

Strategic Housing Development, Blackrock, Dundalk, Co. Louth.

Outline Construction Environmental
Management Plan

Kingsbridge Consultancy Ltd.

21st June 2019



Notice

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This document has 48 pages including the cover.

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 0	Draft	AMc / DL	AMc	DL	MF	29/05/019
Rev 1	Final	AMc / DL	AMc	CW	MF	21/06/019

Client signoff

Client	Kingsbridge Consultancy Ltd.
Project	Strategic Housing Development, Blackrock, Dundalk, Co. Louth.
Job number	5167910
Client signature / date	

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1. Introduction

This Outline Construction Environmental Management Plan (hereafter referred to as CEMP) has been prepared by WS Atkins Ireland Ltd. (Atkins) on behalf of Kingsbridge Consultancy Ltd. (the applicant) as part of the supporting documents required for a planning application for a proposed residential development at Blackrock, Dundalk, Co. Louth. The proposed development, on a 17.9Ha greenfield site, comprises the construction of 483no. residential units, an access road, creche, 824no. car parking spaces (including 2no. undercroft parking facilities with a combined total of 96no. spaces), 512no. cycle parking spaces, open space / landscaped areas, and all associated ancillary works. The proposed development will be accessed from Blackrock Road. The existing site is bounded to the north by residential housing and Finnabair Industrial Park, to the west by Dundalk Golf Course, to the east by urban residential developments and agricultural lands, and to the south by agricultural lands.

The principle objective of this Outline CEMP is to provide recommended measures to avoid, minimise and control adverse environmental impacts associated with the construction of the proposed development, at the planning stage of this project. Atkins understands that this development does not form part of an overall larger project. Therefore, the following environmental management considerations will apply for the entire life-cycle of the project.

1.1. Methodology

The party responsible for the preparation of the CEMP is likely to change over the lifecycle of a project. Given that this project is still at the planning application stage we consider that the provision of a Detailed CEMP would be premature as more detailed plans will be prepared for construction purposes.

UK guidance (Interim Advice Note 183/14 Environmental Management Plans) states that:

'Initially the Environmental Management Plan (EMP) will be in outline only. It will be later be refined and expanded into a Construction Environmental Management Plan (CEMP) as more information becomes available and there is more certainty in terms of the proposed project layout, construction methods, programme and the likely environmental effects.'

In accordance with this guidance Atkins have prepared a robust site-specific Outline CEMP in order to support this planning submission to An Bord Pleanála (ABP). This document will provide a framework for recording environmental risks, commitments and other environmental constraints for the duration of the project and will clearly identify the structures and processes that will be used to manage and control these aspects, whilst also seeking to ensure compliance with relevant environmental legislation, government policy objectives and project specific environmental objectives. The Outline CEMP will provide a mechanism for monitoring, reviewing and auditing environmental performance and compliance for the duration of the project.

All available information at this planning stage has been incorporated into this Outline CEMP. This document provides a detailed overview of key environmental considerations for the project, while also allowing for further refinement as the project progresses through to the detailed design and construction stages. The preparation of a site-specific Detailed CEMP will be the responsibility of the Contractor, once appointed, and as more information becomes available and there is more certainty in terms of the proposed project layout, construction methods, programme and the likely environmental effects.

1.2. List of Acronyms

The following list of abbreviations have been used within this document;

- AOD - Above Ordnance Datum
- ABP - An Bord Pleanála
- BRE - Building Research Establishment
- C&D - Construction and Demolition
- CEMP - Construction Environmental Management Plan
- LCC - Louth County Council
- EPA - Environmental Protection Agency
- GSI - Geological Survey of Ireland
- HEMP - Handover Environmental Management Plan
- IFI - Inland Fisheries Ireland
- mBGL - meters below ground level
- NPWS - National Parks and Wildlife Services
- PSCS - Project Supervisor for the Construction Stage
- PSDP - Project Supervisor for the Design Process
- SAC - Special Area of Conservation
- SPA – Special Protection Area
- SMR - Sites and Monuments Record
- SuDS - Sustainable Drainage System
- ECoW- Ecological Clerk of Works
- EM – Environmental Manager
- EIAR – Environmental Impact Assessment Report
- NIS - Natura Impact Statement
- PEAR - Preliminary Ecological Appraisal Report
- ERP – Emergency Response Plan

1.3. Site Location & Surrounding Land use

The boundary of the Blackrock Small Housing Development site (hereafter referred to as the Site) is outlined in red in Figure 1.1 below. The site is bordered to the north by residential developments, Finnabair Industrial Park and Bothar Maol Road, to the west by Dundalk Golf Course, to the east by rural residential housing and agricultural lands and to the south by agricultural lands.

1.4. Existing Site Setting

The land on which the Site is located slopes moderately in a southwest and northeast direction with topographic levels ranging from 23.78m AOD (above ordnance datum) in the southwest to 6.08m AOD in the northeast of the Site. The Site is located ca. 0.03km west of Dundalk Bay and there are 2no. rivers in the immediate vicinity; the Marshes Upper River located approximately 0.4km north of the Site and the Haggardstown River located approximately 1.6km southwest of the Site (EPA, 2018) as presented in Figure 1.2 below. Both the Marshes Upper and Haggardstown River flow in a general south-easterly direction for approximately 0.38km and 1.3km respectively, before discharging to Dundalk Bay. Dundalk Bay has been designated as a Special Area of Conservation (SAC) (Site Code: 000455) and Special Protection Area (SPA) for birds (Site Code: 004026). These are the closest designated Natura 2000 Sites to the proposed development site, located ca. 0.3km to the east at their closest.

An industrial abstraction well (GSI Ref: 2929NEW093) is located ca. 0.8km north-west of the Site which is reportedly used by Carroll's Ltd. However, the P.J. Carroll factory ceased operation in 2008, and this well is located up-hydraulic gradient of the Site. Several other boreholes and springs are reported to be present within the immediate vicinity (2km radius) of the Site; however, none of these are reported by the GSI (2018) to be used for potable use or for major groundwater abstraction. A Geological Heritage Area, Dundalk Bay (Site Code: LH018), is located to the immediate east of the Site. Dundalk Bay has been designated as a Geological Heritage Area because of the presence of 'extensive flats, associated beach, dune and slack features; beaches, salt marshes and headlands' (GSI, 2018). There are no karst features present within the Site or within the immediate vicinity of the Site.

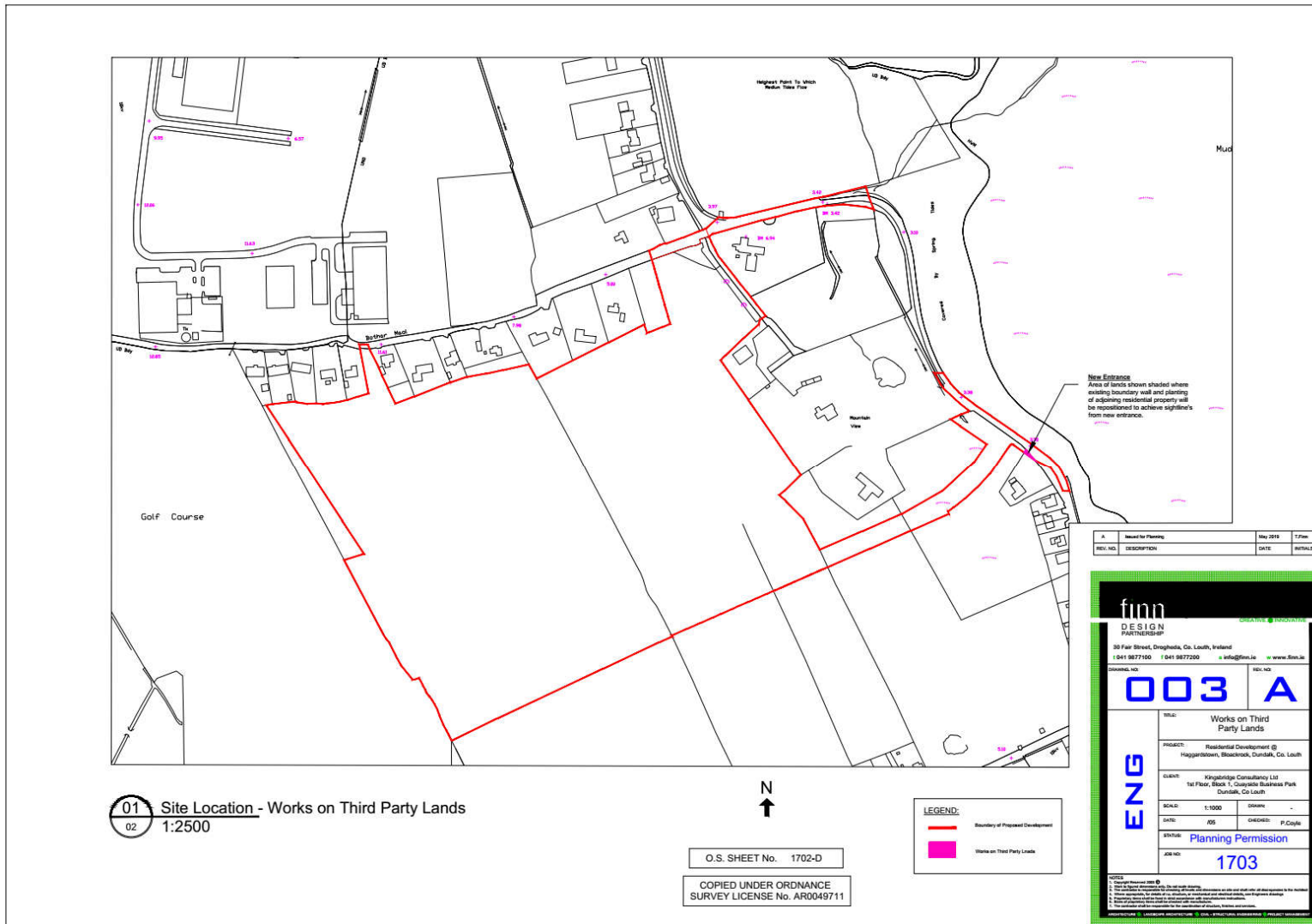


Figure 1.1 - Site Location

1.5. Sensitive Receptors

Key receptors which have been identified as being potentially sensitive to the proposed development works are presented in Table 1.1, along with their respective locations in relation to the proposed development.

