Rowan

Landscape and Ecology Management Plan

Coffey Construction Ltd

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Report Sign Off

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1. Introduction

Rowan Engineering Consultants (ROWAN) Ltd were requested by Coffey Construction Ireland Ltd to prepare a Landscape and Ecology Management Plan (LEMP) for land contouring works at Slade, Saggart Co. Dublin (planning application ref: SD22A/0051) and as requested by the developments final grant order no. 0873.

1.1 Overview of the proposed project

The principal activities associated with the proposed development are:

- Land recontouring works on c 16,000m2 of a folio size of c 2.4 ha (allowing buffers).
- The volume of material to be placed on the site is c 35,000m3 with an average fill level of c. 3.5 m above existing. The material is clean, inert soil and stone from the Saggart Water Reservoir construction site located directly adjacent to the north of the proposed infill site. Refer to planning drawing numbered J1387 - LH.001 submitted as part of the planning application for full details.
- A small section of hedgerow removal (6m) to be removed between Saggart Water Reservoir construction site and the proposed infill site to allow access for lorries and infill equipment onto the proposed infill site. No other hedgerow removal is required.

An infill free buffer zone of at least 10m will be established around the perimeter of the site.

Silt screening along sections adjacent to the river will be undertaken, and tree fencing willbe installed to maintain the hedgerow (with the exception of the site access point).

1.2 Purpose and Scope of the LEMP

The scope of the LEMP covers the activities relating to the proposed infill at the proposed development in Slade, Saggart, County Dublin.

The LEMP is developed with the objective of avoiding adverse ecological impacts from the landscaping works. The Camac River flows along the south-western site boundary.

The LEMP is applicable t the Client, the appointed construction contractor and also any sub-contractor's site staff during the construction phase of the proposed works.

The LEMP has been requested by the County Council as a requirement for the permitting of the activities on the site in addition to the submitted Construction Environmental management Plan (CEMP)

2. Location of the Proposed Development

2.1 Site Location and Site Layout

The Proposed project is located in the townland of Slade, Co. Dublin. The nearest village to the site is Saggart, which is located c.600m north east of the proposed site. The proposed site

is c.2.4ha. The site is bounded to the north by the Irish Water construction site, to the west by an ESB sub-station, to the south by the Camac River and to the east by a yard.

Figure 2.1: Site Location (outlined in red)

The site area of the proposed project is c.2.4 ha. The proposed site layout is shown below in Figure 2.3.

Figure 2.2 Site Location Aerial View (outlined in red).

Figure 2.2 Site Aerial View (outlined in red).

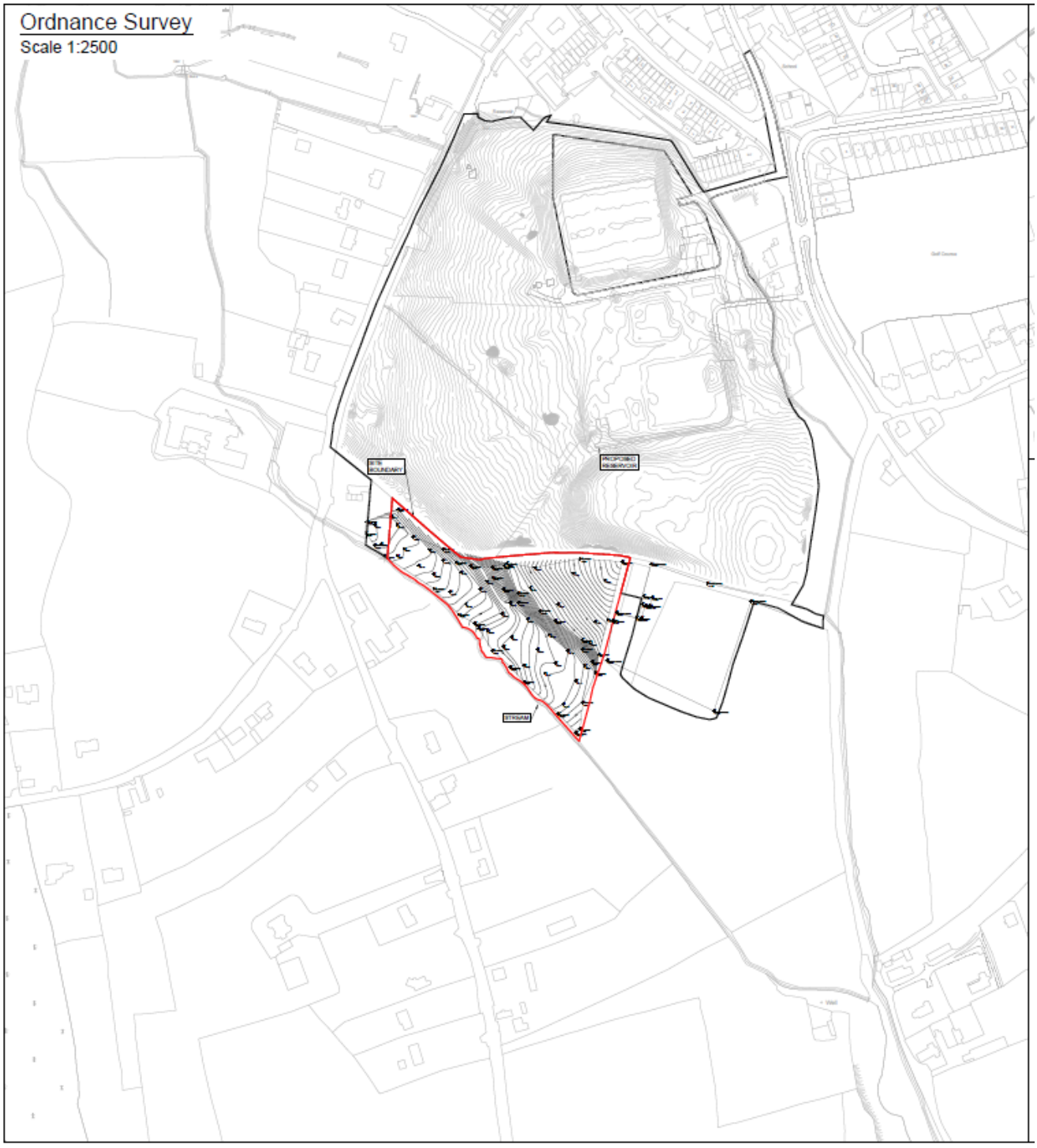

Figure 2.3: Site Location Plan and Site Plan with Proposed Development Boundary

2.2 Site Access

The soil and stone would be transported through an existing linkage between both land parcels using site machinery. Truck movements would be avoided on the local road network.

The main site will be accessed via an entrance along the northern site boundary, which leads to the construction site of the new Saggart Irish Water Reservoir that is under construction. Refer to **Figure 2.4.** and attached drawing J1387-CCL-10-SL-DR-001.

