

Contact us +353 1 5242060 info@ors.ie www.ors.ie

Proposed Part 8 Residential Development Lambs Cross, Sandyford, Dublin 16

Construction Environmental Management Plan (CEMP)

Dun Laoghaire-Rathdown County Council

Lambs Cross, Sandyford, Dublin 16 Construction Environmental Management Plan (CEMP)

Document Control Sheet

Client:	Malone O'Regan		
Document No:	SHB5-LDR-RP-ORS-CS-P3-0001-		
	Construction Environment Management Plan		

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	Final	SB	LM	JB	15/07/2024
P02	Final	SB	LM	JB	22/10/2024

Table of Contents

1 Int	roduction	1
1.1	Objective of Construction Environmental Management Plan	1
1.2	Responsibility	1
2 Sit	e Details	3
2.1		
2.2	Site Environmental Considerations	3
2.2.1	Topography	3
2.2.2	Geology, Hydrology & Hydrogeology	3
2.2.3	Groundwater Vulnerability	4
2.2.4		5
2.2.5	Archaeology	5
2.2.6	Ecological Receptors	6
2.2.7	Historical Maps	0
2.2.8	Noise Pollution	6
	velopment Description	8
3.1	Phasing of the Development	
3.2 3.2.1	Pre-Construction Activities	9 9
3.2.1	Site Set-Up and Hoarding	
3.3 3.4	Construction Sequence of New Structures	
	Site Working Hours vironmental Management Plan	
4.1		12
4.2	Background Noise	12
4.3	Duct and Air Quality	12
4.4	Surface Water and Groundwater Protection	
4.5	Protection of Ecological Receptors	14
4.5.1	Screening for Appropriate Assessment	14
4.5.2	Ecological Appraisal	15
4.5.3	Arboriculture Assessment	17
	tline Traffic Management Plan	
5.1	Background	19
5.2	Outline Traffic Management Plan	19
5.3	Construction Entrance and Construction Traffic Control	20
5.3.1	Access in	20
5.3.2	Access Out	20
5.4	Deliveries to Site / Site Access	21
5.5	Routing of Construction Traffic	21
5.6	Traffic Management Speed Limits	22
5.7	Road Cleaning	22
5.8	Road Condition	23
5.9	Enforcement of TMP	24
	Working Hours	24
5.11	Emergency Procedures	24
5.12	Communication	24
	plementation	26
6.1	Role and Responsibilities	26
6.1.1	Construction Project Manager	26

6.1.2	Construction Project Manager Contact Details	_26
6.1.3	Project Environmental Consultant	26
6.1.4	Resident Engineer	_27
6.2	Awareness and Training	27
6.2.1	Environmental Induction	27
6.2.2	Toolbox Talks	27
6.3	Environmental Incidents and Complaints Procedure	_28
7 Co	nclusion	_29
Appen	dix A: Risk Assessment as per Air Quality Monitoring and Noise Control Unit's	_

Good Practice Guide for Construction and Demolition

1 Introduction

This report is prepared in support of the planning application for National Development Finance Agency and Dun Laoghaire-Rathdown County Council for a residential development on a site located in the townland of Balally, at Lamb's Cross, Dublin 18 situated at the junction of Sandyford Road and Hillcrest Road.

The proposed development includes:

- i. 37 no. apartment units in a 3 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- ii. 1 no. community facility of 171sqm;
- iii. Energy Centre at first floor level and external plant area set back at third floor level;
- iv. Undercroft area at lower ground level comprising (a) 2 no. ESB substations (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; and (e) supporting mechanical, electrical and water infrastructure.
- v. Landscaping works including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road
- **vi.** All associated site development works including (a) vehicular access off Hillcrest Road; (b) public lighting; (c) varied site boundary treatment comprising walls and fencing; and (e) temporary construction signage.

1.1 Objective of Construction Environmental Management Plan

This Construction Environmental Management Plan (CEMP) is an outline document of the proposed approach to ensure that construction activities have the least impact on the surrounding environment. Below is an outline of the objectives:

- Ensure appropriate measures to prevent or mitigate nuisance emissions of noise and dust.
- Ensure that discharges to surface/groundwater sources are controlled.
- Ensure that any nearby ecological receptors (SPAs, SACs, NHAs) and archaeological sites are not adversely impacted by construction activities.
- Minimise the impact on local traffic conditions resulting from construction activities.
- Outline how the measures proposed above shall be implemented.

This CEMP has been prepared for the planning phase of the development to outline the general considerations of the works, from initial enabling works to sub-structure and superstructure construction with regards to waste and the environment. A contractor is yet to be appointed to this project. This document will be revised upon appointment of an experienced and competent contractor, and the development will be constructed in accordance with the environmental management measures contained herein.

The CEMP, due to its structure and nature, will also require constant updating and revision throughout the construction period. Therefore, this is a working document and will be developed further prior to and during construction.

1.2 Responsibility

A contractor has not yet been appointed to carry out the proposed project. Once appointed it

will be the responsibility of the contractor to maintain and update the construction stage CEMP throughout the work and this updated document will be issued to Dun Laoghaire-Rathdown County Council.