Table 1.1 - Identified Receptors in the vicinity of the Proposed Development (during the Construction Phase)

Potential Receptors	Location
Hedgerows/trees	Hedgerows along the northern, eastern and western boundaries of the site. Trees to the east of the site.
Ecology - any protected species that may potentially be present (reptiles, bats, breeding birds)	Various Bat species including Common pipistrelle (<i>Pipistrellus pipistrellus</i>), Leisler's bat (<i>Nyctalus leisleri</i>) and <i>Myotis sp.</i> were reported at the site in July 2018.
Natura 2000 Sites	The site is located ca. 250m west of Dundalk Bay which has been designated as a Special Protection Area (SPA) and Special Area of Conservation (SAC).
Offsite Surface water features	Marshes Upper River, c.0.4km north, Haggardstown River, c.1.6 south west.
Archaeological Features	There are no recorded Archaeological sites located within the site boundary. However there are numerous archaeological sites within 1km of the site as discussed further in Section 6.13.
Groundwater	Poorly productive bedrock aquifer underlies the site. Groundwater beneath the site has an 'Extreme' vulnerability classification with portions of 'Rock at or near the surface or karst' within the Site and to the north. This indicates that bedrock is shallow and groundwater is vulnerable to pollution from surface sources in this area.
Onsite construction workers	Across the site.
Users of the local road network	Users of Bothar Maol Rd, north of the site, Users of the Blackrock Rd (R172), east of the site, Users of the N52, north-west of the site.
Surrounding Amenity Facilities	The west of the site is bordered by Dundalk Golf Course.
Local Residences	Residential properties to the north and east of the site.
Adjacent Industrial /commercial properties	Horseware Products Ltd, Teva Pharmaceuticals Ireland, and the Hangor Company to the north of the site (north of Bothar Maol Rd.)

2. Proposed Development

2.1. Location, Nature and Scale of the Development

The proposed residential development will facilitate the growing population of the general Dundalk area. The area of Blackrock benefits from connectivity to the M1 motorway which allows for reasonable commuting distances to Dublin and Belfast Cities and their surrounding areas. The proposed development lands are designated as 'Residential 2' and 'Recreation, Amenity and Open Space' zoning by Louth County Council (LCC) within the Dundalk and Environs Development Plan 2009-2015. The zoning objective vision for these lands is stated by LCC as follows;

- 'To provide for new residential communities and supporting community facilities subject to the availability of services'
- 'To provide for the provision of public parks, open spaces, amenity and recreational facilities'

The proposed residential development is located on an existing greenfield site at Blackrock, Co. Louth. The site is bounded to the north by residential housing, to the west by Dundalk Golf Course, to the east by rural residential properties and agricultural lands and to the south by agricultural lands. Refer to Figure 2.1 below for the proposed development plan. Further details of the proposed development are presented in the accompanying planning documents, drawings and plans. No demolition works will be required for this project.

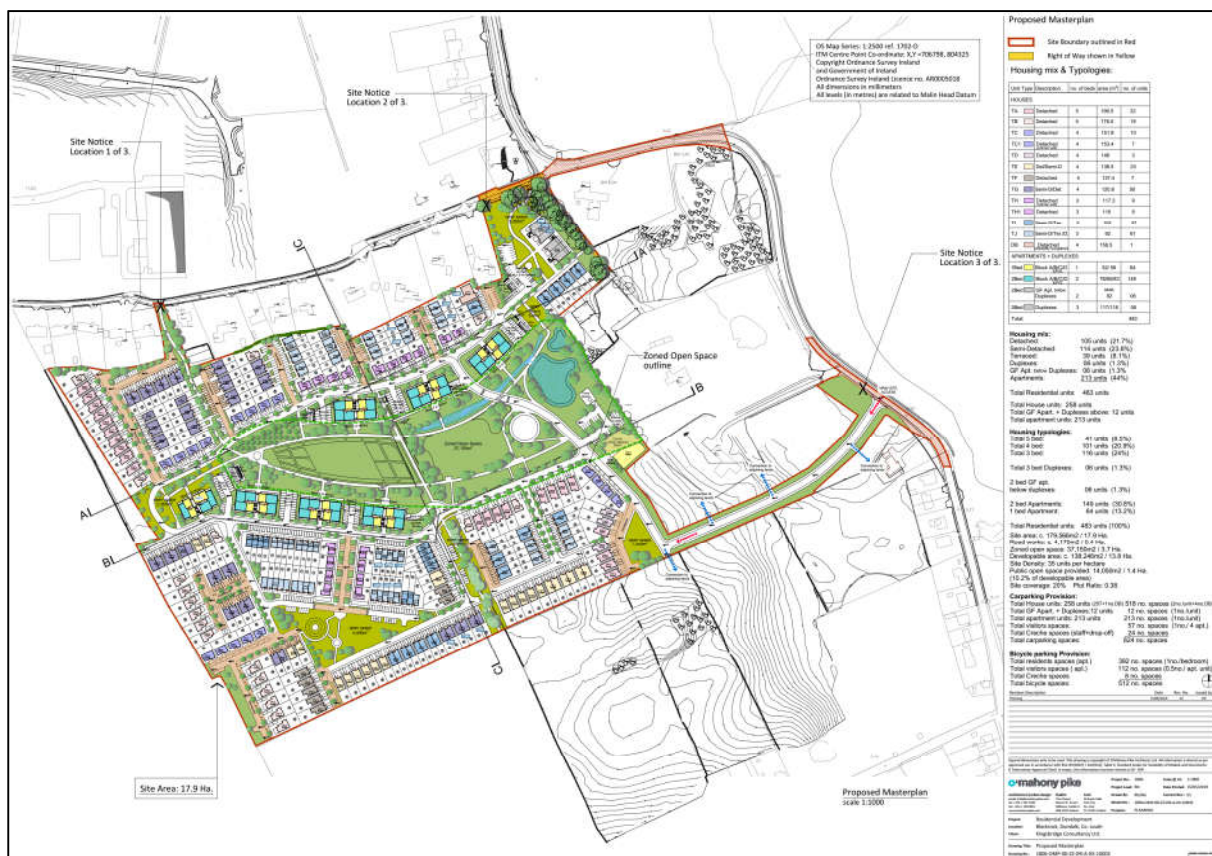


Figure 2.1 - Proposed Development Layout

2.2. Roles & Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed development should be determined at the very outset of the Construction Stage of this project. Key

roles are listed below. These are typically performed by the Client, Engineer and Contractor as presented below. Specific details will be determined upon the Detailed Design and Contract stage.

Employer	Planning Agents
The Client: Kingsbridge Consultancy Ltd. Tel: to be confirmed Contact: to be confirmed	The Planner: Declan Brassil & Company Ltd. Tel: to be confirmed Contact: to be confirmed
Engineer	Architect
The Engineer: Tony Finn Tel: to be confirmed Contact: to be confirmed	The Architect: O'Mahony Pike Tel: to be confirmed Contact: to be confirmed
Project Supervisor for the Design Process (PSDP)	Environmental Team
The Engineer: to be confirmed Tel: to be confirmed Contact: to be confirmed	Environmental: Atkins Tel: to be confirmed Contact: to be confirmed
Project Supervisor Construction Stage (PSCS)	Contractor
The Contractor (s): to be confirmed Tel: to be confirmed Contact: to be confirmed	The Contractor: to be confirmed Tel: to be confirmed Contact: to be confirmed

3. Preliminary Development Description

The proposed development will involve the following key work phases;

- Detailed Design Stage.
- Tender Stage.
- Procurement and appointment of successful Tenderer(s) (hereafter referred to as The Contractor).
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents.
- Site enabling works.
- Site mobilisation.
- Construction Stage.
- Completion.
- Operational Stage.

Site working hours will be determined at the Detailed Design and Tender Stages. However, at this preliminary juncture it is envisaged that the standard times for construction works will apply. These are summarised as follows: -

- Monday to Friday: 08:00 to 19:00.
- Saturdays: 08:00 to 13:00.
- Sundays & Bank Holidays: No works activities shall take place on site

Details of machinery to be used on site are unknown at this time, but are likely to be standard site equipment including tracked excavators, dumpers, bulldozers etc. A project specific Traffic Management Plan and Waste Management Plan taking due cognisance of the Contractors statutory responsibilities, will be prepared by the Contractor. In preparing the project specific Detailed C&D WMP the Contractor should take cognisance of the Outline Waste Management Plan (Atkins, 2019), prepared as part of this application.

4. Purpose of Outline CEMP

The purpose of this Outline CEMP is to provide recommended measures to avoid, minimise and control adverse environmental impacts associated with the construction of the proposed residential development. This document will provide a framework for the Contractor to develop further in response to the environmental constraints and risks that are identified as the project moves into the Construction Phase. The Outline CEMP will document the commitment to safeguarding the environment through the identification, avoidance and mitigation of the potential negative environmental impacts which are associated with the construction and operation of the residential development.

The Outline CEMP aims to define good practice as well as specific actions required to implement mitigation requirements as identified in the following environmental reports and documents reviewed by Atkins: -

- Archer Heritage Planning, 2018. *Haggardstown, Blackrock, Co. Louth Archaeological Impact Assessment*. Issue Date: October 2017.
- Brian Keeley, 2018. *A Bat, Badger and Invasive Species Assessment of Blackrock, County Louth*. Issue Date: August 2018.
- Corvus Environmental Consulting Ltd., 2019. *Natura Impact Statement (NIS) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Corvus Environmental Consulting Ltd., 2019. *Preliminary Ecological Appraisal (PEA) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Finn Design Partnership, 2019. *Proposed Strategic Housing Development at Haggardstown, Blackrock, Dundalk, Co. Louth: Flood Risk Assessment*. Issue Date: 24th May 2019
- Geotechnical Environmental Service Ltd., 2018. *Proposed Residential Development Blackrock Dundalk County Louth Ground Investigation Factual and Interpretative Report*. Issue Date: July 2018.
- Target archaeological geophysics, 2018. *Geophysical Survey Report Lands in Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2018.

This document has also been informed by key findings from a site visit carried out by an experienced Atkins Senior Environmental Consultant on 12th June 2018.

