# Southampton to London Pipeline Project

## Landscape and Ecological Management Plan (LEMP)

Revision No. 2.0

June 2021

Eastleigh Borough Council

Southampton to London Pipeline Project

## Contents

# Acronyms and Abbreviations

| Acronym | Definition |
|---|---|
| CEMP | Construction Environmental Management Plan |
| CEZ | Construction Exclusion Zone |
| CoCP | Code of Construction Practice |
| DCO | Development Consent Order |
| ECoW | Environmental Clerk of Works |
| EPS | European Protected Species |
| INNS | Invasive Non-Native Species |
| LEMP | Landscape and Ecological Management Plan |
| RPA | Root Protection Area |
| SSSI | Site of Special Scientific Interest |
| TPO | Tree Preservation Order |

# 1 Introduction

## 1.1 Overview

1.1.1 Esso Petroleum Company, Limited (Esso) has been granted a Development Consent Order (DCO) by the Secretary of State to replace 90km (56 miles) of an existing pipeline with 97km of new pipeline to transport aviation fuel between Boorley Green in Hampshire and the Esso West London Terminal storage facility in Hounslow. The replacement pipeline is 97km long, taking into account that it cannot follow the line of the existing pipeline along its whole length due to new developments and environmental constraints.

1.1.2 Esso has already replaced 10km of pipeline between Hamble and Boorley Green in Hampshire. The replacement pipeline starts near Boorley Green at the end point of the previously replaced pipeline. The route runs generally in a northeast direction via Esso's Pumping Station in Alton. It terminates at the Esso West London Terminal storage facility. The areas of land to be permanently or temporarily used for the project are known as the Order Limits.

1.1.3 The project within this local authority area has one stage, based on its geographical area. Eastleigh Borough Council is host to 0.6km of the 97km pipeline route. This Landscape and Ecological Management Plan (LEMP) specifically applies to the section of works between (451 208E, 114 388N) and (451 561E, 114 713N), in the Borough of Eastleigh. This is shown on Sheet 1 in the Stages of the Authorised Development.

1.1.4 It is anticipated that works to install the pipeline will start in 2021 and be completed in 2023. The installation of the pipeline is planned to be completed within a two-year construction period. On completion of the installation works the contractor will hydrotest the pipeline and any post-construction monitoring required will be carried out.

1.1.5 The development authorised by the DCO must be undertaken in accordance with the LEMP pursuant to Requirement 12 of the DCO.

## 1.2 Purpose of the LEMP

1.2.1 An Environmental Impact Assessment was carried out to assess the effects that the project, as presented within the application for development consent, would have on the environment. As part of this process, which included extensive stakeholder engagement, a number of commitments were made to good practice measures to be actioned during design and construction. These were assumed as part of the assessment process. In addition, mitigation measures were proposed and committed to, to offset any significant effects identified as part of the assessment.

1.2.2 The purpose of the LEMP is to set out how landscape and ecological features such as vegetation and habitats would be protected and managed during construction and reinstated following construction. The LEMP enables the proposed landscape and ecological good practice measures to be actioned within the project.

1.2.3 The LEMP provides a consistent approach to the control of construction activities for the project. The LEMP covers protection of landscape and ecology during construction, reinstatement of vegetation and habitats post construction and the implementation of other ecological mitigation measures, together with the subsequent aftercare and, where applicable, monitoring arrangements.

1.2.4 Under the terms of the DCO Requirement 12, no stage (as outlined in Section 1.1) of the authorised development must commence until a LEMP relating to that stage has been submitted to, and approved by, the relevant planning authority. Also under Requirement 12, the final LEMP must be in accordance with the Outline LEMP. The LEMP must also include an implementation timetable and must be carried out as approved. To avoid duplication, the LEMP refers out to the Staging Plan, which sets out the implementation timetable.

1.2.5 The LEMP is being issued to the relevant planning authorities as part of discharging Requirement 12. It is anticipated that relevant planning authorities will, at their discretion, consult relevant statutory bodies, including Natural England and other relevant consultees, such as the local wildlife trusts. Once the planting proposals have been agreed with the relevant planning authority, Esso will discuss the proposals with the relevant landowners, prior to construction.

1.2.6 Esso will put in place robust procedures to inform and supervise all those working on the project, including its supply chain of contractors, to make sure the control measures set out in the LEMP are adopted when undertaking the construction of the pipeline and ancillary works.

## 1.3 Change Process

1.3.1 This section sets out how change would be managed if this was necessary in order to implement the project. It creates a category of “Technical Variation” for the approval of minor variations by the relevant authority that Esso considers does not require formal evaluation under paragraph 20 of Schedule 2 of the DCO (Amendments to approved details).

1.3.2 For those more significant changes that need to be considered under paragraph 20 it sets out a process for distinguishing which changes may need to be considered under paragraph 20(2). Changes that may result in likely significant effects on the environment, and that are not assessed in the Environmental Statement, may require further assessment by the relevant authority. A change which Esso considers does not require further assessment is termed a “Non-material Change” below. A change that Esso considers does require further assessment and therefore a discussion to determine what assessment is required, is termed a “Material Change” below.

1.3.3 In each case under this section it is open for the relevant authority to require more stringent evaluation if it considers this necessary.

### Technical Variation (not covered by Paragraph 20 (Amendments to approved details))

1.3.4 By agreement with landowners and relevant regulatory bodies it may be necessary to amend the details contained in the supporting appendices and plans attached to this LEMP as a result of the iterative discussion and engagement that will continue after the LEMP has been approved. The resulting technical variation would not alter any of the underlying commitments, mitigations and methodologies set out in the LEMP. An example may be a proposed change to the planting locations or species as a result of a landowner request to those shown in the Landscape and Ecological Reinstatement Plans in Appendix B.

1.3.5 Where there is a proposed technical variation, Esso will provide details to the Relevant Planning Authority together with evidence of relevant stakeholder approval. The Relevant Planning Authority will, acting reasonably, endeavour to respond within 10 business days to either confirm its consent to the technical variation or provide its reasons why the change is not accepted including where it considers the requested variation is a Non-material or a Material Change (as described below). If declined, Esso may then withdraw the request, or treat the request as a Non-material or a Material Change.

### Other Changes (covered by Paragraph 20 (Amendments to approved details))

1.3.6 During the implementation of the Project it may be necessary or prudent to seek an alternative approach to the commitments, mitigations and methodologies set out in this approved LEMP. Pursuant to Paragraph 20 of Schedule 2 of the DCO, Esso and Eastleigh Borough Council will adopt the following procedure in respect of a requested change to the requirements of the LEMP.

#### Non Material Change

1.3.7 Where Esso and its expert advisers reasonably consider that the proposed changed is not likely to give rise to any materially new or materially different environmental effects to those assessed in the Environmental Statement, this would be presented as a Non-material Change.

1.3.8 Esso will submit the proposed change to Eastleigh Borough Council with details of the requested change (including any amendments to the relevant mitigation measures) together with a summary of why Esso considers the change to be a Non-material. Upon receipt of the request Eastleigh Borough Council will, acting reasonably, endeavour to respond within 15 business days to either confirm its consent to the Non-material Change or provide its reasons why the change is not accepted. It should be noted that consent is deemed to be approved if no formal decision is made by the relevant authority within 42 days of the initial application.If declined, Esso may then withdraw the request, treat the request as a Material Change or appeal the decision in accordance with Schedule 2 of the DCO.

Material Change

1.3.9 Where Esso and its expert advisers reasonably consider that the proposed change is likely to give rise to any materially new or materially different environmental effects to those assessed in the Environmental Statement, this would be presented as a Material Change.

1.3.10 Esso will discuss the proposed change with Eastleigh Borough Council together with its proposals for appropriately assessing the Material Change. Upon receipt of the assessment proposals, Eastleigh Borough Council will, acting reasonably, endeavour to respond within 10 business days to comment on the assessment proposals.

1.3.11 Following subsequent assessment of the proposed change in accordance with any comments received, Esso will submit the proposed change to Eastleigh Borough Council with details of the requested change (including details of any amendments to the relevant mitigation measures) together with the findings of the assessment and the reasons why Esso considers the change is unlikely to give rise to any materially new or materially different environmental effects in comparison with the authorised development as approved (as identified in the Environmental Statement). Upon receipt of the request, Eastleigh Borough Council will, acting reasonably, endeavour to respond within 15 business days to either confirm its consent to the Material Change or provide its reasons why the change is not accepted. It should be noted that consent is deemed to be approved if no formal decision is made by the relevant authority within 42 days of the initial application. If declined, Esso may then withdraw the request or appeal the decision in accordance with Schedule 2 of the DCO.

## 1.4 Structure of the LEMP

1.4.1 The LEMP sets out:

- how existing sensitive features would be retained during construction;
- how land would be restored post construction;
- a programme of post construction aftercare; and
- a programme of monitoring.

1.4.2 Section 3 of the LEMP provides an overview of the main landscape and ecological designations which provide the planning policy context for the LEMP. Commitments relevant to vegetation retention and removal are set out in Section 4. Commitments relevant to landscape and ecological reinstatement are set out in Section 5. Aftercare arrangements and monitoring are outlined in Sections 6 and 7 respectively. The LEMP contains the following appendices:

- Appendix A. SSSI Working Plans – Not applicable to Eastleigh Borough Council;
- Appendix B. Landscape and Ecological Reinstatement Plans – these show the proposed reinstatement of the working area following the installation of the pipeline. Appendix B also shows the proposed reinstatement planting and the

planting schedules including seed mixes, tree types and sizes which have coded references on the plans to show which applies in each location;

- Appendix C. Approach to Ancient Woodland and Veteran Trees – Not applicable to Eastleigh Borough Council; and
- Appendix D. Methodology for Working Near Trees.

1.4.3 Commitment G87 states '*Vegetation clearance, retention, protection and replanting/reinstatement drawings would be produced prior to the construction phase*'. This is implemented through Requirement 8 of the DCO as follows.

- Vegetation Retention and Removal Plans will be notified to the relevant planning authorities in accordance with Requirement 8(1)(a) of the DCO. These plans are based on the intended pipeline alignment which has taken into account the construction and environmental good practice measures, local features and engineering constraints. These plans will reflect the requirements of Section 4 of the LEMP.
- Appendix B contains the Landscape and Ecological Reinstatement Plans in accordance with Requirement 8(1)(b) of the DCO. These reflect the requirements of Section 5 of the LEMP.

1.4.4 The LEMP should be read in conjunction with the Code of Construction Practice (CoCP) (**Document Reference REP7-028**) and the Construction Environmental Management Plan (CEMP) and associated appendices. The DCO specifies that the final plans would be in accordance with the Outline plans that were certified as part of the DCO and that they be approved by the relevant authorities prior to the commencement of construction.

- The CoCP provides a consistent approach to the control of construction activities along the entire pipeline and mitigates potential impacts on people and the environment. It sets out the embedded design measures that have been committed to on the project, including locations and requirements for narrow working. In addition, the CoCP contains construction methodologies about how the works would be undertaken in general. These comprise:
    - open cut;
    - trenchless: auger bore;
    - trenchless: Horizontal Directional Drilling;
    - streets;
    - watercourses;
    - woodland;
    - working near trees;
    - hedgerows;
    - schools; and
    - sports pitches and golf courses.

