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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

**FIRTREE DEVELOPMENTS LTD.,
BAGENALSTOWN INDUSTRIAL PARK,
ROYAL OAK ROAD,
BAGENALSTOWN,
Co. CARLOW**

2019

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1. INTRODUCTION

Panther Environmental Solutions Ltd. was commissioned by the applicant, Firtree Developments Ltd., to compile a Construction Environmental Management Plan (CEMP) for the proposed development, comprising of the construction of four industrial units, with approximate footprints of 8,283m², 8,584m², 3,399m² and 3,594m², at Bagenalstown Industrial Park, Royal Oak Road, Bagenalstown, Co. Carlow.

1.1 PURPOSE OF THE CEMP

The purpose of this CEMP is to communicate key environmental obligations that apply to all site personnel, sub-contractors and visitors to the site, while carrying out construction activities as part of the proposed development. The CEMP defines the approach to environmental management at the proposed development site, outlining the work practices, construction procedures and responsibilities to be undertaken during the construction phase. Compliance with the CEMP, the procedures, work practices and controls would be mandatory and must be adhered to by all personnel and sub-contractors employed during the construction phase. The CEMP outlines, where necessary, the control measures that are required to avoid, minimise or mitigate potential effects on the environment and surrounding area.

This document has been prepared based upon the information provided during the planning stage, supplied by the client, Firtree Developments Ltd., and their representatives, with respect to the proposed development. The CEMP would be reviewed and updated as appropriate upon planning approval and as necessary throughout the construction phase.

1.2 LIVE DOCUMENT

The CEMP is a “live” document, and would be reviewed and updated as necessary throughout the construction phase.

1.3 COMMUNICATION

The construction of the proposed development would be undertaken by Milltown Developments Ltd., on behalf of the applicant, Firtree Developments Ltd. This CEMP would be communicated to all site personnel during site inductions and briefings. All site personnel would be responsible for undertaking their work in an environmentally sustainable manner and would be encouraged to provide feedback and comments on environmental performance at the site and suggestions for improvement. Milltown Developments Ltd. has appointed one of its personnel as Project Manager for the proposed development. Any environmental issues, accidents or incidents would be reported to the Project Manager as soon as possible, who in turn would inform the client.

The main project communications would comprise of structured reporting arrangements and meetings between the applicant and the construction works contractor. Site meetings would be undertaken on a weekly basis, with environmental performance included within the meeting agenda. The CEMP would also be discussed at these meetings, including the effectiveness of the CEMP and potential environmental improvements.

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2. PROJECT DESCRIPTION

2.1 LOCATION

The proposed development site is located on the outskirts of Bagenalstown, as shown in Figure 2.1 below. Access to the site is via the R724, approximately 590m east from the R448 road. The site is at an approximate elevation of 30-40m above sea level and is bordered to the north, south and east by agricultural land and to the west by Bagenalstown Industrial Park. The landuse of the surrounding area is a mixture of housing, commercial and retail development, in addition to agricultural land comprising of pasture and tillage.

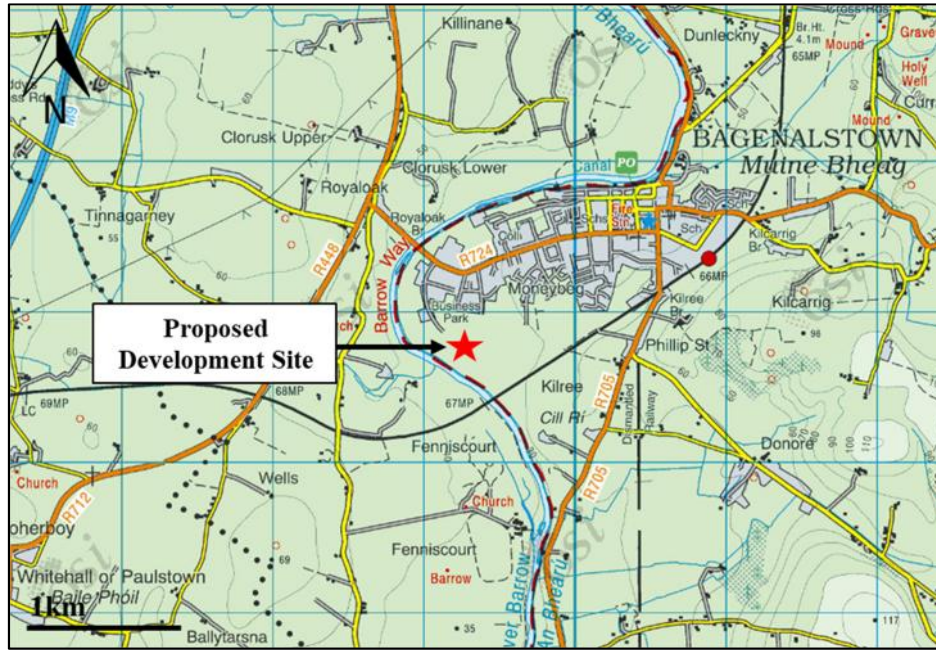


Figure 2.1: Site Location at Bagenalstown, Co. Carlow.

2.2 PLANNING CONTEXT

The applicant is seeking to construct four new industrial units with approximate footprints of 8,283m², 8,584m², 3,399m² and 3,594m² for the purpose of light industrial / manufacturing activities and offices at Bagenalstown Industrial Park, Royal Oak Road, Bagenalstown, Co. Carlow.

An Environmental Impact Assessment Report (Ref. PES_EIAR_19_9457) has been prepared for the project to assess the potential impacts of the proposed development upon the environment and recommends mitigation measures where required. As good environmental practice, this CEMP has been prepared, to ensure construction works would be undertaken in an environmentally sensitive manner. Mitigation measures outlined within the EIAR and within the Natura Impact Statement (NIS) (Document Ref. PES_NIS_19_9457) prepared for the development, where relevant, have been incorporated within this document.

The following sections outline the planning policies relevant to the proposed development and the protection of the environment.

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National Policies

A number of documents have been published in relation to the Government’s commitment to sustainable development, including the *National Spatial Strategy 2002-2020* and the *Sustainable Development: A Strategy for Ireland 1997*.

Regional Policies

The Regional Planning Guidelines for the Southeast Region 2010-2022, which includes the counties of Carlow, Kilkenny, Waterford, Wexford and South Tipperary, outlines the long-term spatial planning strategy for the area. As part of the guidelines, a number of policies relating to the protection of the environment were outlined, as per Table 2.1 below.

Table 2.1: Regional Policies Relevant to the Protection of the Environment and the Proposed Development

POLICY REFERENCE	POLICY
PPO 8.1	<p>Planning Authorities should develop policies that identify clearly:</p> <ul style="list-style-type: none"> - Environmental and Heritage resources that are to be maintained, conserved and enhanced and integrated into any development proposals involving the sites as discussed in the RPG for the area; - Proposals for environmental enhancement in towns and villages and in rural areas; - The means by which potential impacts on environmental resources are to be avoided or mitigated.
PPO 8.2	<p>Planning Authorities should ensure that all development plans take a holistic and integrated approach to heritage and protect all relevant aspects of national heritage, including archaeological, built, cultural, natural and linguistic heritage.</p>
PPO 8.5	<p>Planning Authorities should devise strategies for managing development and other activities in order to achieve the objectives of the South East and South west River Basin Management Plans and associated Programme of Measures. Local authorities should ensure that common approaches are taken to the protection of surface, ground, coastal and estuarine water bodies. These approaches should, <i>inter alia</i>, ensure that:</p> <ul style="list-style-type: none"> - The impact of developments on water bodies outside as well as inside the jurisdiction of the individual authorities is considered when decisions on discharges and water extraction are being made; - Developments do not interfere with the attainment of the standards required by the Water Framework Directive; - Joint actions are taken to positively address the attainment of the standards required by the Water Framework Directive.
PPO 8.6	<p>Planning Authorities should provide for the following biodiversity objectives through County and City Development Plans and Local Area Plans:</p> <ul style="list-style-type: none"> - Protect natural heritage sites designated or proposed for designation in National and European legislation, and in other relevant International Conventions, Agreements and Processes; - Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on plant, animal and bird species and habitats protected by law and that developments affecting Natura 2000 sites are assessed in compliance with Article 6 of the Habitats Directive; - Maintenance and restoration of water quality in areas listed on the Register of Protected Areas under the water Framework Directive including Freshwater Pearl Mussel Catchments;

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POLICY REFERENCE	POLICY
	<ul style="list-style-type: none"> - Protection of Fisheries and Shellfisheries; - Identify and protect sites of local biodiversity interest that act as ecological corridors linking sites of conservation importance.
PPO 8.7	It is an objective of the Regional Authority to encourage and support a co-ordinated approach for protection and enhancement of the region's flood plains, wetlands and watercourses for their biodiversity and flood protection values.
PPO 8.9	<p>Planning Authorities should ensure that River Management Policies should be an integral part of Development Plans and cover all waterways considered as a natural resource requiring protection and sustainable development. The following mechanisms for protection of the aquatic environment could be considered for inclusion in development plans:</p> <ul style="list-style-type: none"> - River Corridor Management Areas which provide for the protection and sustainable development of the aquatic environment (particularly within towns and cities); - The identification and creation of linear parks along waterways incorporating preservation of the Riparian Zone along waterways and subject to compliance with Articles 6 and 10 of the EU Habitats Directive.
PPO 8.10	Local authorities should, where possible, promote awareness of invasive species in collaboration with other relevant agencies and take appropriate measures for their management and control.

Local Policies

Local planning policies are detailed in the Carlow County Development Plan, 2015-2021. A number of policies relate to the protection of the environment and are relevant to the proposed development, summarised as follows:

Table 2.2: Summary of Local Policies Relevant to the Protection of the Environment and the Proposed Development

POLICY REFERENCE	AREA
Heritage – Policy 1	Protection of biodiversity: wildlife, habitats, species and designated sites
Heritage – Policy 2	Protection of all natural heritage sites designated or proposed for designation in accordance with European and National legislation. Screening of all projects and plans for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive.
Env. – Policy 1	Management of wastes, the “polluter pays” principle and the preparation of construction and demolition waste management plans for significant construction / demolition projects.
Env. – Policy 2	Protection of soil quality. Requirement on developments to carry out land contamination surveys where lands may have been at risk.
Env. – Policy 4	Ensuring developments do not cause unacceptable increases in noise emissions.
Env. – Policy 5	Ensuring developments do not cause significant light pollution.
Env. – Policy 6	Protection of groundwater quality. Compliance with the Urban Waste Water Treatment Regulations and the Waste Water Discharge (Authorisation) Regulations.
Env. – Policy 7	Protection of surface water quality and drinking water quality. Implementation of the Water Framework Directive.

Biodiversity Plans

Ireland's third National Biodiversity Plan 2017–2021, identifies actions towards understanding and protecting biodiversity with a vision that, "*biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally*". A number of Local Biodiversity Action Plans have been prepared, and it is noted that the Carlow County Development Plan (CDP) includes a policy to carry out a Biodiversity Plan during the lifetime of the CDP.

All-Ireland Pollinator Plan

In 2015, Ireland joined a number of other European countries in developing a strategy to address pollinator decline and protect pollination services. 68 governmental and non-governmental organisations agreed a shared plan, the "All-Ireland Pollinator Plan", which identifies 81 actions to make Ireland pollinator friendly. The plan provides recommendations for six different sectors, including farmers, county councils, communities, businesses, homeowners and schools.

2.3 ENVIRONMENTAL BASELINE

The proposed development site is located on the outskirts of Bagenalstown, with residential dwellings and commercial and retail developments within the surrounding area. The proposed development site measures approximately 22.9 acres and is a greenfield site. The majority of the site is comprised of pasture land, with limited sections of hedgerow and the remains of old farmyard walls present. The River Barrow passes along the site approximately 50m from the southern site boundary. The River Barrow and River Nore Special Area of Conservation (SAC) (Site Code: 002162) is located approximately 40m from the southern site boundary.

2.3.1 Ecology

As part of the EIAR (Ref. PES_EIAR_19_9457) prepared for the planning application, two ecological assessments were undertaken on the 21st of January 2019 and the 8th of July 2019, to examine the ecological context of the development site, by systematically walking the site and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodologies outlined in Fossitt's "*A Guide to Habitats in Ireland*", and the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.*, 2011).

Bird species and signs of fauna activity and dwellings were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under Irish and European legislation. A protected mammals survey was also undertaken by Mr. Brian Keeley of Wildlife Surveys on the 17th and 18th of September 2018.

In addition to the site walkover and protected mammals survey, flora and fauna records for the previous thirty years were reviewed on the National Biodiversity Data Centre (NBDC) website for the 2km square (S66V) in which the proposed development site is situated. The National Parks and Wildlife Service (NPWS) was also contacted on the 25th of October 2018 in relation to records for sensitive, rare and protected species within 5km of the development

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location, and a data request was submitted to Bat Conservation Ireland (BCI) in relation to bat records within 10km of the proposed development site on the 22nd of July 2019.

Habitats and Flora

A total of five habitats were identified at the proposed development site, which are summarised in the table below. The EIAR provides further detail on the habitats and flora encountered.

Table 2.3: Summary of Habitats Identified for the Proposed Development at Bagenalstown

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	LEVEL 2	LEVEL 3
G – Grassland and marsh	GA – Improved grassland	GA1 – Improved agricultural grassland
	GS – Semi-natural grassland	GS2 – Dry meadows and grassy verges
W – Woodland and scrub	WL – Linear woodland / scrub	WL1 – Hedgerows
E – Exposed rock and disturbed ground	ED – Disturbed ground	ED3 – Recolonising bare ground
B – Cultivated and built land	BL – Built land	BL3 – Buildings and artificial surfaces

No protected flora species under the Flora Protection Order or species of conservation significance were noted during the site assessment. According to the NBDC, there are no records for protected flora species within the 2km square (S66V) in which the proposed site is located for the thirty years previous.

