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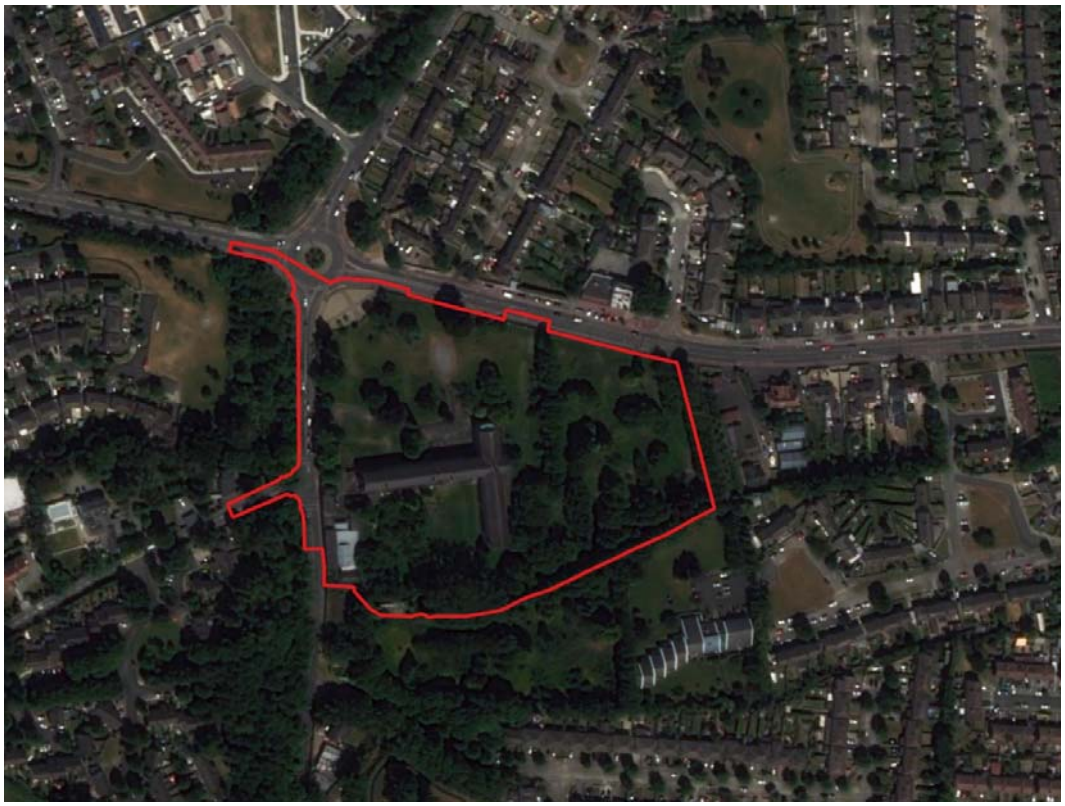
Outline Construction Environmental Management Plan (CEMP) for a proposed LRD at Taylors Lane, Ballyboden, Dublin 16.



29th March 2023

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On behalf of: Shannon Homes Dublin Unlimited Company

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Executive Summary

This outline Construction Environmental Management Plan (CEMP) has been developed to detail the commitments and mitigation measures to be implemented by Shannon Homes Dublin Unlimited Company. and it's appointed contractors during the proposed Large-scale Residential Development (LRD) at Taylors Lane, Ballyboden, Dublin 16. This CEMP is being submitted in tandem, and should be read in conjunction, with the Appropriate Assessment Screening report (AA), Natura Impact Statement, Ecological Impact Assessment (EcIA) and Resource & Waste Management Plan (RWMP) for the proposed development.

The purpose of the CEMP is to provide details of the proposed project, the proposed works, the phasing and methodologies, proposals for on how the proposed project is intending to use a comprehensive and integrated approach to protecting the sensitive receptors proximate to the proposed works, in addition to providing information on waste and traffic management.

This CEMP also outlines the potential impacts of the development, details the sensitive receptors, environmental controls, and the mitigation measures that will be implemented to minimise any potential impacts. The CEMP also details the specific requirements that need to be addressed during project stages and also includes the related roles and responsibilities of individuals involved in the project.

1. Introduction

Outline of CEMP

Altemar Ltd. has been commissioned by Shannon Homes Dublin Unlimited Company to prepare an outline Construction Environmental Management Plan (CEMP) for a proposed Large-scale Residential Development (LRD) at Taylors Lane, Ballyboden, Dublin 16.

The purpose of the CEMP is to provide details of the proposed project, the proposed works, the phasing and methodologies, proposals for on how the proposed project is intending to use a comprehensive and integrated approach to protecting the sensitive receptors proximate to the proposed works, in addition to providing information on waste and traffic management.

This CEMP is subject to planning permission being granted for the development as per the drawings submitted. The CEMP is a live document subject to change based on the following:

1. comments from An Bord Pleanála
2. final planning permission granted and conditions
3. compliance requirements of South Dublin County Council
4. concerns raised by residents affected by the works

The final CEMP prepared for the development will be submitted prior to commencement of the relevant phase on site and will be subject to periodic review as part of the management of the construction process.

Structure of the CEMP

This CEMP is based on measures to ensure legal compliance and established good management practice on-site and includes the following sections:

1. Introduction
2. Project Description
3. Analysis of the Potential Impacts
4. Mitigation Measures & Monitoring
5. Site Information
6. Construction Management
7. Emergency Procedures
8. Invasive Species
9. Conclusions

2. Project Description

Project outline and Site Context

Shannon Homes Dublin Unlimited Company intend to apply for permission for Large-scale Residential Development (LRD) at Taylors Lane, Ballyboden, Dublin 16.

The proposal is for a large-scale residential development on this site of net 3.5ha comprising the following:

- Demolition of existing former Institutional buildings and associated outbuildings (c.5231 sq.m);
- Construction of 402 residential units within 3 apartment/duplex blocks ranging in height from 2-5 storeys and comprising of 39 no. 1-Beds; 302 no. 2-Beds; and 61 no. 3-Beds all with associated private balconies/terraces to the north/south/east/west elevations;
- Provision of one crèche and two retail units.
- Provision of a new public park along Taylor's Lane
- Provision of 290 no. car parking spaces.
- Vehicular access to the site via Edmondstown Road to the west.
- Pedestrian Access to the site via Edmondstown Road to the west and Taylor's Lane to the north.

The proposed site outline, location, site plan, and elevations are demonstrated in Figures 1-5.

Summary of Ecological Importance

Site flora and fauna assessments and bat surveys were carried out. In summary, no terrestrial mammals or signs of mammals of conservation importance were noted on site. No flora of conservation importance were noted on site. The site consists of unmanaged grassland, scrub and treelines in addition to derelict buildings and a millrace. Several standing dead stems of Giant Hogweed (*Heracleum mantegazzianum*) were noted onsite during a 2014 survey conducted by Faith Wilson (MCIEEM). There was no evidence of this species during a 2019 survey of the lands conducted by Faith Wilson or in 2022 by Altemar. Over the course of multiple surveys between 2013 and 2022, four bat species was noted foraging on site. Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*), Leisler's Bat (*Nyctalus leisleri*), and a single Brown Long-eared Bat (*Plecotus auritus*) were noted foraging onsite.

Landscape

The landscape strategy for the proposed development has been designed by Doyle & O'Troithigh Landscape Architecture to accompany this planning application. The proposed overall landscape plan and green infrastructure plan are demonstrated in Figures 6 & 7.

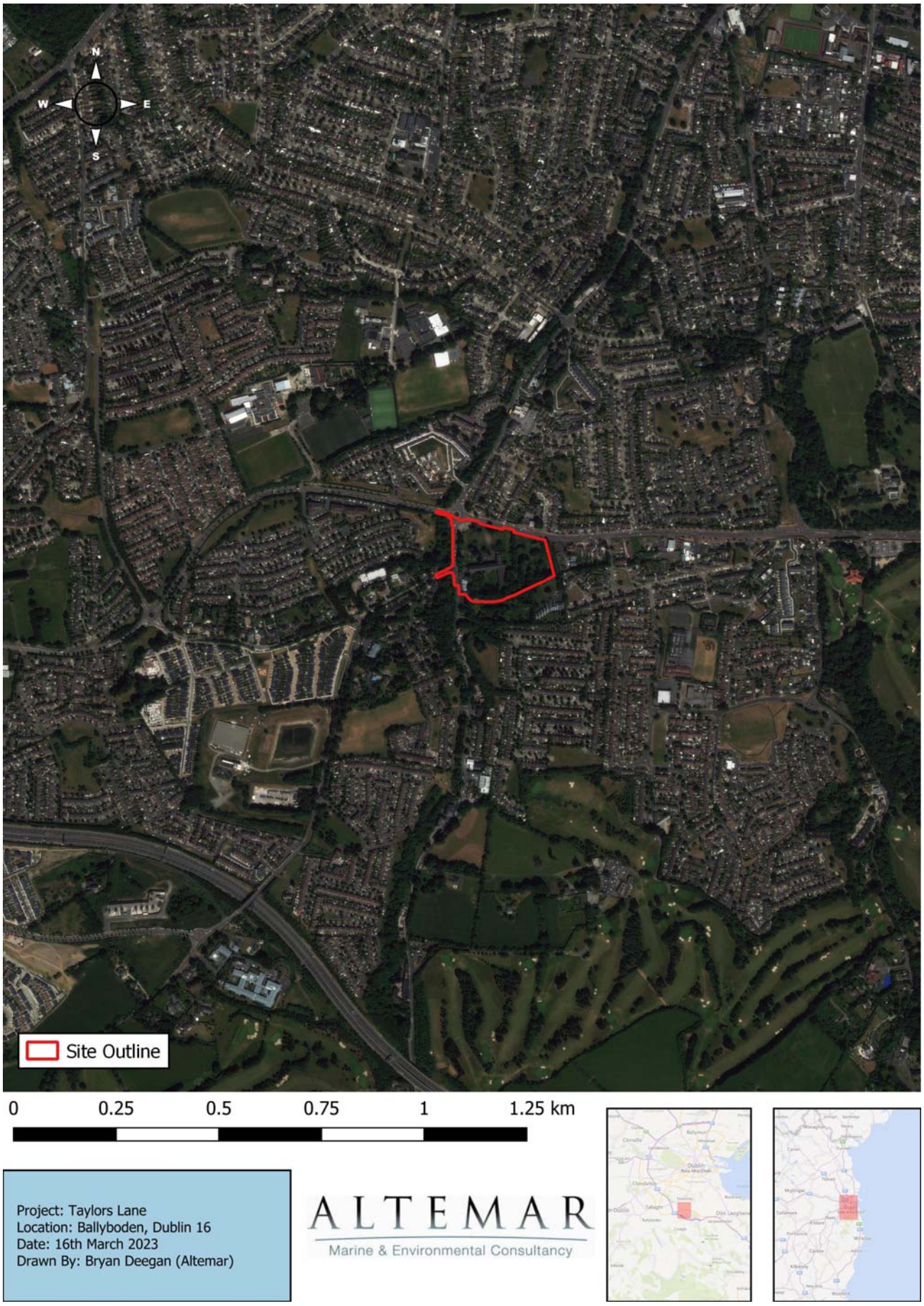

Figure 1. Proposed site outline and location

Figure 2. Proposed site outline

Figure 3. Proposed site plan

Figure 4. Proposed elevations (sheet 1)