2 Site Details

2.1 Site Location

The proposed development will be located just off Hillcrest Road and Sandyford Road at Lambs Cross, Dublin 16. The site currently serves as a contractor's compound for road works in the vicinity of the site. The proposed development is located within land zoned as 'Residential' by Dun Laoghaire-Rathdown County Council.

The site is bounded to the north by Lamb's Brook housing estate, to the east and south by Hillcrest Road and a number of detached housing units that lie either side, and to the west by Sandyford Road beyond which lies open greenfield land.

An approximate outline of the subject site and its environs is provided in Figure 2.1 below.



Figure 2.1: Site location and environs (Source: Google Maps)

2.2 Site Environmental Considerations

2.2.1 Topography

The site is currently used as a temporary construction compound. The majority of the Site consists of compacted sediment, other than a treeline and patch of willow scrub along the northern boundary. The site demonstrates a relatively uniform topography. A high is noted along the southwestern boundary at 127m AOD with a slight gradient eastward to a low of 125m AOD along the eastern site boundary.

2.2.2 Geology, Hydrology & Hydrogeology

Maps generated by the Environmental Protection Agency (EPA) and featuring data from the EU

Water Framework Directive (WFD) were consulted to assess the extent and quality of waterbodies present in the vicinity of the proposed development. The proposed site is located in the Avoca-Vartry WFD catchment (Hydrometric Area 10) and Dargle_SC_010 sub catchment. The closest waterbody to the site consists of the Carrickmines stream which runs from south to north within the northeast corner of the site.

Taking the scale and nature of the proposed development into consideration, only waterbodies within a 1.5km radius of the site were considered as potential receptors, and as such, only these waterbodies were included in this analysis. A summary of the nearest waterbodies to the are summarised in **Table 2.1** below.

Table 2.1: Waterbodies in Proximity to Proposed Site					
Waterbody	WFD Sub-basin Name	Code	Distance from Site	Direction from Site	
Carrickmines Stream	Carrickmines_Stream_010	IE_EA_10C040350	Within Site Boundary	East	
Ballyogan Stream	Carrickmines_Stream_010	IE_EA_10C040350	520m	South	
Slang River	Dodder_050	IE_EA_09D010900	1km	West	

The WFD runs in 6-year cycles with the most recent data being generated between 2016-2021. The Directive takes rivers, lakes, estuaries, groundwater and coastal waters into consideration and each waterbody can be awarded one of five statuses: High, Good, Moderate, Poor, and Bad. Additionally, waterbodies can be assigned a risk level ("At Risk", "Not At Risk", "Review") which represents the risk of the waterbody of failing its WFD objectives by 2027.

The WFD status of the Carrickmines Stream is considered to be 'Good' and the risk level of the stream is currently 'Not at risk'. The source of the Carrickmines stream is at Ticknock Woods located upland south of the site. The stream runs from southwest to northeast through Sandyford and follows course in an easterly direction to reach Shanganagh stream which then outflows into Shanganagh Bay. The stream runs a total length 21.7 km.

There are no significant lake waterbodies within a 2.5km radius of the site.

The site was cross-referenced with the Teagasc Soil Information System (SIS) soil profile map which states that the surface soil at the site location is classed as 'Urban'.

The underlying bedrock of the proposed site is classed as Type 3 muscovite porphyritic granite with muscovite phenocrysts.

2.2.3 Groundwater Vulnerability

According to the Geological Survey of Ireland map viewer, the site is underlain by a Poor Aquifer consisting of the aforementioned bedrock which is generally unproductive except for local zones. The groundwater vulnerability in the area of the proposed site is classed as 'Extreme'. The subsoil permeability of the site has not been mapped, according to the GSI Map Viewer, as such it is difficult to assess the ease at which potential contaminants could reach the groundwater bodies. Considering the 'Extreme' vulnerability of the site area, due caution should be applied to mitigate uncontrolled emissions during the development stage.

2.2.4 Flood Risk

The OPW Floodinfo.ie website was consulted for high level information on any potential flood risk on or near the site. The closest flood events occurred at Lamb's Cross immediately adjacent to the site to the southwest corner. A report dated in 2001 does not specifically name Lamb's Cross as an area of flooding, but mainly refers to flooding in the Carrickmines and Shanganagh Catchments in Dun Laoghaire Rathdown. **Table 2.2** summarises the sources of the nearest floods and their proximity to site.

Table 2.2: Flood Events in Proximity to Proposed Site					
Flood Event Code	Location	Date	Flood Source	Distance from Site	
ID-2200	Ballyogan Stream Lambs Cross	2001 (Recurring)	River	10m SW	
ID-2211	School House Lane Sandyford	November 1982	Runoff	170m SW	
ID-2151	Sandyford Church	January 1980	River	200m N	

The proposed site itself is located adjacent to the Carrickmines Stream which flows within the northeast boundary of the site. While there are no CFRAM medium probability flood extents modelled within the site boundary, modelled flood extents can be observed adjacent to the site opposite Hillcrest Road along the stream.