5. Legislation and Guidance

The Designer should be aware of all key environmental risks and associated measures set out within this Outline CEMP, and the final detailed design should take due cognisance of these. The Contractor should set out the Detailed CEMP in a clear format and should address all key environmental risks and associated measures. The Contractor must be aware of and comply with the 'Key Environmental Considerations' as set out in Section 6 of this Outline CEMP, any specific planning conditions which may be associated with the proposed development, and other relevant documentation as prescribed by the Employer and planning authority. Such documentation includes, but is not limited to: -

- Archer Heritage Planning, 2018. *Haggardstown, Blackrock, Co. Louth Archaeological Impact Assessment*. Issue Date: October 2017.
- Brian Keeley, 2018. *A Bat, Badger and Invasive Species Assessment of Blackrock, County Louth*. Issue Date: August 2018.
- Corvus Environmental Consulting Ltd., 2019. *Natura Impact Statement (NIS) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Corvus Environmental Consulting Ltd., 2019. *Preliminary Ecological Appraisal (PEA) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Finn Design Partnership, 2019. Proposed Strategic Housing Development at Haggardstown, Blackrock, Dundalk, Co. Louth: Flood Risk Assessment. Issue Date: 24th May 2019
- Geotechnical Environmental Service Ltd., 2018. *Proposed Residential Development Blackrock Dundalk County Louth Ground Investigation Factual and Interpretative Report*. Issue Date: July 2018.
- Target archaeological geophysics, 2018. *Geophysical Survey Report Lands in Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2018.
- Design / Tender / Construction Drawings; and,
- Any additional information as determined at the detailed design and tender stages.

5.1. Relevant Legislation

It should be noted that the appointed Contractor will be required to be aware of their obligations under legislation. Such legislation, includes, but is not limited, to:

- Planning and Development Act, 2000, as amended 2017 (S.I. No. 20 of 2017) and 2018 (S.I. No. 16 of 2018);
- Planning and Development Regulations 2001 to 2017, as amended 2018 (S.I. No. 20 of 2018)
- The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC);
- The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;
- The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015);
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015), 2019 (S.I. No. 77 of 2019);
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016);
- European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015);

- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended 2018 (S.I. No. 851 of 2018);
- Waste Management Acts of 1996 to 2019;
- The Water Pollution Acts of 1977 & 1990;
- The Wildlife Act 1976 & Wildlife (Amendment) Acts, 2000 and 2010;
- The Salmonid Regulations 1988, S.I. No. 293 of 1988;
- The Fisheries (Consolidation) Acts 1959 & 2001
- Inland Fisheries Act 2019, as amended 2017;
- Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended, 2005 (S.I. No. 413 of 2005), 2008 (S.I. No. 219 of 2008), 2010 (S.I. No. 93 of 2010) and Amendment (No. 2) Regulations, (S.I. 326 of 2010) & EU Water Policy Regulations 2014 (S.I. 350 of 2014), 2018 (S.I. No. 261 of 2018);
- Water Conservation Regulations 2008, S.I. No. 527 of 2008;
- European Communities (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended 2017 (S.I. No. 464 of 2017);
- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);
- Litter Pollution Act of 1997, as amended, 2017 (Bill 58 of 2017);
- Litter Pollution Regulations 1999, S.I. No. 359 of 1999);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014);
- Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015)
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Environment (Miscellaneous Provisions) Act 2011, as amended 2015;
- Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015), 2019 (S.I. No.182 of 2019);
- Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management Shipment of Waste Regulations 2007, S.I. No. 419 of 2007;
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011, S.I. No 324 of 2011;
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96/2018);
- European Union Batteries and Accumulators Regulations 2014, S.I. No. 283 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I. No. 286 of 2009, as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017);
- European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended 2016 (S.I. No. 315 of 2016);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002;

- Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015);
- Protection of the Environment Act 2003;
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015, as amended, 2018 (S.I. No. 383 of 2018);
- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016);
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990);
- EC (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I. No. 417 of 2013), 2016 (S.I. No. 2016/1628);
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011);
- EU F Gas Regulations 2006, as amended, 2014, S.I. No. 517 of 2014;
- Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994;
- Environmental Noise Regulations 2006, S.I. No. 140 of 2006;
- European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018);
- European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001, S.I. No. 632 of 2001, as amended, 2006 (S.I. No. 241 of 2006);
- European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996, S.I. No. 359 of 1996 and 2001, S.I. No. 632 of 2001);
- Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);
- Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, S.I. No. 112 of 1990 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000);
- European Communities Conservation of Wild Bird Regulations 1985, S.I. No. 291 of 1985, as amended, 1986 (S.I. No. 48 of 1986), 1995 (S.I. No. 31 of 1995), 1997, (S.I. No. 210 of 1997), 1998 (S.I. No. 154 of 1998), (S.I. No. 131 of 1999), 2005 (S.I. No. 716 of 2005), 2010 (S.I. No. 65 of 2010), 2011 (S.I. No. 626 of 2011), 2012 (S.I. No. 84 of 2012), 2013 (S.I. No. 281 of 2013);
- Noxious Weed Act, 1936, S.I. No. 38 of 1936;
- Noxious Weed Act, 1937, S.I. No. 103 of 1937:
- Flora (Protection) Order, 2015, S.I. No 356 of 2015;
- The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014, S.I. No. 31 of 2014;
- Forestry Regulations, S.I. No. 191 of 2017;
- The National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004); and,
- European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013 (S.I. No. 403 of 2013), 2015 (S.I. No. 301 of 2015).
- European Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018.

5.2. Relevant Industry Guidance

The Contractor should take due consideration of, and incorporate best practice guidance, including but not limited to the following:

- BS 5837/2012. Trees in relation to design, demolition and construction;
- BS 3998; 2010. Tree Work. Recommendations;
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry. Updated in 2014;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- Inland Fisheries Ireland IFI, Jan. 2011. Biosecurity Protocol for Field Survey Work;
- Inland Fisheries Ireland (2016). Guidelines on protection of fisheries during construction works in and adjacent to waters;
- Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese Knotweed;
- NRA (2005a). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
- NRA (2005b). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes;
- NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes;
- NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes; and
- NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1).

6. CEMP - Key Environmental Considerations

The following topics and measures should be incorporated into the Detailed CEMP for the proposed development.

6.1. Development of CEMP

The party responsible for the preparation of the CEMP is likely to change over the life of a project. Table 6.1 is extracted from the UK Highways Agency Interim Advice Note (183/14) on the preparation and implementation of Environmental Management Plans (2014), and illustrates the various stages of project delivery, the corresponding stages of a CEMP and identifies responsibilities for the preparation and implementation of a CEMP throughout the project lifecycle.

This Outline CEMP has been developed by Atkins. The Contractor appointed to undertake the construction works will be responsible for further development of a project specific Detailed CEMP.

Table 6.1 - Project Control Framework (PCF) stages and CEMP stages.

Project Stage (PCF Stages)	CEMP Stage	Responsibility
Strategy, Shaping and Prioritisation (PCF Stage 0)	<i>None – but consider high level environmental objectives through Client Requirement</i>	Client
Option Identification (PCF Stage 1)		
Option Selection (PCF Stage 2)		
Preliminary Design (PCF Stage 3)	CEMP (Outline)	Designer
Statutory Procedures and Powers (PCF Stage 4)		
Construction Preparation (PCF Stage 5)	CEMP	Contractor
Construction Commissioning and Handover (PCF Stage 6)	HEMP	Contractor
Close out (PCF Stage 7)		

Note: HEMP – Handover Environmental Management Plan.

6.2. Environmental Management

It will be required that the Contractor appoint an appropriately qualified and experienced Environmental Manager (EM) or Environmental Clerk of Works (ECoW) for the construction phase of the project (hereafter referred to as EM). The Contractor will be expected to provide evidence of the appropriate qualifications and experience of the EM to the Employer.

The EM appointed by the Contractor will oversee the development of the Detailed CEMP and the implementation of recommended mitigation measures, planning conditions and other environmental protection measures as required. The EM shall set out the proposed approach and timeline for liaison and consultation with statutory agencies and other relevant bodies. They will act as the point of contact for all environmental matters for the Contractor and will be responsible for review and authorisation of all method statements and environmental plans for the proposed residential development. The EM will be responsible for updating the CEMP and maintaining all environmental records relating to the works. The CEMP will outline the general tasks and communication lines for reporting procedures for all potential environmental risks, hazards or incidents which may relate to, but not be limited to, ecology, water / soils quality, dust, noise or archaeology. A contact list with relevant details (including contact numbers / emergency numbers) for all relevant statutory bodies and agencies and relevant LCC departments, should be clearly tabulated within the CEMP and made available to all site personnel.

6.3. Training, Awareness and Competence

All site personnel should receive environmental awareness information as part of their initial site briefing and this information should be included within each Method Statement for the specific work element being undertaken. This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, that appropriate procedures are in place to control these impacts and that they fully understand the consequences of departure from agreed procedures.

The CEMP should be available onsite for the full duration of the Construction Phase. Environmental performance at the construction site should be discussed during project management meetings held at key stages of the project. Results for any site monitoring being undertaken should be evaluated by the Environmental Manager. Key findings along with any mitigation measures as required should be clearly communicated to the project team.

6.4. Establishment of the Site

The Contractor will establish the Site area, including Site compound, set down area for vehicles, works areas, temporary set-down areas for material removed etc. prior to commencing work on the development. These areas will need to be fenced to keep the public out of the work area and should be secured as appropriate to prevent pollution risk.

The location of the Site compound will vary as the phased development progresses. However it is noted that, with the exception of the existing hedgerows and property boundaries present within and adjacent to the Site, taking account of the findings of the Environmental Impact Assessment Report (EIAR) no significant environmental constraints associated with the proposed location of the Site compound have been identified within the red-line development boundary. No significant environmental exclusion zones with regards to the location of the proposed Site compound area have been identified. The Site compound will be positioned within each phased area of the development away from any existing hedgerows and adjacent private properties. Accordingly the positioning of the Site compound will have no adverse environmental impacts during the construction phase.

6.5. Emergency Preparedness and Response

An emergency preparedness and response procedure will be required to mitigate for potential environmental pollution incidents. Suitable spill kits and absorbent material for dealing with oil spills should be maintained on site in the event of pollution or potential risk of pollution.

The EM will be responsible for the preparation of an Environmental Incident Emergency Response Plan which should be made available to all relevant site staff. Typically, emergency procedures would include contact details of key personnel in local authorities and statutory authorities including the National Parks

and Wildlife Services (NPWS), Inland Fisheries Ireland (IFI), LCC and the Environmental Protection Agency (EPA).