- Construction Environmental Management Plan (CEMP): This sets out generally how environmental management will be undertaken on the project during construction. It also outlines the roles and responsibilities for implementing actions on site, including the role of the Environmental Clerk of Works (ECoW). The CEMP also includes relevant appendices, as described below.
  - Appendix A: Emergency Action Plan – sets out the emergency procedures to be put in place for potential environmental incidents.
  - Appendix B: Water Management Plan – sets out a framework for use and control of water on the project. It outlines the environmental risks and considers appropriate methods to mitigate against these risks. It considers surface water and groundwater pollution and surface water runoff contributing to flood risk.
  - Appendix C: Site Waste Management Plan – identifies the main sources of waste produced during construction of the project and how it should be disposed of.
  - Appendix D: Dust Management Plan – sets out how the project would avoid or reduce emissions to air and human exposure to emissions. It also promotes close working with relevant authorities to maintain air quality, and provides for mitigation where dust soiling cannot be prevented.
  - Appendix E: Noise and Vibration Management Plan – sets out measures to reduce noise and vibration impacts at local receptors during the construction of the pipeline. It also promotes positive working relationships with local communities and the relevant planning authorities.
  - Appendix F: Soil Management Plan – sets out the generic commitments that the project has made and details about how soils would be protected, stored and reinstated as part of the works. It also outlines the monitoring and reporting that would be undertaken in respect of soils.
  - Appendix G: Lighting Management Plan – sets out the project's strategy for lighting, including identification of light-sensitive locations and measures to reduce impacts, for example at bat roosts.
- Community Engagement Plan: This sets out how the project will communicate with the local community. It sets out the roles and responsibilities for engagement on the project.

## 1.5 Links to European Protected Species Licences

1.5.1 The application for development consent included the draft European Protected Species (EPS) licences and also the Letters of No Impediment from Natural England. The final licences will be produced and submitted to Natural England in 2021 and will contain the mitigation measures required to comply with legislation. The measures set out within the draft licences have been taken into account when developing the Vegetation Retention and Removal Plans and the Landscape and Ecological Reinstatement Plans.

1.5.2 Project Commitment G174 states that 'buildings, structures and trees within the Order Limits, confirmed to have high or moderate potential to support bats, that do

not require removal, would be retained and protected with an appropriate buffer zone. Those that require removal and have high or moderate potential for bat roosts would be surveyed prior to their removal and either removed or removed under licence from Natural England if roosts are confirmed to be present.' There are ongoing bat surveys to confirm which trees containing bat roosts would require felling on the project. If any trees are identified that contain roosts and would require felling, a bat licence would be submitted to Natural England for approval.

# 2 Project Commitments

2.1.1 During application, Esso made a number of good practice measures which would reduce impacts on the landscape and to habitats and ecology. These are indicated by a reference number, for example '(G21)'. The overarching good practice measures that would reduce landscape and ecological impacts are listed in Table 2.1. There are a number of more detailed commitments relating to specific aspects of the LEMP, which are included at the start of the relevant section.

**Table 2.1: Good Practice Measures Relevant to the LEMP**

| Commitment number | Commitment |
|---|---|
| O1 | Commitment to only utilise a 10m width when crossing through boundaries between fields where these include hedgerows, trees or watercourses. |
| G40 | Where sensitive features are to be retained within or immediately adjacent to the Order Limits, an appropriate buffer zone would be created where this extends within the Order Limits. The buffers would be established using appropriate fencing and signage. Suitable methodologies would be produced to ensure that construction works are undertaken in a manner that reduces the risk of damage or disturbance to the sensitive feature. |
| G61 | Construction within Bourley and Long Valley SSSI, Colony Bog and Bagshot Heath SSSI and Chobham Common SSSI would be in accordance with Appendix B of the Habitat Regulations Assessment (**application document 6.5**). Where necessary, detailed methodologies would be agreed with Natural England prior to commencement. All construction works would be in accordance with the detailed methodologies. |
| G65 | Working widths would be reduced in specific locations where trees or hedges are present. Where notable[1], TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures. |
| G88 | Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements). |
| G91 | The contractor(s) would retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings. |
| G92 | A five-year aftercare period would be established for all mitigation planting and reinstatement. |
| G94 | Land used temporarily would be reinstated to an appropriate condition relevant to its previous use. |
| G95 | The contractor(s) would apply the relevant protective principles set out in the British Standard 5837:2012: Trees in relation to design, demolition and construction. This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. |
| G97 | Where woodland vegetation is lost and trees cannot be replaced due to the restrictions of pipeline easements, native shrub planting approved by Esso would be used as a replacement, in accordance with the vegetation reinstatement plans to be approved by the relevant planning authorities as part of the LEMP. The approved vegetation reinstatement plan will also include replacement tree planting where appropriate. |
| G200 | Trees that are removed as a result of the construction of the project will be replaced on a one for one basis in accordance with the vegetation reinstatement plans approved |

[1] Notable trees are defined with Chapter 10 of the Environmental Statement as '*prominent trees within the landscape and by nature will generally be the larger more mature specimens*'.

| Commitment number | Commitment |
|---|---|
| | under the LEMP. Where possible, replacement tree planting will be located in close proximity to the original tree. It should be noted that such tree reinstatement would not apply to areas where tree removal is for habitat improvement reasons, such as at Chobham Common and this has been agreed with Natural England and the relevant landowners. |
| HRA1 | Heathland within statutory or non-statutory designated wildlife sites would be reinstated using natural regeneration, unless otherwise agreed with Natural England. |

# 3 Landscape and Ecological Features

## 3.1 Landscape and Ecological Designations

3.1.1 The landscape and ecological designations relevant to the LEMP are summarised below. Further details relating to landscape designations can be found in ES Chapter 10 (**Application Document APP-050**), and further information relating to ecological designations can be found in ES Chapter 7 (**Application Document APP-047**).

### Statutory and Non-Statutory Designations

3.1.2 There are no statutory designated sites within or near to the Order Limits in Eastleigh Borough. There are no national trails or open access land. There is one non-statutory designated site within the Order Limits within Eastleigh Borough. This is Maddoxford Farm Meadows Site of Importance for Nature Conservation, however, this is avoided by a trenchless crossing (TC001).

### Ancient Woodland, Veteran Trees and Tree Preservation Orders

3.1.3 There are no areas of ancient or potential ancient woodland, Veteran Trees or potential veteran trees within or adjacent to the Order Limits in Eastleigh Borough. There are also no tree preservation orders.

## 3.2 Summary of Main Land Uses Crossed by the Pipeline Route

3.2.1 The land uses that the Order Limits would pass through are presented in ES Chapter 12 (**Application Document APP-052**). Soils and geology are described within ES Chapter 11 **(Application Document APP-051**). For the purpose of identifying landscape mitigation and management, the main land uses that the Order Limits would pass through are summarised below. Soils have been broadly categorised by reference to LandIS (Cranfield University, 2019).

### Agricultural Land (Including Pasture)

3.2.2 The Order Limits comprise mainly agricultural land and pasture. The soil type includes slowly permeable seasonally waterlogged loamy over clayey and similar more permeable soils with slight waterlogging to the south and west and well drained silty soils, over gravel locally.

### Priority Habitats and Ecological Features

3.2.3 Priority habitats are outlined within the Phase 1 Habitat Survey (**Application Documents APP-080 and APP-081**). There is wet woodland priority habitat centred on SU 51563 14729 associated with a tributary of River Hamble. This is (also considered an Annex I habitat - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)). However, there would be no effects to the priority habitat, as this lies over a trenchless crossing (TC01).

3.2.4 There are potential bat roosts in the trees within the Order Limits and dormouse presence has been confirmed within the hedgerows.

## 3.3 Invasive Non-Native Species

3.3.1 No Invasive Non-Native Species have been identified to date within the Order Limits in Eastleigh Borough.

# 4 Vegetation Retention and Removal

## 4.1 Planning and Programming of Vegetation Removal

4.1.1 The LEMP should be read alongside the Staging Plan, which sets out the implementation timetable for the work within Eastleigh Borough. This has taken account of restrictions such as constraints on timing due to seasonal and/or ecological constraints including the good practice measures set out in Table 4.1.

**Table 4.1: Good Practice Measures for Planning and Programming**

| Commitment number | Commitment |
|---|---|
| G34 | Where restrictions to working are required due to ecological seasonality, e.g. for hibernation or breeding of protected species, standard timings have been indicated. However, due to alterations in weather patterns and temperatures from year to year, the restricted season may alter. It would be at the discretion of the ECoW in consultation with Natural England, where applicable, to decide the actual dates for restriction of works. |
| G35 | Bird Breeding Season: The assumption would be that vegetation with the potential to support bird nests would not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works would be supervised by an ECoW. Appropriate protection measures would be put in place should active nests be found. These would include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the ECoW. |
| G42 | A suitable methodology would be produced to set out how identifiable areas with the potential presence of Schedule 9 plant species or other invasive species would be demarcated, and how any affected soils would be appropriately managed throughout the works. |
| G52 | Adder and sand lizard hibernacula would be retained and protected during construction where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula would be timed to avoid the hibernation season. |
| G59 | Potential disturbance to ponds would preferably be timed to avoid the amphibian breeding season or would be supervised by an ECoW. Any amphibians captured during supervision would be translocated to the nearest undisturbed pond. |
| G61 | Construction within Bourley and Long Valley SSSI, Colony Bog and Bagshot Heath SSSI and Chobham Common SSSI would be in accordance with Appendix B of the Habitat Regulations Assessment (**application document 6.5**). Where necessary, detailed methodologies would be agreed with Natural England prior to commencement. All construction works would be in accordance with the detailed methodologies. |
| G196 | All habitats suitable for common reptiles would be subject to two-stage habitat manipulation between mid-March and mid-October. Firstly, vegetation would be cut to approximately 150mm (with the arisings removed) under the supervision of an ECoW and the site left for a minimum of two days to allow reptiles to move away from the area. Secondly, vegetation would be cleared down to ground level under the supervision of an ECoW. Vegetation clearance would be achieved using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of killing or injuring reptiles. Construction works could commence immediately after completion of the second stage. |

## 4.2 General Principles of Vegetation Retention and Removal

4.2.1 The overarching aim would be to *'retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings'* (Commitment G91). In accordance with G95, the contractor(s) would apply the relevant protective

principles set out in the British Standard (BS) 5837:2012 Trees in relation to design, demolition and construction. This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction.

4.2.2 The Vegetation Retention and Removal Plans that have been submitted in accordance with DCO Requirement 8(1)(a). These have been developed following the identification of the intended pipeline alignment and provided to the relevant planning authorities for information in accordance with Requirement 8.

4.2.3 The Vegetation Retention and Removal Plans will follow the requirements of DCO Article 42 – Felling or lopping, namely:

> '*(1) The undertaker may fell, lop, prune, coppice, pollard or reduce in height or width, any tree or shrub within or overhanging land within the Order limits, or may cut back the roots of a tree or shrub which extend into the Order limits if it reasonably believes it to be necessary to do so to prevent the tree, shrub or roots from—*
>
> *(a) obstructing or interfering with the construction, maintenance or operation of the authorised development or any apparatus used in connection with the authorised development; or*
>
> *(b) constituting a danger to persons using the authorised development.*
>
> *(2) In carrying out any activity authorised by paragraph (1) or (3), the undertaker must not cause unnecessary damage to any tree, shrub or hedgerow and must pay compensation to any person who sustains any loss or damage arising from such activity for that loss or damage.*
>
> *(3) The undertaker may, for the purpose of the authorised development—*
>
> *(a) subject to paragraph (2), remove any hedgerows within the Order limits that may be required for the purposes of carrying out the authorised development; and*
>
> *(b) only remove important hedgerows identified in Schedule 10 (Removal of important hedgerows) to the extent shown on the plans identified in Schedule 10* [of the DCO]'.

4.2.4 The Vegetation Retention and Removal Plans show:

- working areas (taking into account narrow working and trenchless crossings where applicable) and the intended pipeline alignment;
- vegetation to be retained and removed;
- RPAs for surveyed trees, including notable trees;
- known sensitive landscape and ecological features to be retained such as hedgerows and ponds; and

- locations where measures to protect vegetation would be required, such as protective matting or fencing.