The site is not located within benefitting land associated with the Arterial Drainage and District Drainage Schemes. The site is located within CFRAM Drawing No. E09CAR_EXFCD_F2_02 where 10% and 1% Fluvial AEP Event modelled flood extents can be observed to the eastern corner of the site.

2.2.5 Archaeology

According to the Historic Environment map viewer there are no sites of archaeological importance within the proposed site boundaries. The nearest archaeological/historical sites are listed in **Table 2.3** below.

Site Code	Site Name	Distance from Site
60220039	Sandyford Carnegie Free Library	50m SW
60220038	Saint Mary's	95m SW

Overall, the archaeological sensitivity of the area in immediate proximity to the proposed site is considered to be low as there are few archaeologically significant sites within a 1km radius of the site.

2.2.6 Ecological Receptors

According to the National Parks & Wildlife Service ap viewer, the proposed site is located *ca*. 5.3km south-west of the South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA. The site is located *ca*. 220m south-east of Fitzsimon's Wood pNHA.

A Screening for Appropriate Assessment (AA) has been carried out by *NM Ecology Ltd.* on behalf of Dun Laoghaire-Rathdown County Council and has determined that a Natura Impact Statement (NIS) is not required in respect of this proposed development.

An Environmental Impact Assessment (EIA) screening has been carried out by *NM Ecology Ltd*. on behalf of Dun Laoghaire-Rathdown County Council and has determined that there is no likelihood of significant impacts on the environment arising from the proposed development once best practice environmental management systems and the proposed mitigation measures are implemented.

Given the scale and nature of the proposed development, it is unlikely that any designated sites will be impacted as a result of the works. Best practice measures will nevertheless be outlined in **Section 4** of this report which will ensure as little impact as possible to the surrounding environment.

Subject to the successful implementation of these measures, it can be concluded that the proposed development <u>will not</u> cause any significant negative impacts on designated sites, habitats, legally protected species, or any other features of ecological importance.

2.2.7 Historical Maps

The GeoHive Historic map viewer was consulted to assess previous land uses or developments within or in the vicinity of the proposed site boundaries. According to the First Edition 6" maps developed between 1829-1841, the location of the proposed site previously consisted of open land most likely used for agriculture. The existing crossroads can be observed in these maps along with the existing course of the Carrickmines Stream which flows within the eastern boundary of the site. St. Mary's National Scholl can also be seen to the southwest within these maps.

Lamb's Brook Estate to the north can be observed in black and white aerial survey maps generated in 1995, as well as the neighbouring detached housing units to the east and south of the site. Aerial survey maps generated from 2001 feature a landscape that is somewhat similar to the environs existing today. Activity within the site boundary can be observed in 2011-2013 aerial survey maps where ground clearance seems to have occurred. It is noted that the existing premises is used as a contractor's compound for road works in the vicinity, as such the current ground composition can be considered made ground.

2.2.8 Noise Pollution

Under the Environmental Noise Directive (END) 2002/49/EC, members are required to develop strategic noise maps and noise management action plans for transport noise sources every 5 years. These strategic noise maps can be accessed via the EPA.ie website. **Figure 2.2** below outlines the modelled noise extents of the roads in the vicinity of the site undertaken by the EPA. As can be seen in the figure, the site is not located within any modelled noise extents

along Hillcrest or Sandyford Road. The majority of road noise is generated along the M50 to 680m north of the site where noise levels reach above 75dB. Noise agglomerations resulting from rail, industry, or airport sources do not impact the site location according to these maps.

Noise generation during the construction phase is projected to increase due to the movement of heavy goods vehicles and construction equipment along Hillcrest and Sandyford Road and within the site itself. Noise emission within the Lamb's Cross area may increase temporarily, although proposed mitigation steps outlined in **Section 5.2** will ensure that construction traffic is routed in such a way that minimises disruption to nearby amenities and regular flow of traffic.

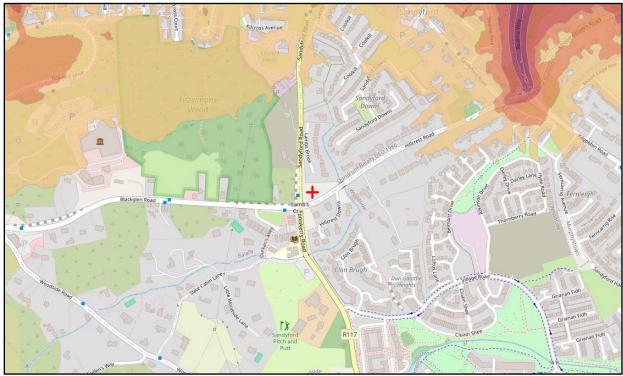


Figure 2.2: EPA Strategic Noise Map (Daytime Noise) (Source: epa.ie Map Viewer)

3 Development Description

3.1 Phasing of the Development

This Construction Environmental Management Plan (CEMP) will outline the intended sequence of works. A construction program of 12 - 18 months serves as an estimated timeline for the project. A layout plan of the development is detailed in **Figure 3.1** below.