6.6. Waste Management

The construction of the proposed development will be in accordance with the Outline Construction and Demolition Waste Management Plan (C&D WMP) submitted as part of this planning application (Atkins, 2019), prepared in accordance with the relevant following guidance '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*' (Department of Environment, Heritage and Local Government (DoEHLG), 2006). The Outline C&D WMP provides a mechanism for monitoring and auditing waste management performance and compliance for the duration of the project. The document also provides a detailed overview of key waste management considerations for the project at this preliminary stage, while also allowing for further refinement as the project progresses through to the detailed design and construction stages. This live document will be further developed within the project specific Detailed Waste Management Plan which will be prepared by the Contractor in advance of the construction phase, and will be fully implemented onsite for the duration of the construction phase of the project.

6.7. Traffic Management

The proposed transport routes of all machinery entering and egressing the Site, for the full duration of the five year phased construction period shall be through the proposed entrance off the R172. All construction activities will be managed and directed by a Construction Traffic Management Plan (CTMP). The details of the CTMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-Site.

6.8. Management of Key Environmental Risks

The key potential environmental risks posed by the proposed development are as follows:-

- Noise & Vibration impacts;
- Ecology / Biodiversity impacts;
- Pollution/Contamination risk to surface water quality / groundwater quality / soils;
- Dust nuisance; and,
- Landscape and Visual Impacts

The following environmental management and mitigation measures provide an outline of key issues that must be addressed by the Contractor within the CEMP. However, at this preliminary stage, this is not an exhaustive list and it will be the Contractors responsibility to produce a project specific CEMP which sufficiently addresses all environmental protection measures required during the construction phase, based on the proposed methodology and programme.

6.9. Noise & Vibration

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within *BS 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*.

Whilst construction noise and vibration impacts are expected to be within the criteria set out in this document for the majority of the time, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts to nearby residential noise sensitive

locations are minimised. In this regard, various mitigation measures can be considered and applied during the construction of the proposed development, such as:

- Use of a standard site hoarding, typically 2.4m height will be erected around the perimeter of the construction site for the duration of works;
- Limiting the hours during which site activities, likely to create high levels of noise or vibration, are permitted;
- Monitoring levels of noise and vibration during critical works periods and at sensitive locations;
- Maintaining site access roads so as to mitigate the potential for vibration from lorries;
- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of acoustic barriers as necessary around high noise generating plant and equipment, such as generators and compressors;
- Situate any noisy plant as far away from sensitive receptors (properties/residences) as is reasonably practicable and the use of vibration isolated support structures where necessary;
- Using noise generating plant and equipment only when necessary, switching off all plant and equipment when not in use;
- Establishing channels of communication between the contractor/developer, Local Authority and residents, and;
- Appointing a site representative responsible for matters relating to noise and vibration.

6.10. Specific Measures Required

A Preliminary Ecological Appraisal (PEA) Report and Natura Impact Statement (NIS) were prepared by Corvus Environmental Consulting Ltd. (2019) with a subsequent Bat, Badger and Invasive Species Assessment prepared by Brian Keeley (2018), as recommended by Corvus Environmental Consulting Ltd.

The following mitigation measures have been recommended within these reports and should be implemented in full during the construction phase of the proposed residential development.

6.10.1. Construction Environmental Management Plan (CEMP)

A project specific Detailed Construction Environmental Management Plan (CEMP), based on the schedule of commitments presented in the EIAR and NIS being submitted as part of this application, will be prepared for the construction phase of the project. An Outline CEMP has been prepared for submission with the planning application.

The CEMP collates and sets out the environmental control measures required to minimise, and control adverse environmental impacts associated with the development. It is intended that the CEMP will be a live document, which will capture all construction-phase environmental mitigation measures that have been included within the EIAR and any other measures which become apparent through the EIA consultation process and/or are prescribed through planning conditions etc. The CEMP will include enabling decommissioning works. The outline document provides a framework for the contractor to develop further as the project moves into the construction phase.

6.10.2. Environmental Management

The Contractor shall engage a suitably experienced ecologist, the Project Ecologist, who will be a full member of a relevant professional institute such as the Chartered Institute of Ecology and Environmental Management (CIEEM), and/or have relevant experience in ecological management and mitigation during construction projects. The Project Ecologist shall be appointed sufficiently in advance of construction to arrange for any mitigation requirements to be incorporated into the CEMP and any Site-specific method statements.

6.10.3. Emergency Response

The project specific Detailed CEMP will include an Emergency Response Plan (ERP) based on the Contractor's Risk Assessment, to be reviewed and approved by the Project Ecologist. The ERP will include (but not limited to):

- training of relevant staff, including cover staff, in the implementation of the ERP and the use of spill kits;
- procedures to be undertaken in the event of the release of any sediment into a watercourse, or any spillage of chemicals, fuel, oil or other hazardous materials or wastes;
- procedures to be undertaken in the event of any non-compliance incidents with any permit or licence, or other such risks that could lead to a pollution incident, including flood risks;
- the number, specification and location of all spill kits which shall be carried/kept on the Site;
- information on clean-up and reporting procedures; etc.
- While it is expected that the Site drainage system will be installed and commissioned early in the Site construction programme, and will, therefore, be operational for much of the construction phase, there will be a period of the construction phase during which the Site drainage system will not be operational. The project specific Detailed Construction Environmental Management Plan (CEMP) is required to cover this period and to deal with other issues during the construction phase.

6.10.4. Surface Water Management

- All construction and operations are to be carefully planned and implemented with a series of environmental management and control procedures. The CEMP details the general pollution prevention principles and measures which are to be implemented, water and sediment management measures to prevent pollution during the construction phase and measures to ensure the potential for pollution fuel, oil, chemicals and other construction materials is minimised.
- The Contractor shall take all necessary precautions to prevent pollution or silting from construction activities. The following management, control and mitigation measures will be implemented:
 - Mud will be controlled at entry and exits to the Site using wheel washes and/or road sweepers, and tools and plant will be washed out and cleaned in designated areas. Wheel washings will be contained and treated prior to discharge.
 - The performance of the surface water drainage network will be maintained and monitored throughout the construction of the proposed development, noting that the proposed storm water system will include permanent hydrocarbon separators.
 - Where the Contractor utilises pumping to drain works areas, a back-up pump and generator must be provided on Site for use in the event of the primary pump failing.
 - Procedures are to be put in place to ensure the identification, remediation and correct reporting of any silt or other pollution incidents that may occur.
 - During localised construction works around the northern and eastern drainage channels (to facilitate the installation of the proposed 2no. outfalls/headwalls), any minor volumes of stripped soils should be stockpiled a minimum distance of 10m from each channel and should be appropriately covered. A temporary stormwater management system should be implemented by the Contractor.
 - Areas should be designated where stockpiles will be established in order to facilitate the efficient transfers of material within the Site. Stockpiles will be stabilised as soon as possible (e.g. sealed, closed over, seeded or covered using geotextile mats), and banded by earth or silt fences at the toe to intercept silt-laden runoff during rainfall events.
 - Excavation is to be restricted during high winds and heavy rainfall to minimise dust generation and contaminated surface runoff.

Silt Traps & Hydrocarbon Interceptors

- As is set out in the NIS and Chapter 4 of the EIAR, the SuDS design includes silt removal traps and Class 1 hydrocarbon separators within each of the four networks. This is the primary mechanism for preventing contaminated surface water runoff entering Dundalk Bay during the operational phase.
- For Networks 1 & 2, the silt traps and hydrocarbon separators are to be installed prior to discharge to the stormwater infiltration basin. For Network 3, a separate silt trap and interceptor is provided to treat runoff from the north-eastern section of the Site. Similarly, for Network 4, a separate silt trap and hydrocarbon separator will be installed on the line before discharge to the wetland area.
- The traps and separators have been designed specifically to the capacity/flow for each network with a minimum retention time of 6 minutes to allow immiscible hydrocarbon pollutants to accumulate on the surface and suspended solids to sink to the bottom of the unit.
- The most likely sources of contamination of the surface and storm runoff are general grit and silt arising from gardens and hard surfaces, hydrocarbons from vehicle exhausts and fuels or oil spills and leaks, vehicle tyre wear, burning plastics, wastewater from washing cars, pesticides etc. used for gardening and materials used in home maintenance. While the risks to the designated conservation sites from these forms of contamination are significant, the likely volumes are expected to be low and to remain within the design capacity of the traps and interceptors, maintained and cleaned in line with the manufacturer's recommendations.
- All storm/surface water will, therefore, be treated prior to discharge. As the Network 1 & 2 traps and separators are to be installed in line before the infiltration basin, 96% of surface/stormwater arising from the development will also be subject to the contingency arrangements detailed below for failure and overloading. These arrangements will ensure that any contamination within surface water that may arise on the Site will be removed and prevented from discharging to Dundalk Bay SPA/SAC. All surface and storm waters discharging to ground or more directly to Dundalk Bay will be clean and clear.

6.10.5. Excavated Materials

- Appropriate working practices to avoid the repetitive handling of excavated substrates, minimise vehicle movements, limit the size, number and frequency of stockpiles, reduce the compaction and erosion of soils etc. and control the generation of dust. The implementation of a construction traffic management plan and controls on the locations of plant and materials will minimise the compaction and erosion of soil.
- Excavated materials are to be inspected for signs of possible contamination, such as staining or strong odours. Should any be noticed, substrates are to be segregated and samples analysed for contaminants to determine an appropriate means of disposal to licensed/permitted facilities appropriate for the waste classification.
- The Contractor will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance.
- The Contractor will vet the source of aggregate, fill material and topsoil imported to the Site in order to ensure that it is of a reputable origin and that it is "clean" (i.e. it will not contaminate the environment).
- All material to be disposed of off-Site to a licensed facility having regard for relevant waste management legislation. Where material is to be stockpiled on Site prior to disposal, the Contractor will control all run-off to prevent contamination of surrounding watercourses.

6.10.6. Construction Programme

- The project specific Detailed CEMP will include a section setting out the construction programme and will include all the environmental control measures required to avoid disturbance to SPA species, as

set out below. The project specific Detailed CEMP will also set out general measures to manage noise and vibration from construction activities that may be employed at the Site.