Figure 5. Proposed elevations (sheet 2)

Figure 6. Proposed overall landscape plan

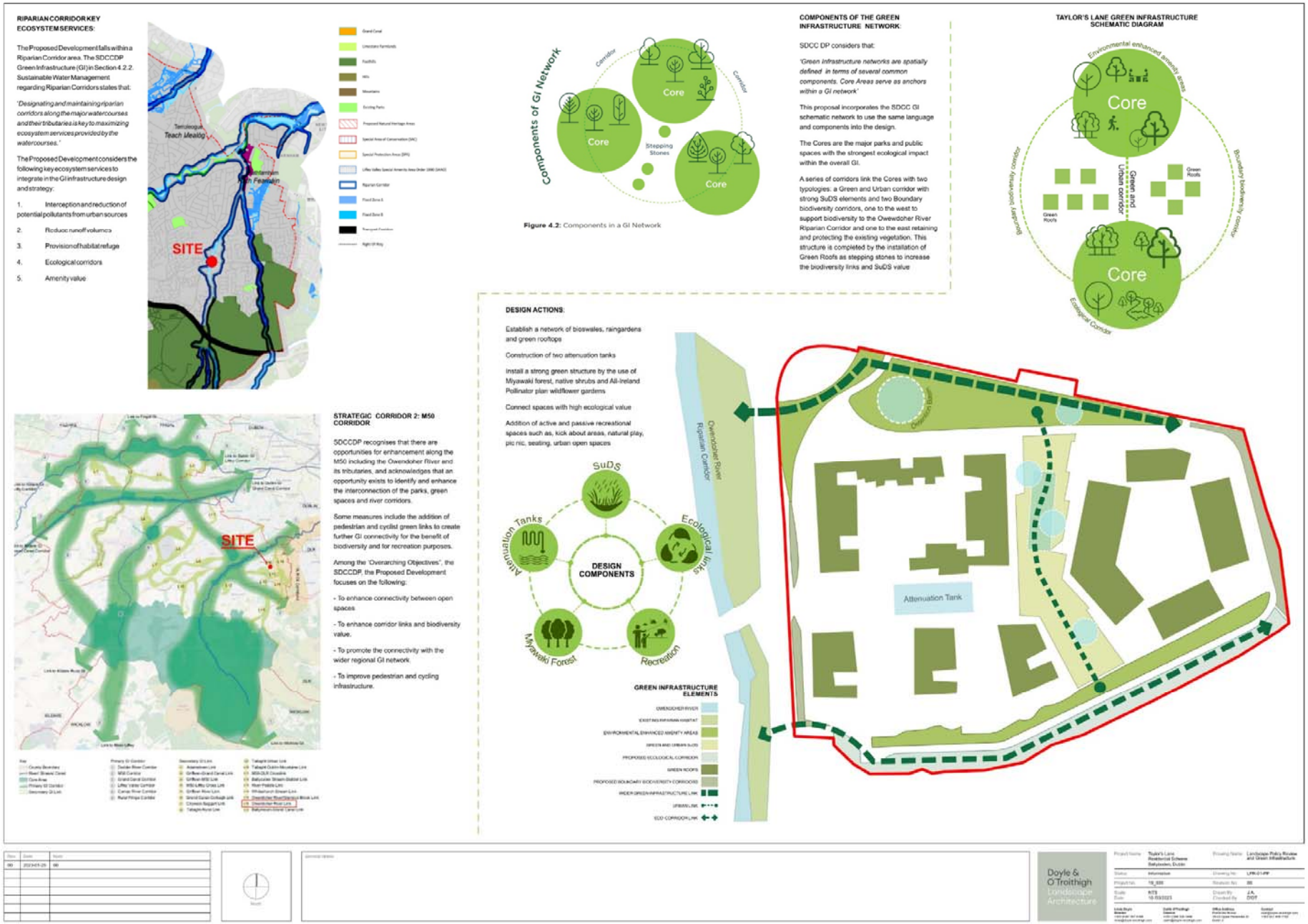

Figure 7. Landscape policy review and green infrastructure

Arborist

A Tree Survey & Planning Report has been prepared by Independent Tree Surveys Ltd. to accompany this planning application. This report details the following arboricultural impact of the proposed development:

'*The scale and density of the proposed new development will require the clearance of most of the existing vegetation cover before this is replaced with a new landscape planting scheme within the new layout. Some of the more prominent mature trees will be retained in the north-western part of the site (including the two category A trees tagged T890 and T909) along with the dense landscape screen of Cypress trees (groups G7, and G18, G19 and G20) along the eastern boundary.*

The number of trees and tree groups proposed for removal from the site is considerable and includes most of the existing tree cover; however, the arboricultural quality and value of most of these trees is comparatively low. The vast majority of the trees proposed for removal are the remnants of the planting scheme established during the creation of the pitch and putt golf course and the planting layout of the tree groups reflects this origin. The trees mostly form narrow linear groups (both straight and sinuous) that were used to divide and separate the individual components of the golf course, the trees are closely spaced and mostly disfigured by the severe pruning regimes to control their size and spread. The planting design, species mix and past treatment limit the management options for the trees and underlie the reasons for their relatively low overall value and low grading in the initial tree survey assessment. Many of the trees planted into the old pitch and putt course has created what are in effect, short sections of hedge which are of little practical use outside of the intended purpose. The individual trees making up the groups are unsuited for retention as individuals because of their growth habit and form and co-dependence with the other members of the group.

The existing pattern of tree cover in the eastern part of the site is thus quite unsuited to incorporation within an efficient revised land use layout for the site, and this makes its removal and replacement unavoidable if the site is to be re-developed for high-density residential use.

The plans for the new development include for the removal of the overgrown Cypress treeline (G21) that runs along the southern boundary region of the site and other trees planted along the bank below the small watercourse. This is proposed as part of plans to improve the conservation value of the riparian corridor by replacing the monocultural stand of conifers with a mix of species able to benefit from the vastly improved growing conditions created by the removal of the heavy shading from the Cypress trees. This work will involve the removal of a considerable number of individual trees and open up the southern boundary region in the short term, however, the trees are of low individual value and the works should bring about a net improvement of tree and vegetation quality over time and into the future.

The trees being proposed for removal include several Ash and Elm trees that are already dead or showing signs of decline as a result of Ash dieback and Dutch Elm disease. It is very likely that these trees would have to be removed at some point within the next few years as they die off due to the disease.

The road re-alignment works to create the necessary access into the new development will require extra space and this will necessitate the removal of many of the existing trees along the Taylors Lane frontage. Many of these trees are of poor quality and/or health, but their removal will constitute a loss of mature tree cover along a well-used public road that will have some visual impact in the short term. The trees will be replaced by a fresh planting scheme as part of the landscape plan; these new trees will add increasing landscape and amenity value as they mature.

In total the plans require the removal of 18 tree groups (17 category C and 1 category U) and 90 trees listed individually on the survey schedule. The trees to be removed include 15 category B, 55 category C and 20 category U trees. As such 75 out of the 90 individual trees (>80%) are of relatively low value or unsuited to long term retention.'

The tree survey and constraints plan and tree protection plan are demonstrated in Figures 8 & 9.

Figure 8. Tree Survey and Constraints Plan

Figure 9. Tree Protection Plan

Drainage

An Engineering Services Report has been prepared by DBFL Consulting Engineers to accompany this planning application. This report outlines the following drainage strategy for the proposed development:

Surface Water Drainage

In relation to existing surface water drainage infrastructure, this report outlines the following:

'*The proposed site is serviced by an existing surface water sewer which crosses Edmondstown Road and discharges to the Owendoher River located to the west of the site. The records also show a 900mm diameter surface water culvert on the north-eastern boundary which crosses Taylors Lane, after investigations it is found the only connection to this culvert is an obsolete surface water drain which serviced an old water feature that is no longer used. No further surface water infrastructure serves the development*.'

In terms of the proposed surface water drainage strategy, this report outlines the following:

'*The site investigation shows relatively good infiltration rates to the north of the site with tests recording results between 4x10-4 ms-1 and 4x10-5 ms-1.*

Due to these results, infiltration techniques will be considered if only in part within the SUDS strategy

All runoff from impermeable surfaces on the site will initially drain via source control SUDS features as the first step in the management train. Where feasible, subsequent SUDS features have been linked to increase interception losses along the management train. For the remaining storage requirements, a number of attenuation features have been designed (discussed under section 5.3). A large portion of the open area of the site to the north has been reserved for open conveyance and detention basins. The remaining storage requirements were fulfilled using economical and sustainable underground attenuation features which promote infiltration. Outflows from the development will be restricted to greenfield rates before being discharged via a single outfall to the Owendoher River at the north-western corner of the subject site. The surface water network and the outfall have been designed to ensure that the network can continue to drain during high water levels in the Owendoher River.'

Foul Wastewater Drainage

In relation to existing foul wastewater drainage design, this report outlines the following:

'*By reviewing records, the surrounding area predominately uses a separated drainage network. The subject site is serviced by an existing 225mm diameter foul sewer on Edmondstown Road which runs from south to north, continuing north within Ballyboden Road*.'