The proposed development includes the following sequence of works:

- i. 37 no. apartment units in a 3 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- ii. 1 no. community facility of 171sqm;
- iii. Energy Centre at first floor level and external plant area set back at third floor level;
- iv. Undercroft area at lower ground level comprising (a) 2 no. ESB substations (b) car, bicycle and motorcycle parking; (c) bin storage; (d) bulk storage area; and (e) supporting mechanical, electrical and water infrastructure.
- v. Landscaping works including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road
- vi. All associated site development works including (a) vehicular access off Hillcrest Road;
 (b) public lighting; (c) varied site boundary treatment comprising walls and fencing; and
 (e) temporary construction signage.

Vehicular access to the development is proposed along Hillcrest Road to the southeast corner of the proposed site. **Figure 3.1** shows the proposed site plan.

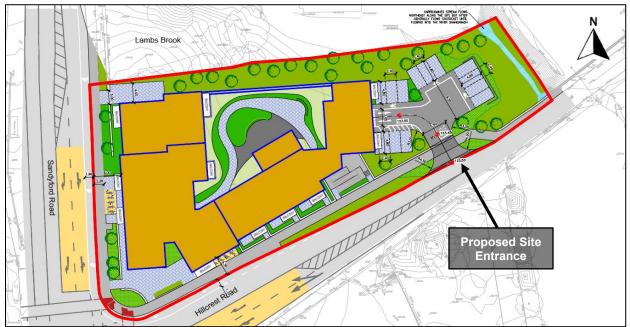


Figure 3.1: Site Plan (Cropped) (A refinement of this site layout may be circulated by the architect)

The project is to be divided into several distinct phases as follows:

Pre-Construction Phase – Site clearance and preliminary works

- Site set-up, temporary services, site hoarding / fencing, staff welfare facilities.
- Ground works and landscaping including provision of (a) communal open space; and (b) public realm area fronting onto Sandyford Road and Hillcrest Road.

Phase 1 - Construction

- 37 no. apartment units in a 3 5 storey building over undercroft area, including 29 no. one bed units; and 8 no. two bed units;
- 1 no. community facility of 171sqm;
- Energy Centre at first floor level and external plant area at third floor level;
- Undercroft area at lower ground level

Ancillary works - which will consist of:

- Sustainable Drainage System (SuDS)
- Surface water and foul sewer network and associated attenuation
- Car and bicycle parking spaces
- Electrical and telecom services
- Mains water supply connections
- Wastewater drainage connections
- Pedestrian access routes
- Bin storage
- Asphalt installation and road markings
- Vehicular access off Hillcrest Road
- Public lighting
- Varied site boundary treatment comprising walls and fencing
- Temporary construction signage

3.2 **Pre-Construction Activities**

The main contractor will conduct enabling works for establishing site setup, appropriate signing, hoarding, security fencing and welfare facilities.

3.2.1 Site Set-Up and Hoarding

Perimeter hoarding will be provided around the site to provide a barrier against unauthorized access from the public areas. Controlled access points to the site, in the form of gates or doors, will be kept locked at any time that these areas are not monitored (e.g., outside working hours).

The hoarding will be well-maintained and may be painted. Any hoardings may contain graphics portraying project information. The site hoarding may be branded using the appointed Contractors logos, etc. Some marketing images or information boards may also be placed on the hoarding. Access to site will be controlled and monitored outside of site working hours. All personnel working on site must have a valid Safe Pass card and the relevant CSCS cards.

A suitably secure site compound will be set up, wherever the restricted confines of the site will allow and will facilitate the efficient delivery of materials and personnel to the site. This compound is to include material storage, site office and meeting room, and staff welfare facilities.

Generators or connection to electricity and water services will be set up to facilitate site works.

3.3 Construction Sequence of New Structures

The exact construction specifications of the proposed residential units and associated infrastructure are yet to be finalised. This section of the CEMP will be updated once a main contractor is appointed and a definitive construction program is established, in advance of the commencement of the project.

A summary of operations for the construction phase is listed in Table 3.1 overleaf.

Table 3.1: Summary of Operations Expected					
External envelope will or may require the following operations:	Internal work will or may require the following operations:				
 Blockwork/Brickwork Sand & cement rendering Windows & doors Roof Coverings – Green/Blue Roof Flashing, Aprons and Tray – Leadwork/Powder coated metal Above ground external operations: Landscaping Installation of manholes Lamp posts Tarmac/ surfacing Signs Car parking and mobility compliant car parking Below ground operations: Foul sewer, surface water, rainwater, and potable water networks Attenuation tanks Electrical ducting 	 Electrical installation Mechanical installation Fireproofing Partitions and ceilings – use of gypsum based products Painting Plastering Stairs Joinery Tiling Air Tightness sealing and testing Metal Work Sanitary-ware installation Vanity units Reinforcement works Insulation Plumbing Concreting/ floor slab Carpet installation Timber floors Green/Blue Roofing 				

3.4 Site Working Hours

Construction operations on site will generally be subject to a planning permission and conditions. However, it may be necessary for some construction operations to be undertaken outside these times, for example, service diversions and connections, concrete finishing and fitout works, etc.