4.2.5 In general, waste generated from vegetation clearance would be removed from site in accordance with Appendix C (Site Waste Management Plan) of the CEMP. Subject to landowner agreement, some logs and vegetation may be used to create replacement hibernacula and refugia to mitigate habitat loss to reptiles and amphibians, in accordance with Commitment G53 and as set out within the EPS licences. Some vegetation may also be chipped and left on site, subject to landowner agreement.

## 4.3 Vegetation and Tree Retention

4.3.1 The overarching aim would be to *'retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings'* (Commitment G91). Table 4.2 includes the key project commitments that are relevant to retention of existing vegetation which would be implemented when developing the Vegetation Retention and Removal Plans.

4.3.2 In accordance with Commitment G85, the working area would be appropriately fenced. The fencing may serve more than one function, for example delineating the working area and protection of trees. The choice of fencing would be decided relevant to the work location in accordance with BS 5837:2012. Provision of additional fencing on a site-by-site basis may be used to reduce the potential for impacts on wildlife and trees. Fencing would be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified. The ECoW and arboriculturalist will contribute to discussions on appropriate signage and/or fencing to protect environmentally sensitive features, including RPAs.

4.3.3 Tree protection fencing types would include:

- Level 1 protection: This will be used to protect important trees within areas of high construction activity. It could include braced Heras-type panels with signage. It may include solid hoarding in areas where it provides a combined function of protecting trees and providing security and screening;

- Level 2 protection: This will be used to reduce the risk of construction encroachment such as at the edge of the working area. This may include rigid pedestrian barriers; and

- Level 3 protection: This will be used in areas with a low risk to trees such as marking the RPA of trees lying outside the working area. This may include orange netting on steel pins to mark out the extent of the RPA for trees beyond the working area.

4.3.4 Physical barriers will not be provided where retained vegetation is in a location where there is a very low risk of accidental damage being caused, for example at the top of a steep cutting where the cutting itself provides protection. Where other temporary fencing is provided, for example reptile fencing, this may provide suitable protection, although further signage will be added.

4.3.5 As well as delineating the site, the working area fencing would serve to protect the trees that lie outside the working area.

**Table 4.2: Good Practice Measures in Relation to Retention of Vegetation**

| Commitment number | Commitment |
|---|---|
| O1 | Commitment to only utilise a 10m width when crossing through boundaries between fields where these include hedgerows, trees or watercourses. |
| G40 | Where sensitive features are to be retained within or immediately adjacent to the Order Limits, an appropriate buffer zone would be created where this extends within the Order Limits. The buffers would be established using appropriate fencing and signage. Suitable methodologies would be produced to ensure that construction works are undertaken in a manner that reduces the risk of damage or disturbance to the sensitive feature. |
| G51 | Where works in wet heath would be unavoidable, effects on soils and surface vegetation would be reduced through the use of ground protection matting and use of appropriate machinery. |
| G52 | Adder and sand lizard hibernacula would be retained and protected during construction where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula would be timed to avoid the hibernation season. |
| G57 | Earth banks within SSSIs which are likely to be of importance for common reptiles and invertebrates would be avoided and protected, where practicable. If their removal is unavoidable during construction, the banks should be reinstated. |
| G65 | Working widths would be reduced in specific locations where trees or hedges are present. Where notable, TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures. |
| G86 | Works to notable, TPO and veteran trees, where at risk of damage, would be supervised by the ECoW and supported by an experienced arboriculturalist. |
| G91 | The contractor(s) would retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings. |
| G95 | The contractor(s) would apply the relevant protective principles set out in the British Standard 5837:2012 Trees in relation to design, demolition and construction. This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. |
| G131 | River bank and in-channel vegetation would be retained where not directly affected by installation works |
| G174 | Buildings, structures and trees within the Order Limits, confirmed to have high or moderate potential to support bats, that do not require removal, would be retained and protected with an appropriate buffer zone. Those that require removal and have high or moderate potential for bat roosts would be surveyed prior to their removal and either removed or removed under licence from Natural England if roosts are confirmed to be present. |
| G175 | For trenchless crossings TC001 to TC015, TC019, TC021 to TC028, TC030 to TC040, vegetation would be retained except where emergency access is required to trenchless equipment or ecological works have been proposed. At TC029 vegetation would be retained to the east of Hardwick Lane but not to the west side due to the requirement for access. At TC016, TC017 and TC018, there would be limited removal of vegetation along the alignment of the existing pathway to allow for pipe stringing. |

## Retention and Protection of Trees

**Extract taken from the CoCP (Section 2.11)**

Site preparation:

- All tree surgery works necessary for the project will be carried out prior to the commencement of site operations unless otherwise agreed. All works will be carried out in accordance with BS3998: 2010, Tree Work – Recommendations.
- Prior to the commencement of any works the appointed arboriculturist will set out the Construction Exclusion Zone (CEZ). The CEZ is defined as the area of the root protection area that all works, and access are not permitted within. The CEZ will be delineated with the use of exclusion fencing
- Where the entire RPA cannot be protected due to restricted space or agreed works within the area then suitable ground protection will also be necessary. Section 6.2.3.3 of BS5837: 2012 sets out the requirements for ground protection and states that the level of protection should be capable of supporting any traffic entering the area. This may be scaffold boards for pedestrian movements, or a proprietary system capable of supporting loads of several tons.
- Once all protection measures are in place a photographic record will be taken and these measures will remain in place until works in the area are completed.
- Where works are beyond RPAs and a considerable distance from trees the RPA will be marked out using orange pedestrian fencing to highlight the prohibited area.

No alterations in soil levels other than those already agreed, will occur within the CEZ without prior agreement from the appointed arboricultural consultant.

No materials, vehicles, plant or personnel will be permitted into the CEZ at any time without prior consent from the arboricultural consultant. Where pipeline installation is required within RPAs, manual excavation will be used as described in section 7.2 of BS5837:2012.

4.3.6 Commitment G65 states that *'working widths would be reduced in specific locations where trees or hedges are present. Where notable, TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures'.* In addition, *'works to notable, TPO and veteran trees, where at risk of damage, would be supervised by an Environmental Clerk of Works (ECoW) and supported by an experienced arboriculturalist'* (Commitment G86).

4.3.7 For all other trees, *'the contractor(s) would apply the relevant protective principles set out in the British Standard 5837:2012 Trees in relation to design, demolition and construction. This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction'* (Commitment G95).

4.3.8 There are ongoing site surveys being undertaken to map trees within the working area and to identify the RPAs. All trees to be retained (as indicated on the Vegetation Retention and Removal Plans) will be protected during construction to reduce the risk of accidental damage and compaction of roots.

4.3.9 The Vegetation Retention and Removal Plans show the RPAs for surveyed trees, including notable trees. The RPAs would be delineated during construction with fencing. The RPA may be identified using tree groupings rather than individual trees.

In this case, an arboriculturalist will calculate the RPA based on the largest stem diameter. The RPA for all retained trees within the working area (or where roots are likely to extend into the working area) will be delineated on site prior to works commencing. This will be undertaken in discussion with an arboriculturalist, with site checks undertaken by the ECoW.

4.3.10 Where trees are to be retained, works would be undertaken outside of the RPA where practicable. Where some encroachment into the RPAs of retained trees is unavoidable, an arboriculturalist will assess and specify temporary ground protection if deemed necessary to avoid compaction. This will be based upon the extent of encroachment into the RPA (area or linear length), the duration of the works and the type of work to be carried out. The specified ground protection will be suitable for the level of encroachment and type of traffic in accordance with section 6.2.3 of BS 5837:2012 and the area will be made good once the ground protection is removed. This area will be indicated on the Vegetation Retention and Removal Plans. Appendix D contains a methodology for working near trees and outlining how works would be undertaken within RPAs where required.

4.3.11 Crown lifting or pruning may be required to some trees and overhanging vegetation, to reduce the risk of further damage. This would be undertaken by a qualified contractor and advised by an arboriculturalist.

4.3.12 The working method near trees will take into account installation requirements, such as working space, soil type and construction activities, and site constraints, such as proximity to services, watercourses or archaeology.

### Protection of Watercourses

**Extract taken from the CoCP (Section 2.9)**

Fencing along the outside of the working area will be narrowed at this point to ensure no encroachment onto the watercourse banks beyond the 10m width. The fencing would not be placed down the bank or within the watercourse.

In-stream vegetation within the crossing area would be temporarily translocated within the watercourse slightly upstream or downstream of the works and will be returned to its original position as part of the reinstatement. The bed material will also be stored separately and used for reinstatement.

Only the bank vegetation within the working width will be removed to reduce biodiversity impacts and fragmentation. The species mix will be recorded by the Environmental Clerk of Works so that it can be reflected in the reinstatement, as appropriate.

[*Upon completion*], the instream vegetation will be removed from its temporary location and returned to this section of the watercourse. The banks of the watercourse will be replanted and reseeded as part of the reinstatement plans contained within the LEMP. The area of bank reinstatement will be covered with hessian which will encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in situ as the vegetation grows back.

4.3.13 Ford Lake Stream would be crossed using a trenchless method, as set out in Annex B of the CoCP. A construction methodology has also been set out in the

CoCP to describe how other minor watercourses would be crossed using open cut methods. This includes Commitment O1, '*to only utilise a 10m width when crossing through boundaries between fields where these include… watercourses'*. River bank and in-channel vegetation would be retained where not directly affected by installation works (G131). Such works will also be in accordance with approvals from the Environment Agency or Lead Local Flood Authorities as per the protective provisions in Schedule 9 of the DCO.

### Retention and Protection of Ecological Features

4.3.14 Measures to retain and protect features specific to protected species are set out in the Protected and Controlled Species Legislation Compliance Report (Appendix 7.17 of the ES (**Application Document APP-101**) and would be confirmed in the EPS licences. These measures are not shown on the Vegetation Retention and Removal Plans but where known, have been taken into account during the development of these plans. Further details would be set out within the relevant EPS licence and the protection of such features would be determined on site under supervision of the ECoW and an ecologist.

### Retention and Protection of Hard Landscape Features

4.3.15 Where existing hard landscape features lie within the Order Limits, such as walls, paths or street furniture, such features will be protected during construction where practicable. Where it is not practicable to retain such features, these will be removed from the working area and, where appropriate, stored to allow reinstatement following the works, or replaced with new. Details will be recorded about the location of the feature(s) to aid reinstatement following construction.

### Retention and Protection of Specific Features

4.3.16 A series of archaeological trial-trenching is being undertaken in advance of the main works to assist in identifying the extent of archaeology. This may result in archaeological mitigation in accordance with Requirement 11 of the DCO which would comprise either a full or sample excavation; strip, mapping and sample prior to construction, or an archaeological watching brief during construction (G68).

4.3.17 Where appropriate, topsoil stripping will be monitored by an archaeologist in order that any archaeological features uncovered during topsoil removal can be investigated in accordance with the Archaeological Written Scheme of Investigation.

## 4.4 Vegetation and Tree Removal

### General Approach to Removal of Vegetation

4.4.1 The Vegetation Retention and Removal Plans show the locations where vegetation will be removed. A record would be made of the species types, approximate age and size to inform the reinstatement in line with the specification tables in Appendix B.

4.4.2 The vegetation clearance will be supervised by the ECoW and supported by an experienced arboriculturalist at locations where tree works are required to notable, TPO and Veteran Trees (in accordance with Commitment G86).

### Tree Removal

4.4.3 All tree works will be carried out by a specialist contractor. Where trees and shrubs are removed to facilitate construction access but do not lie within the direct route of excavation, these may be coppiced to allow rapid regeneration. Where trees are removed within the direct route of excavation, stumps shall be ground out or excavated using a tracked excavator. Details of the location of trees to be removed are shown on the Vegetation Retention and Removal Plans.