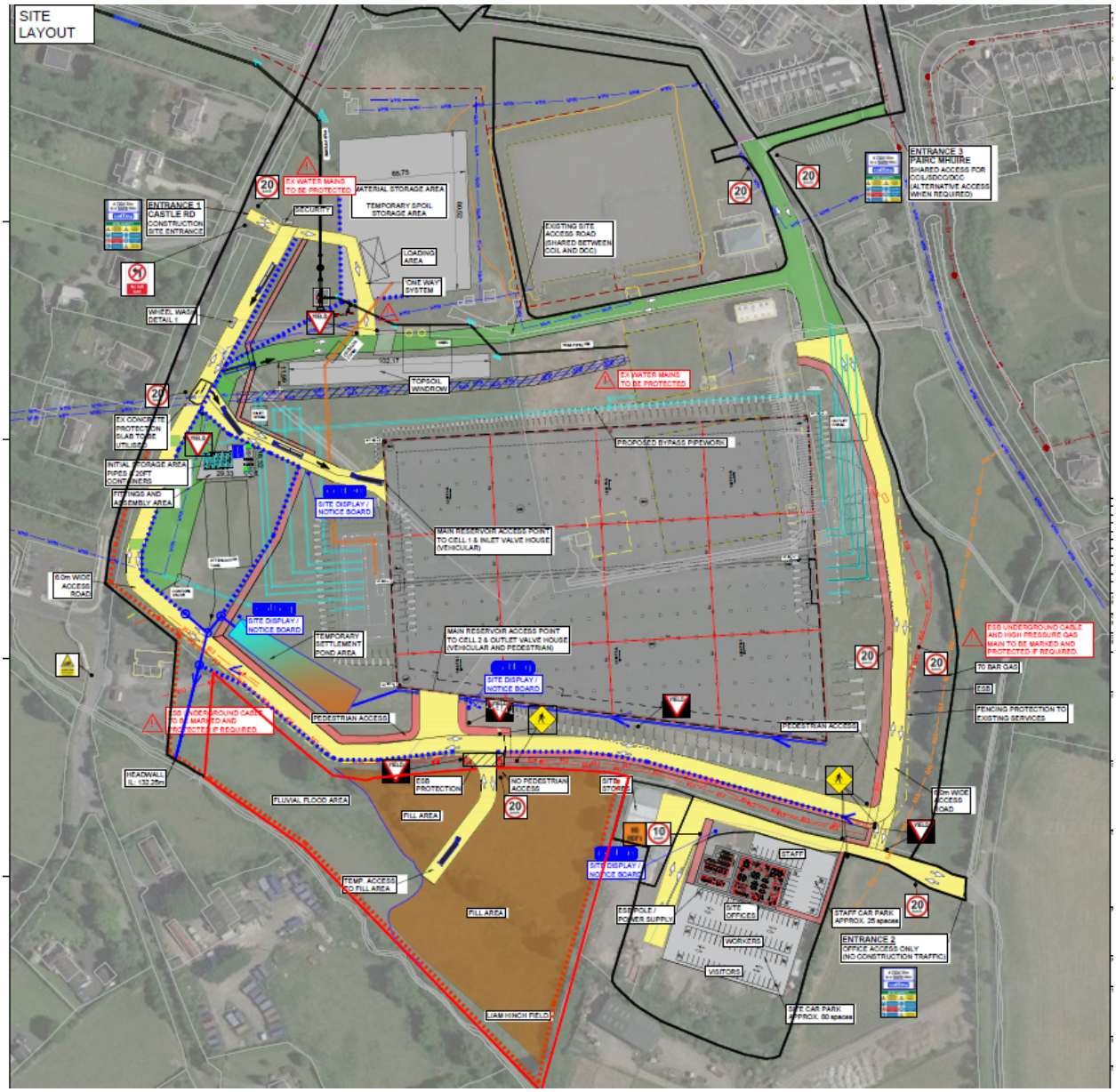

Figure 2.4: Site Access for the Main Water Reservoir Site.

A single site entrance will be constructed through the the hedgerow. No tree felling will be undertaken. The remaining hedgerow and boundary will be preserved with fencing during the operation.

2.3 Decommissioning of the proposed project

At the end of its operational life, the following will be implemented.

- The infilled areas will be levelled, and suitable reseed mix will be sown which will be beneficial for agricultural proposes.

As the equipment used in the infilling and levelling processes 'belong' to the adjacent main site, these will be returned to compounds when not in use.

2.4 Environmental Constraints of Note at the Site

The assessments noted the main environmental constraints onsite are

1) Preservation of the trees and hedgerows
2) Preservation of the River Carmac
3) Ensuing the activities of the site do not impact beyond the site boundaries
4) Restoration of the site post fill

3. Landscape and Ecology Management Plan

3.1 Construction Environmental Management Plan Mitigation

The CEMP has identified specific mitigation in relation to Landscape and Ecology. The objective of this mitigation is to avoid/reduce the potential for environmental impacts during the (infill) phase.

This mitigation is being implemented onsite and is detailed in Table 3.1 below. The mitigation will be monitored through the CEMP and verified by the monitoring in this LEMP.

Table 3.1: Construction Environmental Management Plan Mitigation

Aspect	Potential Environmental Impact	Description
Soils, Geology, Hydrology and Hydrogeology	Pollution event on local soils, geology surface and groundwaters	A buffer zone along the River Camac shall be maintained at all times during the construction period. Mitigation measures that will be implemented on site during the construction phase shall include: • No construction activities will be undertaken within the buffer zone of the River Camac. In the event, the sedimentation / erosion of soils occurs on site, strict controls will be implemented by the construction contractor to confirm that there will be no release of sediment into the River Camac during the construction phase. • All soil materials will be visually inspected for signs of potential contamination. Should any contamination be identified, the relevant soils will be stored separately, sampled and disposed of by a licensed waste contractor (as required). • There will be no oils, fuels, greases, and hydraulic fluids stored onsite. • There will be no refuelling taking place onsite

Aspect	Potential Environmental Impact	Description
Biodiversity/ Ecology	Impacts on Ecological Features	Mitigation measures that will be implemented on site during the construction phase shall include: • All site development works shall adhere to best practice. • The work areas must be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out and cordoned off in advance of work commencement. • Prior to the commencement of the infill on site, the site manager and the contractors should be made aware of the ecological sensitivity of the site, both in terms of the protection of surface water and groundwater. • All site works must follow those specified in the Construction Management Plan. • Efficient construction practices and sequences shall be employed on site, and this will minimise soil erosion and potential pollution of local watercourses with soil and sediment. Unnecessary clearance of vegetation shall be avoided. Works within the site shall be avoided during periods of heavy rainfall. • In order to protect water quality in The River Camac, all site preparation and construction works shall conform to all guidelines within the document Inland Fisheries Ireland Requirements for the Protection of Fisheries Habitats during Construction and Development Works and River Sites (www.fisheriesireland.ie) and the updated guidelines entitled Guidelines on Protection of Fisheries During Construction Works in And Adjacent to Waters (2016). Guidelines in the CIRIA (Construction Industry Research and Information Association) Publications including C532 – Control of Water Pollution from Construction, guidance for Consultants and Contractors should also be followed. • A buffer zone between construction works and the river shall be maintained at all phases of construction and operation. There must be no deposition of soil within this buffer strip. • Hydrocarbon / fluid management measures shall include: o Fuels, oils, greases and hydraulic fluids will not be stored onsite. o No refuelling or lubrication of equipment shall take place

In addition to this mitigation, the Conditions of the Grant of Permission form the Council include additional requirements for client and contractor to implement onsite. This LEMP outlines the adherence to those conditions for landscape and ecology.

