

Client Name: Axis PED
Site Name: Priory Farm Solar Array
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Wymondley Transforming Station LWS: Soil Management Plan

Introduction

Background

Avian Ecology Limited (AEL) were commissioned by Axis on behalf of AGR 4 Solar Limited to produce a soil management plan in relation to works within Wymondley Transforming Station Local Wildlife Site (LWS), in order to discharge Condition 20 of the approved permission for a solar farm and associated infrastructure (Planning application reference: 21/03380/FP), 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 Wymondley Cable Route LWS Update Walkover Report (Avian Ecology, 2024).

It is understood that the cable will be installed via Horizontal Directional Drilling (HDD) from Sperberry Hill road, underneath the perimeter woodland of the LWS at a depth of 3m. This is below the rhizosphere of woodland, ensures no trees will have to be removed to facilitate the cable and other ground level impacts are nil. Possible impacts within the woodland would be limited to minor root damage and overall it is considered the woodland would not be significantly impacted. This soil management plan is therefore relevant 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 open mosaic habitat type present within the LWS, which is the reason for its designation.

Wymondley Transforming Station LWS

The LWS 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 through 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 limited to a long, thin area of around 900mm wide, plus surrounding areas 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.

Methodology

The cable route installation has been designed to avoid valuable ecological features as much as possible. The perimeter woodland 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 2 m, with matting and Heras fencing used to protect adjacent habitats.

The cable trench, where installed through open excavation to a depth of 1m the rest of the LWS, is less than one meter in width at 900mm.

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.

Machinery and initial set up

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 access tracks from the substation entrance, towards the works area.

Ideally, works would begin from inside the active substation working area, up and along the consented route, avoiding any unnecessary damage to other vegetated LWS land not within the consented cable route area. If this is not possible, machinery should follow the perimeter of the active substation working area as closely as possible towards the cable route works area. Machine routes should be targeted to avoid as much travel upon LWS habitat as much as possible. It is noted that the south western perimeter of the active substation area closest to the cable route has a strip of gravel along its length, this is preferable for machine routes, as opposed to vegetated LWS land.

If areas of vegetated LWS land is to be crossed by heavy machinery to reach the red line boundary works area, temporary access and construction matting should first be installed along the access route. This will serve to protect the vegetation and substate located outside of the works red line boundary.

Soil stripping

Topsoil stripping will be restricted to the width of the trench required to facilitate the cable route installation. Prior to soil excavation, temporary construction matting should be placed either side of the trench. 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 1**.

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. This may not be possible however, considering the substrate and plant species present along the cable route. Moss is abundant in this area and the vegetation along the cable route may be lacking a significant root structure.

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 outside the consented cable route red line boundary is not damaged in the process.



Figure 1: Example of cable trenching with separations of soils; topsoil stripped and placed on the right, subsoil on the left (Copyright CRE, 2014).

Soil storage

It is not anticipated that 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.

Reinstatement of land

LWS land 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 remains the topmost layer.

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 vegetative layer was able to be successfully removed, this will be replaced last.

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 the habitat within the LWS, follow up habitat surveys should be undertaken along the cable route. These should be undertaken annually for a minimum of two years post construction, within the optimal floral season (April to 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 and/or species established reflect the species assemblages stated within the LWS citation.

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 at the LWS.

If, after two years 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.

Discussion

By implementing this soil management plan, impacts on the baseline flora and overall habitat type at the LWS should be mitigated as much as possible, to ensure no long-term impacts to the LWS. The seed bank 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 the open mosaic habitat present at the LWS should thrive again post development.

Prepared by: A. Littlechild *BSc (Hons)*

Reviewed by: J. Stevens *BSc (Hons)*

References:

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Figure 1: Local Wildlife Site with Consented Cable Route Location