Invasive Species

The NBDC returned records for the 2km square in which the site is located for four invasive flora species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011); Canadian Waterweed (*Elodea canadensis*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*) and Water Fern (*Azolla filiculoides*). However, no invasive species listed in Part 1 of the Third Schedule were noted as present during the onsite assessments.

Fauna (Excluding Bats)

Mammals, typical of that found throughout the rest of Ireland, which would be expected to be found in the general area include Badger (*Meles meles*), Fox (*Vulpes vulpes*), Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Irish Hare (*Lepus timidus hibernicus*), Rabbit (*Oryctolagus cuniculus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*), Brown Rat (*Rattus norvegicus*) and Fallow Deer (*Dama dama*).

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During the site walkovers, Rabbits were observed, and their burrows were noted long some areas of hedgerow habitats. Evidence of Otter, in the form of spraints, was recorded during the site assessment on the 8th of July 2019 at the railway bridge at the River Barrow, approximately 60m from the development site. There was no evidence of Badger, including setts or latrines at the proposed development site. No other mammals, or evidence of mammals, were noted within the development site during the survey.

The protected mammals survey by Wildlife Surveys noted that there were no signs of Otter or Badger within the proposed development site.

NBDC records for the previous thirty years for fauna of note within the 2km square in which the site is located include one crustacean, Freshwater White-clawed Crayfish (*Austropotamobius pallipes*) and one amphibian, Frog (*Rana temporaria*), with mammals of note including the protected species Badger, Otter and Hedgehog, and the invasive species Brown Rat, Grey Squirrel and Rabbit.

Bats

The mammal survey by Wildlife Surveys included dawn and dusk bat surveys, which concentrated on the hedgerow and trees within and immediately adjacent to the proposed development site. The survey recorded bat activity for four species; Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus leisleri*) and Brown Long-eared Bat (*Plecotus auritus*). The report notes that Daubenton's Bat (*Myotis daubentonii*) would be expected along the River Barrow and that there is high potential for Natterer's Bat (*Myotis nattereri*) in the area. Most of the bat activity was recorded in the south-western portion of the development site. No bats were confirmed to be roosting in any of the trees observed.

Records of bat roosts were obtained from Bat Conservation Ireland (BCI) for the centre of the proposed development site to a distance of 10km. Ten known roosts have been recorded within 10km of the proposed development site, with the nearest known roost located approximately 4.5km to the north of the site on the outskirts of Leighlinbridge. This roost supports Daubenton's Bat. According to the BCI records for roosts, transects and ad hoc observations within 10km of the proposed development site, a total of nine species have been recorded; Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle (*Pipistrellus nathusii*), Daubenton's Bat, Natterer's Bat, Whiskered Bat (*Myotis mystacinus*), Brandt's Bat (*Myotis brandti*) (possible record), Leisler's Bat and Brown long-eared Bat (*Plecotus auratus*).

It is possible that the hedgerows at the development site boundaries may provide foraging habitat for bat species. Upon external inspection of the three mature ash trees within the central portion of the development site, the trees were considered of low bat roost potential, given the absence of suitable roost features such as natural holes, cracks / splits in major limbs, loose bark and hollows / cavities (it should be noted that while a hollow was noted on one ash tree, this was not considered a suitable bat roost feature as it lacked depth).

The NBDC has records for Soprano Pipistrelle for the 2km square in which the proposed site is located.

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Avifauna

Given the agricultural and urban land uses of the surrounding area, it would be expected that common grassland, hedgerow and garden bird species would be present. Given the site's distance to the River Barrow, it would be expected that waterbird species would also be present within the vicinity of the site. Bird species noted during the site walkovers included Blackbird (*Turdus merula*), Blue Tit (*Parus caeruleus*), Chaffinch (*Fringilla coelebs*), Collared Dove (*Streptopelia decaocto*), Hooded Crow (*Corvus cornix*), Jackdaw (*Corvus monedula*), Magpie (*Pica pica*), Robin (*Erithacus rubecula*), Rook (*Corvus frugilegus*), Starling (*Sturnus vulgaris*), Swallow (*Hirundo rustica*), Woodpigeon (*Columba palumbus*), Wren (*Troglodytes troglodytes*) and Yellowhammer (*Emberiza citrinella*).

One species, Yellowhammer, is red listed under the BoCCI classification, while three species are amber listed: Robin, Starling and Swallow. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

NBDC records for bird species of note for the 2km square in which the site is located included House Martin (*Delichon urbicum*), Sand Martin (*Riparia riparia*), Swallow, Swift (*Apus apus*), Spotted Flycatcher (*Muscicapa striata*), Starling, House Sparrow (*Passer domesticus*), Linnet (*Carduelis cannabina*), Mallard (*Anas platyrhynchos*), Mute Swan (*Cygnus olor*), Kingfisher (*Alcedo atthis*), Kestrel (*Falco tinnunculus*) and pigeons (*Columba livia*, *C. oenas*, *C. palumbus*).

National Parks and Wildlife Services Protected Species Records

Records of protected, rare or threatened flora and fauna species within 5km of the proposed development obtained from the NPWS are included in Tables 2.4 and 2.5 below.

Table 2.4: Records of Protected, Rare or Threatened Flora Species from the NPWS

COMMON NAME	SCIENTIFIC NAME	PROTECTION ¹	CONSERVATION STATUS ^{2,3}
Annual Knawel	<i>Scleranthus annuus</i>	FPO	Vulnerable
Basil Thyme	<i>Clinopodium acinos</i>	FPO	Near Threatened
Blue Fleabane	<i>Erigeron acer</i>	None	Least Concern
Bog Orchid	<i>Hammarbya paludosa</i>	FPO	Near Threatened
Cornflower	<i>Centaurea cyanus</i>	None	On Waiting List
Green-Winged Orchid	<i>Orchis morio</i>	None	Vulnerable
Lesser Snapdragon	<i>Misopates orontium</i>	FPO	Endangered
Musk Thistle	<i>Carduus nutans</i>	None	Indeterminate
Red Hemp-Nettle	<i>Galeopsis angustifolia</i>	FPO	Vulnerable
Saw-wort	<i>Serratula tinctoria</i>	None	Regionally Extinct
Shepherd's-needle	<i>Scandix pecten-veneris</i>	None	Regionally Extinct
Weasel's-snout	<i>Misopates orontium</i>	FPO	Endangered

Notes:

¹ HD II/IV = Habitats Directive Annexes II/IV; FPO = Flora Protection Order.

² Vascular flora from the Irish Red Data Book 1 Vascular Plants (Curtis and McGough, 1988; Wyse Jackson et al., 2016), Bryophytes from the Irish Red List No. 8 (Lockhart et al., 2012);

³ IUCN Red list <http://www.iucnredlist.org/> - accessed December 2018

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Table 2.5: Records of Protected, Rare or Threatened Fauna Species from the NPWS

COMMON NAME	SCIENTIFIC NAME	PROTECTION ¹	CONSERVATION STATUS ^{2,3}
Badger	<i>Meles meles</i>	WA	Least Concern
Black-Headed Gull	<i>Larus ridibundus</i>	WA	High Concern - Red
Common Frog	<i>Rana temporaria</i>	WA	Least Concern
Cormorant	<i>Phalacrocorax carbo</i>	WA	Medium Concern - Amber
White-clawed Crayfish	<i>Austropotamobius pallipes</i>	HD II, WA	Endangered
Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>	HD II/IV, WA	Critically Endangered
Grey Heron	<i>Ardea cinerea</i>	WA	Least Concern - Green
Hedgehog	<i>Erinaceus europaeus</i>	WA	Least Concern
House Martin	<i>Delichon urbica</i>	WA	Medium Concern - Amber
Irish Hare	<i>Lepus timidus hibernicus</i>	WA	Least Concern
Irish Stoat	<i>Mustela erminea hibernica</i>	WA	Least Concern
Kingfisher	<i>Alcedo atthis</i>	BDI, WA	Medium Concern - Amber
Little Egret	<i>Egretta garzetta</i>	BDI, WA	Least Concern - Green
Mallard	<i>Anas platyrhynchos</i>	WA	Least Concern - Green
Moorhen	<i>Gallinula chloropus</i>	WA	Least Concern - Green
Mute Swan	<i>Cygnus olor</i>	WA	Medium Concern - Amber
Narrow-mouthed Whorl Snail	<i>Vertigo angustior</i>	WA	Vulnerable
Otter	<i>Lutra lutra</i>	HD II/IV, WA	Near Threatened
Red Squirrel	<i>Sciurus vulgaris</i>	WA	Near Threatened
Sand Martin	<i>Riparia riparia</i>	WA	Medium Concern - Amber
Swallow	<i>Hirundo rustica</i>	WA	Medium Concern - Amber
Swift	<i>Apus apus</i>	WA	Medium Concern - Amber

Notes:

¹ HD II/IV = Habitats Directive Annexes II/IV; WA = Wildlife Acts; BDI = Birds Directive Annex I.

² Terrestrial Mammal Red List (Marnell *et al.* 2009); Birds of Conservation Concern in Ireland 2014-2019 (Colhoun and Cummins, 2013); Red-listed Amphibians, Reptiles and Freshwater Fish (King *et al.* 2011); Red-listed Non-marine Molluscs (Byrne *et al.*, 2009).

³ IUCN Red list <http://www.iucnredlist.org/> - accessed December 2018

Designated Sites

The proposed development is not located within any designated area of conservation. However, the site is located approximately 40m from the River Barrow and River Nore SAC (Site Code: 002162). The River Barrow and River Nore SAC is designated for the following Annex I Habitats: Estuaries [1130], Tidal Mudflats and Sandflats [1140], Reefs [1170], *Salicornia* Mud [1310], Atlantic Salt Meadows [1330], Mediterranean Salt Meadows [1410], Floating River Vegetation [3260], Dry Heath [4030], Hydrophilous Tall Herb Communities [6430], Petrifying Springs [7220], Old Oak Woodlands [91A0] and Alluvial Forests [91E0]. The River Barrow and River Nore SAC is designated for the following Annex II Species: Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016], Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029], White-clawed Crayfish [1902], Sea Lamprey (*Petromyzon marinus*) [1095], Brook Lamprey (*Lampetra planeri*) [1096], River Lamprey (*Lampetra fluviatilis*) [1099], Twaite Shad (*Alosa fallax*) [1103], Atlantic Salmon (*Salmo*

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salar) [1106], Otter [1355], Killarney Fern (*Trichomanes speciosum*) [1421] and Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*) [1990].

No habitats or species listed under Annex I or Annex II of the E.U. Habitats Directive, or species listed under Annex I of the E.U. Birds Directive, were recorded at the site.

There are no other designated sites located within the immediate vicinity of the proposed development site, however there are a number of sites located within 15km of the site. The Blackstairs Mountains SAC (Site Code: 000770) and Coan Bogs Natural Heritage Area (NHA) (Site Code: 002382) are located approximately 11.9km and 13.7km from the site respectively. There are also five proposed NHA sites within 15km of the site; Ballymoon Esker pNHA (Site Code: 000797, 3.6km from site), Whitehall Quarries pNHA (Site Code: 000855, 4.6km from site), Cloghrystick Wood pNHA (Site Code: 000806, 8km from site), Blackstairs Mountains pNHA (Site Code: 000770, 12.2km from site) and Red Bog, Dungarvan pNHA (Site Code: 000846, 12.9km from site).

2.3.2 Water Quality

There are currently no watercourses or drainage ditches within the proposed development. The development site is located within the Barrow catchment (Barrow sub-catchment, SC_100), and the River Barrow flows in close proximity (approximately 50m) from the southern site boundary.

The Environmental Protection Agency (EPA) undertake surface water monitoring along the River Barrow. The results for the nearest monitoring stations (as per Table 2.6) for the period 1994 – 2017 are summarised in Figure 2.2 below for indicative purposes. As can be seen in Figure 2.2, the River Barrow is achieving a water quality status of between Q3-4 (moderate) and Q4 (good) at the monitoring locations.