- All rock breaking, blasting and other high-intensity construction activities as may be required within the Site are to be programmed to take place outside the wintering season for SPA feature species (i.e. to take place between May and September) to ensure that disturbance to wintering species is avoided.
- All discrete elements of Site construction close to the shore of Dundalk Bay (establishment of the main Site access and installation of infrastructure for Site drainage and discharge) should be programmed to take place outside the wintering season for SPA feature species (i.e. to take place between May and September) to ensure that disturbance to wintering species is avoided.

6.10.7. Biodiversity

Bats

Prior to removal, all trees shall be surveyed for the presence of bats by a bat specialist. Any trees with high roost potential shall be examined further either by bat detector assessment or from a hoist or by climbing etc. and where necessary a derogation shall be sought from NPWS for removal of the protection species and adequate mitigation should be implemented if bats are deemed to be present.

6 bat boxes shall be provided on trees, poles or buildings within or outside of the land take, 3 with Double Front Panels and 3 with standard panels. All boxes must be more than 3 metres above ground and be away from illumination and dense scrub or branches.

Bat surveys and any recommended mitigation measures should be undertaken and submitted by a suitably qualified bat specialist / ecologist.

Badgers

A badger underpass will help maintain the local commuting and foraging route along the eastern Site boundary, particularly during the winter when badger activity is more frequent in this area and animals are active earlier in the evening. The specific design of the underpass, and associated fencing/planting etc. will be in accordance with relevant best practice standards. The approximate position of badger trails along the eastern Site boundary is indicated in Chapter 4 of the EIAR. The location of the mammal underpass shall be chosen in consultation with the site ecologist and follow best practice guidelines. The location of the proposed underpass is to be micro-sited in advance of the commencement of the construction phase within the constraints of the road alignment and open space in the immediate vicinity.

Noting that the scheme will be developed in phases, the Site will be resurveyed for badger activity and the presence of setts by the project ecologist during the autumn/winter prior to the commencement of each phase of development, with walkover verification and check surveys completed in the 4 weeks prior to commencement of each new phase and periodically during construction works. Any new setts that may be established within the Site can be managed through the wildlife licensing process.

The following standard management and protection measures will be implemented during the construction works and monitored by the project ecologist.

Prior to works commencing, all personnel are to be briefed about the presence of badgers in the area and the management and protection measures to be implemented.

- The Site, ongoing development/construction operations and any badger management/protection measures are to be checked periodically by the project ecologist to ensure best practice and compliance. Badger activity within and around the Site will be monitored by the project ecologist to ensure that no significant perturbations or disturbances to the local social group with remedial mitigation designed and implemented as necessary.

- No excavations are to be left uncovered overnight or without a means of egress (e.g. a ramp or sloped plank) to prevent badgers from falling in or entering in search of food and becoming trapped.
- No buildings or storage units are to be left open overnight to prevent badgers from entering in search of food and becoming trapped.
- All food waste is to be properly secured and disposed of to avoid attracting badgers to the Site.
- No toxic, poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- Should any new badger setts or mammal burrows be discovered within the Site or immediately adjoining areas the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS as necessary.
- Should any sick, injured or dead badgers be encountered or discovered, or should any badgers be sighted within the Site during daylight, the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS.

Hedgehogs

It is recommended that habitat niches suitable for hedgehog refuge and hibernation, for example, piles of logs and cut branches, are created at suitable locations within planted areas around the Site boundaries where these adjoin undeveloped lands. The specific design and situation to be determined, and installation undertaken, by the project ecologist within the constraints and opportunities presented by the phased construction of the scheme.

Noting that the scheme will be developed in phases, the Site will be resurveyed for hedgehogs by the project ecologist during the late summer or autumn prior to the commencement of each phase of development, with walkover verification and check surveys completed in the 4 weeks prior to commencement and periodically during construction works. Specific attention is to be paid to potential hibernation Sites during the winter months. Any hedgehogs discovered can be removed to a safe location or into care by a qualified and experienced mammal handler and through the wildlife licensing process.

The following standard management and protection measures will be implemented during the construction works and monitored by the project ecologist.

- Prior to works commencing, all personnel are to be briefed about the presence of hedgehogs in the area and the management and protection measures to be implemented.
- The Site, ongoing development/construction operations and any hedgehog management/protection measures are to be checked periodically by the project ecologist to ensure best practice and compliance.
- Site operations should avoid leaving piles of cut branches or vegetation, which might attract hedgehogs for refuge, in areas away from the Site boundaries. Any such piles which must be moved are to be checked for hedgehogs by the project ecologist.
- No excavations are to be left uncovered overnight or without a means of egress (e.g. a ramp or sloped plank) to prevent hedgehogs from falling in or entering in search of food and becoming trapped.
- No buildings or storage units are to be left open overnight to prevent hedgehogs from entering in search of food and becoming trapped.
- All food waste is to be properly secured and disposed of.
- No toxic, poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- Should any sick, injured or dead hedgehogs be encountered or discovered, or should any hedgehogs be sighted within the Site during daylight, the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS.

Hares

- Noting that the scheme will be developed in phases, the Site will be resurveyed for hares by the project ecologist prior to the commencement of each phase of development, with walkover verification and check surveys completed periodically during construction works.
- Should any sick, injured or dead hares be encountered or discovered, or should any hares be sighted within the Site during daylight, the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS.
- Any leverets encountered should not be handled or moved and must be left undisturbed until retrieved by the mother. The project ecologist is to be contacted for immediate inspection, advice and monitoring (and liaison with NPWS if required).

Amphibians

- Prior to construction, seasonally appropriate amphibian surveys will be carried out by the site ecologist. If protected amphibian species are recorded these species can be translocated to suitable wetland habitat within the immediate vicinity under the appropriate wildlife licences.

Avifauna – Breeding/Nesting Assemblage

- Site clearance will be carried out outside the nesting season where feasible. If site clearance is required within the nesting season, a nesting birds survey shall be carried out by the ecologist prior to site clearance and appropriate mitigation and / or wildlife licenses may be required where necessary.
- The scheme will be developed in phases, as illustrated by the phasing plan. Overall losses will be experienced gradually, allowing time for nesting and foraging to be re-established along Site boundaries and within the Site as development progresses.
- The detailed landscaping scheme shows significant levels of new internal landscape and boundary planting which will enhance and strengthen hedgerow boundaries and increase the woodland/scrub resource within the Site.
- All incidental vegetation clearance/removal will be implemented in the winter months, outside the bird breeding season, to ensure that no active nests are destroyed, damaged or disturbed. Where this is not possible, works will be undertaken under the supervision of the project ecologist, once it has been established that vegetation is free from active nests.

Avifauna – Wintering Assemblage

- All discrete elements of Site construction close to the shore of Dundalk Bay (establishment of the main Site access and installation of infrastructure for Site drainage and discharge) are to be programmed to take place outside the wintering season for SPA feature species (i.e. to take place between May and September) to ensure that disturbance to wintering species is avoided.
- The project ecologist will monitor wintering bird numbers and behaviour within and around the Site and along that section of the foreshore of Dundalk Bay close to the Site on a monthly basis during each wintering season while construction is on-going. Additional monitoring will be undertaken prior to and during any activity which may disturb local populations of any SPA feature species.

6.10.8. Landscaping

- Significant levels of boundary and internal landscape planting are proposed which will enhance retained vegetation and offset the minor and incidental losses required to implement the proposed development. Proposed new landscaping and planting will enhance and strengthen hedgerow boundaries and increase the woodland/scrub resource within the Site. The loss of the small wetland area to the construction of the main Site access will be further compensated by the creation of new attenuation pond/wetland area. The scheme will be developed in phases, as illustrated by the phasing plan. Overall losses will be experienced gradually, allowing time for new planting to establish and develop.

The detailed landscaping scheme shows significant levels of new internal landscape and boundary planting which will enhance and strengthen hedgerow boundaries and increase the woodland/scrub resource within

the Site. The creation of a new wetland/attenuation pond area within zoned open space in the eastern section of the Site may enhance the overall habitat utility of the Site for bats.

At present, most of the Site retains high levels of nocturnal darkness, with just sporadic illumination around the boundaries from dwellings on adjoining lands. It will be necessary to design Site lighting, both temporary lighting required for the construction phase and the permanent public amenity scheme, to ensure minimal spillage onto the Site boundaries.

6.10.9. Sustainable Drainage Systems (SuDS)

The storm/surface drainage system for the occupation phase has been designed based on Sustainable Drainage Systems (SuDS) principles and incorporated into the development proposals. The specific aspects of the drainage design required for the protection of Dundalk Bay SPA and SAC, as set out in the NIS and Chapter 4 of the EIAR, are as follows.

The SuDS scheme has been designed, through iterative project design and assessment, with the habitat features and conservation objectives of the SPA and SAC in mind. Storm and surface water arising from the Site will ultimately discharge to the SPA/SAC; the SuDS system has been designed to collect and attenuate storm/surface water arising from the Site and conduct the allowable greenfield runoff to the discharge points alongside the R172, on the edge of Dundalk Bay and to the degraded wetland alongside the main Site entrance. No outfalls are proposed within the designated area and maximum discharges are limited to pre-development greenfield runoff rates, further reduced, retarded and diffused through additional measures designed into the system.

The system includes four separate networks, an infiltration basin, a box culvert at the outlet and a several other features designed to reduce the velocity of the discharge flow in the receiving channel and therefore prevent any erosion or degradation of semi-natural habitat areas within Dundalk Bay. The design of the discharge, into an existing open channel from a box culvert, is such that there will be no structures or development on the foreshore and no direct discharge to any area within the SAC/SPA boundaries.

Two of the four networks serve that part of the development Site where the new residential units will be constructed, Networks 1 & 2, which serve 96% of the new development, collect surface water to the stormwater infiltration basin, from where it can be retained prior to discharge (or diverted in an emergency, as detailed further below). Network 3 is the gravity pipeline which conveys the allowable greenfield runoff to the discharge channel along the R172. Network 4 is a separate drainage network that serves the main Site access roadway; the topography of this area of the Site is such that the runoff will discharge to the degraded wetland alongside the main Site entrance. The north-eastern section of the Site, which contains 20 no. units includes a stormwater infiltration basin. Site investigations have confirmed capacity in the sub-soil for surface water runoff infiltration in this area – this will have the effect of reducing the volume of surface water runoff from the developed Site. Network 3 also conducts runoff from this area to the box culvert outfall.