In terms of the proposed foul drainage design, this report outlines the following:

'*The proposed foul drainage has been designed to drain via one outfall to the Irish Water combined sewer in Edmondstown Road.*'

The proposed site services layout is demonstrated in Figure 10.

Flood Risk Assessment

A Site Specific Flood Risk Assessment Report was prepared by DBFL Consulting Engineers to accompany this planning application. This report concludes with the following:

- '*The proposed type of development for this site is to be residential and is categorised as* ***highly vulnerable development***.
- *All Highly vulnerable development is located wholly in Flood Zone C.*
- *Only the north-western corner of the subject site is located in Flood Zone B and due to the infrastructure constraints (watermain wayleave), all proposed development is located well outside Flood Zone B.*
- *As part of the mitigation measures to reduce the associated Flood risk for site users, was by ensuring all 'highly vulnerable' finished floor levels are located above the 0.1% AEP flood level plus 500mm freeboard. As the flood extents relate to overland flows, the CFRAMS flood depth maps and site-specific topographical survey were used to calculate the levels at the flood extents. Where the difference between the calculated flood level and the FFL is not 500mm, landscaping will ensure the 500mm freeboard is included to ensure no further overland flow paths are created within the site.*
- *A possible source of flood risk from the surcharging or blockage of the development's drainage system has been identified. This risk is mitigated by suitable design of the drainage network (as detailed in DBFL Infrastructure Design Report 190068-X-05-X-XXXRP-DBFL-CE-0002), regular maintenance and inspection of the network and establishment of exceedance overland flow routes.*
- *The development's drainage design includes for a 20% climate change allowance.*
- *The proposed development will not increase run-off rate when compared with the existing site and satisfies the requirement of the SFRA to reduce flooding and improve water quality.'*

Lighting

The lighting strategy for the proposed development has been prepared by McElligott Consulting Engineers. The proposed public lighting layout is demonstrated in Figure 11.

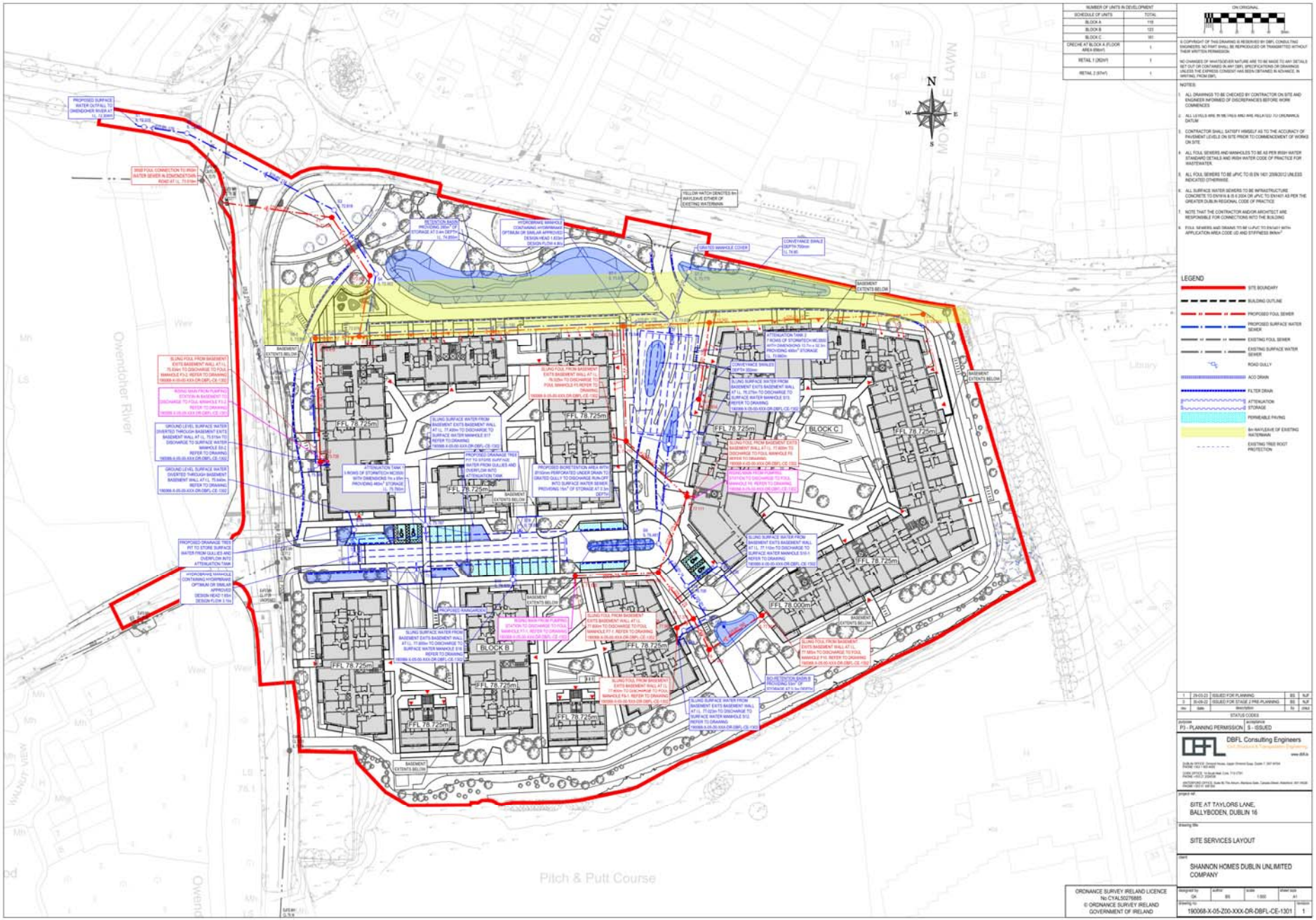

Figure 10. Proposed site services layout

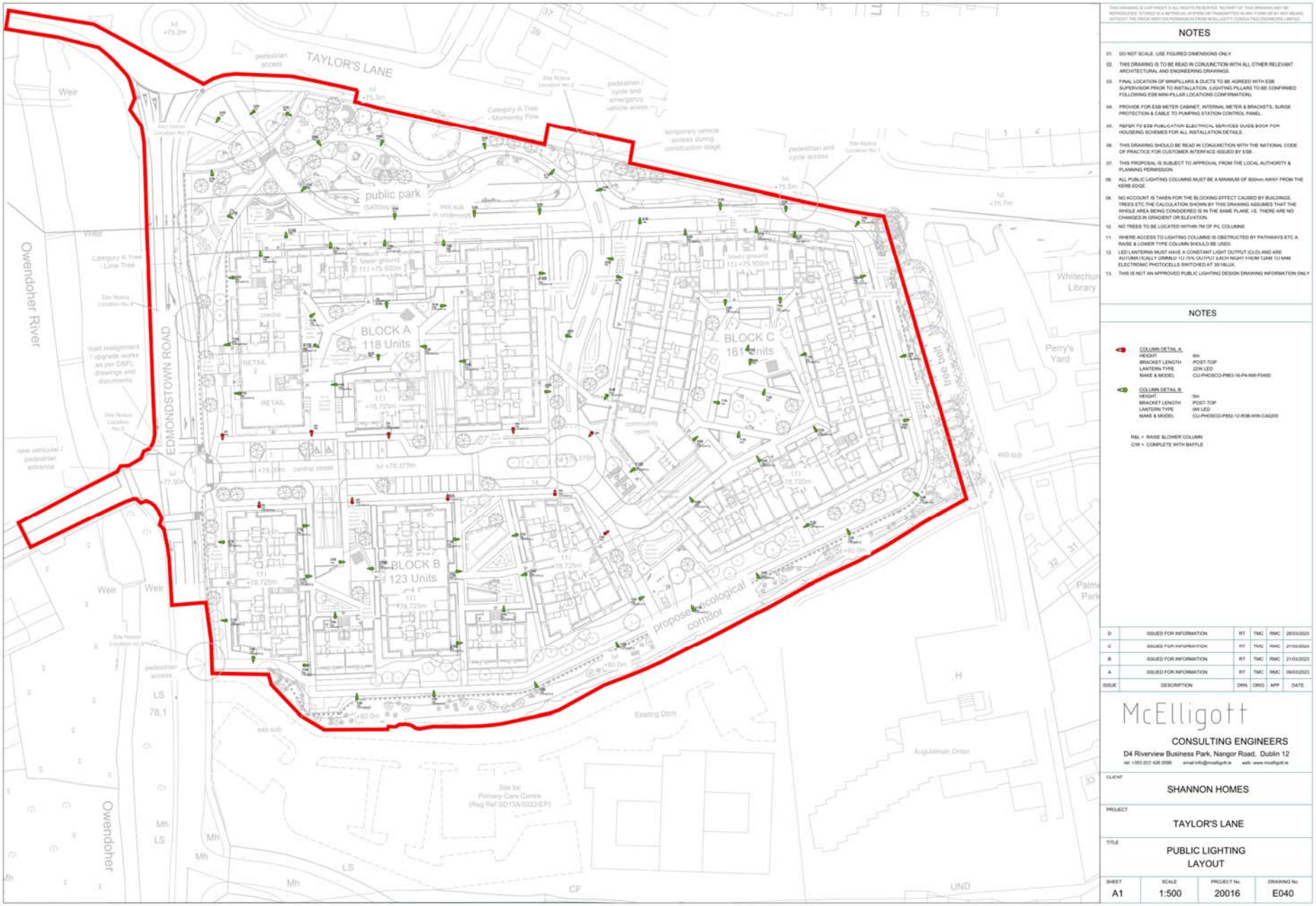

Figure 11. Public lighting layout

Construction Programme and Phasing

The proposed order of construction of key elements is as follows, however this is subject to detailed review by the Contractors at construction stage and specifics may require adjustment once the contractor has been appointed;

- Site Setup;
- Demolitions and site clearance;
- Earthworks, including cut and fill and disposal of excess material off site;
- Construction of substructure;
- Super Structure Frame to buildings in sequence;
- Roof and Façade finishes;
- Internal fit out;
- External site works and tie in to Ballyboden Road.