Table 2.6: River Barrow Monitoring Stations within the vicinity of the proposed site

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO PROPOSED DEVELOPMENT
RS14B012900	Royal Oak Br (LHS)	268957	161462	1.1km Upstream
RS14B013000	Barrow - Fenniscourt Lock	269754	159344	1.5km Downstream
RS14B013100	Goresbridge	268445	153702	7.7km Downstream

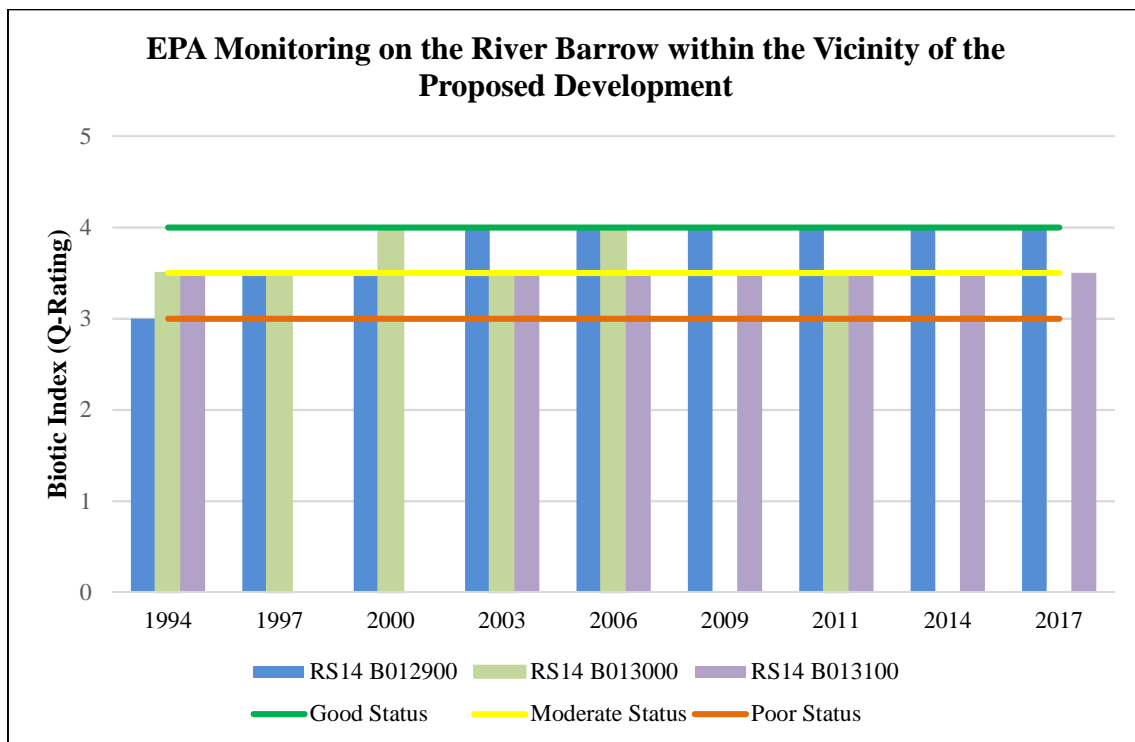


Figure 2.2: EPA Ecological Monitoring on the River Barrow from 1994 – 2017

The Royal Oak Water Treatment Plant (WTP) is located approximately 20m to the north-west of the proposed site access road. This WTP is supplied by two wells at the treatment plant, and has the capacity to supply the town with 1,800m³ per day, while currently supplying 600m³ per day.

2.3.3 Cultural Heritage

There is one recorded archaeological feature (CW016-131) partially located within the proposed development site, at the south-eastern corner. This feature comprises of a small area of possible archaeological activity in the form of two pits containing burnt stone and charcoal discovered during a previous excavation. Three other archaeological features are located between approximately 60-110m to the north-east of the site; CW016-04001 enclosure, CW016-04002 quarry and CW016-104 road / trackway.

2.4 CONSTRUCTION PROJECT DESCRIPTION

The construction of proposed development would be undertaken by Milltown Developments Ltd., hereafter referred to as “the construction works contractor”, on behalf of the applicant, Firtree Developments Ltd., hereafter referred to as “the client”, and would comprise of the construction of four industrial units, with approximate footprints of 8,283m², 8,584m², 3,399m² and 3,594m², at Bagenalstown Industrial Park, Royal Oak Road, Bagenalstown, Co. Carlow. At the time of the planning application for this development, the potential buyers or tenants for the units is not known.

The proposed development would also include the construction of surface water and foul sewer drainage systems, site access road, and all ancillary development works including

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internal road surfacing, boundary construction, the provision of outdoor artificial lighting and site landscaping.

With regards the boundaries of the proposed development site, the majority of the boundary would comprise of paladin fencing. To the front of each unit's site, the boundary would comprise of a retaining free-standing wall with twin-wire welded mesh fence panels.

New storm water and domestic wastewater drainage systems would be constructed. The proposed drainage layout is included in Appendix A. Storm water, comprised of rainwater run-off from roofs and paved areas, would be collected at each unit's site via a system of gullies and stormwater drains and would pass through a silt trap and oil interceptor. Stormwater from each unit would be attenuated in a suitably designed (to engineer's specification) attenuation tank prior to leaving the site. The stormwater from the proposed development site would connect with an existing stormwater line from Bagenalstown Industrial Park to the River Barrow.

Wastewater from the development, anticipated to be mainly generated by staff facilities, would be collected at each unit's site within a holding tank and pumped to the existing sewer line in Bagenalstown Industrial Park, where it would undergo treatment at Bagenalstown Waste Water Treatment Plant (WWTP) prior to discharge to the River Barrow.

Irish Water has been consulted by the client with regards to the water and wastewater connections. Irish Water has confirmed that connections can be facilitated.

Further details on the proposed works are included in the following sections. The proposed site layout, including the drainage layout, is included in Appendix A.

The expected construction timeframe would be approximately 18 months, with hours of operation from 8am to 5pm, Monday to Friday. A temporary site compound would be established within the western portion of the proposed development site, and would house the temporary office, equipment and materials storage, fuels and oils (required for various construction plant) storage, waste receptacles and construction staff welfare facilities including a canteen, toilet and first aid supplies.

During the construction phase, site clearance works would be undertaken, which would involve the removal of vegetation (mainly various grasses) from the site, limited hedgerow and tree removal and earth-moving activities. Following site clearance works, construction of the industrial units and associated works would commence. Reinstatement and landscaping activities would be undertaken upon the completion of construction works.

A landscaping plan has been prepared for the proposed development by Derek Howlin Landscape Architects, and is included in Appendix A. While the majority of the proposed development site would be comprised of hardstanding, some areas of grass have been incorporated into the design, in particular in the north and southern sections of Unit A's site and a section between Unit B and Unit C. The grass areas to the north and south of Unit A would be managed as wildflower meadows. Mixed species hedging, comprising of approximately 60% Hawthorn (*Crataegus monogyna*) and 40% Beech (*Fagus sylvatica*), is proposed for the boundary areas in front of each unit. Mature native Pendunculate Oak (*Quercus robur*) trees are proposed for some sections of the proposed hedging, in addition to feature areas within the carparks of Unit B. The land to the south of the proposed

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development site, but within the applicant's landholding, would be managed as a wetland meadow, which would benefit the biodiversity of the area, in particular for the River Barrow and River Nore SAC (Site Code: 002162).

2.4.1 Construction Schedule

The approximate construction period for the proposed development is estimated to be 18 months. Upon receipt of planning approval, the construction schedule would be finalised at a detailed design stage. The proposed development would include the following construction activities:

General

-) Mobilisation of personnel and equipment to site;
-) Establishment of temporary site compound, including designated materials storage area;
-) Site inductions and relevant training;
-) Erection of health and safety / construction works signage;
-) Installation of external lighting;
-) Site clearance;
-) Installation of silt control features where appropriate, such as silt fencing.

Construction of New Industrial Units and Associated Works

-) Excavations and earth moving activities;
-) Stockpiling of excavated soils for use in site reinstatement and landscaping;
-) Development of drainage network, water supply and services;
-) Pouring of foundations;
-) Construction of industrial units;
-) Construction of internal access road and car parking facilities;
-) Construction of external yard hardstanding.

Reinstatement / Landscaping

-) Removal of temporary construction compound;
-) Reinstatement of temporary construction compound using stockpiled topsoil;
-) Finishing / landscaping of proposed development site, in accordance with the Landscape Plan prepared by Dereck Howlin Landscape Architects;
-) Removal from site of any excess soils remaining following reinstatement and landscape works;

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-) Removal of silt control features once soil stabilisation has taken place / temporary storage of excavated materials has been removed.

2.4.2 Construction Working Hours

It is anticipated that construction works would be undertaken during standard construction hours, as follows:

Start	Finish	Days
8am	5pm	Monday – Friday

However, it should be noted that there may be times where it is necessary to undertake construction works outside of the times mentioned above, for example concrete pours. In such cases, notification would be given where necessary to the relevant bodies (i.e. local council) and any potentially effected local residents in good time and prior to specified works commencing.

2.4.3 Construction Workforce

The number of site personnel during the construction phase of the proposed development would vary depending upon the stage of the project. However, it is anticipated that there would be approximately 20-30 people employed onsite.

2.4.4 Construction Plant and Equipment

The construction plant and equipment likely to be used during the construction phase of the project are included in the table below. It should be noted that this list is not exhaustive.

ACTIVITY	POSSIBLE PLANT / EQUIPMENT REQUIRED
Site Clearance and Excavations	Tracked Excavator Dumper trucks Bulldozer Graders Rollers
Construction of Industrial Units	Tracked Excavator JCB Site Dumper Cement Mixer
Construction of Internal Access Road	Tracked Excavator Earth Mover Paving Machine Roller
Site Reinstatement and Landscaping	Tracked Excavator Site Dumper Bulldozer

2.4.5 Temporary Site Compound and Staff Welfare Facilities

A temporary site compound would be established within the western portion of the proposed development site, and would house the temporary office, equipment and materials storage and construction staff welfare facilities including a canteen, toilet and first aid supplies.

Works to establish the compound would include removing and storing the existing topsoil on site for reinstatement works onsite, laying a geotextile membrane over the entire compound area and covering the area in a suitable layer of graded granular material / hardcore.

Portable cabin structures would be used to provide the temporary site office and staff canteen. A storage container would be provided for the storage of construction equipment, tools and materials required for construction. All fuels and oils required would be stored within a designated bunded area, located within a storage container or at an alternative designated location with the temporary site compound.

A holding tank for sanitary waste would be installed at the temporary compound, and would be emptied by a licenced contractor on a weekly basis or earlier if required.

The site compound would also be the designated location for waste receptacles onsite. Waste would be segregated where possible and placed within recycling and general waste receptacles / skips provided by a licenced waste contractor.

During the construction phase, a portable water supply would be provided via a connection to the mains water supply. Power would be provided via the existing electricity supply to the area. Telecommunications would be provided using mobile phones and broadband.

Following the completion of construction works, the temporary structures, hardcore and geotextile would be removed and the area landscaped or reinstated as required using the stockpiled topsoil.

2.4.6 Main Stages of Construction

Site Clearance and Excavations

An Archaeological Assessment Report has been prepared for the proposed development by Stafford McLoughlin Archaeology, who have also prepared the archaeological, architectural and cultural heritage assessment section of the EIAR prepared for the development. The assessment report recommends that archaeological testing be undertaken in the areas of the site not previously subject to archaeological testing in 2006 (as part of a previous and separate planning application) prior to any works commencing onsite. As recommended by Stafford McLoughlin Archaeology, fencing would be erected to protect the area of recorded archaeological monuments CW016-04001, CW016-04002 and CW016-104 from any unintended impact of construction works. In the event that archaeological testing identifies that the feature CW016-104 (road/track) extends within the development site, an excavation of a section of the ditches should be undertaken. Archaeological monitoring should also be undertaken during construction works of the areas tested previously.

Vegetation at the site primarily consists of various grasses for pasture purposes, with small sections of hedgerows and three mature Ash (*Fraxinus excelsior*) trees within the centre

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portion of the site. During site clearance works, the top layer of vegetation of the proposed development footprint would be removed and would be either stored for re-use in landscaping activities at the development site upon completion of construction works, or, in the instances of larger vegetation (i.e. shrubs and trees) would be removed from the development site and appropriately disposed of to a licenced waste contractor.

Construction works would necessitate the removal of hedgerows at the development site, estimated at 220m in length, in addition to the removal of the three mature Ash trees. Where possible, no hedgerow / tree removal works would be undertaken during the bird nesting season, from the 1st of March to the 31st of August. Should hedgerow and tree removal works be required during the bird nesting season, the sections / trees would be inspected for the presence of breeding birds prior to any clearance works taking place. Where nests are identified, a qualified ecologist would determine if a licence from the National Parks and Wildlife Services (NPWS) is required, or if it is possible to establish a suitable buffer zone around the active nest, with removal works rescheduled until chicks have fledged.

During excavation works, subsoil and topsoil would be temporarily stored for re-use in landscaping and reinstatement where possible. Given the topography of the site, cut and fill activities would be required, therefore it is anticipated that all excavated subsoil and topsoil would be reused onsite. Should any excess soils arise, these would be transported offsite by a licenced contractor for disposal at a suitably licenced facility. Alternatively, should excess excavated soils be classified as a by-product under Article 27 of the Waste Directive Regulations, 2011, and if the proposed end use meets the requirements of the Article 27 regulations, excavated soils could be directed for local use. The storage of excavated material on site would be temporary, until the completion of site reinstatement and landscaping activities.

Provision of Services

Following site clearance and excavations, works would commence on the installation of underground utilities to the site required for water supply, domestic wastewater, electricity and telecommunications.

As discussed above, the new stormwater drainage system would comprise of a system of gullies and stormwater drains, silt traps and oil interceptors. The stormwater would be conveyed to the existing stormwater line from Bagenalstown Industrial Park to the River Barrow. Prior to leaving the proposed site, storm water would be attenuated at each unit's site in a suitably designed storm attenuation tank.

Wastewater from the development would be collected at each unit's site within a holding tank and pumped to the existing sewer line in the Bagenalstown Industrial Park, where it would undergo treatment at Bagenalstown Waste Water Treatment Plant (WWTP) prior to discharge to the River Barrow.

Artificial outdoor lighting would be installed along the internal access network, car parking areas and within the industrial units' yards where required. The lighting design for the development would be determined at a detailed design stage.