3.2 Conditions to Grant of Permission

Under the conditions of the final grant the following ecological items are required for the project:

Hinch Final Grant SD22A/0051

3. Implementation of Landscape Plans
The submitted Landscape Plan (Dwg. No. J1387-LH-004) which includes mitigation hedgerow planting shall be implemented in full, within the first planting season following completion of the development (completion of works on site). In addition:
a) All hard and soft landscape works shall be completed in full accordance with the approved Landscape Plan.
b) All trees, shrubs and hedge plants supplied shall comply with the requirements of BS: 3936, Specification for Nursery Stock. All pre-planting site preparation, planting and post-planting maintenance works shall be carried out in accordance with the requirements of BS : 4428 (1989) Code of Practice for General Landscape Operations (excluding hard surfaces).
c) All new tree plantings shall be positioned in accordance with the requirements of Table 3 of BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.
d) Any trees, shrubs or hedges planted in accordance with this condition which are removed, die, become severely damaged or become seriously diseased within three years of planting shall be replaced within the next planting season by trees, shrubs or hedging plants of similar size and species to those originally required to be planted
REASON: To ensure the provision, establishment and maintenance of a reasonable standard of landscape in accordance with the approved designs.

4. Tree and Hedgerow Protection Measures
No development shall commence on site until adequate steps have been taken in accordance with (Section 8 of BS 5837:2012 Trees in relation to design, demolition and construction) to safeguard all existing trees and hedgerows on the site against damage prior to or during building works, including the erection of fencing. These fences shall be erected to the extent of the crown spread of the trees/hedgerows, or where circumstances prevent this, to a minimum radius of 2 metres from the trunk of the tree/centre line of the hedgerow and such protection shall be retained until the development has been completed. No excavations, site works, trenches or channels shall be cut, or pipes or services laid in such a way as to cause damage to the root structure of the trees.
REASON: These details are necessary to safeguard existing trees and hedgerows on the site, in accordance with policy G2 Objective 9, G4 Objective 5, G2 Objective 13, G6 Objective 1, HCL15 Objective 3 of the CDP 2016-2022.

5. Ecological Impact Assessment The applicant shall implement all relevant recommendations and mitigation measures proposed within the submitted Ecological Impact Assessment prepared by Noreen McLoughlin (Environmental Consultant). The mitigation measures that shall be implemented include:

Before and During the Infilling Works
i. All infilling works must be confined to the development site only and should adhere to all standard best practice measures. Work areas should be kept to the minimum area required to carry out the proposed works area and should be clearly marked out in advance of the proposed works. These measures must be undertaken from initial site works until the completion of all works on site.
ii. The portion of hedgerow that is to be removed along the northern site boundary must be done outside the bird nesting season (March-September). No mature trees must be removed to facilitate this entrance.
iii. The plans for the infilling development allowed for a 10m unfilled buffer zone along the perimeter

of the site, which includes all hedgerows, treelines and the riparian zone of the River Camac. It is vital that this 10m buffer is adhered to for the protection of birds, mammals and water quality. Prior to the commencement of works on the site, this buffer zone will be fenced off with Saturday fencing, which ideally should be mammal proof. There must be no storage of machinery, soil or other material within this buffer zone. All existing vegetation in this buffer zone should be maintained.
iv. As per the plans submitted and in accordance with the Construction and Environment Management Plan (CEMP). A silt barrier will be installed at the edge of the 10m buffer zone along the Camac River and the drain that occurs along the eastern site boundary. This silt fence must be sturdy and inspected regularly for weaknesses and deficiencies.
v. The silt fence proposed will be a permeable geotextile barrier installed vertically on support and entrenched in the ground.
vi. All chemicals, fuels, oils, greases and hydraulic fluids will be stored outside of this site and away from any watercourse in bunded compounds.
vii. There will be no re-fueling on site
viii. All soil material will be visually inspected for signs of potential contamination. Should any contamination be identified, the relevant soils will be stored separately, sampled and disposed of by licensed waste contractor (as required).
ix. The mammal survey prepared by Brian Keely identified a small number if trees on site that have bat potential. These trees must be retained. If it at any stage it is considered necessary to remove these trees, they must be inspected by a bat specialist prior to felling.
x. Any additional mitigation measures outlined in the mammal reports prepared by Brina Keely following the survey work in January/February 2021 must be adhered to in full. These measures including that the contractor maintains a regular watching brief along all topsoil stored on site for potential establishment of badger setts during the construction phase. In addition, it was also recommended that prior to construction works commencing that an ecologist undertake an otter walkover survey along the Camac

Post Infilling Works
i. Any landscaping at the end of the infilling works should involve the planting of native Irish species that are indigenous to the site. Suitable species would be hawthorn, willow and alder. The characteristics of newly planted hedgerows should mimic those in the surrounding area. Invasive species must not be used. Any landscape plan must be cognizant of the sensitivity of the natural habitats surrounding the site. Herbicides should be avoided during all phases of the construction and operation as these chemicals can have detrimental impacts upon local populations of pollinators.
ii. Bare soil should be seeded as soon as possible with grass seed. This will minimize erosion into the River Camac.
iii. The remaining perimeters of the site should be managed at a low intensity level post infilling. They should not be cleared of vegetation, sprayed with herbicide or re-seeded. This will allow for the protection of mammals and water quality post infilling. Cutting of the grass once a year in late summer will promote biodiversity and the growth of flowering herbaceous plants. This will be of benefit to local pollinating insects.
iv. Any future land spreading of the land post reseeding should only be done in accordance with the measures outlined in S.I. 605 of 2017. Land-spreading should adhere the guidance in this legislation, and it should conform to any nutrient management plan set out for the source farm.
REASON: In the interests of protecting and enhancing the biodiversity of the environment, in accordance with policies IE1 Objective 5, IE7 Objective 5, G2 Objective, G3 Objective 2, G4 Objective 2, HCL1 Objective 1, HCL1 Objective 2, HCL1 Objective 3 , HCL15 Objective 3, and other policies relating to Biodiversity within the CDP 2016-2022.