Site setup

A project ecologist will be appointed and approve all site clearance methodologies and works prior to the commencement of works on site.

Immediately after access to the site is made and it is secure, the site compound will be established. Existing site services will be isolated including the decommissioning of any existing substations in conjunction with the ESB and the provision of a temporary builder's power supply. The site will be secured with hoarding on all open sides and accessible approaches. The site boundary will be established as indicated by the red-line on the planning drawings and Figure 1.

The exact location of the construction compound is to be confirmed in advance of commencement of the works (and agreed with South Dublin County Council). The location of the construction compound is likely be relocated during the course of the works, in line with the progress of the development. The construction compound will include adequate welfare facilities such as washrooms, drying rooms, canteen and first aid areas, as well as foul drainage and potable water supply. Two access points to the site will be provided for construction traffic as shown in Figure 1. The first access will use the existing site entrance is off Edmondstown Road and a second access will be provided off Taylor's Lane. Specific control measures will be implemented to fully segregate construction traffic from external pedestrian traffic.

The Contractor shall provide arrangements to provide for vehicular traffic to the site with control measures where crossing the public footpath. The proposed location of the Contractor compound will be internally within the site.

Hoardings will be painted timber hoarding circa 2.4m including supports and appropriate anchoring (Designed by Temporary Works Engineer), external lighting and Safety signage. Site hoarding will include Health and Safety warnings at appropriate intervals. Site security will be provided by way of a monitored infrastructure systems such as site lighting and CCTV cameras, when deemed necessary.

Demolitions and Site Clearance.

It is anticipated that full demolition of the existing buildings (as shown on Figure 1) and perimeter walls on site will be required prior to the commencement of any construction works. Any demolition that is required will be carried out by a competent Demolition Subcontractor in accordance with the current code for demolition and the consultant engineer's specification. The site has a dense vegetation coverage which will need to be removed as part of the works, this will need to be undertaken with cognisance of the Arborist and Ecological Reports.

Earthworks

Earthworks will consist of reducing existing levels for the proposed basement structure and foundations. Suitable material such as rock will be crushed and used on site where possible. Excess material will be disposed offsite to a suitably licensed facility in accordance with the project's Construction Waste Management Plan and the following measures are to be implemented in order to mitigate against such risks:

- Stripping of topsoil and excavation works for the basements will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.

- At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.
- Excavation stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.
- Excavation stockpiles will also be located on site so as not to necessitate double handling.
- Topsoil will be re-used where possible in the landscaping proposals and the public open spaces.
- The design of road levels and finished floor levels has been carried out to minimise cut/fill type earthworks operations.
- Disturbed subsoil layers will be stabilised as soon as practicable. Therefore, backfilling of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping), will all be carried out promptly to minimise the duration that subsoil layers are exposed to the effects of weather.
- Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.
- Where feasible, excavated material will be reused as part of the site development works (e.g. for landscaping works and for backfill in trenches under non trafficked areas).
- Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site
- Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimising soil erosion.

Sensitive Receptors

The sensitive receptors in the vicinity of the proposed development are summarised and the potential impact/mitigation are seen in Table 1. Satellite imagery of the site is seen in Figures 1 & 2.

Table 1. Sensitive Receptors and Potential Impact.

Sensitive Receptor	Location / Potential Impact
Biodiversity within and proximate to the proposed development site and designated sites with a direct pathway.	Onsite works will involve demolition, ground clearance, re-profiling, groundworks, and construction, with potential for runoff, dust, light and noise impacts that could impact on local biodiversity and/or water quality with potential for downstream impacts on the proximate Owenadoher River, millrace and downstream conservation sites located within Dublin Bay. Mitigation will be put in place to protect biodiversity, proximate watercourses and downstream conservation sites from significant negative effects.
Residents in proximity of the proposed development	As seen in Figures 1 & 2, the proposed development is proximal to residential areas that would be sensitive to noise, dust and lighting impacts. Mitigation measures will be put in place to avoid significant impacts on the residents proximal to the proposed development during the construction phase of the project.
Terrestrial Fauna and flora	On-site Fauna and flora of conservation importance No terrestrial species of conservation importance have been recorded on site (NBDC records) or were observed on site during the site survey. The onsite works will involve ground clearance, re-profiling, groundworks and construction with potential for runoff, dust, and lighting impacts. However, as no species of conservation importance or resting/ breeding places e.g. setts/ponds, were noted on site. Frogs were not observed on site, however given that the Owenadoher River passes proximate to the western portion of the site, and that there is an existing mill race along

Sensitive Receptor	Location / Potential Impact
	the southern boundary of the site, there is a possibility that frogs are present on site. Mitigation is needed in the form of control of silt, petrochemicals, and dust during construction. A pre-construction survey should be carried out for mammals.
Birds	Clearance of the site will result in the loss of nesting habitat for breeding birds. Mitigation measures will be put in place to ensure potential nesting habitats are not cleared during bird nesting season. Additional foraging and nesting resources are to be provided.
Bats	The existing three-storey building and associated chapel onsite are of bat roosting potential. There are three trees located to the south of the subject site that are of moderate to high bat roosting potential. No bats were noted roosting on site. No bats were noted emerging from trees or adjacent buildings on site. Over the course of multiple surveys between 2013 and 2022, four bat species was noted foraging on site. Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*), Leisler's Bat (*Nyctalus leisleri*), and a single Brown Long-eared Bat (*Plecotus auritus*) were noted foraging onsite. Mitigation is needed in the form of the control of light spill during construction and the provision of additional roosting habitat will be provided. A post construction assessment of lighting will be required.
Mammals	No protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species.

3. Analysis of the Potential Impacts

This report has been prepared to outline the construction and operational phase measures in addition to detailing the potential impacts on sensitive receptors within the Zone of Influence (ZOI). The potential impacts on the ecology of the site in the absence of mitigation have been outlined in the EcIA.

Potential Impacts

This report has been prepared to outline the construction and operational phase measures in addition to detailing the potential impacts on sensitive receptors within the Zone of Influence (ZOI) in the absence of mitigation measures.

Potential Construction Impacts

The overall development of the site is likely to have direct negative impacts upon the existing habitats, fauna and flora. Direct negative effects will be manifested in terms of the removal of the site's internal habitats. The removal of these habitats will result in a loss of species of low biodiversity importance. However, the due to the substantial vegetation on site, the site forms a nesting resource for birds. There is the potential for contaminants and pollutants to enter the Owendoher River (a watercourse that traverses along the western portion of the application lands) and impact on downstream biodiversity.

Designated Conservation sites within 15km

The proposed development is not within a designated conservation site. The nearest designated conservation site is the Dodder Valley pNHA (2.2 km). The nearest Natura 2000 sites are Wicklow Mountains SAC & SPA (4.6 km).

The nearest watercourse to the subject site is the Owendoher River, which flows along the western portion of the subject site (Figure 16). The Owendoher River outfalls to the River Dodder, which in turn outfalls to the marine environment at Dublin Bay. Given that the Owenadoher River will be connected to the surface water drainage and flows proximate to the western boundary, it is considered that there is a direct hydrological connection to designated conservation sites located within Dublin Bay, namely, South Dublin Bay (SAC & pNHA), North Dublin Bay (SAC & pNHA), South Dublin Bay and River Tolka Estuary SPA, Sandymount Strand/Tolka Estuary Ramsar site, and North Bull Island (SPA & Ramsar Site). During construction, there is the potential for dust and contaminated surface water runoff to enter the Owendoher River and transport to downstream conservation sites within Dublin Bay.

It should be noted that there is an existing millrace that bounds the southern boundary of the subject site, which ultimately outfalls to the Owendoher River downstream of the subject site. Out of an abundance of caution, it is also considered that there is the potential for silt and contaminated runoff to enter this waterbody and transport pollutants to the Owendoher River and, ultimately, downstream conservation sites.

Impacts in the absence of mitigation: Minor adverse / International / Negative Impact / Not significant / short term.
Mitigation measures are required to ensure that there will be no significant impacts on downstream conservation sites via contaminated surface water runoff and dust during the construction stage of development.

Biodiversity

In the absence of mitigation, the impact of the development during construction phase will be a loss of existing habitats and species on site and potential impacts on biodiversity adjacent to and downstream of the site. It would be expected that the flora and fauna associated with these habitats within the site would also be displaced.

Further, given that the Owendoher River flows through a western portion of the subject site, and that there is an existing millrace that bounds the southern boundary of the site (which in turn outfalls to the Owendoher River), and that excavation and reprofiling works are proposed during the construction phase of development, there is potential for negative effects on downstream biodiversity in the absence of mitigation measures. There is the potential for dust, pollution and contaminated surface water runoff to enter the Owendoher River and impact on downstream biodiversity and on the water quality of the watercourse and potentially the River Dodder, which is a salmonid river.

Terrestrial mammalian species

No badger setts are present on-site. Otter presence was not noted on the Owenadoher River to the west of the site, which is a heavily modified watercourse that has few accessible passes for otters. No otter holts were found on site and none are expected onsite. A number of active and disused fox dens were noted onsite. It should be noted that a loss of habitat and habitat fragmentation may affect some common mammalian species.

Potential Impacts in the absence of mitigation: Low adverse / local / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction inspection for terrestrial mammals of conservation importance and control of silt and pollution form the site.

Flora

No flora of conservation importance or invasive species (Habitats Directive, 2011) were noted on site during the 2022 and 2023 site surveys. The majority of the proposed area consists of overgrown grassland with large areas of dense bramble scrub.

It should be noted that a several standing dead stems of Giant Hogweed (*Heracleum mantegazzianum*) were noted onsite during a 2014 survey conducted by Faith Wilson (see Appendix III). There was no evidence of this species during a 2019 survey of the lands conducted by Faith Wilson or in 2022 carried out by Altemar.

Impacts: Low adverse/ site / Negative Impact / Not significant / long-term. Mitigation is needed in the form of a pre-construction inspection for invasive species.

Bat Fauna

A number of bat surveys were carried out onsite, and proximate to the site, between 2013 and 2019 by Faith Wilson (MCIEEM). A number of bat surveys were carried out onsite in 2022 by Bryan Deegan (Altemar)

Three species of bat were noted in 2016 (Common pipistrelle, Soprano pipistrelle and Leisler's Bat). As outlined in Appendix I of the EcIA: '*Bat activity was mostly focused on the southern and south eastern side of the building which was in darkness with the exception of a security light over the door. No bats were recorded either entering or exiting the building and it would not appear to have been used by bats for roosting purposes at this time*.'