Deliveries of materials to site will generally be between the hours of 07:00 – 18:00 Monday to Friday, and 08:00 to 14:00 on Saturdays, or as specified by the Dun Laoghaire-Rathdown County Council. There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times.

4 Environmental Management Plan

4.1 Background

A preliminary risk assessment was carried out for the proposed site location in accordance with the Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition, produced by the London Authorities Noise Action Forum, July 2016. This assessment took into account factors relating to the proximity of the site to sensitive receptors and rated the levels of nuisance and disruption anticipated with scheduled work practices.

Following the completion of this risk assessment, available in **Appendix A**, the proposed development was determined to be a moderate-to-high risk site. This section outlines suitable measures to minimise nuisance noise and dust emissions in order to minimise any impact of the proposed developments on surrounding receptors.

4.2 Noise

The Contractor will aim to restrict noise levels to the following levels:

- Daytime (08:00 to 19:00 hrs) 70dB
- Evening (19:00 to 23:00 hrs) 50dB
- Night-time (23:00 to 08:00 hrs) 45dB (measured from nearest noise sensitive location).

To minimise noise from construction operations, no heavy construction equipment/ machinery (to include pneumatic drills, construction vehicles, generators, etc.) shall be operated on or adjacent to the construction site before 08:00 or after 19:00, Monday to Friday, and before 08:00 or after 14:00 on Saturdays. No activities shall take place in site on Sundays or Bank Holidays. No activity, which would reasonably be expected to cause annoyance to residents in the vicinity, shall take place on site between the hours of 19:00 and 08:00am.

The proposed development will be obliged to comply with BS 5228 "*Noise Control on Construction and open sites Part 1*". The contractor shall implement the following measures to eliminate or reduce noise levels where possible:

- All site staff shall be briefed on noise mitigation measures and the application of best practicable means to be employed to control noise.
- All staff should be briefed on the complaints procedure, the mitigation requirement and their responsibilities to register and escalate complaints received.
- Good Quality site hoarding is to be erected to maximise the reduction in noise levels. It is recommended to incorporate a 2.4m timber hoarding to mitigate excessive noise pollution to neighbouring estates and sensitive receptors.
- Contact details of the contractor and site manager shall be displayed to the public, together with the permitted operating hours.
- Material and plant loading and unloading shall only take place during normal working hours.
- Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC.
- Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.
- Use all plant and equipment only for the tasks for which it has been designed.

- Locate movable plant away from noise sensitive receptors.
- Avoid the transfer of noise and vibration from demolition activities to adjoining occupied buildings through cutting any vibration transmission path or by structural separation of buildings.
- Ensure written confirmation is received from Dun Laoghaire Rathdown County Council Planning Department when applying for extensions to normal working hours. No out of hours work to be undertaken unless permission to do so has been granted.
- In the event that excessive noise levels are deemed necessary, Dun Laoghaire Rathdown County Council Planning Department and local residents must be suitably notified in advance of said works.

4.3 Dust and Air Quality

Dust prevention measures will be put in place for any particulate pollution. The extent of dust generation under construction activities being carried out is dependent on environmental factors such as rainfall, wind speed and wind direction. The most likely sources of dust generation at this site include soil stripping and excavation of foundations for the main building and the sawing of wood and concrete throughout the duration of the project. Dust can also be dispersed by excessive vehicular movement around the site during dry periods. Control Measures are outlined as follows:

- Soil will not be exposed until a replacing capping layer is almost ready to be placed. This is to ensure that soil is left exposed for the minimum amount of time possible.
- Material stockpiles will be strategically placed to reduce wind exposure. Materials will be ordered on an "as needed" basis to reduce excessive storage.
- The contractor will spray water on the surface of all roads in the vicinity of the site if required in order to minimise dust generation from the construction activities.
- Appropriate dust suppression will be employed to prevent fugitive emissions affecting those occupying neighbouring properties or pathways.
- Restrict vehicle speeds to 15 kmph as high vehicle speeds cause dust to rise.
- Covers or dampening of soil stockpiles when high wind and dry weather are encountered, if required.
- All consignments containing material with the potential to cause air pollution being transported by skips, lorries, trucks or tippers shall be covered during transit on and off site.
- Street and footpath cleaning shall be undertaken during the ground works phase to minimise dust emissions.
- A road sweeper with vacuuming capabilities will operate along construction traffic routes throughout the development cycle to alleviate excessive material deposition along transport routes in the vicinity of the site.
- Wet cut concrete saws are only to be used on site. Tools with dust extraction filters are to be used when and where possible.
- No materials shall be burned on-site.

4.4 Surface Water and Groundwater Protection

Sustainable drainage systems are proposed for the development and consist of the following features:

- Bioretention swales
- Green and Blue roofs
- Rain gardens
- Rainwater harvesting via roof runoff
- Permeable paving
- Attenuation storage system to store a volume of 63m³.