The volume of surface water runoff held within the infiltration basin will vary in response to preceding precipitation; the provision of a penstock valve on the outlet allows discharge flow to the box culvert and receiving channel to be controlled and limited.

The section of the box culvert (1.0 m wide x 0.75 m high), which conducts the discharge flow to the existing receiving channel, will be laid at a flat gradient and will be partially submerged, to provide a depth of water within the base. This will ensure that the velocity of water flow from the outlet will be less than 0.5 ms⁻¹. Discharge velocity will be further reduced by stone riprap at the outlet, which will also diffuse the flow into the receiving channel.

The ultimate transfer of storm/surface water arising from the Site will occur via infiltration, at a rate of flow less than 0.5 ms⁻¹, to semi-natural habitats within Dundalk Bay, on the shore side of the R172, but well outside the SAC and SPA boundaries. There will, therefore, be no outfall or any appreciable flow of water

directly to natural habitats within Dundalk Bay SPA/SAC, and no potential for any habitat loss or fragmentation through degradation or erosion.

6.11. Invasive Species

Regulations 49 and 50 of Part 6 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) outlines the legal context for the prohibition of the introduction and dispersal of certain plant and animal species. Specifically, Section 49, paragraph 2 states that any person without the required licence “who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow” any plant species listed in Part 1 of the Third Schedule within the State shall be guilty of an offence.

Under Section 50 paragraph 1, a person without the required licence “shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release” of any plant species listed in Part 1 of the Third Schedule or anything from which a plant referred to in Part 1 of the Third Schedule can be reproduced or propagated or “a vector material listed in Part 3 of the Third Schedule”.

In accordance with the above legislation and as recommended by Corvus (2019), an invasive species survey was conducted by Brian Keeley in July 2018 (Appendix C) which concludes that there are no invasive species within the site or the adjoining lands. Brian recommends that precautionary measures should be taken during the introduction of any soils and plants but does not recommend any special requirements.

6.12. Ground Conditions

Based on the findings of the Geotechnical Ground Investigation carried out by Geotechnical Environmental Services Ltd. (2018) (Appendix C) ground conditions at the proposed site can be summarised as follows: -

- Topsoil was encountered at all locations across the site and ranged from 0.2 to 0.4 meters below ground level (m bgl) across the site.
- Till encountered across the site has been described as firm to very stiff sandy gravelly silty clay with isolated pockets of sand and gravel. Depth of till was generally encountered to depths of 1.8 to 3.6m bgl.
- A detailed description of the ground conditions is contained within Chapter 9 – Land, Soils and Geology of the EIAR being submitted as part of the planning application.

Based on available information including a review of available historic mapping (OSI, 2018) no potential sources of ground contamination associated with current or historic land-use have been identified onsite. Therefore, the potential for ground contamination to be encountered beneath this greenfield site is highly unlikely at this preliminary juncture.

However, in the highly unlikely event that ground contamination is encountered during the Construction Phase, the Employer and Employers Representative, and the Environmental Manager should be immediately notified and consulted with. Appropriate measures must be put in place, as set out in detail in the accompanying Outline Waste Management Plan (Atkins, 2019), including appropriate transport and disposal of such waste materials to a suitably licenced facility in accordance with all relevant waste legislation.

As a precautionary measure, the potential risk of encountering ground contamination should be addressed by the Contractor in the Detailed CEMP.

6.13. Land, Soils and Geology

As recommended in Chapter 9 of the EIAR being submitted as part of this application the following mitigation measures should be implemented in full, to reduce the risk of potential contamination to land soils and geology.

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas. Topsoil stockpiles will be protected for the duration of the works and will be located so as not to necessitate double handling.

The design of road levels and finished floor levels has been carried out in such a way as to minimise cut/fill type earthworks operations. The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilised as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping). Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.

The excavation of material will be minimised as much as possible to reduce the impact on soils and geology. Topsoil and any native soils that can be used for amenity purposes will be stockpiled on the proposed development area for use as required in the final landscaping of the development.

Any surplus material, or materials which are deemed not suitable for onsite reuse will be managed, transported and disposed of in accordance with the requirements of the Waste Management Act 1996, as amended, and the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste. A project specific Detailed Waste Management Plan will be fully implemented onsite for the duration of the project.

The mitigation measures for prevention of soil / bedrock contamination during construction are proposed below. Mitigation measures outlined in Chapter 10 - Water are also applicable to the protection of soils and geology during the construction phase;

- Earthworks plant and vehicles delivering construction materials to Site will be confined to predetermined haul routes around the Site.
- Vehicle wheel wash facilities will be installed in the vicinity of any Site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the Site.
- Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods.
- The employment of good construction management practices will serve to minimise the risk of pollution from construction activities at the proposed development in line with the Construction Industry Research and Information Association (CIRIA) publication entitled, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, CIRIA - C532 (2001) which are also detailed in Chapter 10 - Water. Specifically, with regard to soils and geology, the following will be adhered to:
 - Fuels, lubricants and hydraulic fluids for equipment used on the construction Site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
 - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling;
 - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of;

- All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area.
 - All plant and machinery will be serviced before being mobilised to Site;
 - No plant maintenance will be completed on Site, any broken-down plant will be removed from Site to be fixed;
 - Refuelling will be completed in a controlled manner using drip trays at all times;
 - Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;
 - Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;
 - Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored;
 - Ancillary equipment such as hoses and pipes will be contained within the bund;
 - Taps, nozzles or valves will be fitted with a lock system;
 - Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;
 - Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills;
 - Only designated trained operators will be authorised to refuel plant on Site;
 - Procedures and contingency plans will be set up to deal with emergency accidents or spills; and,
 - An emergency spill kit with oil boom, absorbers etc. will be kept on-Site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment.
 - Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-Site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Site. This will minimise the risk of soils and bedrock becoming contaminated through Site activity.
 - Highest standards of Site management will be maintained and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively.
- All Site workers will use appropriate PPE if required to clean up any potential fuel spillage onsite including gloves and dust masks to minimise contact with contaminated soil.
 - All excavated materials will be stored away from the excavations, in an appropriate manner at a safe and stable location. The maximum height of temporary stockpiles will be 3m.
 - A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site.

All of the above mitigation measures will form part of a site-specific Detailed Construction Environmental Management Plan (CEMP) which will be in operation during the construction phase.

6.14. Cultural Heritage

A Geophysical Survey report was prepared for the development site in March 2018 by Target Archaeological Geophysics.

This document is presented in full in Appendix C.

A summary of the key findings from this survey is as follows;

- No recorded monuments and places (RMP) are located within the site boundary. However, 2no. enclosure sites ((LH007-139 and LH007-140) are located within the proximity and 3no. souterrains (LH007-82, LH007-084, LH007-086) are located ca. 250m north west of the site. Numerous other RMPs are located within 1km of the proposed site.

Archer Heritage Planning also carried out an Archaeological Impact Assessment (Archer Heritage Planning, 2018) which is presented in full in Appendix C. The results of this report are in line with the Geophysical survey report. However, as the site is large in scale and has potential to contain buried archaeological deposits in areas that were not subject to trench assessment the following recommendations were included;

- Any future development works carried out will be monitored by a suitably qualified archaeologist under licence to the Department of Culture, Heritage and the Gaeltacht in consultation with the National Museum of Ireland.
- Particular attention will be paid to the areas adjacent to and covering the laneway (Bothar Maol) to the north which may be an ancient roadway.

The optimum approach to implementing the above recommendations and identifying any potential archaeological constraints associated with the site will be determined during the detailed design stage. The results of this geophysical survey must be incorporated by the Contractor into the Detailed CEMP. Any mitigation measures / recommendations should be implemented in full.

6.15. Dust

Standard measures should be taken which will minimise dust from demolition and construction activities, at a minimum adhering to standard good practice which includes the Building Research Establishment (BRE) document entitled 'Control of Dust from Construction and Demolition Activities'. Dust minimisation measures should include, but are not limited to, the following actions: -

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Dust monitoring should be conducted using the Bergerhoff method during the construction phase in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m²day) during the monitoring period between 28-32 days.

6.16. Landscape and Visual

Based on the findings of the Landscape and Visual Assessment (refer to Chapter 5 – Landscape and visual of the EIAR being submitted as part this application) there is a Minor to Negligible visual impact over the majority of the Zone of Theoretical Visual Influence providing that the following mitigation measures are put in place during the construction phase;

- Advanced boundary and structure planting establishment (i.e. planting at the earliest opportunity) e.g. along the Bothar Maol boundary to the north to allow planting to become established prior to the construction of phases 7, 9, 10 and 11.
- Specified working hours, uses of lighting, location of temporary floodlights and construction compound to be agreed with the Local Authority;
- Lighting to be switched off when not required specifically for construction activities or required for security or health and safety;
- The programme of works will take into account the location of sensitive receptors, particularly to the North (Bothar Maol) and east of the site (Dundalk Bay/ Cooley Peninsula)
- Glare caused by poorly directed security and flood lighting will be minimised by positioning lights to <70 degrees and directing into the centre of the site, in a generally west and southward direction.
- Light spill will be minimised by avoiding poorly sighted lights on the boundary of the development;
- Sky glow will be minimised by use of modern flood lights with appropriate shields to avoid light spilling upwards; and,
- Should any illuminated advertising be installed to advertise the development during construction, the signage should be carefully illuminated in order to minimise glare and follow best practice guidelines.
- Retention of existing planting along the boundaries with residential developments (i.e. Bothar Maol) with all major planting to comprise predominately native indigenous plant species to allow absorption of the development within the surrounding environment.
- The programme of works will take into account the location of sensitive receptors, particularly to the North (Bothar Maol) and east of the site (Dundalk Bay/ Cooley Peninsula)

All of the above measures will be incorporated into the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application and will be developed further by the Contractor within the project specific Detailed CEMP which will be prepared for the construction phase of the proposed development.

6.17. Water Management

Water management will be required during the Construction Phase to ensure that there are no adverse impacts to surface water quality or groundwater quality, or to surface water flows in the Marshes Upper River and the Haggardstown River. It will be the Contractors responsibility to implement temporary surface water drainage management systems including surface water runoff controls, as outlined further below, in order to ensure that the construction works have no adverse impacts on water quality.

