions regarding Denmead Meadows were made at this meeting.
- 17<sup>th</sup> July 2019 (meeting) - Limiting effects on Denmead Meadows was highlighted as a key requirement for NE, and HDD entry and exit points were discussed in addition to the proposed location for the construction compound. Mitigation proposals for this site were requested by NE.
  - Avoidance measures including reduction in size of compounds and incorporation of restoration techniques as mitigation begun.
- 28<sup>th</sup> August 2019 (conference call) - The call involved discussion of how the Proposed Development could be designed to avoid effects on HPI Lowland Meadow habitat at Denmead Meadows.
  - WSP provided an explanation as to why the HDD compound is preferred not to be located south of Hambledon Road (due to interactions with chalk bedrock), laid out mitigation proposals to restore Lowland Meadow habitat, and also a plan of botanical monitoring for the site, and responded to NE questions related to these subjects. These proposals have been incorporated into mitigation measures detailed above and within the ES.
- 27<sup>th</sup> February 2020 (meeting) – Natural England raised concerns about botanical survey methods, specifically the lack of population counts of green winged orchid that it suggested would be important for establishing the success of proposed mitigation and restoration of Denmead Meadows following development. It was agreed further surveys for green winged orchid would be carried out pre-development. In addition, Natural England requested further detail on how proposed meadow restoration mitigation will work, confirming it has a high chance of success, but only if followed up by long term management.

- Botanical baseline data carried out by the applicant used standard best-practice methods for identifying habitats and floral communities through National Vegetation Classification (NVC) survey (see 1.2.2). Thus, the Applicant is confident the survey methods used were appropriate and detailed enough to provide baseline information for the assessment of impacts and development of mitigation.
- The Applicant confirmed that mitigation will be limited to DCO order limits and agreements with landowners, including long-term management. This is due to legal limits placed on the actions with the power of the Applicant through the DCO process. In response to queries regarding whether Denmead Meadows could be purchased for the purposes of ecological mitigation, the Applicant confirmed this was beyond the scope of the DCO application and not possible.
- 6<sup>th</sup> May 2020 (conference call) – Natural England requested further details of mitigation at Denmead Meadows, including (but not limited to): where turf is stored, potential off-site storage, how long turf would be stored for, how it is returned and reinstated, the long-term management of the grassland. In addition, Natural England stated they would want a long-term management plan to ensure that grassland reinstatement would be successful with no residual loss.
  - The Applicant provided an outline framework of mitigation and how individual elements, such as seed harvesting and storage of turves would work. In response to requests for long-term management, the Applicant cannot commit to actions outside the boundaries of what is permitted under the DCO. Management commitments will be provided over a 5 year period and are discussed below.
- 10<sup>th</sup> November 2020 (conference call) – Progress call regarding the DCO examination process.
  - The Applicant confirmed that this paper, which enhances available detail on mitigation at Denmead Meadows, would be made available to answer Natural England’s queries, for example as to where and how turves from Field 3 would be stored.

### **Winchester City Council**

#### 1.5.7.3.

The following points summarise consultation with Winchester City Council regarding Denmead Meadows and its habitats to date, and how advice from the consultation process has influenced the mitigation proposed as described above:

- 13<sup>th</sup> August 2019 (meeting) - Summary of ecological survey results. The ecological importance of Denmead Meadows within region and the requirement for this to be considered appropriately in the ES was discussed.

- The Applicant evaluated habitats at Denmead Meadows as of National importance in the ES, the same level as would be afforded an SSSI, in response to this consultation request.
- 30<sup>th</sup> July 2020 (conference call) – The Council asked the Applicant to explain the cable installation method between Anmore Road and Hambledon Road (Denmead Meadows), including compound locations, but noted that the exact location of the Onshore Cable Route would be confirmed during detailed design. It identified the fact that Field 8 was previously botanically species-rich and could be again.
- The Applicant described the details of construction fixed at that time and noted the potential of Field 8 to be restored. (This point was further discussed in the follow-up meeting, see below.)
- 10<sup>th</sup> September 2020 (conference call) – The Council queried the mitigation proposals for Denmead Meadows, and how the 5 year period of management and monitoring had been decided upon. In addition, Council suggested that Field 8 which is not as ecologically valuable as Field 3 (being heavily grazed and not Lowland Meadow quality habitat) could nevertheless be improved.
- The Applicant responded by outlining the mitigation actions to be undertaken and taking an action to issue Winchester City Council with the document containing the outline framework of mitigation, such as seed harvesting and storage of turves, sent to Natural England following the 6<sup>th</sup> May 2020 call. This paper expands upon this framework and provides further detail.
- In addition, the Applicant agrees that Field 8's condition could be ecologically improved, but the impact assessment can only take account of its current status, which is limited by land management practices, outside the control of the Applicant. The Proposed Development would not alter the potential for the site to improve in value in the future; plant species available in the seed bank would not be lost and soil structure would be protected allowing the field to improve if land management changed in the future. Such an improvement would only be realised should the land use change from what the landowners currently use it for, namely grazing land for horses, and will be returned to the landowner for use following the completion of the construction phase.
- The rationale for the chosen period of management and monitoring is described below.

## **1.6. MONITORING AND MANAGEMENT**

### **1.6.1. MONITORING**

- 1.6.1.1. Botanical survey of Fields 3, 8 and 13 (those affected by works) using the same methods as used to inform the ES will be undertaken prior to construction and post

construction. National Vegetation Classification (NVC; see 1.2.2) will be used to identify plant species present and classify the botanical communities present.