The main pollutants with the potential to impact water receptors are silt, fuel/oil, concrete and chemicals. The steps outlined below aim to eliminate contamination of site surface water runoff. The below recommendations are advised with reference to the Inland Fisheries Board recommendations for protection of adjacent water courses during the construction phase:

- Harmful materials such as fuels, oils, greases, paints and hydraulic fluids must be stored in bunded compounds well away from storm water drains and gullies. Refuelling of machinery should be carried out using drip trays.
- All manholes and gullies will be covered with silt fencing material and sandbags to limit silt and chemical run-off into surface water.
- Refuelling will not be permitted within 10m of surface drains, with the exception of pumps for dewatering purposes, which are to be stored on portable spill bunds.
- Runoff from machine service and concrete/grout mixing areas must not enter storm water drains and gullies leading off-site.
- No direct discharges to be made to waters where there is potential for cement/ residues/ oils/ chemicals in discharges.
- Stockpile areas for sands and gravel should be kept to minimum size, well away from storm water drains and gullies leading off-site.
- Open excavations to be backfilled immediately following installation of services, etc.
- Earthworks and the movement of plant on soil surfaces will be avoided during periods of extensive rainfall to limit silt laden runoff and damage to soil structure.
- Pre-cast concrete should be used wherever possible. When this is not possible, any works using cast-in-place (poured) concrete must be done in the dry and effectively isolated from any flowing water or drains for a sufficient period to ensure no leachate from the concrete.
- As per the plans, a surface water attenuation tank with a volume of 63m³ will be constructed towards the east of the main apartment building under the allocated car parking area. Discharges from this will be restricted to greenfield run-off rates.
- All attenuation zones will be sealed to avoid any potential negative effects on the surrounding groundwater.
- In the event of high rainfall events, drainage silt chambers will be blocked off to prevent excessive silt outflows to the surface water drainage system.

4.5 Protection of Ecological Receptors

4.5.1 Screening for Appropriate Assessment

An Appropriate Assessment Screening Report was published by NM Ecology Ltd. in relation to

the proposed development which assessed the proximity of the site to nearby sensitive ecological receptors (SPAs, SACs, NHAs) and outlined potential pathways to such receptors during development. The main findings of the report were that there is no risk of direct impacts on European sites. Potential pathways for indirect impacts were considered, but none were found to be feasible.

A series of winter bird surveys have been undertaken at the Site, but no brent geese or any other species associated with nearby SPAs were recorded. Therefore it can be concluded that the proposed development **will not be likely to have a significant effect** on any European sites. This is based on three key conclusions:

- The Site is not within or adjacent to any European sites, so there is no risk of direct effects
- There are no surface water (or other) pathways linking the Site to any European sites, so there is no risk of indirect effects
- Surveys have demonstrated that the Site is of no importance for brent geese or any other birds associated with the SPAs in Dublin Bay.

On this basis, the assessment can conclude at Stage 1 of the Appropriate Assessment process, and it is not necessary to proceed to Stage 2.

4.5.2 Ecological Appraisal

NM Ecology Ltd. also carried out a Preliminary Ecological Appraisal of the Site to identify any important ecological features that could be affected by development. The Important Ecological Features identified in this assessment are scrub, which is in line with the Dun Laoghaire Rathdown County Council Development Plan 2022 – 2028 **Policy Objectives**:

• **GIB25: Hedgerows** – "It is a Policy Objective to retain and protect hedgerows in the County from development, which would impact adversely upon them. In addition, the Council will promote the protection of existing site boundary hedgerows and where feasible require the retention of these when considering a grant of planning permission for all developments. The Council will promote the County's hedgerows by increasing coverage, where possible, using locally native species and to develop an appropriate code of practice for road hedgerow maintenance. The Council will promote the protection of existing permission for all developments."

Additional important ecological features identified in the appraisal include the Brewery Stream located *ca.* 220m north of the site, small mammals and nesting birds.

Recommendations for the avoidance or minimisation of ecological impacts are outlined below. All other ecological features discussed in the appraisal are considered to be of Negligible ecological importance, so they are not listed as Important Ecological Features.

Protection of the Brewery Stream

The proposed development will not involve culverting, realigning or other modification of the Brewery Stream. It will be retained in its current condition along with its associated vegetation. Pollution-prevention measures will be implemented during construction work, as outlined in

Section 4 of this CEMP, to avoid pollution of the watercourse.

During the operation of the proposed development, surface water runoff from roofs and other hard surfaces will be discharged to the stream. It will pass through an oil / silt interceptor and attenuation tank prior to discharge, and thus will consist primarily of uncontaminated rainwater. This is not considered to pose any risk to the watercourse.

Retention of scrub

The majority of the scrub habitat within the Site will be retained and incorporated into the development. The only section that will be removed is some crack willows whose roots would be disturbed during the installation of car parking areas near the site entrance.

In addition to the protection of these trees, shrubs and their canopies, it is necessary to ensure that their roots are not damaged during the construction of the proposed development. An Arboricultural Assessment & Impact Report was published by CMK Hort & Arb Ltd. The findings of the assessment are presented in the following section.