Therefore, strict adherence to best practice is required to prevent the risk of pollution during all work stages. Measures to prevent pollution should be in line with published best practice, including, but not limited to those set out in this document.

General water pollution prevention measures, including temporary drainage measures, should include, but are not limited to, the following: -

- In advance of commencement of the construction phase, the disused existing onsite well, securely located within a pump house in the north-western portion of the Site will be fully decommissioned by an experienced borehole specialist in accordance with relevant guidelines, 'Good practice for decommissioning redundant boreholes and wells' (UK Environment Agency, 2012). This will ensure that the redundant well is made both safe and structurally stable and will be suitably backfilled or sealed to prevent groundwater pollution and flow of water between different aquifer units.
- The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' to minimise as far as possible the risk of pollution.
- All of the mitigation measures (for the protection of soils and geology) listed in Chapter 9 will be implemented onsite during the construction phase.
- During localised construction works around the northern and eastern drainage channels (to facilitate the installation of the proposed 2no. outfalls / headwalls), any minor volumes of stripped soils should be stockpiled a minimum distance of 10m from each channel and should be appropriately covered. A temporary storm water management system should be implemented by the Contractor.
- Any groundwater temporarily dewatered during the construction of the infiltration basin, wastewater pumping station and any deep building foundations in localised areas in the eastern portion of the Site will be treated via. the installation of a temporary in-situ water treatment system;
 - This system should be designed and sized to ensure that all pumped groundwater water is treated via. a temporary attenuation pond, prior to discharge to a selected onsite location (via. a temporary soakaway).
 - The Contractor will be required to provide a Site-specific dewatering plan, clearly setting out proposed excavation methodology, estimated dewatering rates, details of proposed treatment system, and discharge location.
- In order to prevent any potential surface water / groundwater impacts via. release of hydrocarbon / chemical contaminants the following standard measures will be implemented:
 - The Contractor will ensure all Site personnel are trained in the handling of materials, the sensitive nature of the receiving environment, the drainage system and the consequences of accidental spillages.
 - Dangerous Substances will be securely stored in COSHH stores within the site compound;
 - Fuels, lubricants and hydraulic fluids for equipment used on the construction Site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
 - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling;
 - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of;
 - All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area.
 - Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-Site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Site. This will minimise the risk of groundwater becoming contaminated through Site activity.
 - All oil stored on Site for construction vehicles will be kept in a locked and bunded area;
 - Generators, pumps and similar plant will be placed on drip-trays to prevent contamination;
 - All Site vehicles used will be refuelled in bunded areas;

- All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on Site in close proximity to any fuel storage tanks or bowsers during proposed Site development works; and,
 - All fuel / oil deliveries to on-Site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes.
 - Fixed plant shall be self-bunded; mobile plant shall be in good working order, kept clean, fitted with drip trays where appropriate and subject to regular inspection. Drip trays will be covered, emptied regularly as required and disposed of off-Site having regard for relevant waste management legislation;
 - Spill kits and oil absorbent material shall be carried with mobile plant and located at vulnerable locations around the Site to reduce the risk of spillages entering the sub-surface or groundwater environment; booms shall be held on-Site for works near drains or dewatering points; and,
 - Procedures are to be put in place to ensure the identification, remediation and correct reporting of any fuel, oil, chemical or other pollution incidents that may occur.
- In order to prevent any potential surface water / groundwater impacts via. release of cementitious materials the following measures will be implemented:
 - All proposed outfall structures and headwalls along the northern and eastern drains will be precast. Poured concrete will not be used in these sensitive areas.
 - The measures detailed below will be employed where poured concrete is being used on the main Site in the construction process;
 - The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed groundwater, or local drainage channels, wetlands or Dundalk Bay;
 - Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
 - Any spillages will be cleaned up and disposed of correctly;
 - Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
 - Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; and,
 - Surplus concrete will be returned to batch plant after completion of a pour.
 - Any groundwater temporarily dewatered during the construction of the infiltration basin, wastewater pumping station and any deep building foundations in localised areas in the eastern portion of the Site will be treated via. the installation of a temporary in-situ water treatment system;
 - This system should be designed and sized to ensure that all pumped groundwater water is treated prior to discharge to a selected onsite location (via. a temporary soakaway).
 - The Contractor will be required to provide a Site-specific dewatering plan, clearly setting out proposed excavation methodology, estimated dewatering rates, details of the proposed treatment system, and discharge location.
 - Surface water attenuation measures are to be designed which will not be overwhelmed by one-off adverse precipitation events.
 - Where practical, cut-off V drains will be utilised to divert water entering Site and reduce the amount of water to be managed on-Site. Attention will be given to the maintenance and protection of all drains and temporary channels to minimise scour and the mobilisation of suspended solids (e.g. lining with hessian or clean stone, check dams, silt fencing etc.).

- Runoff will be directed to and intercepted by temporary settlement lagoons. The size of the settlement lagoon will be determined from predicted flow rates and retention times based on sediment particle size and density.
- Neither groundwater nor surface water runoff from the working areas will be permitted to discharge directly to the environment. Runoff generated within the Site during construction will be filtered and treated to remove hydrocarbons and sediment. Total Suspended Solids (TSS), pH/EC and colour will be monitored daily and outlets from sedimentation ponds will incorporate a turbidity monitor with alarm at a high level.
- Subject to consent, water that is unpolluted, aside from its silt content, may be pumped out over adjacent vegetated ground, where appropriate, with consideration given to groundwater level and saturation, wildlife importance and proximity to drainage channels.
- In the event of surface water failing to meet the required standards water will be recirculated to the inlet of the sediment pond to provide further time for settlement. A penstock valve will be provided on the outlet from the sediment pond to control discharge from the Site.

The above mitigation measures will form part of the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application, and will be further developed by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase.

6.18. Storage / Stockpiling of Materials

Temporary stockpiling of native soils and imported materials onsite will require careful management in order to prevent the release of sediment into drainage ditches (and receiving streams), and any temporarily exposed groundwater (in the unlikely event that groundwater is encountered). The following mitigation measures should be implemented by the Contractor;

- Stockpiled materials should not be located immediately adjacent to any onsite drainage ditches, or any temporarily exposed groundwater (in the unlikely event that groundwater is encountered);
- Stockpiled materials should not be located within areas which have been identified as tree / hedgerow Root Protection Zone;
- Stockpiled materials should be covered as required to prevent it spilling over/blowing onto areas of environmental interest or semi-natural vegetation outside the agreed lands;
- Stockpile of materials to be kept to an absolute minimum, and where possible, stockpiled for as short a time as possible prior to use;
- Any stockpiled materials will be stored in low mounds where possible;
- Slopes of material should be stable, and the side slopes compacted down and stabilised, with regular checks by the Contractor;
- The Contractor is to examine the risk arising from storage areas and identify as appropriate the need for mitigation measures at the toe of slopes to reduce silt transport from areas of stockpiled material (in line with IFI best practice guidance);
- Stockpiles of materials not suitable for onsite re-use should be removed as soon as is practicable in accordance with applicable waste management legislation, and under no circumstances to be stockpiled in sensitive ecological areas;
- The Contractor should develop a contingency plan for temporary covering of stockpiles during adverse weather conditions, or other measures as deemed necessary in order to minimise risk of sediment release to watercourses;
- The Contractor should comply with best practice when sourcing imported materials for site works, including NRA (2006) A Guide to Landscape Treatments;
- If imported material is required, it must be from a reputable source who can confirm that it has been screened for potential presence of invasive species.

6.19. Flood Risk

A Flood Risk Assessment Report was prepared by Finn Design Partnership (2018) and is being submitted to support the planning application; this report is presented in full in Appendix C. The summary of this assessment is as follows;

- The initial Stage 1 assessment concludes the following *'In the context of the 'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009' this initial flood risk assessment has determined that a large portion of the development site (in excess of 98% of the site area) does not fall within Flood Zone 'A' and Flood Zone 'B' and therefore no further consideration is required for this area of the development site. There is that area of the site that is immediately west of the R172 where the proposed new entrance to the development will be constructed that will be subject to tidal/coastal flooding during extreme events. In accordance with the 'Planning System & Flood Risk Management Guidelines, DOEGLG, 2009' this flood risk assessment has determined that this area of the proposed development site may fall within Flood Zone 'A' and Flood Zone 'B'. In accordance with the 'Planning System & Flood Risk Management Guidelines, DOEGLG, 2009' development proposals for this part of the site are subject to the requirements of 'The Justification Test'*
- Accordingly, a Stage 2 (Scoping Stage) FRA was completed by Finn Design Partnership. The key findings of this Stage 2 assessment, which included detailed hydraulic modelling for the two main proposed storm water discharge locations (i.e. existing northern drainage channel which drains to Dundalk Bay, and the existing eastern drainage channel which drains to the existing wetlands area immediately east of the site) are as follows;
- The small increases in flood levels associated with discharging the greenfield runoff rate to the existing open channel on the periphery of the Dundalk Bay Estuary are imperceptible and immeasurable and would not result in an adverse impact to the existing hydrological regime or result in an increased flood risk to adjacent properties.
- There are no negative impacts of discharging attenuated flows to the wetland area that is located to the West of the R172 nor constructing the proposed new access roadway through the same area.
- On the information that is available, it is concluded that the eastern portion of the site where the new entrance and a section of the service roadway will be constructed is susceptible to coastal flooding under extreme conditions. In this case it is deemed that the site is located within a Flood Zone A as defined in the Flood Risk Management Guidelines. Therefore, a justification test is required to check that the development satisfies all of the criteria applicable in terms of flood risk management. It is considered that the information sources are of sufficient quality to make a conclusion on the extent and level of any flooding without the need to advance to a more detailed Stage 3 Assessment for this element of the assessment.
- In summary, taking account of the results of the FRA (including application of the justification test) the following conclusions (with respect to the potential risk of flooding arising from, and/ or impacting the proposed development and adjacent lands) have been made (Finn Design Partnership, 2019):
 - It has been demonstrated that the proposed development satisfies all of the criteria of the Justification Test for Development Management, as per the relevant guidance (DOEHLG 2009).
 - None of the proposed dwellings will be at risk from flooding, as all finish floor levels will be significantly above the highest predicted level for the most extreme coastal flood event.