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Construction of New Units

Following site clearance, excavations and works for the provision of services, works would commence on the construction of the new industrial units. Details for each of the proposed units are as follows:

UNIT	SITE AREA (ACRES)	OVERALL BUILDING FOOTPRINT	FOOTPRINT FOR INDUSTRIAL USE	FOOTPRINT FOR FACILITIES	FOOTPRINT FOR OFFICES
Unit A	7.29	8,283m ²	7,905m ²	193m ²	185m ²
Unit B	7.29	8,584m ²	8,077m ²	310m ²	197m ²
Unit C	2.09	3,399m ²	2,844m ²	310m ²	245m ²
Unit D	5.09	3,594m ²	3,594m ²	-	-

Car parking facilities and bicycle spaces would be provided at each of the units. Unit A would have 141 car spaces and 18 bicycle spaces provided to the west and south of the building, Unit B would have 145 car spaces and 20 bicycle spaces provided to the east and west of the building, Unit C would have 60 car spaces and 12 bicycle spaces provided to the west and south of the building, and lastly, Unit D would have 60 car spaces and 10 bicycle spaces provided to the west and south of the building.

The industrial and facilities areas of the units would comprise of a steel frame on a concrete floor, with precast concrete panels along the building perimeter up to a height of 1.8m. The remainder of the walls would comprise of a Kingspan insulated cladding system on lightweight steel rails, while the roof would comprise of a Kingspan insulated roofing system. Access to the industrial areas of the units would be via roller doors and man doors. The office space of the units would be of masonry construction, with concrete floors, trocal/paralon flat roof and uPVC windows and doors.

Site Reinstatement and Landscaping

The reinstatement and landscaping process shall commence upon completion of construction activities at the proposed development site. Reinstatement and landscaping activities would include the levelling of the site with stockpiled soil from excavations where possible, the removal of the temporary site compound and associated plant, equipment and materials, the reseeded of exposed soil and the planting of trees and shrubs. Reinstatement and landscaping activities would also include the removal of silt control features, once soil stabilisation has taken place. As discussed above, a landscaping plan has been prepared for the site by Derek Howlin Landscape Architects and is included as Appendix A.

2.4.7 Security Arrangements

The construction works contractor would ensure the proposed development site is secured, so as to provide the safety of all potentially affected parties, including staff, contractors, traffic and pedestrians. Only authorised personnel would be allowed onto the site. The site would be secured by a fence, hoarding or another suitable site barrier system to protect against unauthorised entry. The construction works contractor would implement the appropriate security arrangements, including signing in / out procedures, signage and out-of-hours security.

2.4.8 Health and Safety

All activities undertaken at the proposed development site during the construction phase shall be in accordance with the requirements of the Safety, Health and Welfare at Work Act 2005, as amended, and the Safety, Health and Welfare at Work (Construction) Regulations, 2013. As required by the 2013 regulations, a Health and Safety Plan would be prepared by the construction works contractor, which would address health and safety issues from the design stages through to the completion of construction works. This plan would be updated and reviewed as required as the proposed development progresses.

Prior to works commencing onsite, all site personnel, including sub-contractors, would receive induction training that would incorporate health and safety requirements and good practice. Site induction would be mandatory for all employees, sub-contractors and visitors to the development site. Specific training would be provided, where necessary.

All construction personnel, contractors and visitors to the site would wear the following appropriate Personnel Protective Equipment as a minimum at all times:

-) Safety helmet;
-) Hi-visibility clothing (coat or vest);
-) Safety boots;
-) Eye protection where identified for specific activities.

Regular site safety audits would be undertaken throughout the construction phase to ensure the rules and regulations established for the site are complied with at all times.

2.4.9 Construction Signage and Labelling

Environmental signage and labelling would be used to inform site personnel of environmental requirements and restrictions with regards construction activities, in addition to promoting environmental good practice at the development site. The construction works contractor would erect the appropriate signage and label all relevant areas and receptacles. Examples would include speed restrictions, designated storage areas for potentially polluting materials and waste and site environmental rules.

2.4.10 Construction Method Statement

Prior to works commencing, the construction works contractor would prepare and provide to the client a detailed Construction Method Statement, which would address all construction works required for the proposed development. The construction works contractor would maintain a register of all method statements for the project, in addition to a register of all site personnel trained on the method statements.

2.4.11 Potential for Historic Contamination

The proposed development site is currently a greenfield site, with aerial mapping indicating that the site has been in use for agriculture as far, at least, as 2000. Development of the lands

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to the north of the development site took place in the early 2000s, however, it appears the proposed development site was not disturbed during this time.

It is therefore considered unlikely that the site would contain contaminated material. However, in the unlikely event contaminated material is encountered during construction works, appropriate measures would be undertaken in compliance with relevant waste legislation, and as outlined in Section 5.6 below. The relevant authorities would be notified where required.

3. ENVIRONMENTAL MANAGEMENT

3.1 POLICY STATEMENT

The Environmental Policy for the applicant, Firtree Developments Ltd., is included below, which outlines the applicant's commitment to environmental protection and compliance with applicable regulations.

FIRTREE Developments LTD.

Property Developers

Environmental Policy

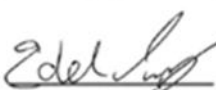
Protecting our shared environment is a fundamental importance to Firtree Developments Ltd as it is to our employees and clients. The company is aware that our activities have an environmental impact and is committed to minimising this impact, through accountability, policies and effective management. To support this common goal, we will;

- comply with applicable local and state environmental regulations and legislation
- continually improve the environmental performance of activities and processes
- protect the surrounding communities and ecosystems by working with local Heritage and Environmental groups in all locations where we carry out work

We will work to achieve these commitments by;

- requiring environmental awareness training of all employees through designated toolbox talks and invite employee consultation in environmental matters
- considering carefully the environmental impacts of all methods of construction before commencing any project
- considering the environmental impact of all business decisions
- evaluating products and processes from the point of view of chemical risk and endeavouring to find better alternatives based on pollution prevention in the first instance
- working with our clients, supplies, sub-contractors and the surrounding community on environmental issues and minimise in as far as practicable noise pollution, traffic, nuisance, and general disturbance to the locality during construction activities
- minimising waste generation as far as is practicable, to re-use and recycle and minimise waste by evaluating operations and ensuring they are as efficient as possible
- reducing the visual impact of our operations by good maintenance and housekeeping during construction and thorough cleaning on completion of projects
- reducing the environmental impact of materials and plant by storing material correctly and planning plant movements carefully to minimise transportation required
- providing the necessary resources to allow our environmental goals to be met

We will make every effort to ensure that environmental performance is an integral part of Firtree Developments Ltd performance and of the performance of all our employees. To this end, we will measure and periodically report on our progress in realising these commitments.

Signed 
Edel Murphy (Director)

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3.2 ENVIRONMENTAL MANAGEMENT SYSTEMS

An Environmental Management System (EMS) would be put in place by the construction works contractor. The EMS would take into account any planning conditions imposed on the site for the construction phase and, in accordance with the relevant guidelines, would be appropriate to the scale of the operation. The construction works contractor would implement a number of environmental management procedures, including but not limited to the following:

-) Awareness and Training;
-) Environmental Emergency Response;
-) Record Keeping, Auditing and Monitoring;
-) Environmental Complaints Procedure;
-) Protection of Flora and Fauna;
-) Protection of Soil, Groundwater and Surface Water Quality;
-) Chemical and Hazardous Material Management;
-) Noise Management;
-) Dust Management;
-) Waste Management.

The CEMP would be updated as necessary to ensure that all measures detailed within the environmental management procedures have been addressed within the CEMP.

3.3 ROLES AND RESPONSIBILITIES

The construction works contractor (CWC) would put an experienced construction management team in place. The Project Manager would have overall responsibility for environmental management at the proposed development site. An organogram of the proposed construction team structure is included as Figure 3.1, and the indicative roles and responsibilities for the relevant site personnel detailed below.

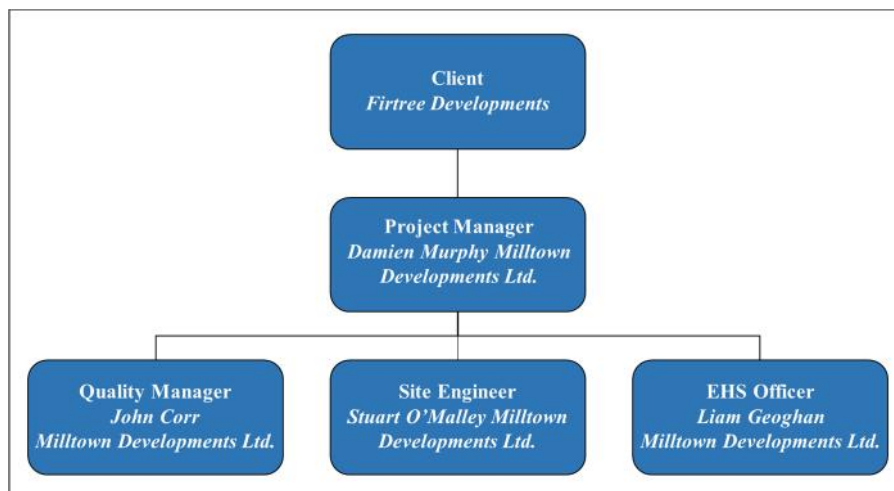


Figure 3.1: Construction Team Organisational Structure

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Project Manager – Damien Murphy, Milltown Developments Ltd.

The Project Manager responsibilities are as follows:

-) Management of the project;
-) Implementing the CEMP;
-) Monitoring the performance of the CEMP and maintaining records to demonstrate compliance with the CEMP and Construction Method Statement;
-) Updating the CEMP as required;
-) Ensuring no deterioration of the environment occurs as a result of the project;
-) Co-ordinating the construction teams;
-) Implementing the Health and Safety Plan and associated responsibilities;
-) Production of construction programmes;
-) Maintaining of relevant records and registers;
-) Ensuring site personnel receive induction and are provided with the relevant information relating to the protection of the environment during works;
-) Dealing with any queries or complaints from the public.
-) Maintaining a project diary.

Quality Manager – Derek Walsh, Milltown Developments Ltd.

The Quality Manager would report to the Project Manager. Their responsibilities are as follows:

-) Implementing the CEMP;
-) Management of quality issues relating to the project;
-) Co-ordinating the construction teams;
-) Ensuring that method statements are in place;
-) Implementing the Health and Safety Plan.

Site Engineer – Stuart O’Malley, Milltown Developments Ltd.

The Site Engineer would report to the Project Manager. Their responsibilities are as follows:

-) Ensuring that all aspects of the project comply with the CEMP;
-) Materials procurement;
-) Design of Temporary Works;
-) Administration;
-) Programming and planning;

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-) Implementing the Health and Safety Plan;
-) Maintaining a project diary.

EHS Officer – Liam Geoghan, Milltown Developments Ltd.

The EHS Officer would report to the Project Manager. Their responsibilities are as follows:

-) Ensuring the Health and Safety Plan is implemented;
-) Ensuring the CEMP is being implemented and followed at all times;
-) Updating the CEMP as required;
-) Ensuring all personnel have received safety inductions;
-) Investigating any accidents, incidents or near misses;
-) Ensuring relevant personnel have received training in environmental issues;
-) Undertaking site audits on a regular basis.

All Staff and Sub-contractors

All site personnel and sub-contractors have the following responsibilities:

-) Ensuring the requirements of the CEMP are followed;
-) Co-operate with the Project Manager and EHS Officer in the implementation and development of the CEMP;
-) Co-operate as required with site inspections and audits;
-) Report all incidents, accidents and near misses to the Project Manager and/or EHS Officer.

3.4 REGULATIONS AND REQUIREMENTS

3.4.1 Legislative Context

The following list of acts and regulations, which is not exhaustive, would be complied with by the construction works contractor throughout the proposed project:

-) The Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000;
-) European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) and (Amendment) Regulations, 2015 (S.I. No. 355 of 2015), transposing the Habitats Directive 92/43/EEC (as amended) and Birds Directive 2009/147/EC;
-) The Flora (Protection) Order, 2015 (S.I. No. 356 of 2015);
-) Planning and Development Regulations, 2001 to 2018;
-) The Local Government (Water Pollution) Act, 1977, as amended;

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- J The Fisheries (Consolidation) Act, 1959, as amended;
- J Fisheries (Amendment) Act, 1999;
- J European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988);
- J European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009);
- J Water Framework Directive (2000/60/EC);
- J European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010) and 2016 (S.I. No. 366 of 2016);
- J Air Pollution Act, 1987;
- J Air Quality Standards Regulations, 2011 (S.I. No. 180 of 2011), transposing the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC);
- J Planning and Development Act 2000 (S.I. No. 30 of 2000), as amended;
- J The EPA Act (Noise) Regulations 1994 (S.I. No. 179 of 1994);
- J European Communities (Construction Plant and Equipment) Permissible Noise Levels Regulations, 1988 (S.I. No. 320 of 1988), as amended;
- J European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 (S.I. No. 632 of 2001);
- J Council Directive 1999/31/EC on the Landfilling of Waste and Council Directive 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills;
- J Waste Framework Directive 2008/98/EC;
- J WEEE Directive 2012/19/EU;
- J Waste Management Act 1996 as amended;
- J Waste Management (Hazardous Waste) Regulations 1998 (S.I. 163 of 1998) and (Amendment) Regulations 2000 (S.I. 73 of 2000);
- J Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009);
- J European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (WEEE) (S.I. 149 of 2014);
- J Litter Pollution Act 1997 and Litter Pollution Regulations 1999 (S.I. 359 of 1999);
- J Waste Management (Prohibition of Waste Disposal by Burning) Regulations 2009 (S.I. 286 of 2009), as amended;
- J European Communities (Waste Directive) Regulations 2011 (S.I. 126 of 2011), (Amendment) Regulations 2016 (S.I. 315 of 2016), and European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. 223 of 2015), European Union (Waste Directive) (Recovery Operations) Regulations 2016 (S.I. 372 of 2016).

