

Client Name: Axis PED
Site Name: Priory Farm Solar Array- Alternative Cable Route
Project Ref: AxisL-043-003724
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Soil Management Plan: Wymondley Transforming Station LWS and Priority Habitats

Introduction

Background

Avian Ecology Limited (AEL) were commissioned by Axis on behalf of AGR Solar 4 Limited to produce a Soil Management Plan (SMP) in relation to works within Wymondley Transforming Station Local Wildlife Site (LWS), in order to discharge Condition 6 of the approved permission (planning application reference: 24/02333/FP) for an electrical connection between the approved Priory Farm Solar Array (application reference: 21/03380/FP) and Wymondley Substation, Blakemore End Road, St Ippolyts (as amended by plans and documents received 11th and 17th March 2025), as follows:

No excavation of trenches for cabling within Wymondley Transforming Station Local Wildlife Site (LWS) shall take place until a soil management plan has been submitted to and approved in writing by the Local Planning Authority. The soil management plan shall include the following:

- i) An ecological survey of the route across the LWS.*
- ii) Details relating to the lifting, storage and replacement of turves, including the season when this will take place.*
- iii) Proposed aftercare and management.*

The works shall be undertaken in accordance with the approved management plan.

Reason - To minimise the impact upon the ecological and biodiversity interest of the Wymondley Transforming Station LWS in accordance with Policy NE4 of the North Hertfordshire Local Plan 2011-2031.

An ecological survey of the LWS was conducted on 16th July 2024, with results detailed within the previously submitted Wymondley Cable Route LWS Update Walkover Report (Avian Ecology, 2024a). This survey was undertaken only 11 months ago, and covered the entire LWS, not just the cable route location at the time. As such, following CIEEM guidance¹ it is considered that the survey data and corresponding report is still valid and sufficient to inform production of this SMP. An update survey is not required at this time, however a pre-construction survey is recommended to identify any specific notable plant or priority species which could be translocated to elsewhere within the LWS.

It is understood that the cable will be installed via Horizontal Directional Drilling (HDD) from land to the north of the LWS, underneath the Ash brook and adjacent perimeter woodland of the LWS, at

¹Accessed: <https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/>

least a depth of 3m. This is below the rhizosphere of woodland, and so ensures no trees will have to be removed to facilitate the cable and other above-ground impacts are nil. Research by Crow (2005)² states that tree roots do not occur in significant quantities at depths greater than 2m, and while there are cases where isolated roots have been found deeper than this, typically 90-99% of total root length occurs in the top 1m of soil. This is further supported by a large dataset on root plate dimensions of windthrown trees which showed no trees has roots deeper than 3m, with only 5% having rooting depths greater than 2m.

Possible impacts within the woodland would therefore be limited to minor root damage unlikely to adversely affect tree health and overall it is considered the woodland would not be significantly impacted. This soil management plan is therefore relevant only to the remaining open habitat within the LWS.

The objective of this report is to provide a methodology for soil management, which should be implemented along the length of the cable installation within open habitat at the Wymondley Transforming Station LWS. This is to protect the flora and chalk grassland indicator species present within the LWS, which is the reason for its designation.

In addition to the SMP being implemented within Wymondley Transforming Station LWS, the submitted Ecological Assessment Report (EAR) for the alternative cable route (Avian Ecology, 2024b) also specifies that a the SMP is also implemented in other areas along the cable route which cover priority habitats; arable field margins and lowland meadows. This is to protect the flora compositions within priority habitat types present along the cable route.

Wymondley Transforming Station LWS

The LWS, as shown on **Figure 1**, comprises a former gravel pit with a nutrient-poor stony substrate on which a patchy calcareous grassland has developed and surrounds the existing Wymondley Transforming Station. The citation for the LWS states the following: '*Wildlife Site criteria: Grassland indicators*'.

It should be noted that although the LWS is designated for its grassland indicator species, the LWS boundary encompasses all surrounding scrub and woodland around the perimeter too. Part of the cable route passes though the perimeter woodland, as well the open habitat present on site which was the reason for its designation.

The LWS has been subject to vegetative management or habitat manipulation over the past twenty years in order to facilitate the transforming station works. Areas of vegetation have been sporadically removed and appear to have re- colonised again within a few years.

As such, it is considered that the habitats will re-establish fairly quickly following any ground works required to facilitate the cable route. Areas of habitat removal required to install the cable route is

² Crow, P. 2005. *The Influence of Soils and Species on Tree Root Depth*. Forestry Commission.

limited to a small area in the north of the LWS, where the HDD trial pit will be located plus surrounding work area likely to be disturbed by machinery to install the cable.

Some areas of bare ground are also known to be good for certain plant species to establish, which might otherwise struggle in a competitive area. This is supported by one of the habitat condition assessment criteria for the 'moderate, high and very high grassland', which is the presence of bare earth on site, between 1 and 5% which would pass the criteria.

Priority Habitats

The alternative cable route red line boundary also comprises sections of two priority habitats; lowland meadows and arable field margin, with locations shown on **Figure 2**.