7. *Landscape and ecological management plan (Also referred to as a Habitat or Biodiversity Management Plan)*
   No works in connection with the development hereby approved shall commence unless a

landscape and ecological management plan (LEMP) has been submitted to the planning authority. The LEMP shall include the following:
(a) Description and evaluation of features to be managed.
(b) Ecological trends and constraints on site that might influence management.
(c) Aims and objectives of management.
(d) Appropriate management options for achieving aims and objectives.
(e) Prescriptions for management actions.
(h) Ongoing monitoring and remedial measures.
(i) Details of the legal and funding mechanisms by which the long-term implementation of the plan will be secured by the developer with the management bodies responsible for its delivery. The plan shall also set out how contingencies and remedial action will be identified, agreed and implemented so biodiversity objectives with the submitted Ecological Impact Assessment can be achieved. The development shall be carried out in accordance with the approved LEMP.
REASON: In order to protect and enhance biodiversity in the environment

3.3 LEMP

In accordance with these requirements this LEMP has been prepared in accordance with the conditions of the Final Grant and structured as per the following sections:

Section 4: A description of features to be managed from the Ecological Impact assessment and EIA. Including ecological trends, seasonal considerations and constraints on site that might influence management.

Section 5: Aims and objectives of management.

Section 6: Proposed actions and mitigations for achieving aims and objectives and the roles and responsibilities associated with management actions.

Section 7: Details of monitoring measures.

The Sections will also outline the responsibility for the actions as well as the implementation of any longer term monitoring and reporting to ensure the remediation of the site.

4. Ecological Impact Assessment

As requested the following section outlines the findings and mitigiation measures of the EcoIA for implementation on the site.

4.1 Ecological Impact assessment – Features

4.3.1 Rare and Protected Plant Species

An examination of the website of the National Parks and Wildlife, the National Biodiversity Data Centre and the Online Atlas of Vascular Plants for Ireland revealed that no species protected under the Flora Protection Order occurs within the 1km square (O0326, O0325), Zone of Influence or the townland (Slade) of the proposed application site. No species listed as protected under this order were observed on the day of the survey.

4.3.2 Non-Native Invasive Species

No invasive plant species as listed in the Third Schedule of the Birds and Habitats Regulations (2011) were recorded in the study area. One non-native (Eucalyptus tree) was identified in the site boundary.

Post fill mitigation should include biosecurity measure to ensure none are introduced.

4.1.1 Site Habitats

The land-use surrounding the site is predominantly agricultural and improved agricultural grassland is the dominant habitat in the lands that surround the site. Other habitats represented locally include small areas of woodland and scrub, hedgerows and tree lines.

The ECoIA records the following habitats detail for the site:

No part of the site lies within any area that is designated for nature conservation purposes. The footprint of the infilling works will take place on lands of relatively low biodiversity value.

The site outline is roughly triangular. The dominant habitats present within the site include

- Dry Calcareous and Neutral Grasslands (GS1),
- small areas of Wet Grasslands (GS4),
- Hedgerows (WL1),
- Treelines (WL2) and
- Watercourses (FW2).

The majority of the fill will be brought into the lower field that lies to the south of the site which is at a naturally lower elevation. The habitats within the site are described in greater detail below.

Grassland Habitats

The grassland habitat within the application site is not intensively managed and has been classed as *Dry Calcareous and Neutral Grassland* GS1. Fertiliser use within the site is low or absent, but the site is grazed by a small number of cattle. Fossit (2000) describes this habitat as grassland that is unimproved or semi-improved and associated with low intensity agriculture. True calcareous grassland is restricted to the esker ridges and moraines and to other areas with shallow and rocky limestone soils. The grassland within the application site is neutral in character and this has a much wider distribution than true calcareous grasslands and most old permanent pastures and less intensively managed lowland grasslands fit into this category. Grass is the dominant group here and species noted included meadow grasses *Poa* sp, cocksfoot grass *Dactylis glomerata* and fescues *Festuca* sp. Typical broadleaved species of this habitat were

noted as common and they included creeping buttercup *Ranunculus repens*, broadleaved dock *Rumex obtusifolius*, spear thistle *Cirsium vulgare* and clovers *Trifolium* sp.

Flood Plain
Certain lower sections of the field, near to the river, are poorly drained and have been considered as *Wet Grassland* GS4. Rushes (*Juncus effusus, Juncus conglomeratus*) are common here, whilst flag iris *Iris pseudacorus* was abundant locally in certain sections. Meadowsweet *Filipendula ulmaria* was also common.

Field Boundaries
The boundaries of the site are mostly defined by hedgerows (WL1) and treelines (WL2). There are also some notable mature trees along these boundaries, these boundaries were numbered and are described below.

Boundary 1 – This boundary occurs along the northern perimeter of the site, immediately south of the ongoing construction works on the reservoir site. This boundary consists mostly of a thick hedgerow on the eastern section of the boundary .
Common species noted here included grey willow *Salix cinerea*, hazel *Corylus avellana* and hawthorn *Crataegus monogyna*. Extensive growth of bramble *Rubus fruticosus agg* was also noted growing amongst the existing shrubs. This boundary occurs in association with a dry drain. This section of the hedgerow is thickly verged with agricultural broadleaves including nettles *Urtica dioica*, ragwort *Senecio jacobaea*, broadleaved dock and spear thistle.

In the western section of the site, this boundary is a treeline and some very mature ash *Fraxinus excelsior* and sycamore *Acer pseudoplantatus* trees were noted here. Willow, hawthorn and gorse *Ulex europaeus* were also common along this section.

Boundary 2 – This boundary occurs along the eastern perimeter of the site, immediately west of an existing farmyard and the operational compound containing the offices and car park associated with the ongoing reservoir works. This boundary is dominated by a hawthorn and bramble hedgerow, with an occasional mature ash. The lower section of this hedgerow, i.e., that which was once in the lower field before the removal of the treeline and closer to the Camac River, is dominated by willow. There is also a wet drain present along this section of the boundary. There is one mature sycamore at the lower end of this hedgerow, where this boundary meets the Camac River.

Boundary 3 – This boundary occurs along the corridor of the River Camac. It consists of the river itself, which at this point is approximately 1.5m wide. The river is heavily shaded by a hedgerow in the south-eastern section of the site, and species such as hawthorn, ash and brambles were common. Other species noted included willow, elder *Sambucus nigra*, blackthorn *Prunus spinosa*, gorse and a Eucalyptus. Further downstream along the boundary, it opens out somewhat and becomes less shaded, with mature trees growing outside of the application site on the opposite side of the bank. There were a number of cattle access points noted along the banks of the Camac within the application site. There are leading to erosion of the banks and subsequent sedimentation of the water.

Boundary 4 – This boundary is short (56m) and it consists of a fence which separates the application site from the ESB sub-station.

Watercourse

The Camac River flows along the south-western boundary of the application site. This falls into the *Depositing / Lowland River category (FW2)*. The river is shallow and approximately 1.5m in width as it flows through the application site. The level of siltation in the river is relatively low. The river is heavily shaded in the upper parts of the site, however where the banks are more open in-stream vegetation was present and was dominated by fool's watercress *Apium nodiflorum.*

Overall Evaluation of Habitats within the Site

The dominant habitat within the application site is unimproved grassland that is used for grazing. This habitat is common locally and is of limited value for biodiversity, although the broadleaved plants would provide suitable sources of nectar for local populations of pollinating insects. The site boundaries consist of the Camac River, along with hedgerows and treelines and these are the most valuable biodiversity features within the site due to the mixture of native species that

they contain, as well as being important habitats and ecological corridors for local birds and small mammals. These boundaries are considered to be of local importance (higher value).