3.4.2 Relevant Guidelines

The following list guidance documents, which is not exhaustive, would be consulted as relevant by the construction works contractor throughout the proposed project:

-) *Environmental Good Practice on Site* (CIRIA, 2015);
-) *Control of Water Pollution from Construction Sites; guidance for consultants and contractors* (CIRIA, 2001);
-) *Control of Water Pollution from Construction Sites – Guide to Good Practice* (CIRIA, 2002);
-) *Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters* (IFI, 2006);
-) *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (National Roads Authority (NRA), 2010);
-) *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes* (NRA, 2006a);
-) *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (NRA, 2006b);
-) *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2006c);
-) *Bat Mitigation Guidelines for Ireland* (Kelleher and Marnell, 2006);
-) *Bats & Lighting: Guidance Notes for Planners, Engineers, Architects and Developers* (Bat Conservation Ireland, 2010);
-) *Assessment of dust from demolition and construction 2014* (Institute of Air Quality Management, 2014);
-) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (NRA, 2004);
-) *Code of practice for noise and vibration control on construction and open sites* (British Standard 5228-1, 2009);
-) *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (DoEHLG, 2006);
-) *Southern Region Waste Management Plan 2015-2021 and Associated Reports.*

3.5 ENVIRONMENTAL AWARENESS AND TRAINING

Prior to works commencing onsite, this CEMP and its contents would be communicated to all site personnel, including sub-contractors, as part of induction training. Site induction would be mandatory for all employees, sub-contractors and visitors to the development site. The site induction would include the following aspects:

-) Organisational structure of the construction team;

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-) Key environmental roles and responsibilities;
-) Communications and contacts;
-) Sensitive environmental receptors;
-) Incident and emergency response;
-) General good environmental practices.

Specific training would be provided, where necessary, to nominated personnel to address any incidents or emergencies that could have a potential to cause environmental pollution. This training would be provided to staff via toolbox talks, and may address issues such as the following:

-) Water Pollution;
-) Spill Control;
-) Noise Pollution;
-) Dust Pollution;
-) Waste Management.

3.6 DOCUMENT REVIEW AND UPDATES

To ensure the CEMP remains “fit for purpose”, it would be reviewed and updated as necessary throughout the construction phase to ensure that it continues to facilitate efficient and effective delivery of the project environmental commitments for the protection of the environment.

The CEMP would be reviewed to address, for example, the following;

-) Any conditions stipulated in the planning approval for the proposed development;
-) Any requirements or issues highlighted by prescribed bodies such as Inland Fisheries Ireland and the NPWS;
-) To ensure it reflects best practice at the time of construction;
-) To ensure it incorporates findings from previous inspections and audits undertaken by the construction works contractor;
-) To ensure it incorporates findings and/or recommendations arising from the fortnightly site meetings between the construction works contractor and applicant/client.

The Project Manager and EHS Officer would be responsible for the review of the CEMP, and would ensure that any revisions to the CEMP are effectively communicated as appropriate to onsite personnel and sub-contractors.

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3.7 ENVIRONMENTAL COMMITMENTS

The construction works contractor, Milltown Developments Ltd., recognises that construction works have the potential to adversely impact upon the environment, and is therefore committed to the effective implementation of the CEMP. Compliance with the CEMP, including all procedures, work practices and controls, would be mandatory by all personnel and sub-contractors employed during the construction phase.

The CEMP outlines the necessary control measures that are required to avoid, minimise or mitigate potential effects on the environment. This CEMP also incorporates the necessary mitigation measures outlined in the Natura Impact Statement (Ref. NIS_19_9457) prepared for the planning application to ensure that there would be no significant impacts to the listed habitats or species of the River Barrow and River Nore SAC (Site Code: 002162).

The construction works contractor is committed to the implementation of the controls / mitigation measures specified within the following sections:

-) Dust Management – Section 5.1;
-) Surface Water, Groundwater and Soil Contamination Control – Section 5.2;
-) Terrestrial Ecology Protection Protocol – Section 5.3;
-) Noise and Vibration Control – Section 5.4;
-) Traffic Control – Section 5.5;
-) Waste Management Control – Section 5.6;
-) Chemicals and Hazardous Materials Management – Section 5.7;
-) Invasive Species Control – Section 5.8.

The Project Manager, Quality Manager and EHS Officer would be responsible for the implementation of the CEMP throughout construction works. The Project Manager would be responsible for monitoring the performance of the CEMP and maintaining records to demonstrate compliance with the CEMP, and would be assisted by the EHS Officer.

3.8 COORDINATION WITH EXTERNAL ENTITIES

In the event of an environmental incident at the site, the construction works contractor would follow the Emergency Response Plan as appropriate. The construction works contractor would liaise with the relevant third parties as appropriate, which may include the following:

-) Emergency Services;
-) Carlow County Council;
-) National Parks and Wildlife Service;
-) Inland Fisheries Ireland;
-) Environmental Protection Agency.

4. ENVIRONMENTAL IMPACTS

4.1 AIR QUALITY IMPACTS

Generally, the primary potential air quality impact or nuisance associated with construction activities is dust. Excavations and earth moving operations may generate quantities of construction dust, particularly in drier weather conditions. The extent of any construction dust generation depends on the nature of the construction dust (soils, sands, gravels, silts etc.) and the construction activity. The potential for construction dust dispersion depends on the local meteorological conditions such as rainfall, wind speed and wind direction. The issue of construction dust dispersion may be exaggerated with vehicles transporting sand/gravels/concrete/etc. to and from the site, having the potential to cause an environmental nuisance to use of the local road.

Dust is normally defined as particulate matter in the size range of 1 - 75µm in diameter, with particles less than 1µm being classified as smoke or fumes. Particles greater than 10µm are associated with public perception and nuisance. Dusts are normally present in the atmosphere at varying levels of concentration and can have a wide variety of man-made and natural origins including:

-) Products of combustion from e.g. fires, power stations and motor vehicles;
-) Mechanical handling of minerals and allied materials;
-) Industrial activities.

Dust particles are dispersed by their suspension and entrainment in airflow. Dispersal is affected by the particle size, shape and density, as well as wind speed and other climatic effects. Smaller dust particles remain airborne for longer, dispersing widely and depositing more slowly over a wider area.

The main potential sources of air borne dust from construction activities are as follows:

-) Construction vehicles, construction traffic and haulage routes;
-) Excavation works and earth-moving activities;
-) Materials (particularly excavated soils) handling, storage and stockpiling.

Construction dust control is a common part of construction management practices. The effect of construction activities on air quality, in particular construction dust, would not be significant following the implementation of standard working practices and the proposed mitigation measures outlined in Section 5.1.

4.2 SURFACE WATER IMPACTS

During construction works, there is potential for water quality deterioration through the potential release of suspended solids during soil disturbance works, the release of hydrocarbons (fuels and oils) and the release of uncured concrete.

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Suspended solids could become entrained in surface water run-off and could affect aquatic habitats through deposition. An increase in sediments has the potential to impact upon fish by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success. Aquatic flora and fauna could also be impacted upon by an increase in nutrients which are bound to suspended solids. A significant increase in nutrients can result in excessive eutrophication, leading to deoxygenation of waters and subsequent asphyxia of aquatic species.

A potential source of chemical contamination of surface water would be from the release of hydrocarbons (oils, fuels) from construction plant and equipment. Hydrocarbons can affect water quality, potentially resulting in toxic and / or de-oxygenating conditions for aquatic flora and fauna. Pollution could occur in a number of ways, such as neglected spillages, the storage handling and transfer of oil and chemicals and refuelling of vehicles.

Another potential source of contamination of surface water during construction works would be the potential release of uncured concrete. In the event of uncured concrete entering a waterbody, the pH would be altered locally, potentially causing an adverse impact upon aquatic flora and fauna and causing an alteration to the waterbody substrate.

As there are no watercourses or drainage ditches within the development site, the potential for construction works to impact upon water quality would be reduced. However, the River Barrow is located approximately 50m south of the site, and therefore, control measures would be put in place to ensure no deterioration in water quality arises as a result of the construction of the proposed development.

4.3 SOIL AND GROUNDWATER IMPACTS

The main potential impacts upon soil and groundwater during construction works would be the release of potentially polluting substances, such as hydrocarbons and uncured concrete, the stripping of subsoils and soils within the development footprint area and soil compaction due to the movement of heavy machinery. The potential impacts of the release of hydrocarbons and uncured concrete are discussed in Section 4.2 above.

With regards the stripping of soils and subsoils at the development site, all excavated subsoils and soils would be used in the reinstatement and landscaping processes of the construction phase. Therefore, there would be no significant impact upon soils due to excavation activities. Specialist machinery (such as tracked machinery) would be used during construction works to minimise the potential compaction of soils and subsoils.

As noted in Section 2.3, the Royal Oak Water Treatment Plant (WTP) is located approximately 20m to the north-west of the proposed site access road. Given the limited excavation works required for the proposed development within the immediate vicinity of the WTP, it is not considered that the development would have the potential to impact upon the water quality of the two wells. Notwithstanding the above, the construction works contractor would be cognisant of the local topography and potential drainage from the site, to ensure that there would be no deterioration in water quality during the construction phase of the development.

4.4 TERRESTRIAL ECOLOGY IMPACTS

Construction activities have the potential to impact upon terrestrial ecology through destruction and loss of habitat, disturbance due to noise and dust, the potential introduction of invasive species and light pollution.

The construction phase of the development would result in a direct and permanent loss of the existing habitats improved agricultural grassland (GA1), dry meadows and grassy verges (GS2), hedgerows (WL1) and recolonising bare ground (ED3).

A considerable proportion of the land take would comprise of improved agricultural grassland (GA1) and recolonising bare ground (ED3) habitats, which are considered modified and of low ecological value, therefore the loss of this habitat would not be considered significant. The construction phase of the development would also result in a direct and permanent loss of some sections of habitats of local importance (higher value): dry meadows and grassy verges (GS2) and hedgerows (WL1). However, the loss of these habitats would not be considered significant, given the limited land-take required, and given the proposed landscaping scheme which incorporates two areas of wildflower meadows, mixed species hedging and planting of native trees.

Two sections of hedgerow and three mature Ash trees would require removal as part of the construction of the proposed development. It is estimated that approximately 230m of hedgerow in total would be removed as part of the development, with approximately 110m of this sparsely vegetated. Where possible, the removal of this vegetation would not be undertaken during the 1st March to the 31st August, so as not to disturb nesting bird species. In the event that vegetation removal works are required to take place during the bird nesting season, a suitably qualified ecologist would be engaged to carry out inspections for the presence of breeding birds prior to any clearance works taking place. Where nests are present, the ecologist would make a decision as to whether a “Licence to interfere with or destroy the breeding places of any wild animals”, is required from the NPWS. Alternatively, the ecologist may establish a suitable buffer zone around an active nest, with removal works rescheduled until chicks have fledged. Where no evidence of nests are found during inspection, vegetation removal works must be undertaken within three days of inspection.

During the assessment of the three mature trees scheduled for removal for their potential to support bat roosts, the trees were determined to be of low bat roost potential. Therefore, there would be no significant impact upon bats due to tree removal. The removal of hedgerows at the development site would not be considered to have a significant impact upon bats, given the limited extent, approximately 230m, of the hedgerow removal required and given that approximately 110m of this is sparsely vegetated and is quite open in nature. As detailed in the mammal survey by Wildlife Surveys, the majority of bat activity was recorded to the south and south-west of the development site, with no activity recorded within the immediate vicinity of the hedgerows scheduled for removal.

As the majority of the site is of low ecological value, the potential for the site to support protected fauna species is reduced. However, should a protected species be found during demolition or construction works, an officer of the NPWS would be notified prior to the resumption of construction works.

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Dust emissions may arise during construction activities, in particular during earth-moving works, which may have the potential to impact upon photosynthesis, respiration and transpiration processes of flora due to the blocking of leaf stomata, and have the potential to cause nuisance to fauna. Given the transient nature of construction works, the potential impact to flora and fauna would not be considered significant.

Construction work has the potential to disturb fauna due to the generation of construction noise. However, construction noise would not be considered to pose a significant risk to fauna owing to the transient nature of works and given that all vehicles where possible would be equipped with mufflers to suppress noise, as is standard practice. Where possible, no construction works would be conducted outside of normal working hours, therefore there would be no disturbance to nocturnal species.

During construction works, there is potential for invasive species to be introduced to the site through the movement of materials, such as soil and stone, and the arrival of construction plant and equipment from an area with invasive species. Materials containing invasive species such as Japanese Knotweed are considered “controlled waste” and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), it is a legal requirement to obtain a license to move “vector materials” listed in the Third Schedule, Part 3. Under Regulation 49(2) of the aforementioned regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place any plant which is included in Part 1 of the Third Schedule.

There would be no significant import of materials with the potential to contain invasive flora species. Soils excavated during construction works would be stockpiled and re-used for site levelling and landscaping, therefore no importation of topsoil or subsoil would be required. Any stone required would be sourced locally where possible and would be inspected for the presence of invasive species by the construction works contractor.

Artificial lighting has the potential to negatively impact upon nocturnal species, particularly bat species, as illumination can impact upon their roosting sites, commuting routes and foraging areas. While some bat species, such as Leisler’s bats, may take advantage of prey concentrating around light sources, other bat species are sensitive to lighting and would avoid artificially lit up areas. Measures, as outlined in Section 5.3, would therefore be implemented by the construction works contractor to reduce the potential impact of light pollution.

The potential impacts of construction works upon aquatic flora and fauna due to a potential deterioration in water quality are discussed in Section 4.2 above.

4.5 NOISE IMPACTS

Construction noise, while inherently noisy and disruptive, is temporary in duration. It is anticipated that the construction of the proposed development would take approximately 18 months to complete. The works involving heavy machinery for the purposes of excavation, the preparation of building foundations and passing construction traffic usually cause the most disturbances to nearby residents.