Four species of bat were noted in 2019 (Common pipistrelle, Soprano pipistrelle, Brown Long-eared Bat, and Leisler's Bat). As outlined in Appendix III: '*There was no evidence of bats roosting in the buildings on site but as noted above there is potential for bats to roost in a number of locations within the buildings. The detector survey recorded four species of bats foraging in the grounds of the property. These were Leisler's bat, which was first recorded flying south to north over Taylor's Lane and the Owendoher River corridor. This bat is unlikely to have been roosting in the property but would be availing of foraging habitat in the grounds. Common and soprano pipistrelles were recorded foraging over much of the grounds as previously recorded. A single pass of a brown long-eared bat was recorded at the corner of the chapel. This species is very hard to detect on a bat detector as it makes quite quiet calls. The design and structure of the attic of the building would be very favourable to brown long eared bats.*'

Three species of bat were noted on the 14th September 2022 (Leisler's, Common pipistrelle and Soprano pipistrelle). Two species of bat were noted foraging onsite on the 20th September 2022 (Common pipistrelle and Soprano pipistrelle). Bat activity was concentrated to two trees located to the south of the site. Given that these trees are covered in ivy and have a number of hollows, they are considered to be of bat roosting potential. Lighting during construction has the potential to impact on bat foraging. It should be noted that no bat roosts were noted in the buildings or trees on site.

Potential Impacts in the absence of mitigation: Moderate adverse /local / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction inspections of building and trees and control of light spill during construction.

Aquatic Biodiversity

The Owendoher River is a watercourse that traverses along the western portion of the subject site. A drainage connection for surface water will be made to the watercourse. No additional works are proposed to the watercourse. However, in the absence of mitigation measures there is potential for effects on this watercourse due to the potential for dust, polution and contaminated surface water runoff to enter the watercourse and cause downstream impacts on biodiversity.

It should be noted that there is an existing millrace that bounds the southern boundary of the subject site, which ultimately outfalls to the Owendoher River downstream of the subject site. Out of an abundance of caution, it is considered that there is the potential for silt and contaminated runoff to enter this waterbody and transport pollutants to the Owendoher River.

Potential Impacts in the absence of mitigation: Moderate adverse / county/ Negative Impact / Slight Effects / short term. Robust mitigation is needed in the form of control of silt, petrochemicals and dust entering the watercourse during construction. A pre-construction survey should be carried out for frogs.

Bird Fauna

A series of wintering bird surveys were carried out in 2022 and 2023 by Hugh Delaney (Ornithologist). As outlined in Appendix II of the EcIA "*In total 37 Bird species were recorded overall at the Taylor's Lane site in Ballyboden during*

10 surveys over the course of the winter bird survey period 2022-2023." Due to the presence of breeding birds on site the construction will result in a loss of foraging and nesting habitat for breeding habitat for breeding birds.

Potential Impacts in the absence of mitigation: Moderate adverse / site / Negative Impact / Not significant / long term. Mitigation is needed in the form of control site clearance outside bird nesting season and the provision of compensatory foraging and nesting habitat.

Potential Operational Impacts

Once developed, the site would be seen as a stable ecological environment. Planting of native species will be important to re-establish nesting and foraging habitats lost. Proximate bat species will be sensitive to light spill.

Appropriate measures should be taken to prevent light spill, contaminated surface water run-off and dust entering into adjacent riparian habitats, and in particular the Owendoher River needs to be protected due to the potential for downstream impacts on the watercourse. The new drainage networks will have to comply with SUDS requirements and standard petrochemical interception will be in place.

Designated Conservation sites within 15km

The proposed Project will comply with drainage requirements and the Water Pollution Acts. Standard compliance mitigation measures will be in place to prevent downstream impacts. No significant impacts on designated sites are likely during operation.

Potential Impacts in the absence of mitigation: Negligible / International / Neutral Impact / Not significant / Long-term.

Biodiversity

Biodiversity value of the site will improve as landscaping matures.

Terrestrial mammalian species

No protected terrestrial mammals were noted in the site outline.

Potential Impacts in the absence of mitigation: Low adverse / local/ Negative Impact / Not significant / long term.

Flora

No protected flora was noted on site. Landscaping will increase flora diversity. Invasive species on site will be removed on site.

Potential Impacts in the absence of mitigation: Neutral / site / Not significant / long-term

Bat Fauna

The proposed development will change the local environment as new structures are to be erected and some of the existing vegetation will be removed. Species expected to occur onsite should persist. Sensitive lighting and landscape strategies have been prepared in consultation with Altemar, to incorporate bat foraging on site. Potential Impacts in the absence of mitigation: Low adverse / Local /Negative Impact / Not significant / long term.

Aquatic Biodiversity

Standard measures will be in place in relation to surface water discharges. No additional mitigation is required during operation. Potential Impacts in the absence of mitigation: Low adverse / local / Negative Impact / Not significant / long term

Bird Fauna

The proposed development will change the local environment as new structures are to be erected. The buildings are comprised of solid materials consisting of a solid material on the exterior which includes sections of concrete and glass. As landscaping matures in the medium to long term the nesting and foraging resources will improve. These buildings would be clearly visible to bird species and would not pose a significant collision risk. However, the presence of buildings on site and increased human activity may reduce the potential for breeding birds to forage.

Potential Impacts in the absence of mitigation: Low adverse / site / Negative Impact / Not significant / long term. Mitigation is required to offset nesting resource loss.

4. Mitigation Measures & Monitoring

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI) including Owendoher River, downstream biodiversity, and local biodiversity within / proximate to the subject site are outlined in Table 9. It should be noted that the measures in relation to the protection of the Owendoher River will be robust.

5 . Adverse Effects likely to occur from the project (post mitigation)

Standard construction and operational mitigation measures are proposed. These would ensure that water entering the Owenadoher River is clean and uncontaminated, bats are protected and that mitigation in relation to bird nesting and foraging will be in place. However, early implementation of ecological supervision, prior initial mobilisation and enabling works is seen as an important element to the project, particularly in relation to the implementation of surface water runoff mitigation, bat mitigation and the protection of riparian habitats.

With the successful implementation of standard mitigation measures to limit surface water impacts on the watercourses, biodiversity mitigation/supervision, no significant impacts are foreseen from the construction or operation of the proposed project on terrestrial or aquatic ecology. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed works. It would be expected that bat foraging may be reduced within the site, but this would deemed not to be significant.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on terrestrial biodiversity, aquatic biodiversity and bats through the application of the standard construction and operational phase controls as outlined above. In particular, mitigation measures to ensure compliance with Water Pollution Acts and prevent silt, dust and pollution entering the Owenadoher River will satisfactorily address the potential impacts on downstream biodiversity. No significant adverse impacts on the conservation objectives of European sites are likely in the absence of mitigation measures outlined above.

It is essential that these measures outlined are complied with, to ensure that the proposed development does not have “downstream” environmental impacts and significant impacts on biodiversity on site.

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Table 2. Sensitive Receptors/Impacts and mitigation measures.

Sensitive Receptors	Mitigation
Owendoher River River Dodder South Dublin Bay (SAC & pNHA) North Dublin Bay (SAC & pNHA) South Dublin Bay and River Tolka Estuary SPA Sandymount Strand/Tolka Estuary Ramsar site North Bull Island (SPA & Ramsar Site)	**Construction Phase Mitigation** • A project ecologist will be appointed to oversee works from prior to commencement of works on site to the completion of all drainage and landscape elements. • Local silt traps established throughout site. • Mitigation measures on site include dust control, stockpiling away from drains • Stockpiling of loose materials will be kept to a minimum of 20m from drains. • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses. • Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches, excavations and other locations where it may cause pollution. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations that require pumping will not directly discharge to the public network. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality. • Mitigation measures on site include dust control, stockpiling away from drains • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system. • Fuel, oil and chemical storage will be sited within a bunded area. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. • During the construction works silt traps will be put in place in the vicinity of all runoff channels to prevent sediment entering the public network. • Petrochemical interception and bunds in refuelling area • Maintenance of any drainage structures (e.g. de-silting operations) will not result in the release of contaminated water to the surface water network. • No entry of solids to the associated millrace or drainage network during the connection of pipework to the public water system • Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks. • The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained. • The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area. • A project ecologist will be appointed and be consulted in relation to all onsite drainage during construction works. • Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains. • Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis.

Sensitive Receptors	Mitigation
	Air & Dust Dust may enter the Owendoher River and surface water network via air or surface water with potential downstream impacts. Mitigation measures will be carried out to reduce dust emissions to a level that avoids the possibility of adverse effects on downstream biodiversity. The main activities that may give rise to dust emissions during construction include the following: • Excavation of material; • Materials handling and storage; • Movement of vehicles (particularly HGV's) and mobile plant. • Contaminated surface runoff *DUST & DIRT GENERATION* *The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust management plan. Air quality and dust generation mitigation measures are described in the following chapter and will be implemented for the project in accordance with best practice.* • *An independent environmental consultant shall be appointed by the contractor to prepare a dust control and monitoring method statement prior to the commencement of site activities and to witness all demolition activities to ensure that the specified dust mitigation measures are implemented.* • *The Contractor shall put in place a regime for weekly monitoring of dust levels in the vicinity of the site during the works. The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time.* • *The Construction team will monitor the Contractor's regime on an ongoing basis throughout the project to endeavour to minimise impact on a surrounding community.* • *If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g. wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed.* • *Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.* • *Buildings shall be demolished by approved methods and in a manner that reduces the impact on air quality.* • *Manual Stripping of buildings of internal fixings, metals, glass and asbestos.* • *A 2.4m high solid wooden fencing shall be erected around the construction site perimeter as required.* • *Use of rubble chutes and receptor skips during construction/demolition activities.* • *All buildings in which asbestos has been identified shall be sealed during the asbestos removal process. Asbestos shall only be removed by an appropriately permitted company. All asbestos waste shall be double bagged, stored in a dedicated sealed waste container/skip prior to removal off-site for disposal at an appropriately permitted/licenced facility. Records of all asbestos waste removed from site shall be maintained by the site manager and certificates of destruction shall be provided by the asbestos removal contractor. Asbestos surveys shall be conducted by an appropriately HSE approved contractor.* • *All buildings shall be thoroughly wetted down prior to commencement of building demolition to suppress high level dust emissions.* • *All demolition plant shall be fitted with high pressure water sprays to direct water onto demolition point.* • *Mobile crushing units (if utilised on-site) shall be fitted with spray bars to suppress dust generated by the crushing activity.* • *Temporary dust screens shall be fitted around all mobile crushing plant (if used on-site).*