Species within the Study Area

Badger *Meles meles* – Trails and badger prints were noted throughout the site. Evidence of badger activity was documented along hedgerows parallel to the site's southern (the current site's northern boundary) and western boundaries, with a small number of badger-sized excavated holes, latrines in shallow depressions and trails noted along hedgerows which suggested regular use of parts of the site by badger.

Otter *Lutra lutra* – During the previous surveys the only evidence of otter usage was a single spraint found in the Camac River at a bridge on the Slade Road adjacent to the Millbrook Manor Nursing Home (which is just downstream of the proposed infill site).

No evidence of holts were identified along the Camac river at this point or along accessible sections of the Millrace Stream. Follow up visits undertaken in January and April 2018 did not locate any evidence of Otter holts along sections of the Millrace and Camac River, although it was noted that some sections were largely overgrown with dense bramble-dominated scrub on both sides of the bank. It is highly likely that otter use the Camac River for resting, breeding and commuting, though no breeding/resting sites were confirmed. Although no holts were identified, further evidence of sprainting was noted under the roadbridge which crosses over the Camac River alongside the ESB substation. The site specific survey revealed some slides but no obvious use of the site. Despite this monitoring will confirm the lack of prescence.

Bats – The hedgerows, treelines and watercourses throughout the reservoir site were found to provide connectivity to the wider landscape for bats and it was determined that they provided suitable commuting/foraging corridors for bats. Static surveys deployed along treelines on the southern boundary of the lands (northern boundary of the infill site) revealed a minimum of four, and potentially five species of bat mostly attributed to Common and Soprano Pipistrelle along hedgerows and treelines. The bat survey report concluded that the lands around the proposed reservoir site were found to be used for foraging and commuting bats (Common pipistrelle, Soprano pipistrelle, and Leisler's bat). Surveys revealed no bats in the treelines and surveys of the trees revealed no significant habitat for bats on the site.

Birds

A limited range of common passerine birds associated with agricultural areas were noted within or outside the application site. Species observed / heard within or flying over the site included:

- Blackbird *Turdus merula*
- Goldfinch Carduelis carduelis
- Great tit *Parus major*
- Hooded crow *Corvus cornix*
- Jackdaw Corvus monedula
- Magpie *Pica pica*
- Pigeon *Columba palumbus*
- Robin *Erithacus rubecula*
- Starling *Sturnus vulgaris*
- Swallow *Hirundo rustica*
- Wren *Troglodytes troglodytes*

The site survey was carried out outside the optimal breeding season for birds so bird activity would be naturally lower. Overall, the treelines and hedgerows would normally provide good nesting, perching and feeding sources for local birds and the site is likely to be of local value for birds.

Water Features

The Camac River flows along the south-western site boundary.

The Camac River (IE-EA_09C020100) (to the south west of the proposed site) and the proposed site are located within the Liffey Catchment. The proposed site is located in the (Liffey_SC_090) sub catchment.

Under the WFD, all water bodies are required to meet good status within a certain time period. Ireland is now in the second cycle of the WFD and therefore good status should be achieved in all water bodies by the end of this current cycle, i.e., 2021. If a waterbody is unlikely to achieve this status, then it is deemed to be *At Risk.* The Camac River is described as being *Not At Risk* and of *Good Status*.

Figure 2.5: Surface water features relevant to the development site.

5. Aims and Objectives

The purpose of the LEMP (in conjunction with the CEMP) is to implement the recommendations and mitigation from the predevelopment impact assessments and put in place the checks and monitoring to ensure proposed mitigation measures are carried out.

This is to ensure that the potential risks to the ecology or landscape from the proposed development identified in the assessments are mitigated and implemented onsite to ensure the development has no significant effects on these aspects.

6. Proposed Actions and Mitigations

In order to mitigate against the loss or damage of habitats of high biodiversity value, and to reduce impacts on birds and mammals and water quality, a number of mitigation measures have been proposed for implementation during construction and post fill operation.

These measures are site specific and have been devised to consider the most achievable ways to allow for the protection of habitats of high biodiversity value on the site, along with measures for the protection of protected species and landscape. These were outlined in the EcoIA and EIAR. Several are already implemented via the CEMP. Those related to ecology and landscape are included in this document.

The mitigation is a combination of the actions proposed in the EIAR, the Ecological Impact Assessment and the Landscape Plan / Asessment of the site

6.1 Mitigation and Monitoring

The primary method of mitigation for any development should be avoidance of that impact. Consideration was therefore given to avoiding any direct or indirect impacts on the sensitive ecological receptors within the site. In order to protect the existing ecological features on site and surrounding area, the following mitigation measures are recommended:

Before and During the Infilling Works

- All infilling works must be confined to the development site only and should adhere to all standard best practice measures. Work areas should be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out in advance of the proposed works. These measures must be undertaken from initial site works until the completion of all works on site.
- The portion of hedgerow that has been removed along the northern site boundary was done so outside of the bird nesting season (March – September). No mature trees must be removed to facilitate this entrance.
- The plans for the infilling development allowed for a 10m unfilled buffer zone along the perimeter of the site, which includes all hedgerows, treelines and the riparian zone of the River Camac. This 10m buffer is for the protection of birds, mammals and water quality. In additional a 2m exclusion is demarked fo the root protection area 9RPA) along all hedgerows and tree areas. This is ano entry area for the duration of the works and signed accordingly. Prior to the commencement of works on the site, this buffer zone will be fenced off with sturdy fencing, which ideally should be mammal proof. There will be no storage of machinery, soil or other material within this buffer zone. All existing vegetation in this buffer zone should be maintained.
- As per the plans submitted and in accordance with the Construction and Environment Management Plan (CEMP), a silt barrier will be installed at the edge of the 10m buffer zone along the Camac River and the drain that occurs along the eastern site boundary. This silt fence must be sturdy and inspected regularly for weaknesses and deficiencies. As part of the FI response for this proposed development details of the proposed silt control measures have been submitted by the applicant as part of the CEMP.
- The silt fence installed is a permeable geotextile barrier installed vertically on support posts and entrenched in the ground. Such a design is illustrated in the sketch below:

- All chemicals, fuels, oils, greases and hydraulic fluids will be stored outside of this site and away from any watercourse in bunded compounds.
- There will be no re-fuelling on site.
- All soil materials will be visually inspected for signs of potential contamination. Should any contamination be identified, the relevant soils will be stored separately, sampled and disposed of by a licensed waste contractor (as required).
- The mammal survey prepared by Brian Keely identified a small number of trees on site that have bat potential. These trees must be retained. If it any stage it is considered necessary to remove these trees, they must be inspected by a bat specialist prior to felling.
- There measures include requesting that the contractor maintains a regular watching brief along all topsoil stored on site for the potential establishment of badger setts during the construction phase. In addition, it was also recommended that prior to construction works commencing that an ecologist undertake an otter walkover survey along the Camac. The ECOW will conduct walkover