4.4.4 Where working beneath trees is unavoidable the introduction of height barriers may be necessary if pruning cannot provide sufficient height clearance. This will prevent damage to overhead branches within wooded areas.

### Hedgerows

**Extract based on Section 2.12 of the CoCP**

*The working area would be reduced to a maximum of 10m in width (O1).*

*Within the typical 36m Order Limits, and taking account of other local considerations, the detailed design will select the least impactful 10m width to use within the Order Limits, to take advantage of gaps within an existing hedge, or reduce the number of trees removed where possible. For example, if there is a tree within the hedgerow, installation will seek to retain the tree by positioning the working area to the side. Similarly, utilising existing gaps or entrances already within the hedgerow will reduce the amount of vegetation to be removed.*

*Tree felling and removal will be undertaken by a specialist contractor. Fencing of the working area will be continuous when crossing a hedgerow, creating a barrier between the retained hedge and the working area and taking account of the Root Protection Area (RPA) where practicable.*

*Topsoil will be stripped from the working area. If the haul road crosses the RPA of the retained hedge, appropriate ground protection such as matting will be used.*

*On completion of the works, dead hedging will be installed for all hedges to restore ecological connectivity until permanent reinstatement can be undertaken.*

4.4.5 The Vegetation Retention and Removal Plans show the extent of hedge to be removed consistent with Commitment O1, '*to only utilise a 10m width when crossing through boundaries between fields where these include hedgerows, trees or watercourses*'. Where practicable, the selection of the location has been based on the least impactful 10m width, taking into account other local considerations. For example, taking advantage of existing gaps within a hedge.

4.4.6 Where hedgerows lie within the Order Limits but are not crossed by the pipeline alignment, these would be protected, with the RPA being delineated and works occurring outside of the RPA where practicable.

## 4.5 Ecological Considerations

4.5.1 Specific measures relating to protected species will be set out within the final licences which will be approved by Natural England.

## 4.6 Invasive Non-Native Species

4.6.1 No Invasive Non-Native Species have been identified to date within the Order Limits in Eastleigh Borough. However, if Schedule 9 plant species or other invasive species are identified, the proposed working method would be discussed with the ECoW and supported by an ecologist. Where required, vegetation would be removed from the site in accordance with the CEMP, Appendix C Site Waste Management Plan.

# 5 Landscape and Ecological Reinstatement

## 5.1 Introduction

5.1.1 This section sets out the general principles for how reinstatement would be undertaken on the project. It includes the reinstatement of hard landscaping features such as walls and fences. It also covers soft landscaping, including the reinstatement of vegetation that has been removed and reinstatement of habitat areas.

5.1.2 Requirement 8 of the DCO states that '*the reinstatement of all vegetation must be undertaken in accordance with a written plan of reinstatement to be prepared by the undertaker in accordance with paragraph (2). The written plan of reinstatement referred to in sub-paragraph (1)(b) must form part of the LEMP approved in accordance with Requirement 12 (landscape and ecological management plan*)'.

5.1.3 The Landscape and Ecological Reinstatement Plans are based on the intended pipeline alignment and show locations where specific measures would be applied. These are based on the examples of the Landscape and Ecological Reinstatement Plans provided during Examination.

5.1.4 The final Landscape and Ecological Reinstatement Plans show:

- existing features retained;
- location of key hard landscaping features to be reinstated, such as walls and fences and surfacing of paths within public parks;
- vegetation, including hedges and trees, to be replanted with reference to types and sizes; and
- landscape and ecological mitigation measures, for example provision of hedge infilling for dormice.

## 5.2 General Reinstatement Proposals

5.2.1 The LEMP includes reference to the Staging Plan, which sets out the implementation timetable of reinstatement for the work within Eastleigh Borough. Reinstatement would be undertaken in the first available planting season following completion of installation of the pipeline.

5.2.2 The general principle of reinstatement on the project is that '*Land used temporarily would be reinstated to an appropriate condition relevant to its previous use'* (Commitment G94). Reinstatement would be on a like-for-like basis, unless specified otherwise on the Landscape and Ecological Reinstatement Plans in Appendix B.

5.2.3 Reinstatement tree planting would be undertaken in accordance with G200. Where practicable, this will be in the same location or in close proximity to the tree that has been removed. In some locations existing constraints or the location of the pipeline easement may preclude planting in close proximity, in which case the planting would be undertaken as close as possible to the original location (and still within the Order

Limits). Reinstatement planting is shown on the Landscape and Ecological Reinstatement Plans in Appendix B. Further commitments in relation to reinstatement are included in Table 5.1.

**Table 5.1: Good Practice Measures for Reinstatement**

| Commitment number | Commitment |
|---|---|
| G53 | Replacement hibernacula and refugia would be provided within the Order Limits to mitigate habitat loss to reptiles and amphibians. |
| G55 | Individual plants of creeping willow (*Salix repens*) and common wintergreen (*Pyrola minor*) at Bourley and Long Valley SSSI and Chobham Common SSSI, where likely to be affected by construction, would be translocated into suitable receptor locations within the Order Limits where practicable. The location of the receptor site would be determined by the ECoW and protected by an appropriate buffer during the pipeline construction period. |
| G56 | Alternative roost structures (bat boxes) would be provided (with landowner consent) on retained trees within the Order Limits. Three boxes would be provided for all trees with moderate bat roost potential to be felled. Five boxes would be provided for all trees with high bat roost potential to be felled. |
| G58 | Barn owl boxes would be provided for barn owls as necessary. Two boxes per roost would be positioned a minimum of 40m away from the likely construction zone of disturbance. |
| G62 | Vegetation arisings would be disposed of responsibly. Small quantities may be reused on site to create ecological habitat. |
| G88 | Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements). |
| G93 | Hedgerows, fences and walls (including associated earthworks and boundary features) would be reinstated to a similar style and quality to those that were removed, with landowner agreement. |
| G94 | Land used temporarily would be reinstated to an appropriate condition relevant to its previous use. |
| G97 | Where woodland vegetation is lost and trees cannot be replaced due to the restrictions of pipeline easements, native shrub planting approved by Esso would be used as a replacement, in accordance with the vegetation reinstatement plans to be approved by the relevant planning authorities as part of the LEMP. The approved vegetation reinstatement plan will also include replacement tree planting where appropriate. |
| G200 | Trees that are removed as a result of the construction of the project will be replaced on a one for one basis in accordance with the vegetation reinstatement plans approved under the LEMP. Where possible, replacement tree planting will be located in close proximity to the original tree. It should be noted that such tree reinstatement would not apply to areas where tree removal is for habitat improvement reasons, such as at Chobham Common and this has been agreed with Natural England and the relevant landowners. |
| HRA1 | Heathland within statutory or non-statutory designated wildlife sites would be reinstated using natural regeneration, unless otherwise agreed with Natural England. |
| HRA2 | At heathland SSSIs, targeted scrub and secondary woodland within the Order Limits would be removed. Subject to landowner consent, these areas would be reinstated as heathland or acid grassland through natural regeneration. |

5.2.4 The Landscape and Ecological Reinstatement Plans will be discussed with the relevant landowner (and, where appropriate, tenant). This will be to confirm the suitability of proposed planting, the specification of hard landscape features such as fences and walls (based on like-for-like reinstatement) and will also include discussions about the acceptability with the landowner of the planting once the five-

year aftercare period has been completed. Where there is reinstatement on a private property, the final placement would be agreed with the landowner.

5.2.5 The proposed reinstatement is shown on the Landscape and Ecological Reinstatement Plans in Appendix B. The planting proposals have followed the following principles:

- Trees and shrubs will be of local provenance and shall be supplied in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape (British Standards Institution, 2014). Exceptions may include urban or park environments, where ornamental species may be more appropriate. The proposed species and sizes are shown in Appendix B.
- Reinstatement planting, including any subsequent replacement of failed planting, shall be carried out in the first available planting season. For example, tree and scrub planting would typically be undertaken between November and the end of March, avoiding periods of frost, extreme cold and waterlogged conditions.
- Planting shall be undertaken by an appropriately experienced landscape contractor, in accordance with good horticultural practice and the following current British Standards:
  - BS 4428:1989 Code of practice for general landscape operations (British Standards Institution, 1989); and
  - BS 8545:2014 Trees: from nursery to independence in the landscape (British Standards Institution, 2014).
- Tree and shrub planting areas will initially be protected to shield young trees from browsing rabbits and deer during establishment, for example using tree/shrub shelters or fencing.

5.2.6 The proposed species mixes and typical stock sizes for the main planting reinstatement types are set out in the table in Appendix B and are cross-referenced on the relevant reinstatement plan. These generally reflect existing species compositions and habitat types (see ES Appendix 7.1 (**Application Documents APP-080 and APP-081**)) and ES Figure 7.4 (**Application Document APP-061**) for further details) where these were considered appropriate. Alternative mixes have been set out in some locations, as shown on the plans, where alternative species are considered more appropriate, for example in recent years; where the existing planting includes Invasive Non-Native Species that would be inappropriate to reinstate; or where there are existing species at risk of pests and diseases (such as ash dieback).

5.2.7 It may be difficult to purchase proposed species mixes and stock sizes set out within the LEMP. If during implementation, there are difficulties with sourcing the planting species and sizes specified, a discussion would be held with Eastleigh Borough Council regarding alternative species or sizes.

## 5.3 Reinstatement of Vegetation

### Reinstatement of Hedgerow and Woodland Field Boundary

5.3.1 The construction methodology for hedgerows in the CoCP (and within Section 4.4 of the LEMP) sets out how construction would be undertaken in hedgerows and woodland field boundaries. Following construction, hedgerows and woodland field boundaries that were removed would be reinstated using the same or similar species to those removed. Where tree species cannot be used due to the restrictions of the 6.3m wide pipeline easement, native shrub would be used.

5.3.2 Hedgerows will be typically planted at 300mm centres in a double-staggered row 450mm apart, with tree species randomly incorporated where appropriate. However, where the pipeline installation requires removal of 10m of hedge, trees will not be replaced over the 6.3m pipeline easement but will be located either side of this area (in the remaining 3.7m). The reinstated hedgerow will be boxed with stockproof post and rail to protect the plants until they established. In addition, dead hedging will be installed for hedgerows to restore ecological connectivity until permanent reinstatement can be undertaken.

5.3.3 A proportion of tree species within hedgerows would be planted as feathered stock to help establish hedgerow tree forms. The proportion of feathered tree species within reinstatement hedgerow planting is set out within the specification tables. A higher proportion of feathered tree species has been used for reinstatement of woodland field boundaries compared to a hedgerow, to establish a replacement tree line/woodland belt.

### Reinstatement of Individual Trees

5.3.4 Where individual mature trees may need to be removed they will be replaced with a mix of feathered and extra heavy trees, using the species listed in Appendix B, which has drawn on the baseline information from the arboricultural surveys.

5.3.5 The depth and size of topsoil pit for tree planting shall be appropriate to the stock size of tree to be planted and in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape (British Standards Institution, 2014).

## 5.4 Reinstatement of Grassland

5.4.1 Areas of grassland and verges disturbed by construction activities outside the areas identified for natural regeneration, will be reinstated by seeding of an appropriate grass mix suited to the existing soil conditions and site use. Seed is best sown in the autumn or spring, but can be sown at the other times of the year if there is sufficient warmth and moisture. The Landscape and Ecological Reinstatement Plans show the land use type and proposed species mix composition within the accompanying specification.