Generally, the type of works involved at this development site would include the following:

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-) Excavation/Levelling: Excavator, dump truck & dozer.
-) Foundations: Excavations, cement mixers & concrete vibrators.
-) General Construction: Masonry construction, services, drainage and surfacing etc.

There are currently no published Irish guidance documents relating to permissible noise levels that may be generated during the construction phase of a project. However, the National Road Authority (NRA) has published the document “*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*”, 2004. This document provides a useful reference for assessing construction noise of the proposed development. The NRA considers that the noise levels provided in the table below are typically deemed acceptable.

Days / Times	L _{Aeq} (1hr) dB	L _{pA} (max)slow dB
Monday to Friday (07:00 to 19:00hrs)	70	80
Monday to Friday (07:00 to 22:00hrs)	60	65
Saturday (08:00 to 16:30hrs)	65	75
Sundays and Bank Holidays (08:00 to 16:30hrs)	60	65

4.6 TRAFFIC IMPACTS

Access to the site is via the R724, approximately 590m east from the R448 road. Construction works have the potential to impact upon traffic volumes in the area, which may subsequently impact upon the generation of noise and dust emissions.

Traffic impacts may arise via the following:

-) Delivery of construction plant and equipment to the site;
-) Delivery of raw materials to the site;
-) Vehicle movements from staff, sub-contractors and site visitors travelling to and from the site;
-) Vehicle movements associated with waste removal at the site.

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4.7 WASTE MANAGEMENT IMPACTS

It is anticipated that the following categories of waste may be generated during the construction of the project:

WASTE TYPE	EWC CODE	ORIGIN
Concrete	17 01 01	Waste concrete may arise due to surplus concrete from pouring activities and washings from ready-mix trucks.
Bricks	17 01 02	Damaged / defected brick waste may arise during the construction of the industrial units.
Tiles and Ceramics	17 01 03	Waste tiles / ceramics may arise during the construction activities.
Mixture of Concrete, Bricks, Tiles and Ceramics	17 01 07	As detailed in 17 01 01, 17 01 02 and 17 01 03 above.
Wood	17 02 01	Wood waste may arise in small volumes during construction works, including building and shuttering works, due to damaged / defected wood, off-cuts and surplus wood.
Glass	17 02 02	Glass waste may arise due to damaged / defected glass and accidental breakages.
Plastic	17 02 03	Plastic waste may arise due to damaged / defected products.
Metals (including alloys)	17 04 01 - 07	Waste metal may arise due to damaged / defected metal, off-cuts and surplus metal.
Soils and Stones	17 05 04	Excavated soils and stones waste would arise during site excavations and earth-moving activities.
Insulation Materials	17 06 04	Waste may arise due to damaged / defected insulation panels and off-cuts.
Bituminous mixtures, coal tar and tarred products	17 03	Waste may arise due to surplus material from tarring of internal road network.
Biodegradable waste	20 02 01	Limited volumes of green waste would be generated during the removal of hedgerows and three mature trees within the central portion of the proposed site.

The temporary site compound, which would house the site offices and staff welfare facilities such as a canteen, would generate limited amounts of waste, including the following:

-) Paper and cardboard – EWC 15 01 01 and EWC 20 01 01;
-) Biodegradable / food waste – EWC 20 01 08;
-) Plastics – EWC 15 01 02 and EWC 20 01 39;
-) Metals – 20 01 40;
-) Mixed municipal waste – EWC 20 03 01;
-) Sanitary waste – EWC 20 03 04.

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Other waste materials that may arise during construction works in small volumes include:

-) Waste Oils and Liquid Fuels – EWC 13 02 and EWC 13 07;
-) Waste from Electrical and Electronic Equipment – EWC 16 02;
-) Cables – EWC 17 04 11;
-) Paints – EWC 20 01 28;
-) Batteries – EWC 16 06.

Wastes from EWC fractions EWC 13 02, EWC 13 07, EWC 16 02 and EWC 16 06 may be hazardous.

The BRE Waste Benchmark Data, published in June 2012, provides guidance on the construction waste estimates based on the gross internal floor area. The table below details the typical construction industry waste generation per 100m² floor area.

PROJECT TYPE	NUMBER OF PROJECTS DATA RELATES TO	AVERAGE TONNES/100M ²
Residential	256	16.8
Public Buildings	23	22.4
Leisure	21	21.6
Industrial Buildings	23	12.6
Healthcare	22	12.0
Education	60	23.3
Commercial Other	4	7.0
Commercial Offices	14	23.8
Commercial Retail	48	27.5
Total number of projects	471	-

For a total building area of 23,860 m², and an average of 12.6 tonnes of waste per 100m² of floor area, the construction waste generated translates to approximately 3,006 tonnes.

The following table outlines the typical breakdown of construction and demolition waste type expected to be generated from a typical site such as this, based on the EPA Waste Data, *Construction & Demolition Waste Statistics For Ireland* (March 2018). The table also gives an estimate of the construction waste (breakdown) which might be generated based on information currently available. It should be noted that the figures below are estimates, and therefore, are for indicative purposes only. During the detailed design stage of the project, the construction works contractor would review the estimated volume of wastes to be generated.

WASTE TYPES	PERCENTAGE (EPA FIGURES)	WASTE TONNES ESTIMATE
Metal waste	5.24%	157.5
Glass waste	0.09%	2.7
Paper and cardboard waste	0.01%	0.3

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WASTE TYPES	PERCENTAGE (EPA FIGURES)	WASTE TONNES ESTIMATE
Plastic waste	0.01%	0.3
Wood waste	1.57%	47.2
Waste containing PCBs	0.00%	0
Mixed waste	0.08%	2.4
Mineral waste	12.11%	364
Asbestos waste	0.19%	5.7
Soil and stones	74.35%	2,235
Residue from treatment of mixed waste	6.35%	190.9
Total	100	3,006

It should be noted that no asbestos waste would be anticipated to be generated at the site. Therefore, the estimated figure of 5.7 tonnes of asbestos waste can be discounted.

While the table above estimates that 2,235 tonnes of soils and stones would likely be generated, it should be noted that it is intended by the applicant to use all excavated materials at the site for site levelling and landscaping activities where possible.

Further details are provided within the Construction & Demolition Waste Management Plan (Document Ref. PES_C&D WMP_19_9457), which accompanies the planning application.

Throughout the construction phase, wastes generated would be managed by the construction works contractor in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended, as per the waste hierarchy below.



Figure 4.1: The Waste Hierarchy

4.8 EUROPEAN SITE (NATURA 2000) IMPACTS

The proposed development does not directly impinge on any part of a Natura 2000 site, and as such construction works would not be expected to impact upon a protected site through destruction or fragmentation of habitat, disturbance of habitat or direct reduction in species density during the construction phase.

The closest protected site to the proposed development is the River Barrow and River Nore SAC (Site Code: 002162), which is located approximately 40m to the south of the proposed development site.

It is not considered that the proposed development site would contain the habitats or species for which the River Barrow and River Nore SAC has been designated. The proposed development site contains no aquatic habitats of note, is located a considerable distance from the tidal stretches of the River Barrow and does not contain any areas of woodland, heath, marsh or swamp with potential links to designated habitats of the River Barrow and River Nore SAC. It is not considered that the proposed site would be suitable to support the SAC qualifying interests Killarney Fern and Desmoulin's Whorl Snail. While evidence of otter was recorded approximately 60m from the proposed development site, given the site's current agricultural use, which can be considered to be of low ecological value, and in the absence of evidence of otter (including spraints and tracks) within the proposed development site itself, it is unlikely the proposed site would support this species.

The potential disturbance on protected species due to construction noise would not be considered significant, given the nature and scale of the proposed development and the transient nature of construction works.

The potential disturbance on protected habitats and species due to dust during the construction phase would not be considered significant, given the transient nature of construction works and the scale of the proposed development. The air quality assessment undertaken as part of EIAR for the planning application (Document Ref. PES_EIAR_19_9457) assessed the potential impacts of construction dust on sensitive habitats. Using the screening assessment tool devised by the National Roads Authority, the development site was determined to be of a minor scale. The screening tool notes that for a minor scale development, dust may cause an impact at sensitive receptors within 25m from the source of the dust generated. Given that the designated habitats of the River Barrow and River Nore SAC are located approximately 40m from the proposed site boundary, there would be no anticipated impact on these habitats due to construction dust.

Activities as part of the construction of the development would not have the potential to cause a significant impact upon designated sites due to invasive species. There would be no significant import of materials with the potential to contain invasive flora species. Soils excavated during construction works would be stockpiled and re-used for site levelling and site landscaping, therefore no importation of topsoil or subsoil would be required as part of the development works.

The proposed site is located within the Barrow Catchment, thus, the proposed development is hydrologically linked to the River Barrow and River Nore SAC. During the construction phase of projects, a deterioration in water quality can arise through the release of uncured concrete, the release of suspended solids during soil disturbance works and the release of

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hydrocarbons, which could potentially impact upon the River Barrow and River Nore SAC. Given the short duration of construction works and given that no works would take place within or immediately adjacent to riparian or aquatic habitat, the risk of the proposed development impacting upon works would be reduced. However, given the proximity of works to the SAC site (approximately 40m), control measures are required to ensure that there would be no potential significant impacts to the listed habitats and species of the River Barrow and River Nore SAC due to a potential deterioration in water quality. These control measures are detailed in Section 5.2.

4.9 FLOOD IMPACTS

According to the Preliminary Flood Risk Assessment (PFRA) Mapping website by the OPW, a small area of the proposed development site is partially located within an indicative fluvial flood zone, while a small area of indicative pluvial flooding is indicated at the south-east corner of the site. A site specific Flood Risk Assessment was undertaken for the development by IE Consulting (Ref. IE 1794-3109), which included hydraulic modelling. The report noted that a small area of predicted 0.1% AEP (1 in 1000 year) current scenario flooding may encroach the south-western boundary of the site, and noted that % AEP (1 in 100 year) flood extent is not predicted to encroach the south-western boundary.

The Flood Risk Assessment by IE Consulting notes that a small portion of the Unit D building structure falls within the predicted 0.1% AEP mid-range future climate change scenario flood extents, however, the finished floor level of this unit would be 1.21m and 0.87m above the predicted 0.1% AEP current scenario flood level and the 0.1% AEP mid-range future climate change scenario flood level respectively. The report notes that while the portion of the Unit D building may result in the placement of approximately 33.86m³ of 0.1% AEP flood waters, this volume is imperceptible and would not result in an adverse impact to the hydrological regime or increase flood risk elsewhere.

The report concluded that the flood risk to and from the proposed development site is considered low, and the development is not expected to result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere.

5. ENVIRONMENTAL MITIGATION MEASURES

5.1 DUST MANAGEMENT

The following dust control measures would be implemented by the construction works contractor for the duration of the construction of the proposed development:

-) Cognisance would be taken of the guidelines published by the Institute of Air Quality Management (IAQM), “*Assessment of dust from demolition and construction 2014*”;
-) Material handling systems and site stockpiling of materials would be designed and laid out to minimise exposure to wind;
-) Prolonged storage of materials onsite would be avoided;
-) Where possible, the storage of materials, such as stockpiled excavated soils, would be located as far as possible from adjacent commercial/residential properties;
-) A 15kph speed limit would be implemented for all traffic onsite to reduce the potential for dust generation;
-) When transporting materials to and from the site, vehicles would be fitted with covers where possible to prevent material loss;
-) Public roads outside the site would be regularly inspected for cleanliness, and cleaned as necessary. A road sweeper would be used where required;
-) Any un-surfaced roads would be restricted to essential construction site traffic only;
-) While the natural recolonization of exposed areas of soil during reinstatement activities is preferred, re-seeding would be undertaken where required to promote the rapid stabilisation of soils;
-) Regular visual inspections would be undertaken around the proposed site boundary to monitor the effectiveness of dust control measures.

Should additional dust control measures be required, for instance during particularly dry weather, dust suppression measures would be undertaken, including the following:

-) Water misting plant, such as bowsers and sprays would be used as required and where necessary;
-) Wheel-wash facilities would be provided for vehicles exiting the site to reduce the level of dust travelling offsite;
-) Where practicable, stockpiles of excavated soils and exposed surfaces would be dampened down via misting plant.

5.2 SURFACE WATER, GROUNDWATER AND SOIL CONTAMINATION CONTROL

The implementation of control measures for dust and materials storage and handling would reduce the potential for a deterioration in water quality. These measures are outlined in Sections 5.1 above and 5.7 below. The following control measures shall be implemented by the construction works contractor for the protection of surface water and groundwater quality:

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- J The construction works contractor would adhere to standard construction best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines “*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*” 2001 and “*Control of Water Pollution from Construction Sites – Guide to Good Practice*”, 2002;
- J While no construction works would take place within the immediate vicinity of any watercourses, cognisance would be taken of the 2016 guidelines published Inland Fisheries Ireland, “*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*”;
- J Daily visual inspections would be undertaken of the River Barrow during construction works;
- J Silt fencing (comprising of a porous filter fabric which detains sediment) would be provided along the southern boundary of Unit D’s site and would remain in place until the completion of construction works;
- J Additional silt fencing would be placed adjacent to storage areas of stockpiled soil, until such time as the excavated soil has been used in landscaping / re-instatement works or removed offsite by a licenced waste contractor;
- J Silt control features would be inspected on a daily basis and maintained as appropriate;
- J Where spoil is generated, this would only be stored temporarily and away from watercourses. Where possible, spoil would be covered or alternatively, graded to avoid ponding or water saturation;
- J Excavations and earth-moving activities would be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- J Should water be encountered during excavation works, water would be pumped to a constructed silt control feature, such as a settlement pond or detention pond. A filter would be provided at the pump inlet and, where required, dewatering bags or silt fences would be used at the outlet to retain any potential silt entrained in the water. Pumping operations would be supervised at all times;
- J All construction plant machinery and equipment would be maintained in good working order and regularly inspected;
- J The temporary site compound would be used for the storage of all machinery and plant when not in use, the re-fuelling of plant and the storage of all associated oils and fuels for plant;
- J Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be readily available onsite;
- J The holding tank for sanitary waste would be located at the temporary site compound and would be emptied by a licenced contractor on a regular basis;
- J The construction works contractor would ensure the relevant site personnel are trained in spill control and water pollution control;

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-) It is not envisaged that vehicle wheel wash facilities would be required. However, in particularly dry weather, additional dust control measures may be required, including the provision of a wheel wash facility. Should a wheel wash facility be required, it would be located within the northern section of the site and the associated run-off would be collected via a settling pond;
-) In the unlikely event of a suspected deterioration in water quality within the River Barrow due to construction works at the development site, works would immediately cease, an investigation into the cause undertaken and the relevant National Parks and Wildlife Services and Inland Fisheries Ireland personnel informed.