Post Infilling Works

- Any landscaping at the end of the infilling works should involve the planting of native Irish species that are indigenous to the site. Suitable species would hawthorn, willow and alder. The characteristics of newly planted hedgerows should mimic those in the surrounding area. Invasive species must not be used. Any landscape plan must be cognisant of the sensitivity of the natural habitats surrounding the site. Herbicides should be avoided during all phases of the construction and operation as these chemicals can have detrimental impacts upon local populations of pollinators.
- Bare soil should be seeded as soon as possible with grass seed. This will minimise erosion into the River Camac.
- The remaining perimeters of the site should be managed at a low intensity level post infilling. They should not be cleared of vegetation, sprayed with herbicide or reseeded.
- This will allow for the protection of mammals and water quality post infilling. Cutting of the grass once a year in late summer will promote biodiversity and the growth of flowering herbaceous plants. This will be of benefit to local pollinating insects.
- Any future land spreading of the land post reseeding should only be done in accordance with the measures outlined in S.I. 605 of 2017. Land-spreading should adhere the guidance in this legislation and it should conform to any Nutrient Management Plan set out for the source farm.

7. Ecological Management Plan

In accordance with the requirements of the grant of permission and the EcoIA, a number of requirements for ecological and landscape are required. These are outlined in detail in this reporr. All other mitigation is outlined in the CEMP

7.1 Site visits and verifications in advance of works.

As part of the CEMP, the Environmental manager onsite checks and reports the mitigation and EIAR monitoring on a regular basis.

Under the existing Grant of permission for the Hurley site, this includes monitoring of the Carmac river and water quality and the detailed design and now erection of the silt screens.

The site access area between the two fields was already cleared when the contractor took vert h site. No further clearance of the hedge and treeline are required.

In addition to the ECOW tasks the ecologists will verify the silt screens and fencing as well as the other mitigation requirements prior to infilling. The ECOW and Environmental Manager also have responsibilities for environmental monitoring under the CEMP.

7.2 Construction Ecological Monitoring

- Under the CEMP the Environmental manager will conduct daily and weekly inspection (see Attachment 1) and report findings via a check list. Any environmental or ecological observations will be reported to the ECOW
- ECOW will conduct periodic inspection of the site and report via checklist.
- No material is imported into the site from exterior sources. Seed bank is to be maintained. Ground clearance is already undertaken. Verification of these actions will be confirmed by the Environmental Manager onsite and verified by the ECOW by inspection and reporting.
- Pre infilling inspection will be undertaken by the ECOW of the site preparaton the silt fencing and the RPA marking and fencing. Verification of these actions will be confirmed by the Environmental Manager onsite and verified by the ECOW by inspection and reporting. These items will be visually inspected by the ECOW on each visit. The environmental Manager will inspection the silt fence daily and the RPA weekly.
- Badgers - There are no seasonal constraints for this species as there is no sett or permanent activity on the site. The ECOW will include walkover of this area during the November to January period if operations are still ongoing to ensure no change in activity or adolescent sett digging activities.
- Otters – whilst there is no direct evidence of otters onsite the following survey will be required, Pre infilling river walkover and inspection of the silt fencing and the river area for any otter sign, a mid infill inspection, post infilling walk over for otter sign before the silt fence is removed and one after the silt fencing is removed and area remediated.
- Water Quality – water quality monitoring including Q value sampling will be conducted as indicated in the CEMP
- Other aspects such as landscape and visual, noise, complaints procedures etc will be implemented as per the CEMP.

8. Landscape Management Plan

In accordance with the requirements of the grant of permission and the EIAR mitigation, the following landscape requirements are implimetented in addition to those in the CEMP.

8.1 Requirements.

Seedbank – the surface material from the infill area has been stripped and held onsite. The material will not be treated in anyway and will be spread on the surface of the infill area, post development. This is to ensure that as far as possible the same species diversity is promoted on the site as the current predevelopment situation. This will be supplemented with grasses.

Root protection Area, as part of the daily inspection the site Environmental Manager will ensure that

a. Materials are never to be stacked within the root spread of the tree;
b. No oil, tar, bitumen, cement or other material is to be allowed to contaminate the ground;
c. No fires shall be lit beneath or in close proximity to the tree canopy;
d. Trees to be retained should not be used as anchorages for equipment or for removing stumps, roots or other trees, or for other purposes;
e. No notices, telephone cables or other services should be attached to any part of the tree;
f. Cement mixing should not be carried out within the canopy/protected area of the tree;
g. Soil levels are to be maintained as existing within the root spread of the tree.

Non Native species and biosecurity – no material will be brought from other sites beyond the current development (Hunley and Hich sites). Any material introduced into the site will be susubject to inspection by the Site Environmental Manager. Replanting seed will be verified as native species and from a known supplier.

Dust management, runoff and surface water control will be implemented as per the requirements of the CEMP.

8.2 Silt Fencing for the River Camac.

There shall be no discharges of contaminated waters to ground or surface waters from the infill phase. In order to avoid indirect sedimentation impacts on The River Camac, there will be a buffer of c.10m and the installation of silt fence around the perimeter of the infilled area. This mitigation was proposed in the EIAR and is implemented onsite for the infilling works

A silt fence will remove the potential for sediment movement during wet weather events. This is particularly important along the River Camac. The silt fence will be a permeable geotextile barrier installed vertically on support posts and entrenched in the ground. **Figure 6.1** below illustrates a silt fence in operation and **Figure 6.2** shows the silt screen installed onsite in advance of the works.

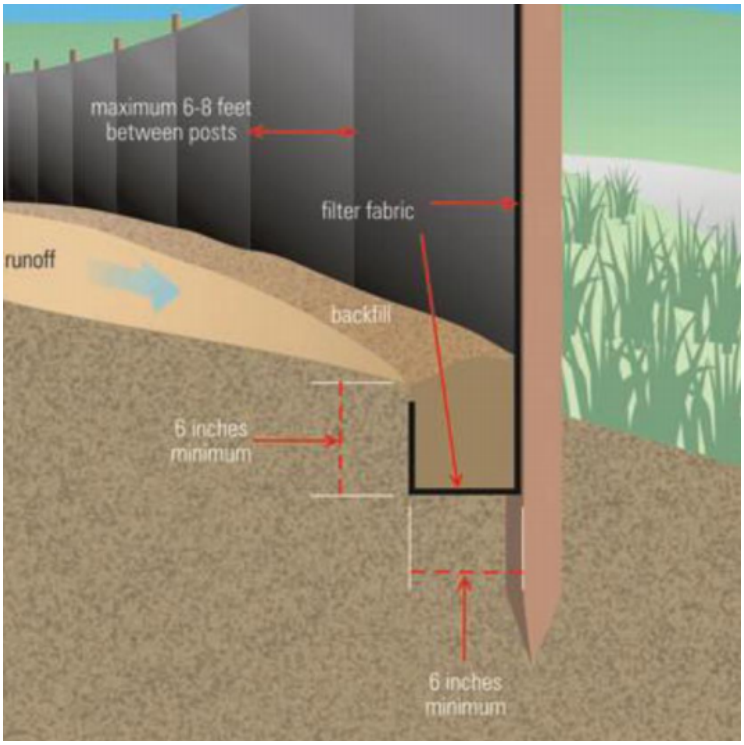

Figure 6.1: Silt fencing arrangements for vulnerable section along the River Camac.