## 5.5 Reinstatement of Hard Landscaping

5.5.1 Commitment G94 states that '*Land used temporarily would be reinstated to an appropriate condition relevant to its previous use*'. This assumes that in general, hard landscaping features, such as footpaths, walls or bank features would be reinstated or replaced on a like-for-like basis. This includes earth banks and hibernacula that were temporarily dismantled during construction. Like-for-like reinstatement has been assumed when developing the Landscape and Ecological Reinstatement Plans in Appendix B, and therefore only key features or those where reinstatement may be different than existing are indicated on the plans.

## 5.6 Ecological Habitat Creation and Improvements

5.6.1 The dormouse licence requires additional hedgerow planting and gapping up within the Order Limits (i.e. excluding the like-for-like habitat replacement where hedgerow removal is required) which will mitigate the effects of temporary habitat loss associated with the project. Locations for hedge infilling are shown on the Landscape and Ecological Reinstatement Plans.

# 6 Aftercare

## 6.1 General Aftercare Commitments

6.1.1 As a general principle, at the end of installation, '*land used temporarily would be reinstated to an appropriate condition relevant to its previous use'* (Commitment G94). In many locations, the land would be handed back to the relevant landowner at the end of reinstatement. Where vegetation including hedgerows and trees have been planted as part of the reinstatement, these would have a five-year aftercare period in accordance with Commitment G92 and Requirement 8 of the DCO.

6.1.2 Requirement 8 states, '*any vegetation planting which is part of an approved reinstatement plan that, within a period of five years beginning with the date of planting, is removed, uprooted, destroyed, dies or (in the reasonable opinion of the relevant planning authority) becomes seriously damaged or defective, must be replaced with planting material of the same specification as that originally planted unless otherwise approved by the relevant planning authority and the landowner concerned'*.

6.1.3 Periodic checks (at least once a year) would be undertaken by a suitably experienced professional to check reinstatement and to replace species that have not taken. The landscape contractor would prepare inspection reports as part of these visits.

6.1.4 Prior to the end of the five-year aftercare period, an interim final inspection shall be undertaken jointly with Esso and the landowner at which any final replacement planting required, shall be agreed. Following the completion of any agreed replacement planting, a final inspection shall then be held as part of the completion of the aftercare, whereupon Esso shall cease to have any further maintenance obligation.

6.1.5 The following sub-sections set out the proposed aftercare arrangements based on planting/habitat type.

## 6.2 Trees and Hedgerows

6.2.1 The five-year aftercare includes inspections (at least once a year) by a suitably experienced professional for all reinstated hedgerows, woodland field boundaries and individual trees, to:

- check and record failing, dead or defective plants and replace any failed planting each year, between November and end of March;
- re-firm plants and inspect, adjust or remove stakes, guards and ties as required;
- apply herbicide to maintain weed-free plant circles around base of transplants and spot-treat undesirable species, having regard to any restrictions on use of herbicides in certain locations, for example, in proximity to watercourses of other sensitive habitats or through agreement with the landowner; and
- water individual larger specimen trees that have been planted, as required, during the five-year aftercare.

## 6.3 Pests and Diseases

6.3.1 The periodic checks of reinstatement planting would include a check for any obvious signs of pests or diseases, including ash dieback or reoccurrence of invasive species. Any instances would be recorded on the quarterly inspection reports and appropriate action taken.

# 7 Ecological Monitoring

## 7.1 Monitoring in Relation to Protected Species

7.1.1 Further measures may be required by the conditions of species licensing, as required by the licensing authority, Natural England. These would last for a minimum of one year but may extend to the full five years of aftercare.

7.1.2 The scope of the protected species monitoring would be set out in the final EPS licence applications and would be agreed with Natural England. This may include site checks to monitor the presence/absence of a species, or population monitoring of a species. This would be used to determine the success of the mitigation undertaken. This would include nest box checks for bats and dormouse, and habitat creation checks of hibernacula and egg-laying substrate for amphibians, reptiles and invertebrate assemblages.

7.1.3 The monitoring requirements, including locations and frequency of inspections, would be set out within the finalised EPS licence applications and would be agreed with Natural England. Any corrective actions would be agreed with Natural England and implemented as required.

# References

British Standards Institution (1989). BS 4428:1989 Code of practice for general landscape operations. British Standards Institution, London.

British Standards Institution (2012). BS 5837:2012 Trees in relation, demolition and construction. British Standards Institution, London.

British Standards Institution (2014). BS 8545:2014 Trees: from nursery to independence in the landscape. Recommendations. British Standards Institution, London.

Cranfield University (2019). LandIS. Accessed December 2019. http://www.landis.org.uk/soilscapes/index.cfm

# Appendices

A. SSSI Working Plans – Not applicable to Eastleigh Borough Council

B. Landscape and Ecological Reinstatement Plans

C. Approach to Ancient Woodland and Veteran Trees – included for reference but not applicable to Eastleigh Borough Council

D. Methodology for Working Near Trees

# Appendix B: Landscape and Ecological Reinstatement Plans

NOTES

1. Intended pipeline alignment is indicative only.
2. These Landscape and Ecological Reinstatement Plans should be read in conjunction with the Landscape and Ecological Management Plan (LEMP) Report.

REINSTATEMENT SPECIES MIXES[1]

- **T2** Individual tree planting for well drained clayey and silty soil.
- **H1** Hedgerow mix for seasonally wet loamy and clayey soil.
- **H2** Hedgerow mix for well drained clayey and silty soil.
- **G1** Seed mix for improved grassland pasture on well drained clayey and silty soil.
- **G10** Seed mix for improved grassland pasture on seasonally wet loamy and clayey soil.

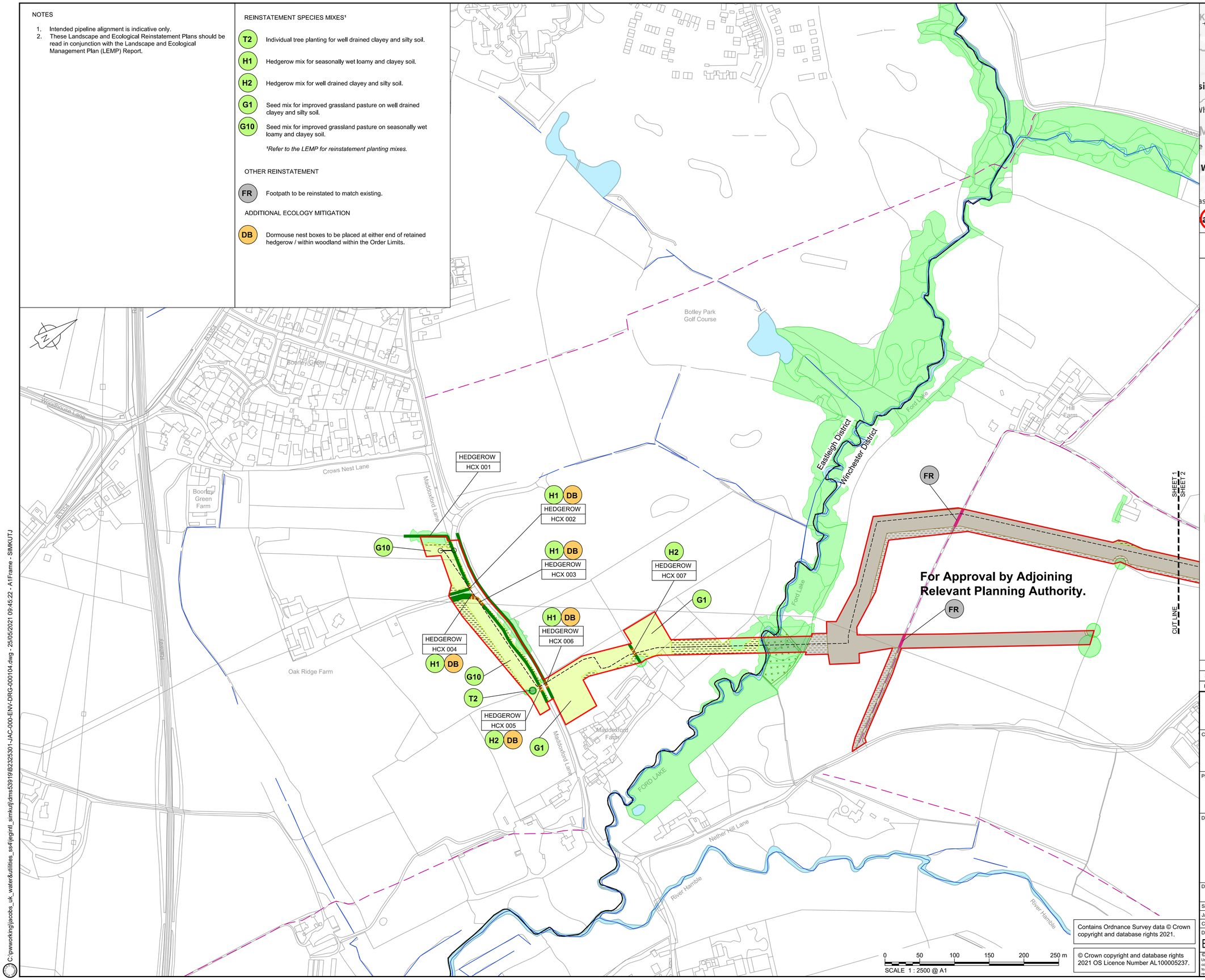
*[1]Refer to the LEMP for reinstatement planting mixes.*

OTHER REINSTATEMENT

- **FR** Footpath to be reinstated to match existing.

ADDITIONAL ECOLOGY MITIGATION

- **DB** Dormouse nest boxes to be placed at either end of retained hedgerow / within woodland within the Order Limits.





LOCATION PLAN
SCALE 1:500,000

LEGEND

ORDER LIMITS
INTENDED PIPELINE ALIGNMENT
LOCAL PLANNING AUTHORITY BOUNDARY

EXISTING CONTEXT

PUBLIC RIGHTS OF WAY
WATERCOURSE
PONDS / WATERBODIES

EXISTING FEATURES TO BE RETAINED

POTENTIAL ANCIENT WOODLAND TO BE RETAINED
TREES AND WOODLAND TO BE RETAINED
HEDGEROWS TO BE RETAINED
IMPROVED GRASSLAND PASTURE TO BE RETAINED
ARABLE LAND TO BE RETAINED

FEATURES TO BE REINSTATED

TREES AND WOODLAND REINSTATEMENT PLANTING
HEDGEROW REINSTATEMENT PLANTING
REINSTATEMENT OF IMPROVED GRASSLAND PASTURE
ARABLE LAND TO BE MADE GOOD
FOOTPATH TO BE REINSTATED TO MATCH EXISTING

| Rev | Rev. Date | Purpose of revision | Drawn | Checkd | Rev'd | Apprv'd |
|---|---|---|---|---|---|---|
| 3.0 | 17/05/21 | Final for issue | | DR/LD | SK | SN |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Project
Esso Southampton to London Pipeline Project

Drawing title
# LANDSCAPE AND ECOLOGICAL REINSTATEMENT PLANS SHEET 1A

Drawing status
Fit for Information

| | | |
|---|---|---|
| Scale | 1:2500 | DO NOT SCALE |
| Jacobs No. | B2325301 | Rev 3.0 |
| Client no. | | |

Drawing number
B2325301-JAC-000-ENV-DRG-000104

# Eastleigh Borough Council Planting Schedules

**Key:**

B – Bare rooted and bagged

Breaks – Minimum number of breaks or shoots

L – Container size in litres

RB – Root-balled

1+1 – 2 year seedling transplanted after first year

0/2 – 2 year cutting not transplanted

2x – 2 times transplanted

## Individual tree planting

**T2. Individual tree planting for well drained clayey and silty soil**

| Botanical Name | Common Name | Girth/ Stem Dia cm | Height cm | Root Zone | Form and age / method of growth | Percentage |
|---|---|---|---|---|---|---|
| *Quercus robur* | Oak | N/A | 125-150 | B | 2x; Feathered; 2 breaks | 100% |