Additional controls to reduce the potential impact upon soils include the following:

-) Specialist machinery (such as tracked machinery) would be used to minimise the potential compaction of soils;
-) Excavated soils would be stockpiled onsite, segregated into topsoil and subsoils, and reused in reinstatement and landscaping activities where possible;
-) Any fill and aggregate material required onsite would be sourced from reputable, local quarries.

5.3 TERRESTRIAL ECOLOGY PROTECTION PROTOCOL

It is considered that the implementation of the controls and measures outlined in Sections 5.1 – 5.8 would reduce any potential adverse impacts upon the biodiversity in the area. The following control measures are also recommended to ensure that the proposed construction works would not have any significant impact upon biodiversity:

-) All construction works would be confined as far as possible to the development footprint;
-) Should a protected fauna species be found during the construction phase of the project, an officer of the NPWS would be notified prior to the resumption of construction works;
-) As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal and the protection of birds and bats, and would have regard to reducing impacts on nesting birds;
-) Where vegetation removal works are required during the bird breeding season, the sections for removal would be inspected by a suitably qualified ecologist for the presence of breeding birds. Where nests are present, the ecologist would make a decision as to whether a “Licence to interfere with or destroy the breeding places of any wild animals”, is required from the NPWS. Alternatively, the ecologist may establish a suitable buffer zone around an active nest, with removal works rescheduled until chicks have fledged. Where no evidence of nests are found during inspection, vegetation removal works must be undertaken within three days of inspection;
-) Where possible, no construction works would be conducted outside of normal working hours, to reduce potential noise disturbance to nocturnal species.

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Construction works have the potential to impact upon bat species due to lighting disturbance on commuting and foraging habitat. Therefore, the following measures would be implemented by the construction works contractor:

-) Construction works in the hours of darkness, when bats are active (April – October), would be kept to a minimum;
-) Lighting of trees and hedgerow would be avoided where possible, to ensure that commuting and foraging corridors are maintained;
-) Should lighting be required during construction works, it would be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
-) Directional lighting would be used where possible, by use of louvres fitted to the lighting;
-) White light emitting diode (LED) would be used where possible, which is considered to be a low impact in comparison to other lighting types.

5.4 NOISE AND VIBRATION CONTROL

The following noise control measures would be implemented by the construction works contractor for the duration of the construction of the proposed development:

-) Cognisance would be taken of the National Roads Authority’s “*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*”, the British Standard 5228: Part 1 “*Code of practice for Noise Control on Construction and Open Sites*” and the CIRIA 2015 “*Environmental Good Practice on Site*”;
-) Plant and machinery used on-site would comply with the EC (Construction Plant and Equipment) Permissible Noise Levels Regulations, 1988 (S.I. No. 320 of 1988). All noise producing equipment would comply with S.I. No 632 of 2001 European Communities (Noise Emission by Equipment for Use Outdoors) Regulations 2001;
-) All construction activities would take place between 7:00am and 19:00pm, Monday to Friday. Any works which, by necessity, are required to be carried out outside of these times would be notified to the relevant bodies and any potentially effected local residents in good time and prior to specified works commencing;
-) Deliveries would be organised to arrive during daytime hours;
-) All on-site workers, hauliers and contractors would be informed of noise considerations on-site and on public access roads;
-) Ensure care would be taken when unloading vehicles to minimise noise disturbance. Materials should be lowered, not dropped, insofar as practicable and safe;
-) Regular maintenance would be carried out on all construction equipment, machinery and vehicles;
-) Construction plant would be operated in accordance with the operator’s instructions;
-) Engine and machinery covers would be maintained in good working order and would remain closed whenever machinery is in use;

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-) Where required, screens or barriers would be installed to shield particularly noisy activities;
-) Where practicable, all mechanical plant would be fitted with effective exhaust silences and pneumatic tools fitted with mufflers or silencers;
-) Ensure any compressors required would be silenced or of sound reduced models fitted with acoustic enclosures;
-) Noisy equipment would be orientated in one direction so that noise would be directed away from noise-sensitive areas;
-) Construction plant would be selected, where possible, with low inherent potential for the generation of noise;
-) Construction plant would be switched off or throttled back to a minimum when not in use;
-) A 15kph speed limit would be implemented for all traffic onsite;
-) Staff personnel would be instructed to avoid unnecessary revving of machinery;
-) Site personnel would notify the Project Manager in the event equipment or plant becomes defective, resulting in high noise emissions. Any defective plant would be kept out of service until the necessary repairs are undertaken.

5.5 TRAFFIC CONTROL

The construction works contractor would undertake site entrance works to facilitate the access of traffic associated with the proposed development. The construction works contractor would ensure the following:

-) A 15kph speed limit would be implemented for all traffic onsite;
-) Deliveries to the site would be via suitably contained vehicles, with sheeting and covers where required;
-) Materials would not be delivered to the site until required;
-) Local roads would be inspected and cleaned as necessary;
-) Where possible, large-scale vehicle movements would be timed outside peak hours on the local road network.

Upon planning approval, and at a detailed design stage, the construction works contractor would prepare a Construction Traffic Management Plan (CTMP), in order to minimise the potential impact of the construction phase of the proposed development on the safety and amenity of other users of the public highway. The CTMP would consider (inter alia) the following aspects:

-) Routes to be used by construction traffic;
-) Working hours of the site;
-) Forecasts of construction traffic volumes;

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-)] Times when construction traffic movements and deliveries will be undertaken;
-)] Facilities for loading, unloading and storage;
-)] Facilities for parking cars and other vehicles associated with the workforce; and
-)] Measures to encourage car sharing amongst the workforce.

5.6 WASTE MANAGEMENT CONTROL

Waste management during the construction phase would be in accordance with the Construction and Demolition Waste Management Plan (Document Ref. PES_C&D WMP_19_9457), which accompanies the planning application for the proposed development.

5.6.1 Waste Storage Area

The temporary site compound would be the main designated location for waste receptacles onsite. Suitable waste receptacles would be provided by the appointed waste contractor(s) during the construction phase, with skips / bins allocated to specific waste streams to avoid contamination. The number and size of waste receptacles would be determined following the appointment of the waste contractor(s). Waste receptacles would be appropriately labelled.

Where waste fuels and oils are generated, they would be stored within a bunded container in a designated area of the site compound. Any hazardous materials would be stored separately from non-hazardous waste, and would be stored within bunded containers / upon a bund where appropriate.

The removal of waste from the site would be undertaken on a regular basis, preventing large volumes of waste accumulating onsite.

5.6.2 Waste Contractors

The collection of wastes from the site would be undertaken by suitably authorised waste hauliers, and would only be recycled / recovered or disposed of at suitably licenced waste facilities.

The construction works contractor would appoint a waste contractor(s) for the construction phase. The waste contractor(s) appointed for the project would have experience in construction waste management and would be appropriately licenced, holding the relevant waste collection permit and/or waste licences for the types of waste anticipated to be generated during construction works.

The waste contractor(s) would be appropriately licenced in compliance with the following regulations:

-)] Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007);
-)] Waste Management (Collection Permit) Amendment Regulations 2008 (S.I. No. 87 of 2008);

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- J Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007);
- J Waste Management (Facility Permit and Regulations) Amendment Regulations 2008 (S.I. No. 86 of 2008).

The construction works contractor would ensure that copies of all waste contractors' collection permits and licences would be available for inspection, as discussed in the "Record Keeping" section below.

5.6.3 Waste Minimisation

Waste minimisation and prevention would be the responsibilities of the construction works contractor appointed to the proposed development, who would ensure the following:

- J The efficient ordering and purchasing of materials to reduce surplus materials;
- J Materials would be ordered in appropriate sequence to minimise materials stored on site;
- J The correct storage of materials to minimise the generation of damaged materials, for example keeping materials packaged until they are ready to be used and storing materials which are vulnerable to water damage via precipitation under cover and raised above the ground;
- J The handling of materials with care, to avoid undue damage;
- J The return of uncured concrete to the batching plant where possible;
- J The re-use of shutters for concrete works;
- J Where practical and where permitted, certain waste streams would be used during infill works;
- J Where possible, excavated subsoil and topsoil would be reused for the reinstatement and landscaping of the development site.

The construction works contractor would reuse materials onsite where possible. In particular, inert wastes (such as concrete (EWC 17 01 01), bricks (EWC 17 01 02) and soils and stones (EWC 17 05 04)) would be used for infilling activities where suitable (and where required). The inert wastes may be passed through a mobile crusher unit, which would render the backfill material into a uniform shape and size which would allow for improved backfilling and compaction to required engineering standards.

5.6.4 Management of Waste Streams

As mentioned in Section 4.7 above, wastes generated would be managed by the construction works contractor in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended.

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Excavated Soils and Stones:

Based on current calculations, it is estimated that approximately 2,235 tonnes of excavation materials would be generated for the proposed development. However, it is likely that this figure is an over-estimate.

Soils and stones arising from excavations would be reused in the reinstatement (for example as cut and fill activities and engineering fill) and landscaping processes where possible. This would be investigated by the construction works contractor and would be subject to appropriate testing to ensure the material is suitable for its proposed end use.

Any excess excavated soils would be collected by a licenced waste contractor and either reused for reinstatement / landscaping activities at other sites if suitable or disposed of as appropriate. Alternatively, the construction works contractor would investigate if excavated soils can be classified as a by-product under Article 27 of the Waste Directive Regulations, 2011. If a local use for the material is identified, and if the proposed end use meets the requirements of the Article 27 regulations, there would be no requirement to send this material to a waste facility.

In the unlikely event of any evidence of soil contamination being found during work on site, the appropriate remediation measures would be employed. Areas of potentially contaminated soil would be isolated and tested for contamination in accordance with the 2002 Landfill Directive (2003/33/EC). Any work of this nature would be carried out in consultation with, and with the approval of, the EPA and the Environmental Department of Carlow County Council. Pending the results of laboratory testing, this material would be excavated and exported off-site, by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material, and be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Concrete, Bricks, Tiles and Ceramics:

Surplus concrete would be returned to the batching plant where possible. An impermeable concrete washout area (separate to vehicle wheel wash) would be installed by the construction works contractor, if required. Excess concrete and washings from ready mix trucks would be deposited in the designated contained area only. The main contractor would arrange for removal from site of concrete at regular intervals. Where concrete, blocks and bricks, tiles and ceramics arise from construction activities, they would be crushed and used for ground-fill material where deemed suitable (should infill activities be required). Where these materials cannot be reused onsite, they would be diverted for recycling if possible.

Wood:

Waste wood would be reused for shuttering where suitable. Wood that is uncontaminated (free from preservatives and paints) would be segregated and recycled. Any wood not deemed suitable for recycling would be disposed of as appropriate.

Metal:

Metal is highly recyclable and has a considerable rebate value. Where metal cannot be reused onsite, the majority would be recycled.

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Glass:

Small volumes of waste glass may be generated during the construction phase. As glass can contaminate other segregated waste streams, it would be collected separately where possible. The majority of glass would be recycled.

Other Recyclables:

These include plastic, cardboard and office waste such as paper. Where possible, the different recyclables would be segregated onsite and sent for recycling. With regards packaging waste, the construction works contractor would investigate the possibility of returning the packaging to the supplier.

Food Waste:

Food waste on site would arise from food consumption by construction staff. Suitable food waste bins would be provided by the contractor in the construction compound and the contractor would ensure that these are regularly removed and emptied. Food waste would be sent for composting or anaerobic digestion.

Mixed Municipal Waste and Other Non-Recyclable Waste:

Wastes not suitable for reuse or recycling would be stored in separate waste receptacles. Prior to removal from site, the EHS Officer or delegate would inspect the receptacles to ensure they contain no recyclable material or materials which can be reused.

Green Waste:

Green waste may be sent for composting if not possible to reuse onsite during landscaping / re-instatement activities, or for disposal as deemed appropriate by the waste contractor.

Sanitary Waste:

Sanitary waste from the holding tank located within the temporary site compound would be collected by a licenced waste contractor on a regular basis.

Hazardous Materials:

Hazardous waste would be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. Small quantities of hazardous waste may be generated onsite. Examples of potentially hazardous wastes include fuels and oils, batteries, paints, adhesives and sealants. Hazardous waste would be stored separately from non-hazardous waste, would be appropriately labelled and would be stored upon bunds where appropriate. Where hazardous materials are being specified, alternatives with a lower environmental impact should be sought wherever possible. The construction works contractor would ensure that the appointed waste contractor is licenced to transport / accept hazardous waste prior to the waste leaving the site. Depending on the type of hazardous material, the waste may be recovered, recycled or disposed of appropriately.