Figure 6.2: Silt fencing in situ River Camac (erected an in place as part of the conditions of grant for both sites (Coffeys 13th July 2022).

8.3 Tree and Hedgerow Fencing

Tree protection is being undertaken in accordance with Section 8 of BS 5837:2012 Trees in relation to design, demolition and construction) to safeguard all existing trees and hedgerows on the site against damage prior to or during building works

The British Standard "Trees in Relation to Design, Demolition and Construction to Construction - Recommendations" (BS 5837) (2012), details the steps that should be taken to ensure that trees are appropriately and successfully retained when a development takes place.

The existing plans submitted include a root protection area (RPA) in the boundary of the site where the hedgerows occur. This area is demarked onsite and the exclusion zone will be monitored by the site Environmental Manager.

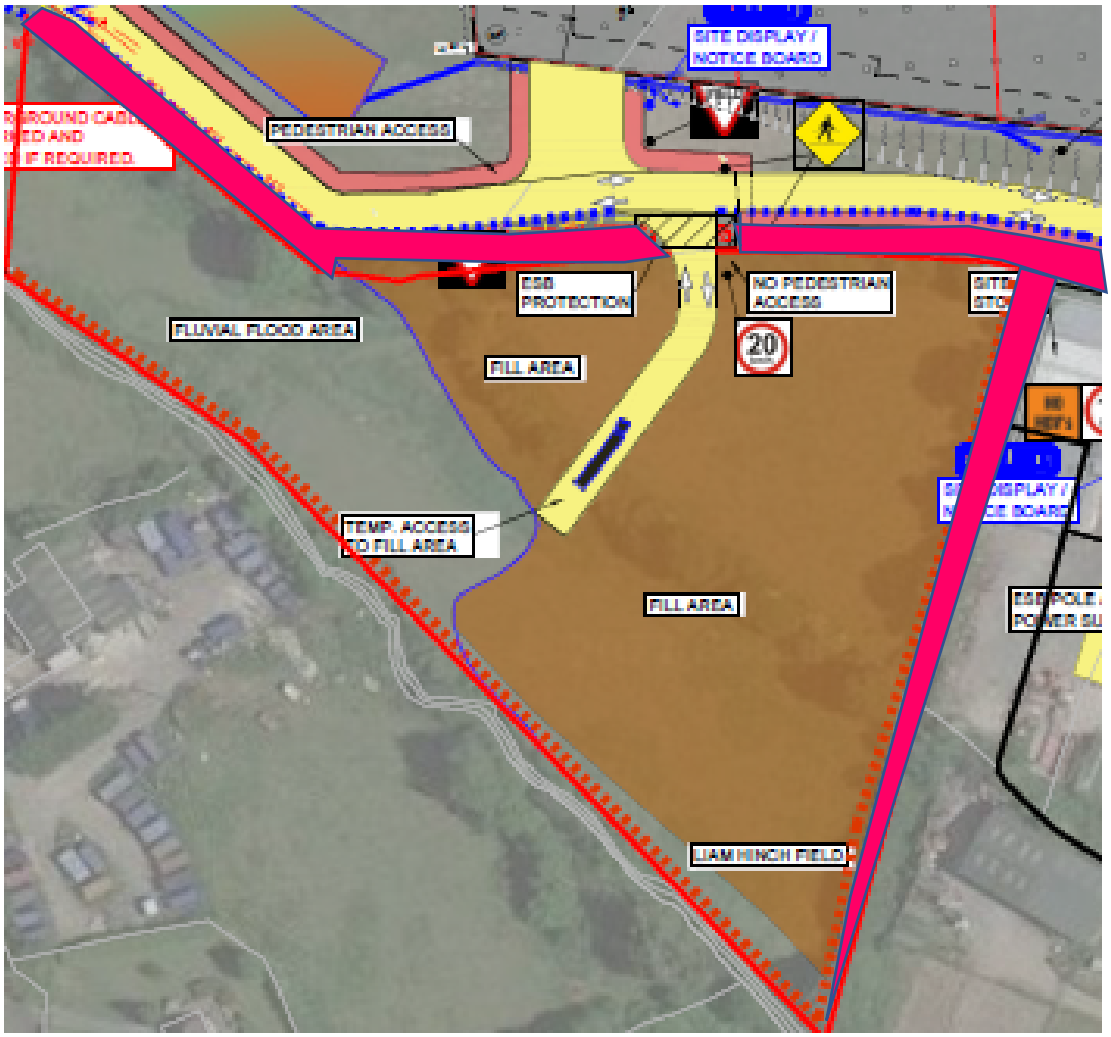

Figure 6.2: Root Protection Area (shown in pink): a minimum 2m buffer between work and in fill areas and hedgerows.