## Hedgerow planting

### H1. Hedgerow mix for seasonally wet loamy and clayey soil

| Botanical Name | Common Name | Girth/ Stem Dia cm | Height cm | Root Zone | Form and age/ method of growth | Percentage | Density |
|---|---|---|---|---|---|---|---|
| *Acer campestre* | Field Maple | N/A | 40-60 | B | 1+0; Seedling | 12.5% | 2 staggered rows at 450mm linear centres |
| *Alnus glutinosa* | Alder | N/A | 40-60 | B | 1+0; Seedling | 15% | |
| *Crataegus monogyna* | Hawthorn | N/A | 40-60 | B | 1+1; Transplant - seed raised | 50% | |
| *Prunus spinosa* | Blackthorn | N/A | 40-60 | B | 1+1; Transplant - seed raised; branched; 2 breaks | 2.5% | |
| *Rosa arvensis* | Field Rose | N/A | 40-60 | 3L | Branched; 5 breaks | 5% | |
| *Salix cinerea* | Grey willow | N/A | 40-60 | 2L | Branched; 2 breaks | 15% | |

### H2. Hedgerow mix for well drained clayey and silty soil

| Botanical Name | Common Name | Girth/ Stem Dia cm | Height cm | Root Zone | Specification | Percentage | Density |
|---|---|---|---|---|---|---|---|
| *Cornus sanguinea* | Dogwood | N/A | 40-60 | B | 1+1; Transplant - seed raised; branched; 2 breaks | 10% | 2 staggered rows at 450mm linear centres |
| *Crataegus monogyna* | Hawthorn | N/A | 40-60 | B | 1+1; Transplant - seed raised | 45% | |
| *Euonymus europaeus* | Spindle Tree | N/A | 40-60 | B | 1+1; Transplant - seed raised; branched; 3 breaks | 15% | |
| *Prunus spinosa* | Blackthorn | N/A | 40-60 | B | 1+1; Transplant - seed raised; branched; 2 breaks | 2.5% | |
| *Rosa canina* | Dog Rose | N/A | 40-60 | 2L | Branched; 3 breaks | 7.5% | |
| *Sambucus nigra* | Elder | N/A | 40-60 | B | 1+0; Seedling; branched; 2 breaks | 20% | |

## Grass seeding

### G1. Improved grassland pasture seed mix for well drained clayey and silty soil

| Botanical Name | Common Name | Percentage | Density |
|---|---|---|---|
| **Grasses** | | **100%** | 4 g/m$^2$ |
| *Agrostis capillaris* | Common Bent | 12.5% | |
| *Alopecurus pratensis* | Meadow Foxtail | 1.25% | |
| *Anthoxanthum odoratum* | Sweet Vernal-grass | 3.75% | |
| *Briza media* | Quaking Grass | 1.25% | |
| *Cynosurus cristatus* | Crested Dog's-tail | 32.5% | |
| *Festuca rubra* | Red-fescue | 30% | |
| *Hordeum secalinum* | Meadow Barley | 1.25% | |
| *Phleum bertolonii* | Smaller Cat's-tail | 5% | |
| *Poa pratensis* | Smooth-stalked meadow-grass | 12.5% | |

### G10. Improved grassland seed mix for seasonally wet loamy (clayey or sandy) soil

| Botanical Name | Common Name | Percentage | Density |
|---|---|---|---|
| **Grasses** | | **100%** | 5 g/m$^2$ |
| *Agrostis capillaris* | Common Bent | 10% | |
| *Anthoxanthum odoratum* | Sweet Vernal-grass | 3.75% | |
| *Briza media* | Quaking Grass | 3.75% | |
| *Cynosurus cristatus* | Crested Dog's-tail | 25% | |
| *Festuca ovina* | Sheep's Fescue | 22.5% | |

| Botanical Name | Common Name | Percentage | Density |
|---|---|---|---|
| *Festuca rubra* | Red-fescue | 30% | |
| *Phleum bertolonii* | Smaller Cat's-tail | 3.75% | |
| *Trisetum flavescens* | Yellow Oat-grass | 1.25% | |

# Appendix C: Approach to Ancient Woodland and Veteran Trees

## Contents

# 1 Introduction

1.1.1 Esso Petroleum Company, Limited (Esso) has made an application for development consent to replace 90km (56 miles) of its existing 105km (65 miles) aviation fuel pipeline that runs from the Fawley Refinery near Southampton, to the Esso West London Terminal storage facility in Hounslow. The replacement pipeline is referred to as the project within this report.

1.1.2 The application for Development Consent is based on the project Order Limits, which are generally up to 36m wide. Within the Order Limits, there are the Limits of Deviation, which is the area within which the trench for the 300mm pipeline would be excavated. It is not possible to undertake a detailed Arboricultural Impact Assessment on individual trees within the Order Limits, as the pipeline routing would not be determined until the detailed design stage.

1.1.3 The Environmental Statement (ES) set out the assessment of the project on Ancient Woodland and potential ancient woodland. The assessment concluded that there were unlikely to be significant effects in relation to these (see ES Chapter 7 **Application Document APP-047**).

1.1.4 During ongoing discussions with Natural England and the Forestry Commission with regards to agreeing the Statements of Common Ground, the Applicant has agreed to provide further information around the assessment of designated trees based on the current project understanding. This has also provided an opportunity to consider standing advice from Natural England and the Forestry Commission (2018) and to provide further details on a mitigation hierarchy for the protection of designated trees.

1.1.5 For the purposes of this document, 'designated trees' comprise of:

- Ancient Woodland (including potential ancient woodland); and
- Veteran Trees (including potential veteran trees).

1.1.6 For the purposes of the project, '*Ancient Woodland*' are areas of woodland identified on the Ancient Woodland Inventory. '*Potential ancient woodland'* are areas of woodland less than 2ha in size that have been identified by the project as potentially being ancient woodland through desktop and / or field surveys but are not on the Ancient Woodland Inventory. '*Veteran Trees*' are trees with veteran status on the Woodland Trust Ancient Tree Inventory. '*Potential veteran trees'* are those identified during the arboricultural surveys undertaken for the project and which are not currently listed on the Woodland Trust Ancient Tree Inventory.

1.1.7 No Ancient Trees are recorded within 15m of the Order Limits on the Woodland Trust Ancient Tree Inventory (checked 8 December 2020). No potential ancient trees have been identified during the arboricultural site surveys, therefore, Ancient Trees and potential ancient trees are not considered further within this document.

# 2 Project Overview for Trees

## 2.1 Design Evolution and Commitments

2.1.1 ES Chapter 4 (**Application Reference APP-044**) outlines how the project corridor and Order Limits have been defined to avoid important tree groupings, such as Ancient Woodland. There are several areas where the design was changed because of trees, either by narrow working commitments or by amending the Order Limits.

2.1.2 Table 2.1 outlines the general commitments that have been made for the project in relation to trees. These are all secured through the Landscape and Ecological Management Plan (Requirement 12). Those commitments related to trees and construction and the locations where narrow working would be undertaken are set out in the Code of Construction Practice for the project and are secured through Requirement 5 (Code of Construction Practice) of the Development Consent Order.

**Table 2.1: Project Commitments Relating to Trees**

| Ref | Commitment Description |
|---|---|
| O1 | Commitment to only utilise a 10m width when crossing through boundaries between fields where these include hedgerows, trees or watercourses. |
| O2 | Design route alignment to avoid all areas of existing classified Ancient Woodland. |
| G65 | Working widths would be reduced in specific locations where trees or hedges are present. Where notable, TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures. |
| G86 | Works to notable, TPO and veteran trees, where at risk of damage, would be supervised by the ECoW and supported by an experienced arboriculturalist. |
| G87 | In accordance with Requirement 8 of the DCO, vegetation clearance, retention, protection and replanting/reinstatement drawings would be produced prior to the construction phase (including where applicable as part of a Site Specific Plan). The contractor(s) would implement these plans including agreed mitigation where practicable. |
| G88 | Where possible, reinstatement of vegetation would generally be using the same or similar species to that removed (subject to restrictions for planting over and around pipeline easements). |
| G91 | The contractor(s) would retain vegetation where practicable and in accordance with, as a minimum, the vegetation retention drawings. |
| G92 | A five-year aftercare period would be established for all mitigation planting and reinstatement. |
| G95 | The contractor(s) would apply the relevant protective principles set out in the British Standard 5837:2012 Trees in relation to design, demolition and construction . This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. |
| G97 | Where woodland vegetation is lost, and trees cannot be replaced in situ due to the restrictions of pipeline easements, native shrub planting approved by Esso would be used as a replacement, in accordance with the vegetation reinstatement plans to be approved by the relevant planning authorities as part of the LEMP. The approved vegetation reinstatement plan will also include replacement tree planting where appropriate. |

| Ref | Commitment Description |
|---|---|
| G175 | For trenchless crossings TC001 to TC015, TC019, TC021 to TC028, TC030 to TC040, vegetation would be retained except where emergency access is required to trenchless equipment or ecological works have been proposed. At TC029 vegetation would be retained to the east of Hardwick Lane but not to the west side due to the requirement for access. At TC016, TC017 and TC018, there would be limited removal of vegetation along the alignment of the existing pathway to allow for pipe stringing. |
| G200 | Trees that are removed as a result of the construction of the project will be replaced on a one for one basis in accordance with the vegetation reinstatement plans approved under the LEMP. Where possible, replacement tree planting will be located in close proximity to the original tree. It should be noted that such tree reinstatement would not apply to areas where tree removal is for habitat improvement reasons, such as at Chobham Common and this has been agreed with Natural England and the relevant landowners. |

## 2.2 Arboricultural Survey

2.2.1 Appendix 3 of the Scoping Report (**Application Reference AS-019**) set out the proposed approach to surveying trees within and in the vicinity of the Order Limits, to provide baseline information for the ES. The survey involved arboricultural specialists surveying trees in accordance with British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (BS 5837:2012). This information has been used to calculate root protection areas (RPAs) and has been used to inform the detailed routing of the pipeline.

## 2.3 Mitigation Hierarchy

2.3.1 It should be noted that the ES adopts a worst-case scenario whereby, with certain exceptions, it assumed that all trees within the Order Limits would be removed to facilitate installation of the project. This was because the project assumed Limits of Deviation within which the pipeline trench would be excavated, rather than a specific pipeline alignment, at such an early stage in the design process.

2.3.2 Since removal of all trees within the Order Limits is not the intention, this document sets out the mitigation hierarchy that is to be employed during the detailed route alignment design and installation. The starting assumption is that the project will seek to locate the pipeline trench outside of a 15 buffer around designated trees (including the RPAs) where practicable (A1 and B1 in the following sections). If this is not practicable, for example due to engineering or other environmental constraints, then the project would avoid locating the pipeline trench within the RPA (mitigation A2 and B2). Where avoidance of the RPA is also not practicable, a specialist construction measures for use within the RPA would be adopted and set out in a method statement (A3 and B3).

2.3.3 Site Specific Plans (SSPs) providing location-specific construction methodologies have been prepared as documents certified as part of the DCO. These include SSPs for Queen Elizabeth Park and Southwood Country Park, where veteran and potential veteran trees have been identified. Construction within those sites must be in accordance with those plans and therefore the mitigation hierarchy applied in these areas is based on the pipeline alignment shown within the SSP.

2.3.4 For all areas outside of an SSP, the Landscape Retention and Removal Plans identify the tier of the mitigation hierarchy that applies to designated trees.