Protection of birds and small mammals

It is strongly recommended that tree / shrub removal is carried out between September and February (inclusive), i.e. outside the nesting season. If this is not possible, an ecologist will survey the affected areas in advance to assess whether any breeding birds or mammals are present. If any are encountered, vegetation clearance will be delayed until the breeding attempt has been completed, i.e. after chicks have fledged and a nest has been abandoned

Potential biodiversity enhancements

The loss of scrub habitat may be compensated by the incorporation of biodiversity enhancements into the landscaping proposals for the scheme. The following measures could be considered:

- Inclusion of a range of native trees and shrubs, including species that provide berries for birds (e.g. hawthorn, rowan)
- Managing grassland areas as meadows, by mowing only once per growing season and removing cuttings. Guidance is provided in the All-Ireland Pollinator Plan
- Leaving sections of landscaping for natural succession, with little or no active management
- Provision of bird boxes, including designs suitable for common garden birds (e.g. finches, tits, blackbirds), or species that nest on buildings (swifts, martins, swallows). Swift nesting boxes should be considered for tall buildings (at least 5 m in height)
- Provision of bat boxes suitable for crevice-dwelling species. These are only suitable if installed in a part of the site that will be in complete darkness, and that are directly connected to potential foraging areas (e.g. the western hedgerow)
- Provision of hedgehog boxes in areas of dense ground cover
- Provision of wildlife dispersal corridors to connect green areas outside the site boundary. These would consist of continuous lines of dense shrubs and ground vegetation, which are not obstructed by walls / fences / roads and are not illuminated by streetlights. Gaps should be provided at the base of walls / fences to allow ground-dwelling fauna to move through the site.

- Creation of a pond or similar semi-natural wetland feature with native fringing vegetation. Ponds may also be suitable for frogs / newts. These measures may be feasible for aboveground SUDS features (e.g. attenuation ponds, swales)
- Incorporating biodiversity features on the roofs of structures including apartment roofs, cycle shelters, sheds etc. Such features should use the site's soils, and have appropriate long-term maintenance
- Artificial lighting should be avoided near the Brewery Stream and retained scrub, to ensure that they are suitable for bats and other nocturnal species. Similarly, paths and cycleways should not be located alongside biodiversity features, because the associated infrastructure, human disturbance, vegetation management, lighting, etc can substantially reduce the biodiversity value of these features.

If sufficient areas of the above measures can be incorporated into the proposed development, they would compensate for the loss of vegetation during site clearance works. Small, localised features may reduce the negative ecological effects of the proposed development, while larger areas and a broader range of features may achieve an overall neutral or positive effect.

4.5.3 Arboriculture Assessment

An Arboricultural Assessment & Impact Report was published by *CMK Hort & Arb Ltd.* which assessed the trees and woody vegetation present at the site location. **Figure 4.1** overleaf was produced *CMK Hort & Arb Ltd.* and outlines the areas where trees are to be retained, coppiced or monitored during development. No actions are proposed for the mature Sycamore tree (101) located in the east of the development site. It is proposed to coppice where required and monitor the group of Crack willow located to the north of the development. No trees are to be removed for facilitate the proposed development.

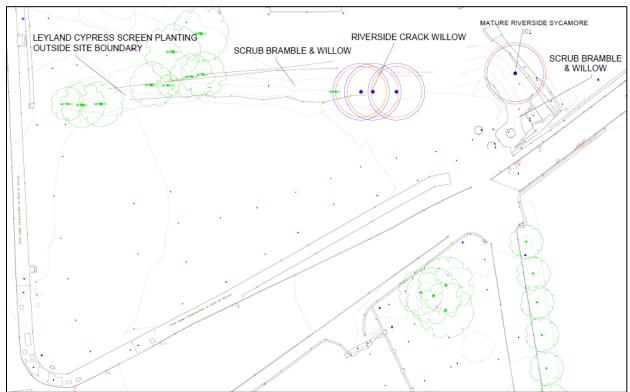


Figure 4.1: Location of trees at the north and east of the proposed development (Drawing no. TLOT-LAM001)

5 Outline Traffic Management Plan

5.1 Background

This Outline Traffic Management Plan (OTMP) is designed to facilitate access to the site by plant, machinery, and work vehicles during collections/ deliveries; and to minimise traffic impacts of construction to residents and amenities in the vicinity of the site. The site is located within a prominent suburban area adjacent to multiple residential units and in close proximity to a national school. As such this Outline Traffic Management Plan aims to provide options for the routing of construction traffic that will avoid sensitive receptors and reduce impact on sensitive receptors (schools, healthcare facilities, public amenity areas). **Section 5.5** provides an outline of routes that minimise impact to the site environs.

5.2 Outline Traffic Management Plan

The construction phase OTMP has been prepared in accordance with the following best practices publications and demonstrates compliance with the requirements of the Health and Safety Authority:

- 1. Chapter 8 of the Traffic Signs Manual and the Safety, Health & Welfare at Work (Construction) Regulations Department of Transport
- 2. Temporary Traffic Management Design Guidance Department of transport, Tourism and Spot.