Lowland meadows is present within a field which lies north of the Ash Brook. A public footpath cuts across the field in two different places, one adjacent to the Ash Brook, the other along the top of the field which the cable route largely follows. The path itself has reduced species variation and sward height, however it mostly still vegetated with minimal areas of bare ground.

The area subject to cable works largely lies along a public footpath, already subject to disturbance and nutrient enrichment. With the implementation of this SMP in the area, it is considered that the habitats will re-establish fairly quickly following any ground works. Additionally, as above for the LWS, small areas of bare ground within lowland meadows habitat type is known to be good for certain plant species to establish, supported by the same habitat condition assessment criteria as above (between 1 and 5% would pass the criteria).

A very thin area of arable field margin is present on the easternmost extent of the alternative cable route. It is a pastoral field edge approximately 2m wide and fenced off from the rest of the field, with a sward height ranging from 5-30cm. Species present were indicative of other neutral grassland but is suspected that this area is under the agricultural stewardship scheme, and as such was allocated as arable field margin instead. The habitats present within this area is expected to re-establish fairly quickly following any required ground works along its edge.

Methodology

The cable route installation has been designed to avoid valuable ecological features as much as possible. The perimeter woodland and adjacent Ash Brook will have the cable drilled underneath by HDD to avoid direct significant impacts, with all other retained trees and woodland across the LWS to be protected in line with *British Standards BS5837:2012 Trees in relation to design, demolition and construction*.

An area of open habitat within the LWS will have a receiving pit for the HDD to take the cable beneath the woodland habitat on the boundary of the LWS. The pit will be approximately 3m x 2m, with matting and Heras fencing used to protect adjacent habitats. It is surrounded by a works area roughly 40m by 23m to support the installation. All works within the LWS will be subject to this SMP.

The HDD entry pit will be located half way along the lowland meadows priority habitat field which lies on the northern side of the Ash Brook. The entry pit dimensions will be the same as the exit pit above,

with matting and Heras fencing also used to protect adjacent habitats. It is not expected that any works should occur south of the HDD entry pit, and as such, should have Heras fencing separating the works areas and retained area, to reduce as much impact as possible.

The remainder of the cable route installation will be implemented via open trench technique, measuring 900mm wide and 1m deep. All works within this priority habitat area, plus the area of arable field margin in the east of Site will be subject to this SMP.

All works will be short term and temporary with habitats restored immediately upon completion of the cable works. The main objective when restoring land is to reinstate to its original (pre-development) condition. This is primarily achieved by ensuring that the full soil profile is restored in the correct sequence of horizons, and in a state where good soil profile drainage and plant root development can be achieved; and by ensuring that the reinstatement works cause minimum damage to soil structure.

It is considered likely given there will be no loss of individual trees or woodland, and no long term loss of other vegetation, that habitat loss will be restricted to a small, temporary extent and replaced post development.

A pre-construction survey should be undertaken across the LWS and lowland meadow areas, with the aim of identifying any particularly notable species. If individual notable species cannot be avoided by the works, these could be translocated to other adjacent parts of the Site.

Machinery and initial set up

This SMP should be implemented within the optimal timeframe for removal of turves, in Spring or Autumn. It can however, be undertaken at any time when the ground is not too wet, dry or frozen, with it noted in summer the ground may need to be watered regularly.

Prior to construction, adjacent habitats must be protected by perimeter security fencing which will be erected to prevent the encroachment of construction works beyond the consented cable route boundary.

Equipment used to undertake the works should be as small as possible, and should also be tracked machines as much as possible to reduce surrounding soil compaction and damage (DEFRA, 2009). Measures should be considered to protect the ground from excessive disturbance and to limit heavy machinery use along the route as much as possible.

Machinery used must follow strict haul routes, using existing tarmac roads and access tracks as much as possible.

For works within the LWS, machinery will follow the existing access tracks from the substation entrance, north west towards the works area.

For works within priority habitat areas, works must begin from Stevenage Road, along the working areas up and along the consented route, avoiding any unnecessary damage to other vegetated priority

habitat land not within the consented cable route red line boundary. Machine routes should be targeted and limited to avoid as much travel upon priority habitats as much as possible.

Removal of Turves

Turf removal will be restricted to the width of the trench or HDD pits required to facilitate the cable route installation. Prior to soil excavation, temporary construction matting should be placed either side of the trench or pits to protect habitat underneath.

Vegetated turves will be removed and stored on the adjacent construction matting, separately to the excavated soils. The turves must be reinstated within the trench last.

Whilst no problems regarding turf removal is anticipated within the areas of priority habitats, turves may not be possible to extract within the LWS. Considering the substrate and plant species present along the cable route, there may be a lack of significant root structure, particularly for areas more dominant with moss.

Soil stripping

Topsoil stripping will be restricted to the width of the trench or HDD pits required to facilitate the cable route installation. Prior to soil excavation, temporary construction matting should be placed either side of the trench and a suitable place by the HDD pits. Excavated soils will be temporarily placed on this matting before being replaced. This serves to protect the vegetation underneath the spoil piles. Topsoil and subsoil will be stored separately to prevent mixing and will be reinstated in reverse order of excavation.