Sensitive Receptors	Mitigation
	• *Demolition stockpiles shall be kept to an absolute minimum and all C&D waste shall be promptly removed from site.* • *Demolition stockpiles shall be covered by tarpaulin during dry and windy weather.* • *During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting.* • *Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.* • *Wheel wash facilities will be provided at the egress point from the site. During peak vehicle movements, where there is a likelihood of dirt on construction vehicles exiting the site, a dedicated road sweeper will be put in place until these works are competed.* • *If dirt generation extends onto public roads, road sweeping will be carried out as well, including if necessary, cleaning of silt from road gullies.* • *Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. Material stockpiles containing fine or dusty elements shall be covered with tarpaulins. Aggregates will be transported to and from the site in covered trucks.* • *Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.* • *The overloading of tipper trucks exiting the site shall not be permitted.* • *Aggregates will be transported to and from the site in covered trucks.* • *Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.* • *Wetting agents shall be utilised to provide a more effective surface wetting procedure.* • *Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.* • *All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.* • *Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.* • *Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.* • *Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.* • *A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction/demolition phase activities to ensure that the air quality standards relating to dust deposition and PM10 are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.* • *A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.*

Sensitive Receptors	Mitigation
	Pollution Control *Contamination of Watercourses and ground water is a risk during the construction phase of the development. Detailed construction method statements will need to be approved by the Client's design team. A detailed Site Specific Construction and Environmental Management Plan will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Construction and Environmental Management Plan.* *Identified risks include spillages into water courses and unprotected ground, allowing pollutants to enter watercourses or ground water. The measures proposed to be put in place to mitigate this risk would be the use of exclusion zones where practicable and exclusion of construction vehicles from areas near the stream. Exclusion zones would the defined by erecting a 1m high barrier along the watercourse formed by steel road pins supporting an orange PVC barrier with warning signs appropriately fixed at regular intervals.* *Sediment and Erosion – Similar to the above, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring surface water discharge from site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete.* *A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.* *Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.* *The extent of sub-soil and topsoil stripping to be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.* *Accidental Spills and Leaks – All oils, fuels, paints and other chemicals will be stored in a secure bunded construction hardstand area. Refueling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water features e.g. The old mill race (when not possible to carry out such activities off site). A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency procedures and use of the equipment.* *Concrete – Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed of on site. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings are not to be discharged into surface water drains.* *Disposal of Wastewater from Site – Discharge from any vehicle wheel wash areas is to be directed to on-site settlement tanks/ponds, debris and sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility.* *Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.* *In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate treatment facility prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.*

Sensitive Receptors	Mitigation
	Biodiversity *<u>Tree Protection</u>* *Protective fencing will be erected in advance of any construction works commencing outside the drip-line of the canopy of retained trees and vegetation within and along the site boundaries in order to prevent damage by machinery, compaction of soil, etc. in accordance with BS 5837:2012. This will be signed off on by a qualified arborist or ecologist to ensure it has been erected properly before any machinery is allowed on site. No ground clearance, earth moving, stock-piling or machinery movement will occur within these protected areas.* *<u>Lighting Design</u>* *Many species of bats and other mammals are sensitive to lighting and will avoid areas which are illuminated. The design recommendations from the BCT (2010) for wildlife-friendly lighting will be incorporated into the lighting design for the scheme which will be prepared for the next application stage. The lighting on site will be shielded to ensure the spill light into ecological area at below 1 lux.* . *<u>Planting of Native Species</u>* *The landscaping proposals for the development (including the planting of trees and shrubs) were developed in conjunction with the project ecologist and include the use of native and local plant species such as hawthorn, blackthorn, spindle, Wych elm, holly, hazel, guelder rose, willows, oak, ash, and elder – the planting along the watercourse at the southern boundary of the site will be diversified following the removal of the cypress trees to improve this feature for wildlife. The species used will be native and of local origin, certified stock is available from nurseries who supply stock for the Native Woodland Scheme. Additional planting was recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. Further details are provided in the accompanying landscaping drawings.* *<u>Provision of Roosting and Nesting Opportunities</u>* *Nesting and roosting opportunities will be provided for both bats and birds within the new development as appropriate. These will include the erection of 25 no. artificial nest boxes and 15 no. bat boxes, which will be accommodated on trees within the site. These will be specified by an ecologist and erected under their supervision.* *<u>Minimising site disturbance</u>* *Design to avoid excessive cut and fill, unnecessary clearing of vegetation and to preserve existing site drainage patterns. Clear only those areas necessary for building work to occur. Preserve grassed areas and vegetation where possible. This helps filter sediment from storm water run off before it reaches the drainage system and stops rain turning exposed soil into mud. Delay removing vegetation or commencing earthworks until just before building activities start. Avoid building activities that involve soil disturbance during periods of expected heavy or lengthy rainfall.* *<u>Contractor Briefing</u>* *All site contractors should be briefed regarding the biodiversity value of the retained trees and vegetation to ensure that there are no accidental or unintentional actions conducted during the project construction that could lead to a reduction in water quality/damage to same. Such matters often arise through ignorance or by accident rather than as a result of an intentional action.* *<u>Protection Measures for Fisheries</u>*

Sensitive Receptors	Mitigation
	Measures will be in place to ensure that there is no deterioration in water quality to the millrace along the southern boundary of the site or the Owendoher River arising from the development. These relate mainly to the control of dust, pollution, silt and sediment runoff during construction and the installation of hydrocarbon/petrol interceptors on surface water drainage systems leaving the development. For any instream works the guidelines presented in the Eastern Regional Fisheries Board 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' should be reviewed and followed where applicable and the contractor informed of the sensitivity of the catchment. *Storage/Use of Materials, Plant & Equipment* • Materials, plant and equipment shall be stored in the proposed site compound location; • All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater; • Fuel may be stored in the designated bunded area or in fuel bowsers located in the proposed compound location. Fuel bowsers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages; • Smaller quantities of fuel may be carried/stored in clearly labelled metal Jeri cans. Green for diesel and red for petrol and mixes. The Jeri cans shall be in good condition and have secure lockable lids. The Jeri cans shall be stored in a drip tray when not in use. • Drip trays will be turned upside down if not in use to prevent the collection of rainwater; • Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips; • No plant used shall cause a public nuisance due to fumes, noise, and leakage or by causing an obstruction; *Drainage on-site* a) Channels will be prepared on site, in the vicinity of future access roads. Within these channels silt fences/barriers will be placed and will consist of woven/terram style material of suitable density to remove the majority of silt from runoff. These will be maintained throughout the construction phase to ensure efficiency, prior to the installation of the permanent drainage network. b) Appropriate storage and settlement facilities will be provided on site. This could include the provision of silt and petrochemical interception for water pumped on site (if required). c) Fuel, oils and Chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of watercourses.

Sensitive Receptors	Mitigation
	Soil Handling Soil should be handled with care as it is a living entity. The topsoil and subsoil layers will be stripped, stored and maintained separately. Topsoil will be temporarily stored upon geotextile such as Terram 1000 (www.terram.com). The contractor should submit proposals for supplier and product, which should be a nonwoven geotextile manufactured from UV stabilised, high tenacity, virgin polypropylene fibres that have been both mechanically and thermally bonded with a minimum of 5 years lifespan in all soil conditions. Note that soil levels within the root spread of those trees that are to be retained should not be raised. From this temporary storage heap the topsoil should be distributed as required for landscaping purposes. In general the topsoil should not be firmed, consolidated or compacted when laying. Tipping and grading to approximate levels should be done in one operation with minimum of trafficking by plant. The topsoil, which is to be retained and reused should not be mixed with: subsoil, stone, hardcore, rubbish or material from demolition work, or the other grades of topsoil, including those contaminated with non-native invasive species. The topsoil should be handled in the driest condition possible. Topsoil should not be handled during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2. **Construction/Demolition Phase - Noise** With regard to construction/demolition activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. Whilst construction noise and vibration impacts are expected to vary during the construction/demolition phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site noise sensitive locations are minimised. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to: • Selection of quiet plant. • Noise control at source. • Screening. • Liaison with the public • Monitoring A detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required. **Ecological Clerk of Works** An ecological clerk of works will be appointed to oversee and sign off on the various mitigation measures outlined in this report during the construction phase.