1.6.1.2. In addition to this and as requested by Natural England through the consultation process (see 1.6.2.1 below), direct counts of individual green-winged orchid plants present in Field 3, 8 and 13 will be made as part of the survey.

1.6.1.3. Suitably qualified botanists will carry out the survey work.

1.6.1.4. One pre-construction survey will be undertaken at the end of the growing season (June/July) in the year prior to work commencing (currently proposed to be 2021). This will be followed by surveys in each year of management to inform changes required to maintain habitats.

## 1.6.2. MANAGEMENT

1.6.2.1. The proposed management regime will cover Field's 3, 8 and 13 and allow the habitat to regenerate to its former condition post construction. It will comprise three years of management actions over five years in total, with management undertaken in years 1, 3 and 5 post construction.

1.6.2.2. Management will involve weed cutting/pulling, with a focus on removing invasive species to avoid them becoming dominant. Arisings will be removed and disposed of away from Denmead Meadows to aid retain the nutrient status of the soils. Actions required and their timing will be informed by botanical surveys and will be kept to areas that are affected by the works within the Order Limits so as not to alter retained habitats.

1.6.2.3. In addition to the above, there will be a yearly (i.e. years 1, 2, 3, 4 and 5 post construction) hay cut within Fields 3, 8 and 13, with arisings removed and disposed of away from Denmead Meadows to aid retain the nutrient status of the soils.

1.6.2.4. Overall, the land uses of the meadows as a whole will remain unchanged as to the preconstruction condition, as determined by the landowner. Currently grazing occurs on the meadows and this is expected to continue, but not under the control of the Proposed Development.

## 1.6.3. REQUESTS MADE BY NATURAL ENGLAND/WINCHESTER CITY COUNCIL

1.6.3.1. The following requests were made by Natural England and Winchester City Council through the consultation process in relation to Denmead Meadows. The Applicant has investigated the possibility of these requests, with the outcome detailed below:

- **Population counts of green-winged orchid** –As detailed in section 1.2, the detailed botanical surveys completed to inform the assessment of impacts and mitigation are appropriate and comprehensive. However population counts of green-winged orchid will be undertaken as part of pre- and post-construction monitoring. Direct counts of individual green-winged orchid plants within works areas in Fields 3, 8 and 13 will inform the pre-construction baseline and repeated during monitoring surveys post-construction.

- **Long-term management beyond 5 years** – The current 5-year proposal for post-construction habitat management will ensure habitats are restored and residual effects of the Proposed Development mitigated. Beyond this time period the influence of the Proposed Development would have been restored and returned back to the existing land use of Denmead Meadows. replaced and Denmead Meadows returned to its existing land use.
  - Long-term management of the site would require agreements with the landowners of Denmead Meadows. This is outside the scope of the DCO application, and given there will be no residual effects, it is not considered necessary for there to be long term management or maintenance arrangements beyond 5 years to be secured through DCO powers. It would be unreasonable for the Applicant to be responsible for providing long term management that goes beyond restoring the land back to its existing condition.
- **Management commitments of the whole of Denmead Meadows, including areas outside the Order Limits** – The Applicant has assessed and made commitments to mitigate and manage the components of Denmead Meadows that are within the Order limits and impacted by the Proposed Development. For those areas within the Order limits, the ES (Chapter 16) APP-131 sets out the commitments, with links to both the outline landscape and biodiversity strategy and the outline onshore construction environmental management plan. The actions that can be undertaken within the Order limits includes the requirement to submit a Biodiversity management plan to be approved by the local planning authority in consultation with statutory nature conservation bodies. The Biodiversity management plan must include biodiversity and management measures and the Proposed Development must be carried out in accordance with the approved document.
  - However, the Applicant has not made any commitment to manage areas not impacted (such as Soake Farm Meadows SINC) or areas external to the Order limits. For the purpose of this DCO application, it has been demonstrated that such areas do not need to be within the Order limits to mitigate the impacts of the Proposed Development. Such commitments would be outside the DCO requirements.
- **Purchase of Denmead Meadows by the Applicant for the purposes of ecological mitigation** – Given appropriate measures are in place within the DCO to ensure no residual effects, it would be unreasonable for the Applicant to pursue purchasing Denmead Meadows for ecological mitigation. The provision for compulsory purchase of Denmead Meadows through the DCO for such purposes would not be justified for the scale of impact and no long term management or maintenance measures are required.

- **Compensation payments** – Natural England has requested that additional compensation for management and creation of neutral grassland is required, in addition to mitigation and aftercare management. The Applicant has demonstrated the proportionality of the mitigation proposed and an evidence base that suggests a likelihood of success of returning the habitat to its prior condition. Therefore, the Applicant does not consider it appropriate to provide a parallel compensation strategy. Similarly, the Applicant does not consider it necessary for a financial contribution to be secured by way of signing a Section 106 legal agreement with the local planning authority. The compensation payments would need to meet the legal tests set out in regulation 122 of the Community Infrastructure Levy Regulations 2010. As outlined above, such measures are not likely to be considered necessary in making the development acceptable in planning terms nor reasonable to the scale and kind of impact on Denmead Meadows.

## **1.7. CONCLUSIONS**

- 1.7.1.1. This position paper has demonstrated the proportionate and appropriate nature of the impact assessment process undertaken by the Applicant with respect to grassland habitat at Denmead Meadows. The mitigation proposed is comprehensive and designed to have a high degree of certainty of success.