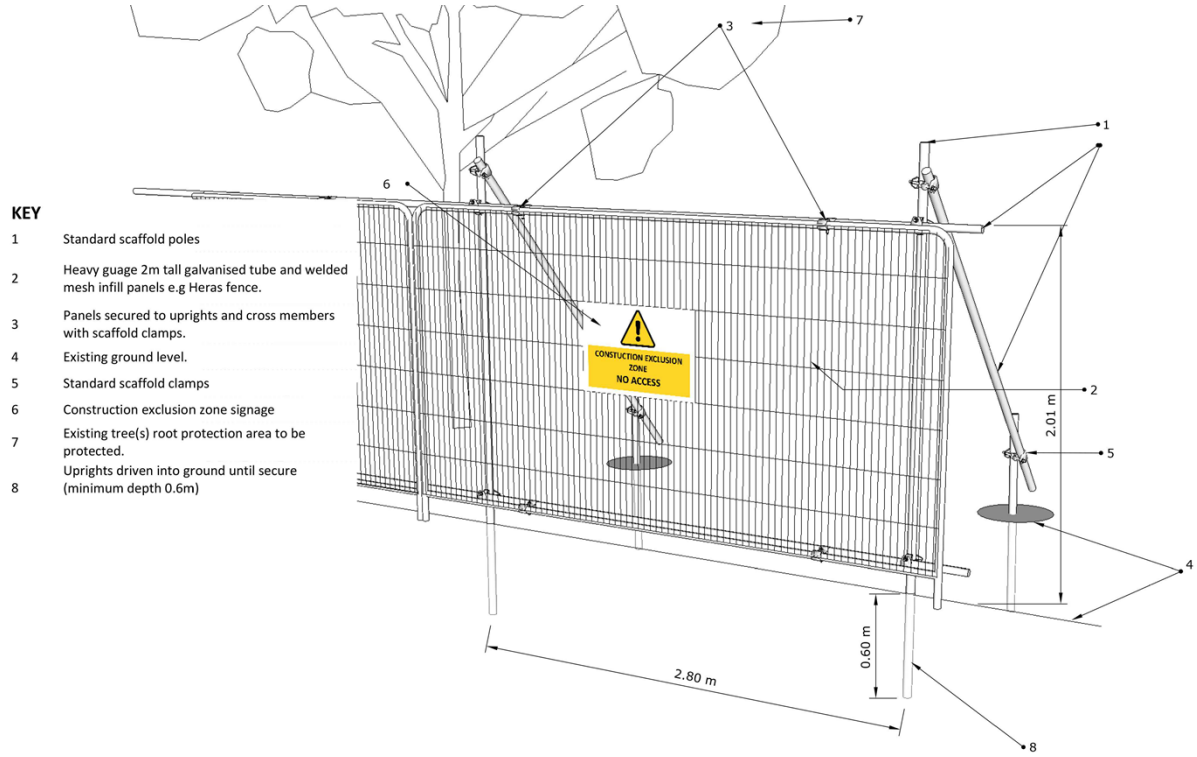

Figure 6.2: Root Protection Fencing for entrance area.

All trees/hedgerows to be retained to be protected in accordance with BS 5837:2012, Trees in relation to design, demolition & construction.

Prior to the commencement of any work, or any materials being brought on site, existing trees to be retained are to be protected from damage.

In areas of heavy vehicle movement (i.e. the entrance way and immediate area at the crown of the site) these will be protected by a 2.0m high weld mesh/Heras fence or similar approved fencing method.

This shall be maintained in good and effective condition until the work is completed and inspected by the ECOW prior to infilling and the site Environmental Manager on a weekly basis.

The fence will allow for stabiliser struts to secure fence for duration of construction.

The protective fencing is to coincide, as far as is practical, with the root protection area (RPA), The RPA is demarked with posts tape and environmentally friendly marker spray at 2m+ from all trees and hedgerow areas. The area outside the RPA buffer is demarked and outside this area the interior of the site is surface stripped as per the EIAR recommendations. Banking of topsoil outside the RPA boundary ensures clear demarcation of the hedgerow areas. Tree areas especially around the entrance will be fences as per the specification in BS 5837:2012

All weather notices shall be securely fixed to the fence and posts words such as 'construction exclusion zone - no access'.

8.4 Post Fill Landscape requirements

Seeding

No material will be brought int the site from other sources without a biosecurity assessment for invasive species. Planting will be in line with current grassland.

The topsoil from the site which was stripped from the in fill area is held for over topping the site. This material will act as a seedbank to recover the area in the equivalent species. The main reseeding will be for grassland.

Compaction

Post infill the area will be compacted as per BS587:2012. Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed.

Where soil compaction may be needed in the vicinity of existing trees, arboricultural or ecological advice should be taken before carrying out any remedial or other works within RPAs to mitigate risk of further damage to roots.
Heavy mechanical cultivation such as ploughing or rotavation should not occur within the RPA during construction or operational phases.
Any cultivation operations should be undertaken carefully by hand in order to minimize damage to the tree, particularly the roots.
Decompaction measures include forking, spiking, soil augering and tilthed radial trenching maybe undertaken only in the area where the entrance has been added to the field.

Post-development management: existing trees

A post development inspection will advise on any necessary work to retained trees. This will be drawn up with an ecologist for the landowner
Trees growing on a site before development takes place can, if adversely affected, be in decline over a period of several years before they die. The landowner will be responsible for reporting any decline to the ECOW to support any required remedial action by referring the matter to Coffeys.

Post-development management: new plantings

Regular maintenance of newly planted trees is of particular importance for at least three years post-planting. Planting will be undertaken by the contractor at the completion of the infilling operations. The trees will be planted with suitable support posts and where required, grazing guards.

The landowner will be responsible for the observations in the 3 years post construction of these plantings and will report any decline or damage to Coffeys for remediation.

9. Site Inspection Procedure and Checklist

Regular site assessments will be undertaken to confirm that the CEMP is being followed. These will be undertaken and reported by the site Environmenal Manager and audited and checked periodically by the ECOW. These will include.

- Daily and weekly site walkovers using prescribed check lists
- Environmental Toolbox talks;
- Environmental Awareness induction
- Periodic ECOW inspection
- Visual checking and recording of mechanical plant for leaks and mechanical issues in order to minimise leakage and breakdowns on site. The purpose is to identify any need for pre-emptive maintenance, so as to avoid any accidental spillage of hydrocarbons.

The checklists proposed for use are appended to this CEMP.

Attachment 1 – CEMP Environmental Checklist

Introduction & Scope

This environmental inspection procedure outlines the requirements for the conduct of regular visual inspections at the site, Slade Saggart, Co. Dublin.

Regular visual inspections are performed to ensure a clean working environment.

The inspections also aim to identify potential environmental hazards in the work area and to minimise associated risks.

Responsibilities

The site operator

- Undertake regular visual inspections of the Site;
- Undertake and record the Weekly Check inspections (per checklist attached); and
- Implement and adhere to any required corrective actions/ control measures.

Inspection Procedure

1. Review the Weekly Checklist Form;
2. Conduct the inspection by walking around the work environment;
3. Identify any hazards and areas of non compliance against the checklist;
4. Record all findings, ensuring the Form is signed and dated and includes details of the personnel conducting the environmental inspection;

Environmental Inspection Checklist

Date: _____

Person: _____

Weather condition (precipitation, sun, wind- speed and direction)

Environmental Inspection Checklist	Comments	Corrective Actions Needed (Y/N)
GENERAL		
Site clean and tidy – no litter, good housekeeping?		
Are there any leaks or mechanical issues with plant and equipment on-site?		
Do any corrective action records remain open?		
DUST EMISSIONS		
Are site activities sprayed to minimise dust generation?		
Are dusty sections of the site sprayed with water?		
Are speed control measures being complied with		
WATER ENVIRONMENT		
Are emission values at the monitoring points being met?		
Are vehicles cleaned before leaving the main site?		
Are wheel washing facilities at the main site properly maintained		
Is sand and silt in the wheel washing bay regularly removed?		
Is the site entrance and surrounding public road kept clean and free of mud?		

Environmental Inspection Checklist	Comments	Corrective Actions Needed (Y/N)
Is wastewater regularly removed off-site		
Is water recycled where possible for dust suppression/ wheelwash etc?		
NOISE		
Is the site operating within the agreed working hours?		
Is idle equipment turned off?		
Any noise mitigation measures adopted?		
WASTE MANAGEMENT		
Are wastes regularly removed off-site for recycling/ appropriate disposal?		
Are all wastes collected and disposed of by licensed contractors		
Are waste containers appropriately & clearly labelled?		
GENERAL OBSERVATIONS		
Are there any observations or opportunities for improvement		
Are there any ecological observations on the site?		