Sensitive Receptors	Mitigation
	Operational Phase Mitigation • A project ecologist will be appointed to oversee completion of all landscape and drainage works. • Petrochemical interception will be inspected by the project ecologist to ensure compliance with Water Pollution Acts.
Birds (National Protection)	• "Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. • 20 Nest boxes placed on site to compensate for resource loss. • Planting will provide suitable cover for nesting birds and encourage insect diversity that would sustain birds. • During construction light falling upon any areas of benefit to birds such will not exceed 3 lux to ensure that resting and nesting species are not unnecessarily disrupted. All lighting during construction phase will be to the satisfaction of the project ecologist, will be point inwards to the site and will be downward facing so as not to impact on surrounding habitats.
Bats (International Protection)	*<u>Protection Measures for Bats – Buildings</u>* *Although no roosts were confirmed within the buildings in the site they have high potential to support roosting bats. The buildings, which are scheduled for demolition, will be resurveyed for bats prior to any proposed demolition works as some time may have elapsed between the present survey and these works once planning permission is granted. Should bats be discovered during these works a bat derogation licence will then be sought.A precautionary approach to the demolition of these buildings can then be prepared whereby the roof will be stripped manually with the expectation that bats may be present. One side of the roof will be removed and then the building left overnight before the other side is removed. This work will be done during the winter months (i.e. October – March) when bat numbers are known to be lower in buildings and will also avoid the bird breeding season.* *<u>Protection Measures for Bat Foraging Habitat</u>* *It is recommended that as much native vegetation, immature and mature trees are retained within, adjoining and surrounding the site as possible. It is likely that these areas support large numbers of invertebrates on which both bats and birds rely for feeding and foraging and also provide cover and shelter for a variety of species.* *<u>Felling of Potential Bat Roosts in trees</u>* *All trees will be subject to appropriate felling measures as detailed in NRA Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority 2006). The felling/clearance of trees will be scheduled for the autumn months of September/October when bats are less likely to be using trees. This also avoids the bird breeding season. Suitable trees include the mature sycamore, horse chestnut, and ash along the western site boundary. Other trees with roosting potential include the cherry trees, the copper beech and the mature poplars. Prior to tree felling works the trees will be inspected by a bat specialist in the presence of the tree surgeons and an appropriate felling methodology agreed. The felling of those trees, which have been identified as potential bat roosts, must be supervised by a bat specialist holding a bat handling licence issued by the National Parks and Wildlife Service, (Department of Environment, Heritage and Local Government). If bats are encountered they should be removed by the licence holder to a bat box, to be sited on a nearby tree and the NPWS notified. Identified trees must be felled carefully. Specific advice in relation to individual trees will be given on site by a bat specialist. Gradual dismantling of some mature trees may be necessary to ensure the safety of any bats which may be roosting within significant sized boughs or in the trunk. The tree should be inspected by a bat specialist, and*

Sensitive Receptors	Mitigation
	depending on the structure of the tree they may need to be left intact on the ground for 24 hours to allow any bats within them to escape prior to processing. • Compliance with conditions of a bat derogation licence (if required). • Fifteen bat boxes will be placed on site. • Lighting at all stages should be done sensitively on site with no direct lighting of treelines. • Post Construction assessment/compliance with proposed lighting strategy.
Amphibians	• A pre-construction survey will be carried out. • Initial lighting and landscaping have taken into account the light spill from the site and the protection of bat foraging areas. It is recommended, as an enhancement measure, that the ecologist reviews the landscaping on the southern boundary following the installation of lighting and landscaping to assess if additional trees could be planted between the development and the mill run.
Invasive Species	• A pre-site clearance invasive species inspection will be carried out by the project ecologist.
Mammals	• A pre-construction inspection will be conducted to ensure that there are no badger setts in any areas of scrub on site. Badgers may also construct new setts in the period between this survey and development proceeding. • All scrub clearance will be monitored to ensure that no badger setts are present in areas that could not be searched in this survey and in the pre-construction survey Pre Construction building inspection for mammals • Post Construction assessment/compliance with proposed lighting strategy will be carried out.
Landscape and visual impact	• Consideration shall be made to mitigate' any potentially adverse construction-related effects on immediately adjoining neighbours, particularly to those with views into the site from Taylors Lane Road and the housing estates to the east, north and west of the site. The housing estates to the north of the site and users of the Taylors Lane Road are the most likely to experience some level of negative visual impact during the construction phase • Adequate measures to protect existing retained vegetation and particularly the mature retained trees to the front of the site. The existing lines of screen trees to the east (on adjoining property) and south will also provide valuable screening during the course of the construction works. • Use of hoarding for screening works as appropriate. • Directing site lighting away from surrounding properties
Cultural and Archaeological Heritage	*Archaeology* All topsoil stripping associated with the proposed development, including site investigations, will be monitored by a suitably qualified archaeologist. Full provision will be made for the resolution of any archaeological features/deposits that may be discovered, should that be deemed the appropriate way to proceed. *Architectural Heritage* A full written and photographic record will be made of the exterior and interior of the Good Counsel building prior to demolition.

Sensitive Receptors	Mitigation
Waste	*A project specific C&D WMP has been prepared in line with the requirements of the guidance document issued by the DoEHLG. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction phase of the proposed development.* *DBFL Consulting Engineers have estimated that 41000cumecs of cut will be generated from the excavations required to facilitate construction. It is anticipated that 80-90% this material will require removal for offsite. Contractor(s) will endeavor to ensure material taken offsite is reused or recovered off-site or disposed of at authorised facility.* *In addition, the following mitigation measures will be implemented:* *• Building materials will be chosen with an aim to 'design out waste';* *• On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:* *- Concrete rubble (including ceramics, tiles and bricks);* *- Plasterboard;* *- Metals;* *- Glass; and* *- Timber.* *• Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible;* *• All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;* *• Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);* *• A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works;* *• All construction staff will be provided with training regarding the waste management procedures;* *• All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;* *• All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and* *• All waste leaving the site will be recorded and copies of relevant documentation maintained.* *These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.*
Material Assets	Mitigation measures proposed in relation to the drainage and water infrastructure include the following: • A detailed "Construction and Environmental Management Plan" will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the "Construction and Environmental Management Plan".

Sensitive Receptors	Mitigation
	• Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. • In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate treatment facility prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas. • In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with the relevant standards, pressure tested and CCTV surveyed to ascertain any possible defects. • The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established. • The construction compound's potable water supply shall be protected from contamination by any construction activities or materials. • Where possible backup network supply to any services will be provided should the need for relocation or diversion or existing services be required otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.
Traffic	All construction related parking will be provided on-site. Construction traffic will consist of the following two principal categories: • Private vehicles owned and driven by site construction staff and by full time supervisory staff. • Excavation plant and dumper trucks involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc. It is anticipated that the trip generation of HGV'S during the construction period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods. Nevertheless, mitigations measures outlined for the Construction Stage include the provision of a Construction Management Plan, to be agreed with the Local Authority and which will include details on the following: • Prescribed and agreed working hours; • Agreed haul routes for incoming materials; • Licensed hauliers to be used; • Disposal sites; • Travel arrangements for construction personnel; • Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network; • Temporary construction entrances to be provided (if necessary) • Wheel wash facilities to be provided; • Road cleaning and sweeping measures to be put in place if required; • Temporary construction signage to be put in place and maintained; • Any proposed traffic management measures such as temporary traffic lights and signage on any public roads

5. Site Information

a) Roles and Responsibilities

The roles and responsibilities of the personnel involved in the construction works are outlined in Table 4. However, it will be necessary that all personnel involved in the project are responsible for ensuring the requirements of the CEMP are followed.

Table 4. Roles and responsibilities of the personnel involved in the development project

Role	Roles and responsibilities
Applicant	Shannon Homes Dublin Unlimited Company will have overall responsibility for the compliance with the CEMP. They will appoint staff and contractors to deliver the various elements of the development and oversee works carried out on site.
Contractor	Contractors will be hired to carry out all works on site. Works carried out will be overseen by Shannon Homes Dublin Unlimited Company and on a day to day basis by the site manager. All contractors on site are required to comply with all elements of the CEMP.
Site Manager	The Site Manager will be responsible for the day to day management of the site including compliance of all personnel with the CEMP, in addition to Health and Safety, Environmental and Quality elements. The Site Manager is responsible for ensuring that all people on-site are provided with relevant information concerning environmental protection. The Site Manager will be responsible for overseeing any environmental monitoring programmes, carrying out site environmental inspections and audits as necessary, and will co-ordinate the environmental monitoring programme. All records of incidents and environmental issues will be collated and maintained by the site manager. The Site Manager will also be responsible for reviewing all risk assessment method statements and ensuring an appropriate programme of tool box talks are developed and effectively communicated. The site manager will be responsible for overall waste management issues arising from the project. These would include: Implementation and monitoring of waste minimisation, segregation and safe disposal measures, Dissemination of waste reduction, and waste management procedures to all relevant personnel on site.
Monitoring	Noise and dust specialists will be appointed to oversee mitigation measures on site and to act as liaison with South Dublin County Council.
All Staff and Subcontractors	All staff and subcontractors have the responsibility to comply with the CEMP including environmental procedures on site to minimise environmental impacts, avoid pollution on-site, including noise and dust, and to respond quickly and effectively to an incident to avoid or limit environmental impacts. All incidents must be reported to the Site Manager immediately.

b) Training and Raising Awareness

As part of site induction for all personnel, a copy of the CEMP will be provided to and discussed with all onsite staff. This would include discussing the elements outlined in the CEMP including sensitive receptors on site and measures in place to mitigate impacts on these receptors.

As part of tool box talks relevant elements of the CEMP should be discussed particularly when working in areas with sensitive receptors, or where there is potential to impact biodiversity on site. Training records of all personnel on site should be reviewed and copies held centrally. This is particularly important for those operating excavators, other heavy machinery and with environmental certification to deal with incidents on site.

c) Reporting

The Site Manager / Project Manager is responsible for collating and maintaining all reporting. This would include all environmental and compliance documentation.

d) Environmental Targets and Objectives

Targets

- Zero pollution incidents;
- Segregation of site waste to include timber, general waste and other materials;
- Completion of environmental checklists as required;
- Fuel spill kit to be present on each site at all times;
- Maintain all waste licences and waste transfer notes for all waste movements including contractors;

Reporting Specific Objectives

- Environmental incidences to be reported to Site Manager without delay;
- The following documentation will be reported to Shannon Homes Dublin Unlimited Company on a 4 weekly basis:
    - Environmental incidents and nonconformities raised, including nature, status, corrective and preventive actions and potential for statutory intervention;
    - Key environmental issues raised by others;
    - Significant environmental incidents;
    - Complaints and the current status of those complaints;
    - Actions or interventions undertaken by enforcement organisations;

Site Specific Objectives

- Reduce waste, water and energy use on the project including within all of the site offices;
- Ensure that everyone comply with the environmental requirements in the contract;
- Seek ways to incorporate environmental opportunities within the design;
- Seek ways to reduce the carbon footprint of the contract;
- Reduce the amount of construction waste and excavated material generated which goes to landfill;
- Zero pollution incidents onsite;
- Recycle construction waste where possible;
- Maximise beneficial reuse of the materials: and
- Ensure that all waste documentation (waste transfer dockets, permits etc.) is available for inspection at the site office / in head office.