- Minor increases in flood levels associated with discharging the greenfield runoff rate to existing open channels on the periphery of the Dundalk Bay Estuary are imperceptible and immeasurable and would not result in an adverse impact to the existing hydrological regime or result in an increased flood risk to adjacent properties. This is clearly evident in the results of the site-specific hydraulic model developed by IE Consulting (refer to Appendix E of the FRA (Finn Design Partnership, 2019) included in Appendix C
- The proposed measure to raise the level of the R172 carriageway on either side of the proposed new entrance to the site and where the new entrance and service roadway will tie in with such levels will mean that access will be available to and from the site at all times albeit that vehicles may have to pass through a section of the public roadway and service roadway that will be under a maximum depth of 110 mm of water in the case of a 0.1% or 1 in 1000 coastal flood event.
- The proposed development does not represent an unacceptable flooding risk, nor shall it exacerbate flooding in the immediate vicinity or wider area.
- The proposed development is therefore deemed to be in compliance with both '*The Planning System and Flood Risk Management – Guidelines for Planning Authorities*' (DOEHLG, 2009) and Louth County Development Plan with respect to flood risk.

A number of design recommendations are included in the FRA report, which have informed the final drainage design proposed as part of this residential development. The residual risk of flooding arising from or to the proposed development is therefore considered to be negligible and does not warrant further evaluation as part of this impact assessment.

6.20. Environmental Monitoring and Record Keeping

The Environmental Manager will be responsible for the monitoring of pollution control during construction works. This should include daily site inspection and collation of a daily monitoring log, with attention to be paid to onsite control measures and protection of the any watercourses / intercepted groundwater.

Control measures to manage surface water ponding and overland flows should follow best practice standards in order to minimise release of suspended solids from the site to nearby receiving waters. Measures undertaken in relation to pollution prevention should be noted in the Environmental Managers Daily Record Sheet.

The daily record sheet should include, but not be limited to, incidents such as the following: -

- Incidents arising that may impact on ecological receptors;
- Condition and effectiveness of silt control measures, such as silt fencing;
- Condition and effectiveness of fuel, oil and chemical spill prevention measures;
- Condition of any vegetation to be retained onsite. Where any damage is noted remedial measures must be proposed and implemented;
- Condition of the laneway (Bothar Maol) to the north and any other archaeological features that are found incidentally during the construction phase;
- Consultations with organisations such as NPWS, IFI etc.;
- Any measures undertaken / considered for invasive species, including imported soils;
- In each case where specific remedial actions are required, measures taken and effectiveness must be recorded;
- Any residual impacts from implementation of mitigation measures; and,

- Any other relevant information, as appropriate.

As noted within the EIAR the following Specified Monitoring requirements should be implemented during the Construction phase of the development;

6.20.1. Population and Human Health

- It is recommended that dust monitoring (Bergerhoff Method) should be conducted during the construction phase as this will ensure the efficiency of the dust mitigation measures and will also highlight when more measures may need to be implemented.
- It is good practice for the appointed contractor to monitor levels of noise and vibration during critical construction periods at nearby sensitive locations and/or development Site boundaries.

6.20.2. Land, Soils and Geology

- A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site.

6.20.3. Water

Routine inspections of all silt traps and Class 1 petrol/oil separators within the proposed development should be carried out as part of the proposed Site management plan, on a quarterly basis. During each inspection, all associated equipment should be checked, and a visual inspection of water quality in the final chamber (post treatment) should be carried out.

Surface water sampling should be carried out at the following locations, on an annual basis, and in the unlikely event of a major onsite fuel / oil spill or fire:

- Infiltration basin (1no. sample);
- Manhole located in north-eastern corner of the Site (treated storm water prior to offsite discharge to the northern channel and Dundalk Bay SAC/ SPA) (1no. sample); and,
- Manhole located in eastern portion of the Site (treated storm water prior to offsite discharge to the eastern channel, wetlands and Dundalk Bay SAC/ SPA) (1no. sample).

All 3no. samples should be analysed for a representative suite of hydrocarbon parameters, and the results evaluated to assess any potential deterioration in storm water quality arising from the Site. Should any potential issues be identified during this review, appropriate actions will be undertaken, in accordance with the detailed Site management plan.

6.20.4. Cultural Heritage

All future archaeological works will be carried out in accordance with the requirements of the DCHG and the planning authority and under licence to the DCHG in consultation with the National Museum of Ireland.

6.20.5. Material Assets

As detailed within the Outline C&D WMP (Atkins, 2019) prepared as part of this planning application, the Contractor will be responsible for maintaining waste records and documentation for the full duration of the construction phase. The Contractor will track and monitor all waste volumes transported offsite. All waste records will be maintained onsite throughout the project, and will be made available for viewing by the Client, Employer's Representative and statutory consultees (LCC, EPA) as required.

Additionally, regular inspections and audits shall be conducted to ensure compliance with the measures set out in the Detailed CEMP. A checklist shall be prepared and form the basis for reporting. In the event that

the measures set out in the Detailed CEMP are not being met, corrective action must be taken such as alteration of work practices; put in place additional pollution control measures, additional training etc.

Should a pollution event occur that may pose a risk to receiving waters the Environmental Manager shall advise IFI immediately in addition to implementing pollution control measures to contain the risk and notifying the Employer and Employers Representative.

6.21. Reinstatement

As noted within the EIAR the following Specified reinstatement requirements should be implemented during the Construction phase of the development;

All temporary construction compounds and site entrances are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings. All construction waste and / or scrapped building materials are to be removed from site on completion of the construction phase. Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.

6.22. Reporting

All relevant environmental documents including daily environmental audits, environmental monitoring results, inspection records, correspondence with relevant statutory bodies and records of any environmental incidents or issues should be available onsite for the duration of the project. Upon completion of the Construction Phase of this development the Contractor shall issue the Handover Environmental Management Plan (HEMP) to the Employer which shall include a copy of all such records.

6.23. Schedule of Environmental Commitments

An EIAR has been prepared by Atkins (2019) and is being submitted separately as part of the planning application. This report includes the Schedule of Environmental Commitments (mitigation measures and monitoring requirements) that the Contractor will be obliged to adhere to and implement in full during the construction phase of the development. Refer to Chapter 13 of the EIAR for further details.

7. References

- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016);
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990);
- Any additional information as determined at the detailed design and tender stages.
- Archer Heritage Planning, 2018. *Haggardstown, Blackrock, Co. Louth Archaeological Impact Assessment*. Issue Date: October 2017.
- Brian Keeley, 2018. *A Bat, Badger and Invasive Species Assessment of Blackrock, County Louth*. Issue Date: August 2018.
- BS 3998; 2010. Tree Work. Recommendations.
- BS 5837/2012. Trees in relation to design, demolition and construction.
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry. Updated in 2014;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- Corvus Environmental Consulting Ltd., 2019. *Natura Impact Statement (NIS) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Corvus Environmental Consulting Ltd., 2019. *Preliminary Ecological Appraisal (PEA) Haggardstown, Blackrock, Co. Louth*. Issue Date: March 2019
- Design / Tender / Construction Drawings; and,
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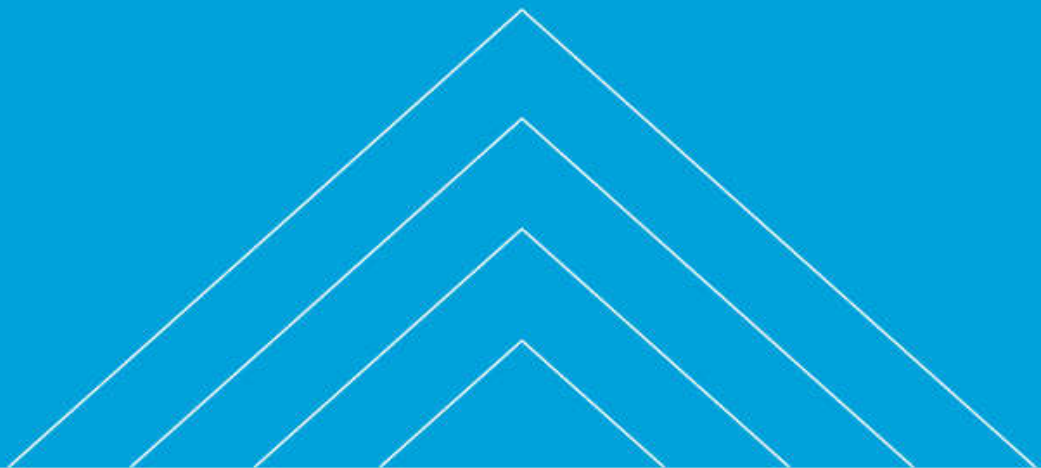
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Appendices



Appendix A. Design Drawings. Refer to Design Drawings submitted as part of the Planning Application.

Appendix B. Supporting Documents

- B.1. *Natura Impact Statement (NIS) Haggardstown, Blackrock, Co. Louth* (Corvus Environmental Consulting Ltd., 2019). Refer to NIS in Volume 3 of the EIAR.
- B.2. *Preliminary Ecological Appraisal (PEA) Haggardstown, Blackrock, Co. Louth* (Corvus Environmental Consulting Ltd., 2019). Refer to PEA in Volume 3 of the EIAR.
- B.3. *A Bat, Badger and Invasive Species Assessment of Blackrock, County Louth.* (Brian Keeley, 2018). Refer to the Bat, Badger and Invasive Species Assessment in Volume 3 of the EIAR.
- B.4. *Proposed Residential Development Blackrock Dundalk County Louth Ground Investigation Factual and Interpretative Report* (Geotechnical Environmental Services Limited, 2018). Refer to the Ground Investigation Report in Volume 3 of the EIAR.
- B.5. *Geophysical Survey Report Lands in Haggardstown, Blackrock, Co. Louth* (Target Archaeological Geophysics, 2018). Refer to the Geophysical Survey Report in Volume 3 of the EIAR.
- B.6. *Haggardstown, Blackrock, Co. Louth Archaeological Impact Assessment* (Archer Heritage Planning, 2018). Refer to the Ground Investigation Report in Volume 3 of the EIAR.
- B.7. *Proposed Strategic Housing Development @ Haggardstown, Blackrock, Dundalk, Co. Louth. Flood Risk Assessment* (Finn Design Partnership, 2019). Refer to the Flood Risk Assessment in Volume 3 of the EIAR.

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