# 3 Ancient Woodland

## 3.1 Definition

3.1.1 In the Standing Advice '*Ancient Woodland, Ancient Trees and Veteran Trees: protecting them from development'*, Ancient Woodland is defined as *'any area that's been wooded continuously since at least 1600 AD* (Natural England and Forestry Commission, 2018)*. It includes:*

- *ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration [and]*
- *plantations on ancient woodland sites - replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi.'* (Forestry Commission and Natural England, 2018).

## 3.2 Project Approach to Ancient Woodland

### Survey and Assessment

3.2.1 All designated Ancient Woodland on the Ancient Woodland Inventory dataset (Natural England, 2018) within 15m of the Order Limits was mapped. (Appendix A). Areas of designated Ancient Woodland are referred to within the ES Appendix 7.3 Ancient Woodland Factual Report (**Application Reference APP-083**).

3.2.2 The Order Limits were designed to avoid areas shown on the Ancient Woodland Inventory as per Commitment O2 '*Design route alignment to avoid all areas of existing classified Ancient Woodland*'.

3.2.3 There are 12 areas (which incorporate 14 inventory 'plots', as some larger woodlands are split into more than one plot on the inventory) of designated Ancient Woodland within 15m of the Order Limits, as illustrated on Figure 10.3 of the ES (**Application Document APP-064**).

3.2.4 Arboricultural surveys to map the stems of trees at the edge of Ancient Woodlands have helped define the extent of the woodland for determining protective buffers during construction.

### Further Mitigation Principles

3.2.5 The project has considered the Forestry Commission and Natural England Standing Advice (2018) which states that *'For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage*…'.

3.2.6 The Landscape Retention and Removal Plans show areas of Ancient Woodland within 15m of the Order Limits and which tier of the mitigation hierarchy applies.

**Table 3.1: Principles of the mitigation hierarchy for Ancient Woodlands**

| Mitigation hierarchy | | Further Mitigation Principle |
|---|---|---|
| This would apply where practicable | **A1 (15m buffer)** | A minimum buffer width of 15m shall be maintained between the pipeline trench and the Ancient Woodland Inventory boundary. Appropriate and readily visible demarcation shall be maintained to define the 15m buffer where this extends within the Order Limits and to control access during construction. Installation of the pipeline will be kept outside of this 15m buffer. Where not practicable to exclude all potentially compacting activities within 15m of Ancient Woodland boundaries, appropriate ground protection measures shall be put in place within the 15m buffer to mitigate the potential effects on trees. |
| If A1 was not practicable due to other site constraints, A2 would apply, | **A2 (RPA buffer)** | A minimum buffer equivalent to the extent of the RPA shall be maintained between the pipeline trench and Ancient Woodland boundary. Appropriate and readily visible demarcation shall be maintained to define the RPA buffer where this extends within the Order Limits and to control access during construction. Installation of the pipeline will be kept outside of this RPA buffer. Where not practicable to exclude all potentially compacting activities within the RPA buffer, appropriate ground protection measures shall be put in place to mitigate the potential effects on trees. |
| If A2 was not practicable due to other site constraints, A3 would apply, | **A3 (Specialist techniques)** | Where not practicable to exclude the pipeline trench from within the RPA of Ancient Woodland boundaries, site-specific measures that would be employed to mitigate the effects on the RPA, for example, hand digging / vacuum excavation under arboricultural supervision. These would be recorded in a method statement |

3.2.7 Table 3.2 summarises the Ancient Woodlands that are likely to fall within each tier of the mitigation hierarchy.

**Table 3.2: Summary of mitigation hierarchy for Ancient Woodlands within 15m of the Order Limits**

| Mitigation hierarchy | Ancient Woodland plots that the mitigation hierarchy would be applied based on the current project assumptions | Approximate extent of mitigation measure (linear metres) |
|---|---|---|
| **Not applicable; no likely impact.** | Four woodlands:<br>• Plantation near Bramdean Common - 1490746;<br>• Woodland south of Neatham Manor - 1490082;<br>• Skains Copse / Combe Wood - 1489102; and<br>• Fan Grove – 1493.326. | N/A |
| **A1 (15m buffer)** | Eight woodlands:<br>• Copse near Betty Mundy's Bottom – 1490774 (Exception - see A2); | 30m |
| | • Joan's Acre Wood - 1490766 / 1491165; | 190m |
| | • Hughes Copse - 1490373; | 48m |
| | • Noar Copse - 1490375 / 1490233; | 212m |
| | • Greendane Copse - 1487529. | 65m |
| | • Skains Copse / Combe Wood - 1489100 (except as noted below); | 190m |
| | • Halebourne Copse 1494014. | 95m |
| | • Holme Wood, Broadlands Row - 1491028 | 12m |

| Mitigation hierarchy | Ancient Woodland plots that the mitigation hierarchy would be applied based on the current project assumptions | Approximate extent of mitigation measure (linear metres) |
|---|---|---|
| **A2 (RPA buffer)** | Two woodlands:<br>• Copse near Betty Mundy's Bottom - 1490774 (south-western corner); | 12m |
| | • Holme Wood, Broadlands Row - 1491028 | 90m |
| **A3 (Specialist techniques)** | One woodland:<br>• Skains Copse / Combe Wood - 1489100 (in vicinity of NW 33 pinch-point). | 25m |

# 4 Potential Ancient Woodland

## 4.1 Definition

Forestry Commission and Natural England Standing Advice (2018), states that *'Ancient woodlands smaller than 2 hectares are unlikely to appear on… Natural England's Ancient Woodland inventory'*. Therefore, for the purposes of this strategy, the term 'potential ancient woodland' is used to refer to woodland that corresponds to the definition of designated Ancient Woodland set out in Section 3 of this document, but is less than 2ha in size and is not recorded on the inventory. The approach taken to the identification of potential ancient woodland is set out below.

## 4.2 Project Approach to Potential Ancient Woodland

### Survey and Assessment

4.2.1 A desk study was undertaken to identify areas of potential Ancient Woodland, as set out in ES Appendix 7.3 Ancient Woodland Factual Report (**Application Reference APP-083**). Although it was not possible to avoid all potential ancient woodland within the Order Limits during the pipeline routing, the project approach to the mitigation hierarchy for potential ancient woodlands is to treat them the same as designated Ancient Woodland using the measures outlined in Table 3.1.

4.2.2 Since submission of the application for Development Consent, additional desk survey has been undertaken to refine the precautionary assessment undertaken within ES Appendix 7.3 Ancient Woodland Factual Report (**Application Reference APP-083**). The additional work concluded that there are seven potential ancient woodlands within 15m of the Order Limits.

### Further Mitigation Principles

4.2.3 The Landscape Retention and Removal Plans show areas of potential ancient woodland within 15m of the Order Limits and which tier of the mitigation hierarchy would apply. Table 4.1 summarises the number of potential ancient woodlands that are likely to fall within each tier of the mitigation hierarchy.

**Table 4.1: Summary of mitigation hierarchy for Potential Ancient Woodlands within 15m of the Order Limits**

| Mitigation hierarchy | Potential ancient woodland plots that the mitigation hierarchy would be applied based on the current project assumptions | Approximate extent of mitigation measure (linear metres) |
|---|---|---|
| **Not applicable; no likely impact.** | One woodland:<br>• AW2 (Woodland west of Nether Hill). | N/A (Trenchless crossing) |
| **A1**<br>**(15m buffer)** | Five woodlands:<br>• AW3 (Durley Mill Copse); | 78m |
| | • AW5 (Copse near Betty Mundy's Bottom); | 212m |
| | • AW12 (Neatham Down) (Exception – see A2); | 33m |
| | • AW16 (Greendane Copse) ; | 25m |
| | • AW30 (Woodland at Silverlands). | 217 |

| Mitigation hierarchy | Potential ancient woodland plots that the mitigation hierarchy would be applied based on the current project assumptions | Approximate extent of mitigation measure (linear metres) |
|---|---|---|
| **A2**<br>**(RPA buffer)** | One woodland<br>• AW12 (Neatham Down) (where Limits of Deviation narrow); | 11m |
| **A3**<br>**(Specialist techniques)** | One woodland: | |
| | • AW15a (Woodland west of Ewshot Wood). | 52m |

# 5 Veteran and Potential Veteran Trees

## 5.1 Definition

5.1.1 BS 5837:2012 defines a Veteran tree as a *'tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned'*. BS 5837:2012 also provides a footnote that '*These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem. [BS 3998:2010]'*

## 5.2 Project Approach to Veteran and Potential Veteran Trees

### Survey Approach

5.2.1 At the time of submission of the application for Development Consent, there were no veteran trees recorded on the inventory within 15m of the Order Limits. Since application (checked 8 December 2020), three Veteran Trees have been added to the inventory within 15m of the Order Limits along Ashford Road, Staines and four Veteran Trees have been added to the inventory within 15m of the Order Limits at Queen Elizabeth Park, Farnborough.

5.2.2 Arboricultural surveys have recorded those trees that display features consistent with a potential veteran tree in accordance with BS 5837:2012. The potential veteran trees are listed in Table 5.2. RPAs have been calculated for each potential veteran tree.

### Further Mitigation Principles

5.2.3 The project has considered the Standing Advice on protecting Veteran trees from development which states *'A buffer zone around*[a]*… veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter'* (Forestry Commission and Natural England, 2018).

5.2.4 For the purposes of the assessment and the application of the mitigation hierarchy, potential veteran trees are considered on the same basis as Veteran Trees. The Landscape Retention and Removal Plans identify potential veteran trees and the tier of the mitigation hierarchy that would apply.

**Table 5.1: Principles of further mitigation for Veteran and potential veteran trees**

| Mitigation hierarchy | | Further Mitigation Principle |
|---|---|---|
| This would apply where practicable | **B1 (Up to 15m buffer)** | A buffer width of 5m from the edge of the canopy of the Veteran or potential veteran tree, or up to fifteen times the tree stem diameter[1], whichever is the greater, up to a maximum of 15m[2] from the stem, shall be maintained between the pipeline trench and the veteran or potential veteran tree. Appropriate and readily visible demarcation shall be maintained to define the buffer where this extends within the Order Limits and to control access during construction. Installation of the pipeline will be kept outside of this buffer. Where not practicable to exclude all potentially compacting activities within the buffer (up to 15m), appropriate ground protection measures shall be put in place to mitigate the potential effects on trees. |
| If B1 was not practicable due to other site constraints, B2 would apply, | **B2 (RPA buffer)** | A minimum buffer equivalent to the extent of the RPA shall be maintained between the pipeline trench and the Veteran or potential veteran tree. Appropriate and readily visible demarcation shall be maintained to define the RPA buffer where this extends within the Order Limits and to control access during construction. Installation of the pipeline will be kept outside of this RPA buffer. Where not practicable to exclude all potentially compacting activities within the RPA buffer, appropriate ground protection measures shall be put in place to mitigate the potential effects on the RPA. |
| If B2 was not practicable due to other site constraints, B3 would apply, | **B3 (Specialist techniques)** | Where not practicable to exclude the pipeline trench from within the RPA of Veteran or potential veteran trees, site-specific measures that would be employed to mitigate the effects on the RPA, for example, hand digging/ vacuum excavation under arboricultural supervision. These would be recorded in a method statement. |

5.2.5 Table 5.2 summarises the number of inventory Veteran Trees and potential veteran trees that are likely to fall within each tier of the mitigation hierarchy.

*2 Stem diameter, as measured at 1.5m above highest adjacent ground level.
*2 The buffer for protecting Veteran and potential veteran trees has been capped at a maximum of 15m, the same buffer dimension in the Natural England/ Forestry Commission standing advice for Ancient Woodland.