Soil will be stripped and stored in layers. Topsoil depth varies dependent on numerous factors but is generally considered to be between 15-30cm from the surface. The topsoil will first be removed and placed to one side of the cable trench. Subsoil will then be removed and placed on the opposite side of the trench, as shown in **Figure 3** below.



Figure 3: Example of cable trenching with separations of soils; topsoil stripped and placed on the right, subsoil on the left (Copyright CRE, 2014).

If possible, the very top layer of top soil with vegetation growth will be removed and stored separately to the remainder of the topsoil, with this being reinstated last. The same methodology will also be implemented at the HDD pits and associated working areas.

The height of topsoil storage piles will be restricted to less than 1m to minimise risks of compaction within the soil heap, however care must also be taken to ensure that piles are not so wide that additional LWS land or adjacent priority habitat areas outside the consented cable route red line boundary is not damaged in the process.

Turves and Soil storage

It is not anticipated that the turves or soils will need to be stored for a prolonged period. If required, soil storage should be undertaken in the driest condition as possible (DEFRA, 2009). If necessary, the areas of soil storage could be covered and protected to prevent any degradation or loss during periods of unexpected bad weather. Turves may need to be watered in summer to prevent excessive drying out and maintaining the plant species present within them.

Reinstatement of land

LWS land and priority habitat areas will be reinstated to the baseline condition as far as reasonably possible. Soil layers will be returned to the trench in the same order they were removed, ensuring topsoil, followed by turves remains the topmost layers.

Subsoil will be returned to the trench after cable installation, up to the existing depth of subsoil within the trench. Topsoil should be replaced during favourable weather conditions and should be left in a loose and workable condition, replaced back to its original depth over the whole working area. If a turve or vegetative layer was able to be successfully removed, this will be replaced last. The same measures will be implemented within the HDD pits and associated working areas.

This will ensure soil conditions such as nutrient levels and PH remain broadly similar, and that any seedbank within the topsoil is able to germinate. The topsoil will be left to recolonise naturally from adjacent, unaffected habitats within the LWS.

Effects during the cable installation relate to physical disturbance and temporary removal of open mosaic habitat land, primarily comprising temporary compaction and soil disturbance from plant machinery and vehicles. This disturbance is small in size, will be temporary and of relatively limited duration.

For the operational lifetime of the cable route, there will be no further impacts post construction.

Other measures

Standard measures to ensure runoff control and pollution prevention (such as dust mitigation measures) will be implemented; these measures will safeguard habitats within the Cable Route and wider area.

There are no relevant constraints relating to protected or notable species. Standard good practice measures will be adopted during the cable route installation however, including the covering of any holes or trenches overnight. This will ensure no harm comes to species known to be on the site or wider area such as rabbits, deer and badger.

Aftercare

To ensure the Proposed Development does not have a long-term adverse impact on either the habitat within the LWS or priority habitats across the cable route, follow up habitat surveys should be undertaken along the cable route. An initial survey should be undertaken within a year of completion of the works, during the optimal floral season (April – August inclusive) by a suitably qualified ecologist.

The purpose of the survey is to determine if the soil management plan has been successful, if habitats present along the Cable Route are still representative of the LWS, priority habitat types and/or species established which reflect the species assemblages stated within the LWS and relevant priority species citations.

If unfavourable species (those indicative of suboptimal condition such as ruderal species thistles, docks, teasel and nettles) are found to be present, prescriptions to be implemented along the cable include spot weeding by hand, or careful strimming, dependant on the established vegetation. Herbicide should not be used, as this may affect soil pH levels and have an adverse effect on vegetation on and around the cable route.

If, after the first-year post construction the vegetation along the cable route still does not match the desired species assemblage, follow up surveys and prescription measures must be continued annually and further advice sought from a suitably qualified ecologist. Contingency measures may include direct application of 'green hay' from elsewhere within the LWS, or seeding with a suitable seed mix tailored for chalk grassland or lowland meadows.

Discussion

A pre-construction survey should be undertaken to identify any specific notable or priority plant species, that could be avoided or translocated to other part of the LWS.

This SMP should be implemented within the optimal timeframe for removal of turves, in Spring or Autumn. It can however, be undertaken at any time when the ground is not too wet, dry or frozen, with it noted in summer the ground may need to be watered regularly.

By implementing this SMP, impacts on the baseline flora and overall habitat types at both the LWS and wider cable route are mitigated as much as possible, to ensure no long-term impacts to either the LWS or priority habitats (lowland meadows and arable field margin) present across the alternative cable route.

The seed banks will be retained and replaced within the correct layer of the trench after the cable installation. The size of the cable route disturbance is relatively small and the temporary creation of bare earth should serve to ensure that both the open mosaic habitat present at the LWS and lowland meadows within the wider cable route should thrive again post development.

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Figure 1: Local Wildlife Site with Consented Cable Route Location



Figure 2: Priority Habitats along the Consented Cable Route