Waste Electrical and Electronic Equipment (WEEE):

This waste, if generated, would be stored separately from other waste streams and would be covered pending collection. WEEE can contain hazardous components such as batteries and mercury containing fluorescent tubes. All hazardous wastes would be stored in appropriate secure banded containers prior to removal from site. Some hazardous wastes may not be stored with other wastes. This would be determined by the contractor and appropriate precautions taken.

5.6.5 Records

For each waste movement and for each type of waste, the construction works contractor would obtain a signed waste docket from the waste contractor, detailing the weight, type of material, destination of material and whether the material is going for recycling, recovery or disposal. The construction works contractor would retain copies of the waste contractors' relevant waste collection permits and waste licences on file throughout the construction phase.

5.7 CHEMICAL AND HAZARDOUS MATERIALS MANAGEMENT

5.7.1 Concrete

The following controls would be implemented throughout the construction phase:

-) The use of pre-cast concrete where possible;
-) The delivery and pouring of concrete would be supervised at all times;
-) The pouring of concrete would be avoided during periods of expected heavy rainfall;
-) Concrete would be poured directly into the shuttered formwork from the Ready Mix Truck, reducing the risk of spillage;
-) The wash-out of Ready Mix Truck drums would not be permitted onsite, in the environs of the site, or at a location which could result in a discharge to surface water;
-) Surplus uncured concrete would be returned to the batching plant where possible;
-) An impermeable concrete washout area would be installed, if required, by the construction works contractor at the temporary site compound. Excess uncured concrete not returned to the batching plant, in addition to chute washings, would be deposited in the designated concrete washout area. The construction works contractor would arrange for the removal of concrete from this area at regular intervals.

5.7.2 Hydrocarbons

The following controls for the handling and storage of hydrocarbons would be implemented throughout the construction phase:

-) All construction plant machinery and equipment would be maintained in good working order and regularly inspected;
-) Any fuels, oils or chemicals would be stored in accordance with the EPA guidance on the storage of materials, in designated bunded areas at the temporary site compound, with adequate bund provision to contain 110% of the largest drum volume or 25% of the total volume of containers;
-) Material storage areas would be appropriately labelled and marked;
-) The designated area for the storage of hydrocarbons would be inspected on a regular basis;
-) Deliveries of fuels and oils to the site would be supervised and records maintained;

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-) All loading and unloading of hydrocarbons would take place within the bunded area where possible;
-) Fuels / oils would be handled and stored with care to avoid spillage or leakage;
-) Where appropriate, small construction plant equipment would be placed on drip trays;
-) Any waste fuel / oils would be collected in bunded containers at a designated area within the site compound and properly disposed of to an authorised waste contractor;
-) Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be readily available onsite;
-) In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material would be properly disposed of to an authorised waste contractor;
-) The construction works contractor would ensure the relevant site personnel are trained in spillage control;
-) Where re-fuelling of construction plant is required to take place onsite, re-fuelling would take place within a bunded area, within the temporary site compound. Under no circumstances would re-fuelling take place within the vicinity of the southern site boundary (approximately 50m from the River Barrow);
-) Re-fuelling onsite would only be undertaken by experienced and trained personnel;
-) Where construction plant shows signs of hydrocarbon leakage, site personnel would cease the operation of the item in plant in question and notify the Project Manager. Any defective plant would be kept out of service until the necessary repairs are undertaken.

5.7.3 Excavated Materials

This section should be read in conjunction with the dust control measures relating to the storage and handling of spoil outlined in Section 5.1. The following controls for the handling and storage of excavated materials would be implemented throughout the construction phase:

-) Spoil would only be stored at the proposed development site temporarily and away from watercourses;
-) Where possible, spoil would be covered or alternatively, graded, to avoid ponding and water saturation, in addition to minimising exposure to wind;
-) Silt fencing would be placed around spoil areas until such time as the excavated soil has been used in landscaping / re-instatement works or removed offsite by a licenced waste contractor;
-) Spoil would be used in the reinstatement and landscaping process where possible;
-) Reinstatement would be undertaken as soon as possible after excavation and earth-moving works.

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5.8 INVASIVE SPECIES CONTROL

The following controls for the prevention / treatment of invasive flora species would be implemented throughout the construction phase of the development:

-) Regular site inspections would be undertaken to ensure that no growth of invasive species has taken place;
-) The construction works contractor would ensure that all equipment and plant is inspected for the presence of invasive species and thoroughly washed prior to arriving to, and leaving from, the development site.;
-) All relevant construction personnel would be trained in invasive flora species (main species of concern) identification and control measures;
-) In the unlikely event of an invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 appearing onsite, works within the immediate vicinity would cease until the invasive plant has been appropriately treated and disposed of to a suitably licenced facility, in accordance with Regulation 49 of the 2011 Regulations;
-) Cognisance would be taken of National Roads Authority's Guidelines on "*The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*".

5.9 EMERGENCY MANAGEMENT PLAN

An Emergency Response Plan would be prepared for the proposed development by the construction works contractor, which would cover all potential risks, including environmental risks, such as fire, explosion, accidents, spillage and leaks. Designated site personnel would be trained as first aiders and fire marshals, with additional site personnel trained in environmental emergencies such as spill response procedures.

6. MONITORING AND AUDITING

6.1 REPORTING AND RECORD KEEPING

The Project Manager, in conjunction with the EHS Officer, would ensure that appropriate, detailed records are maintained during the construction phase of the development. Records of all works associated with the proposed development would be completed by the construction works contractor throughout the construction phase. Environmental records would include waste and site inspection records and where relevant, environmental incident and complaints records. Other records may include Safety Data Sheet records and a copy of the Safety File. Where relevant to the associated works, statutory inspection records would be maintained for such activities as excavations and lifting gear.

Where necessary and as requested by the local authority, copies of relevant construction activity records can be made available.

In the event of an environmental incident occurring at the site with the potential to cause environmental pollution, the Project Manager would notify the client and the relevant third parties, as outlined in Section 3.8, as soon as practicable. Such environmental incidents may include:

-) Fire;
-) Water pollution event;
-) Hydrocarbon or chemical spill;
-) Excessive noise;
-) Excessive dust.

Any complaints and/or incidents would be reported to the Project Manager. The Project Manager would be responsible for developing and maintaining a register of complaints and a register of incidents, with details on follow-up actions. The Project Manager would notify the client as soon as practicable of any environmental complaint or incident.

6.2 ENVIRONMENTAL PERFORMANCE MONITORING

6.2.1 Safety Monitoring

The EHS Officer would be present at the development site during working hours, to ensure activities are undertaken in a safe manner.

6.2.2 Environmental Monitoring

The EHS Officer would be present at the development site during working hours, to ensure activities are undertaken in an environmentally sensitive manner. The EHS Officer would undertake regular site inspections and audits, at least weekly, to monitor the environmental performance of the site and address any potential environmental issues such as dust, litter and noise. Site inspections and audits would include the following:

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- J Assessment of public access roads;
- J Assessment of neighbouring properties;
- J Temporary site compound;
- J Chemical and hydrocarbon storage area;
- J Waste storage area;
- J Spoil areas;
- J Inspections of the River Barrow, located approximately 50m to the south of the site.

A qualified ecologist would be engaged to oversee any hedgerow and tree removal works required during the bird nesting season. Prior to any hedgerow / tree removal works, the sections / trees required for removal would be inspected by the ecologist for the presence of breeding birds. Where nests are present, the ecologist would determine the best course of action, as outlined in Section 5.3

6.3 MONITORING COMPLIANCE REPORTS

As noted in Section 6.2 above, site inspections and audits would be undertaken by the EHS Officer on a regular basis, at least weekly. These site inspections and audits would monitor the environmental performance of the site.

Where works are determined to be in breach of any specifications outlined within the CEMP, the EHS Officer shall notify the Project Manager, who would raise a non-compliance report and notify the client as soon as practicable. Non-compliance reports may also be raised as a result of an incident or potential incident, the receipt of a complaint or as a result of a regulatory inspection or audit.

The non-compliance report would include details on the nature of the non-compliance, the proposed corrective action required, action taken to prevent recurrence and verification that the corrective actions have been undertaken and the non-compliance has been closed out. Any non-compliances would be discussed at the weekly meetings between the construction works contractor and client.

6.4 PROCEDURES TO REVIEW INSPECTIONS AND STEPS TO ADDRESS NON-COMPLIANCE

The Project Manager is responsible for reviewing inspections, audits and any arising non-compliances. A review schedule would be decided upon between the construction works contractor and the client upon receipt of planning permission for the project.

The Project Manager would notify the client as soon as practicable of any non-compliances arising during the construction of the proposed development. The Project Manager would be responsible for notifying the relevant third parties where required of non-compliances at the site, and would liaise with third parties as necessary as to the outcome of the non-compliance. All non-compliances would be investigated immediately, and the construction works contractor would aim to close out non-compliances as soon as possible. As discussed in

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Section 6.3, the statuses of any non-compliances would be discussed at the weekly meetings between the construction works contractor and client.

Where it has been determined that revisions to the CEMP are required to ensure recurrence of a non-compliance does not take place, the Project Manager and EHS Officer would make the necessary changes to the CEMP and would ensure that the revisions are effectively communicated as appropriate to onsite personnel and sub-contractors.

7. CONCLUSION

This CEMP has been prepared to demonstrate the commitment of the client and construction works contractor to environmental management at the proposed development site, and outlines the work practices and control measures that would be implemented throughout the construction period to ensure that potential environmental impacts are effectively managed, reduced or eliminated.

The CEMP is considered a “live” document and would be reviewed and updated as appropriate upon planning approval and as necessary as construction works progress.

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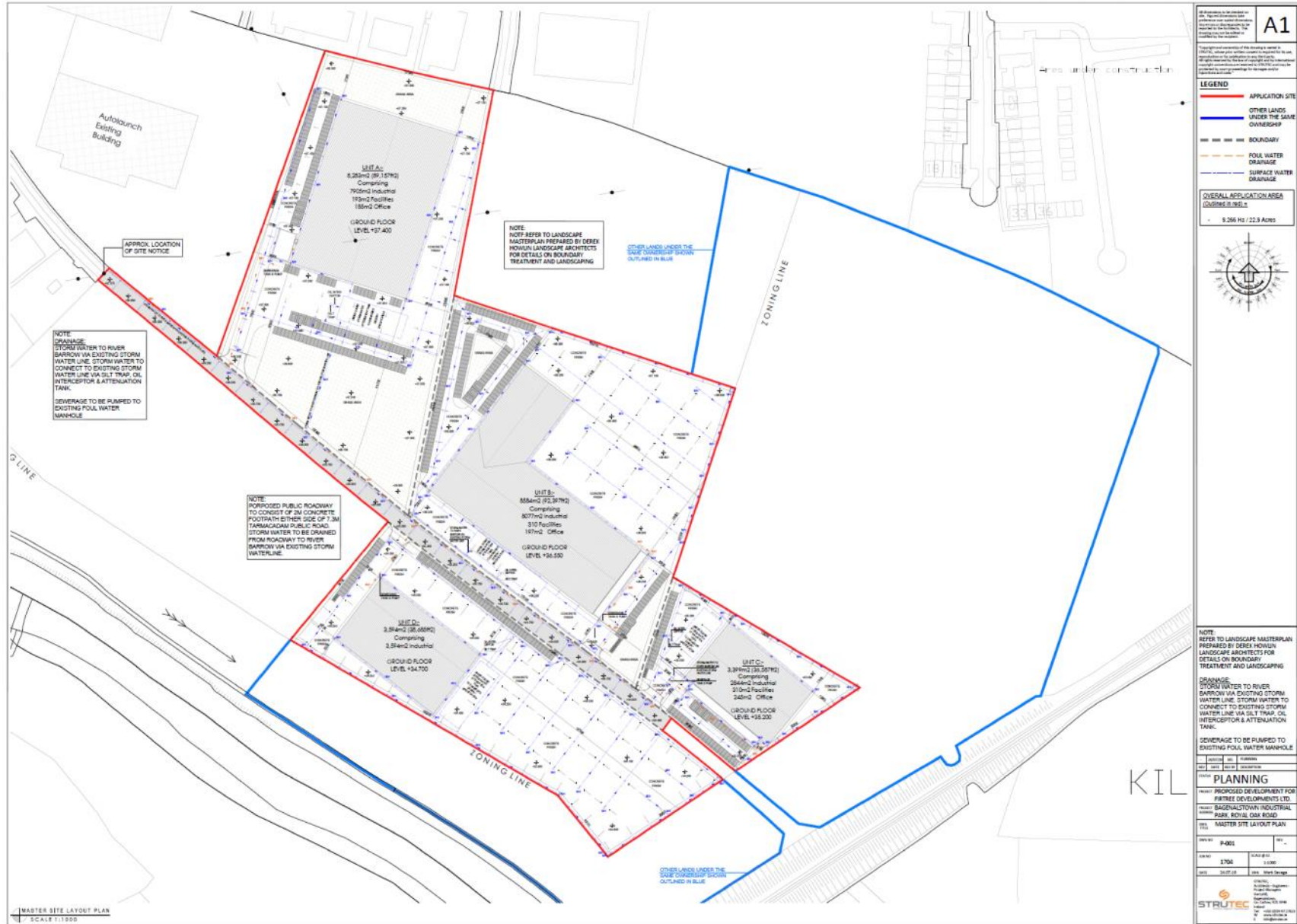
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APPENDIX A

PROPOSED SITE LAYOUT

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