**Table 5.2: Summary of veteran and potential veteran trees within 15m of the Order Limits**

| Mitigation hierarchy | Veteran and potential veteran trees that the mitigation hierarchy would be applied to based on the pipeline alignment shown on the relevant SSP or the current project assumptions for other locations |
|---|---|
| **Not applicable; no likely impact.** | Two Veteran trees (not affected due to trenchless crossing)<br>• S2700-T19 (Willow in Queen Elizabeth Park);<br>• S2700-T22 (previously T41) (Willow in Queen Elizabeth Park). |
| **B1**<br>**(Up to 15m buffer)** | 15 potential veteran trees and one potential veteran tree group:<br>• T4 (Oak east of Minchingfield Lane);<br>• S300-T2 (Ash near Betty Mundy's Bottom);<br>• S400-T1 (Field maple south east of Hinton Ampner);<br>• S400-T2 (Ash south east of Hinton Ampner);<br>• S400-T4 (Ash south east of Hinton Ampner);<br>• T13 (Oak to the north of West Tilsted);<br>• T105 (Beech south of Petersfield Road);<br>• S700-T12 (Beech at Jubilee Clump, Manor Farm);<br>• S1200-T4 (Oak within woodland south of West End);<br>• T40 (Oak on southern edge of Southwood Golf Course);<br>• S1800-T6 (Oak near entrance to Farnborough Hill School);<br>• S1800-T7 (Oak near entrance to Farnborough Hill School);<br>• S1800-T45 (Sweet chestnut near eastern edge of Farnborough Hill School);<br>• T102 (Alder on edge of woodland south of Halebourne Copse);<br>• T106 (Oak on edge of Halebourne Copse)<br>• G170 (Oak on edge of woodland at Foxhills Golf Course). |
| **B2**<br>**(RPA buffer)** | Three Veteran trees:<br>• 193108 (Survey ref: S2300-T46) (Oak east of Ashford Road);<br>• 193090 (Survey ref: S2300-T12) (Ash west of Ashford Road);<br>• 194703 (Survey ref: S2300-T64) (Oak east of Ashford Road).<br>Two potential veteran trees:<br>• S300-T1 (Field maple close near Betty Mundy's Bottom);<br>• S2400-T219 (Ash at north western end of Fordbridge Park). |
| **B3**<br>**(Specialist techniques)** | Two Veteran trees:<br>• S2700-T5 (Beech at Queen Elizabeth Park);<br>• S2700-T8 (Beach at Queen Elizabeth Park). |

# 6 References

Forestry Commission and Natural England (November 2018). Ancient woodland, ancient trees and veteran trees: protecting them from development. Accessed 25 July 2019. https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

Woodland Trust (July 2019). Planning for Ancient Woodland Planners' Manual for Ancient Woodland and Veteran Trees. Accessed 9 September 2019. https://www.woodlandtrust.org.uk/mediafile/100825449/planners-manual-for-ancient-woodland.pdf?cb=d69433f72bf14b388b637d1046700a4f

# Appendix D: Methodology for Working Near Trees

# 1 Introduction

## 1.1 Purpose of the Methodology

1.1.1 This methodology has been produced to support the Landscape and Ecological Management Plan (LEMP) by providing further details about how works would be undertaken in and around root protection areas (RPAs).

# 2 General Principles

2.1.1 Table 1.1 outlines the commitments that the project has made in relation to RPAs.

**Table 1: Commitments**

| Commitment Reference | Measures Description | Where is it secured in the Draft DCO |
|---|---|---|
| **G95** | The contractor(s) would apply the relevant protective principles set out in the British Standard 5837:2012 Trees in relation to design, demolition and construction. This would be applied to trees within the Order Limits which would be preserved through the construction phase, and to trees outside of the Order Limits where such measures do not hinder or prevent the use of the relevant working width for construction. | DCO Requirement 12 (LEMP) |
| **G65** | Working widths would be reduced in specific locations where trees or hedges are present. Where notable, TPO, Ancient Woodland and veteran trees would be retained within or immediately adjacent to the Order Limits, the trees and their root protection areas would be protected where they extend within the Order Limits and are at risk. This would be by means of fencing or other measures. | DCO Requirement 6 (CEMP) and DCO Requirement 12 (LEMP) |
| **G86** | Works to notable, TPO and veteran trees, where at risk of damage, would be supervised by the ECoW and supported by an experienced arboriculturist. | DCO Requirement 5 (CoCP) and DCO Requirement 8 (Hedgerows and trees) |

2.1.2 In accordance with clause 6.3 of British Standard (BS) 5837:2012, works at ground level will be undertaken under the supervision of an arboriculturalist and / or Environmental Clerk of Works (ECoW).

2.1.3 Working in accordance with clause 6.2 of BS 5387:2012, barriers and / or ground protection will be used to demarcate RPAs on site. A joint RPA may be provided around groups of trees with the RPA reflecting the greatest RPA. In accordance with clause 6.2.1.1 of BS 5387:2012 all barriers and ground protection will be installed prior to works in the area commencing.

2.1.4 In accordance with good practice to avoid ground compaction, as referenced in clause 8.4 of BS 5387:2012, no materials (including fencing material prior to installation), plant or equipment will be stored in an RPA at any time. This will be briefed to all employees working in or adjacent to an RPA, and be monitored by, the arboriculturalist and / or ECoW. In addition, plant will not be allowed to idle or be

parked in the RPA. This will be briefed to all plant operators, and be monitored by, the arboriculturalist and / or ECoW. Where exclusion is not practical, alternative appropriate ground protection would be used following, discussion with the arboriculturalist.

2.1.5 In accordance with clause 6.2.2.4 of BS 5387:2012, project signage will also be installed to identify the RPA.

# 3 Protection of RPAs

## 3.1 Barriers

3.1.1 The type of barriers will be provided dependent on the level of risk posed to the RPA and to suit the location in accordance with clause 6.2.2.3 of BS 5387:2012, as agreed with the arboriculturalist on site. This may be post and rope, or netlon-type fencing in low risk areas, plastic style pedestrian barriers in medium risk areas or, in high risk areas, welded mesh panels on rubber feet with stabiliser struts, commonly known as heras fencing.

A barrier will be erected to demarcate the RPA and to prevent works encroaching into the RPA. In accordance with clause 6.2.2.1 of BS 5387:2012, the site team will maintain the barriers so that they remain rigid and complete, for as long as they are in-situ.

## 3.2 Vehicle Access within an RPA

3.2.1 It will not always be practical to keep construction vehicles outside of the RPA in all instances. In some cases, temporary construction access may be required within some RPAs, as identified in clause 6.2.3.1 of BS 5387:2012. Where this is required the barriers will be set back as far as is required and clause 6.2.3.2 of BS 5387:2012 will apply. Temporary ground protection will be designed and installed in accordance with the requirements of clause 6.2.3.3 of BS 5387:2012.

3.2.2 Proprietary systems, as noted in point C of clause 6.2.3.3 of BS 5387:2012, will be installed where construction plant is required to traffic within the RPA. The proprietary system will be suitable to the duration and type of vehicular disturbance. It may include the following, as advised by the arboriculturalist:

- Proprietary geo-cell: A permeable geotextile membrane is laid in the RPA followed by placement of the geo-cell. Geo-cell is available in various thicknesses which can be built up to provide the appropriate protection as detailed by the arboriculturalist. The geo-cell is then filled with clean angular stone fill. When works are complete the geo-cell can be teased from the angular stone, leaving the stone on the surface of the membrane. The stone can then be removed using hand tools or plant, such as a vac-ex truck, that operates from an intact adjacent section of geo-cell. This enables the removal of the stone working backwards out of the RPA.
- Proprietary trackway / trackmat: A permeable geotextile membrane is laid in the RPA followed by a thickness of clean angular stone fill as detailed by the arboriculturalist. The proprietary trackway / trackmat is then laid on top and fixed together. Reversing this process removes the temporary ground protection. As with the geo-cell, the stone can be removed using hand tools or plant, such as a vac-ex truck, that operates from an intact adjacent section of ground protection. This enables the removal of the stone working backwards out of the RPA. If acceptable to the arboriculturalist, the trackway / trackmat will be placed

directly on the ground.

3.2.3 The proprietary systems are re-usable and will be moved around the project as required by the programme of works.

## 3.3 Pedestrian Access within an RPA

3.3.1 Where there are likely to be frequent worker (pedestrian) movements only in the RPA, lighter ground protection will be installed prior to works commencing, in accordance with clause 6.2.3.3 of BS 5837:2012:

- Wood chips: A permeable geotextile membrane is laid in the RPA followed by placement of the wood chips to a depth of 100mm or that specified by the arboriculturalist. If required by the arboriculturalist, a proprietary pedestrian walkway board will be placed on the wood chips and connected. Wood chips will only be used where they have been generated as a result of the tree pruning / removal works as part of the project.
- Walkway Boards: A proprietary pedestrian walkway board will be placed on a compression resistant layer or suspended onto a driven scaffold frame.

## 3.4 Working around Roots in Streets

3.4.1 Where roots are encountered in a street environment RPA, as described in clause 6.2.3.1 of BS 5837:2012, the existing road pavement will be left in place to provide the ground protection. The arboriculturalist will confirm that the existing road pavement is suitable to provide appropriate ground protection to tree roots.

# 4 Open Cut Works in an RPA

4.1.1 Open cut works in an RPA, whether in a rural or urban setting, will be undertaken under the supervision of an arboriculturalist and / ECoW. The following hand dig excavation techniques, individually or in combination, will be used to reduce any potential damage to the roots during open cut works:

- Use of an air lance or air spade. An air lance or air spade provides a concentrated air flow in a high velocity stream jet. This penetrates and dislodges the soil without damage to roots and is an accepted method of excavating safely in accordance with clause 7.2.1 of BS 5837:2012. An air compressor is used to power the lance / spade. An air lance / spade is most effective in granular soils or made ground but can be used in clay-type soils. An experienced operator will be able to effectively dislodge the soil around the roots for removal by vacuum excavation or traditional methods i.e. excavator or manual removal.
- Manual excavation. All operatives will be briefed and supervised by the arboriculture specialist and / or ECoW.
- Use of a vacuum excavation (vac-ex) wagon. A vac-ex wagon can be used depending on ground conditions which will be assessed by the arboriculturalist and / or ECoW. Soil is displaced by suction power where high-volume air flow – suction – is generated to create the excavation. The suction dislodges the soil without damage to roots and is an accepted method of excavating safely in accordance with clause 7.2.1 of BS 5837:2012. The soil displaced during excavation can be stored to use later for reinstatement activities.

4.1.2 Hand excavation will be reviewed by the arboriculturalist as works commence and proceed. Where on initial excavation there is an absence of roots within the works area, and in agreement with the arboriculturalist, a small rubber tracked excavator

may be used to excavate the pipeline trench. All excavated spoil will be removed from the area or placed on temporary ground protection to be used for back filling upon completion.

4.1.3 Any roots uncovered during the works will be assessed and treated in accordance with clauses 7.2.2, 7.2.3 and 7.2.4 of BS 5837:2012.

4.1.4 Roots, whilst exposed, will be wrapped in dry hessian or covered to prevent desiccation and to protect them from temperature changes. Any wrapping will be removed prior to backfilling, which will take place as soon as practical once the pipeline has been installed.

4.1.5 As stated in the Code of Construction Practice, upon reinstatement the roots will be surrounded with topsoil, sharp sand (builders' sand will not be used due to its high salt content) or other loose inert granular fill, before soil or other medium is replaced. This material should be uncontaminated and free from injurious objects. Temporary ground protection will be removed in a backwards direction away from the tree so as always to be positioned on protection and not on unprotected ground. Once the work area is cleared of ground protection the recently backfilled spoil will be watered.