To ensure the CEMP remains 'fit for purpose' for the duration of the project it should be reviewed prior to commencement of the relevant phase of development and, if necessary, updated during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project environmental commitments. The environmental review would consider past performance from inspections, audit report and monitoring data, plan actions required to mitigate forthcoming risks and disseminate best practice.

e) Environmental Complaints and Incidents

The site manager will develop and implement an appropriate queries / complaints procedure. Records will include full details of the concerns expressed and ensure that a formal assessment is commenced of the reported concern. The site manager will also discuss complaints with Shannon Homes Dublin Unlimited Company and oversee an initial response to the person who has submitted the complaint/concern confirming its receipt.

An investigation to assess the issue of concern will be carried out and decisions made to see what corrective and/or preventive action, or further investigation is necessary. With overall responsibility for complaints, the site manager will respond within a reasonable timescale and maintain records of all correspondence. If significant corrective action and external stakeholder involvement is required, the site manager / project manager will oversee all elements of the process.

Complaints that may be received will be logged, assessed and appropriate action taken as soon as practical. The construction company will be actively seeking liaison with all parties throughout the construction periods. It will be critical to the success of the project that key issues are properly addressed

from the outset to create a good working relationship and an integrated team approach to resolving potential issues before they arise.

In the event of spillages or other incident, steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following and oil / chemical spill, and turning off equipment or other sources of noise or dust.

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the corporation and relevant authorities and recorded in the site environmental register.

6. Construction Management

a) Work Hours

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority. It is anticipated that normal working hours may be 7am to 7pm Monday to Friday and 8am to 2pm on a Saturday. Working outside these hours will be subject to agreement with the Local Authority. Deliveries of material to site will be planned to avoid high volume periods. There may be occasions where it is necessary to have deliveries within these times. The Contractor will develop, agree and submit a detailed Traffic Management Plan for the project prior to commencement.

b) Site Storage

At no given time during the project will materials or other items be placed outside the hoarding line, unless otherwise agreed with SDCC.

c) Liaison

SDCC's relevant departments will be contacted and liaised with prior to the commencement. Where necessary Road Opening Licence applications will be submitted for approval from SDCC. The construction company acknowledge that many parties will have an interest in this project throughout the duration of the contract. The construction phase will have a direct impact on the local environment, particularly concerning the following:

- Local residents and land owners
- Tenants and Residents Associations
- Planning Authority
- Other Statutory Authorities
- Building Control
- Environmental Health
- Utilities Providers

The project manager will be responsible for project strategic liaison whilst the construction manager will be responsible for day to day liaison and logistics for all the construction related activities.

Both will be permanently based on site with the construction manager as the first point of contact for all concerns, issues and complaints. A display Board will be erected outside the site, which as a minimum will identify key personnel contact addresses and telephone numbers.

Liaison meetings, progress photos, organised site visits are all methods by which the construction company are able to communicate how they intend to carry out the works and keep people informed.

h) Complaints

Complaints that may be received will be logged, assessed and appropriate action taken as soon as practical. The construction company will be actively seeking liaison with all relevant parties throughout the construction periods. It will be critical to the success of the project that key issues are properly addressed from the outset to create a good working relationship and an integrated team approach to resolving potential issues before they arise.

i) Delivery System

The key to efficient material/plant deliveries will be the effective management and co-ordination/timing of all deliveries. Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries and rush hour traffic. Large deliveries will be scheduled outside peak hours to minimise disruption. The construction company will consider out of hours deliveries and collections to facilitate the smooth continuation of works and minimise disruption. During the project procurement phase, the construction company will produce a schedule of deliveries, adopting a 'just in time' approach to avoid potential conflicts and unnecessary storage and handling.

j) Emergency Work

In the event of spillages or other incident, steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following and oil / chemical spill and turning off equipment or other sources of noise or dust. Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the corporation and relevant authorities and recorded in the site environmental register.

k) Site Security

The site will be secured with hoarding on all open sides and accessible approaches. Hoardings will be painted timber hoarding circa 2.4m including supports and appropriate anchoring (Designed by Temporary Works Engineer), external lighting and Safety signage. Site hoarding will include Health and Safety warnings at appropriate intervals.

Site security will be provided by way of a monitored infrastructure systems such as site lighting and CCTV cameras, when deemed necessary

All personnel working on site will be required to have a valid Safe Pass card.

The Contractor will ensure the presence of site security staff at all times on the site.

l) Delivery of Materials

All deliveries will take place inside the site boundary.

m) Road Safety

The project team will organise the construction site so that vehicles and pedestrians are kept separate. Gatemen will ensure that the interface between deliveries and road traffic will be controlled at delivery gates.

The key message is: *construction site vehicle incidents can and should be prevented by the effective management of transport operations throughout the construction process.*

By creating a crane off-loading area within the site boundary all offloading will be possible within the site boundary which will minimize any risk to the public. The gate man will then assist in the entry and leaving from the site.

Key issues in dealing with traffic management on site are:

- Keeping pedestrians and vehicles apart
- Minimising vehicle movements
- People on site
- Turning vehicles
- Visibility
- Signs and instructions

Accidents occur from groundwork's to finishing works and managers, workers, visitors to sites and members of the public can all be at risk. Inadequate planning and control is the root cause of many construction vehicle accidents.

Keeping pedestrians and vehicles apart.
Most of construction transport accidents result from the inadequate separation of pedestrians and vehicles. This will be avoided by careful planning, particularly at the design stage, and by controlling vehicle operations during construction work.

The following actions will help to keep pedestrians and vehicles apart:

- Entrances and exits - The construction company will provide separate entry and exit gateways for pedestrians and vehicles with a gate man in attendance to interface with the traffic and public to facilitate safe access and egress of vehicles.
- Walkways - firm, level, well-drained pedestrian walkways will be provided.
- Crossings - where walkways cross roadways. The construction company will provide a clearly signed and lit crossing point where drivers and pedestrians can see each other clearly;
- Visibility - The construction company will make sure drivers driving out onto public roads can see both ways along the footway before they move on to it;
- Obstructions - The construction company will not block walkways so that pedestrians must step onto the vehicle
- Route; and Barriers - The construction company will install a barrier between the roadway and walkway.
- People on site - The construction company will take steps to make sure that all workers are fit and competent to operate the vehicles, machines and attachments they use on site by, for example:
    - Checks when recruiting drivers/operators or hiring contractors;
    - Training drivers and operators;
    - Managing the activities of visiting drivers.
    - People who direct vehicle movements will be trained and authorised to do so. Accidents can also occur when untrained or inexperienced workers drive construction vehicles without authority. Access to vehicles will be managed and people alerted to the risk.

The construction company will provide:

- Aids for drivers - Mirrors, CCTV cameras or reversing alarms will be provided that can help drivers can see movement all-round the vehicle;
- Gatemen will be appointed to control manoeuvres and who are trained in the task;
- Lighting - Site will be properly lit so that drivers and pedestrians on shared routes can see each other easily. Lighting may be needed after sunset or in bad weather;
- Clothing - Pedestrians on site will wear high visibility clothing.
- Signs and instructions
- The construction company will make sure that all drivers and pedestrians know and understand the routes and traffic rules on site. Use standard road signs where appropriate.
- The construction company will provide induction training for drivers, workers and visitors and send instructions out to visitors before their visit. The construction company will make sure that all the drivers and our supply chain personnel are competent and have relevant training and certification appropriate for their job.

n) Waste Management

This section of the CEMP sets out a basic structure for a Site Waste Management Plan and how the construction company will best use them to improve and manage our operations at all stages of site activity. Shannon Homes Dublin Unlimited Company is committed to maintain the highest environmental standards.

All waste will be source separated into recyclable and general non-recyclable waste. In addition to general waste bins and recycling bins, there will also be bins provided for the storage of glass, batteries, and printer cartridges. General waste and recycling waste shall be stored in secure designated external waste storage areas, located a short distance away from each of the buildings.

The waste management areas are to be located on flat ground and will allow flexibility for change in the future. These areas will allow for the correct and legally compliant segregation, storage, movement, handling, processing and off-site disposal of waste. Sufficient access and egress will be allowed to facilitate the movement of bins to the collection point. The waste storage area will be adequately vented to prevent odours. The waste bins will be secure and subject to fire safety regulations and, where possible, lockable. Clearance of a minimum of 300mm will be provided around each bin to allow movement of the bins within the storage area.

o) Record Keeping

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the construction waste arisings on site.
A copy of the Waste Collection Permits, Certificates of Registration, Waste Facility Permits and IED or Waste Licences will be maintained on site always. The waste manager or delegate will record the following;

- Waste taken for reuse off-site;
- Waste taken for recycling;
- Waste taken for disposal; and
- Reclaimed waste materials brought on-site for reuse.

For each movement of waste on or off-site, a signed docket will be obtained by the waste manager from the contractor, detailing the weight and type of the material and the source and destination of the material.

This will be carried out for each material type. This system will also be linked with the delivery records. In this way, the percentage of C&D waste generated for each material can be determined. The system will allow the comparison of these figures with the targets established for the recovery, reuse and recycling of C&D waste and to highlight the successes or failures against these targets.

7. Emergency Procedures

The risk of spilling fuel is at its greatest during refuelling of plant. All refuelling of major plant and equipment will take place on an impermeable surface within a designated area of the site compound, greater than 10m away from any drains. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in this area and operators will be fully trained in the use of this equipment.

Diesel pumps and similar equipment will be placed on drip trays to collect minor spillages or leaks. All equipment must be checked regularly.

Fuel, oil and chemical storage will be sited within a bund of adequate capacity. The bund must be located at least 10 metres away from drains, ditches, excavations and other locations where it may cause pollution.

All materials will be stored in accordance with the manufacturer's instructions. Epoxy mortars and chemical based materials/sealants will be stored in secure containers with relevant warnings shown on the storage unit. Spill kits will be located adjacent to storage areas and used in the event of spillages.

8. Conclusions

This CEMP has been submitted to show Shannon Homes Dublin Unlimited Company's commitment to Environmental Management of the proposed project. This CEMP has outlined the environmental principles that will be adopted to ensure that potential environmental impacts and health and safety issues associated with the construction processes are effectively managed, minimised and / or eliminated. The plan details the roles and responsibilities of the applicant, the site manager, project manager and site workers and how these controls are to be implemented. The CEMP will require regular updating and monitoring throughout the construction period to ensure potential risks are adequately managed throughout the construction works.