The main contractor will be required to implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the OTMP. The OTMP shall address the following issues:

- Site Access & Egress
- Traffic Management Signage
- Routing of Construction Traffic/ Road Closures
- Timings of Material Deliveries to Site
- Traffic Management Speed Limits
- Road Cleaning
- Road Condition
- Road Closures
- Enforcement of Construction Traffic Management Plan
- Details of Working Hours and Days
- Details of Emergency plan
- Communication
- Construction Methodologies
- Particular Construction Impacts.

5.3 Construction Entrance and Construction Traffic Control

5.3.1 Access in

Access to the site is proposed via Hillcrest Road to the east of the site. Using the M50 as the nearest major road, construction traffic will approach the site entrance from the east utilising Hillcrest Road which comprises part of the R113 road that connects to the M50 via a roundabout *ca*. 1.3km northwest of the site. The entrance will be manned by a banksman at all times who will direct traffic safely into the construction site and facilitate the safe navigation of larger construction vehicles as required. The existing site entry/ exit point associated with the contractor's compound is detailed in **Figure 5.1**.



Figure 5.1: Site access point (Source: Google Maps).

The entrance gate will be within the boundaries of the site and will prevent incoming vehicles from causing obstruction to local traffic on Hillcrest Road. Since only one access gate is available, at most one HGV may enter/ exit the site at a time. Strong lines of communication with hauliers, strict delivery schedules and just-in-time delivery methods will be in operation to ensure no more than two trucks will visit the site at any one time. It is envisaged that strict adherence to these protocols will ensure that no queuing will occur on Hillcrest Road.

5.3.2 Access Out

When vehicles are due to depart from the site the banksman will ensure the roadway is safe to proceed and will communicate with the driver in the cab. The proposed construction exit from the site will be the same as that used for entrance to the site, see **Figure 5.1**.

The main contractor is required to ensure the provision of adequate guarding and lighting appropriate to the circumstances. Traffic signs should be placed in advance of the works area on both sides to ensure adequate warning to the general public and maintained, when necessary, they should be operated as reasonably required for the safe guidance or direction of the public with regard to the needs of people with disabilities. The main contractor will comply with Regulation 97 of the Safety, Health, and Welfare at Work (Construction) Regulations 2013.

Access to the construction site will only be to authorised persons. During afterhours, security will be employed by the main contractors to ensure no unauthorised access.

5.4 Deliveries to Site / Site Access

The site entrance will be gated and manned at all times with access only permitted for site vehicles and plant movements when necessary.

Deliveries of materials to site will be planned and programmed to ensure that the materials are only delivered when required by adopting a 'just in time', lean construction management approach. There will be periods where multiple vehicle deliveries will be required, e.g., site fill material under roads, houses and landscape areas, pre-cast concrete and large concrete pours. These will be planned well in advance and no queuing of vehicles will be allowed on the public road at the entrance to the site. Supply chain to be directed as not to travel in convoys greater than three at any time.

All off-loading of material will take place within the site, remote from the public road and access via the agreed access construction point only. Bulk deliveries to take place outside of peak traffic hours within a six-day week as to minimise impact on the existing road network.

Access control: The site entrance will always be controlled by a banksman. The contractor will carry out a visitor induction briefing for all visitors or other persons who need access to the construction area. All visitors to the site will be required to have current 'Safe Pass' cards.

Material delivery: Material deliveries to the site will be coordinated as to avoid peak traffic hours associated with the neighbouring estates which could be expected around regular commuting times in the morning and evening.

Sign management: Signs are to comply with statutory requirements on public roads. Other construction sites may be carrying out construction activity at the same time as the subject site. It is therefore imperative that directions to each site are distinctly identifiable.

5.5 Routing of Construction Traffic

All traffic associated with the development must turn left / right off Hillcrest Road to reach the access point of the site. Construction traffic must travel through along the R113 regional road to access the site. There are a series of detached residential units lining this road on either side, however, the density of housing is low so impact to local traffic conditions should not be severe. The presence of St. Mary's National School to the southwest means that scheduled deliveries to the site should be organised to avoid peak drop-off and pickup times associated with the school. Regulation 97 of the Safety, Health, and Welfare at Work (Construction) Regulations 2013 must be strictly adhered to along with all traffic management protocols outlined in this

CEMP.

It is proposed that vehicles travelling east along the M50 utilise Junction 14 and take the third exit off the roundabout to reach the R113 road. Travelling along the R113 for *ca.* 1.3km will lead to the site entrance on the left prior to the junction at Lamb's Cross. It is not expected that the proposed transport route will cause any undue additional travel time to the site as it is the most direct route from the M50 motorway and avoids smaller local roads and dense residential developments. See **Figure 5.2** for the suggested construction traffic route.



Figure 5.2: Traffic routes to proposed site (Source: Google Maps).

5.6 Traffic Management Speed Limits

Adherence to posted/ legal speed limits will be emphasised to all contractors and subcontractors during induction training.

Drivers of construction vehicles/ HGVs will be advised that vehicular movements in locations, such as local community areas, shall be restricted to 50 km/h. Special speed limits of 30 km/h shall be implemented for construction traffic in sensitive areas such as residential. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic.

5.7 Road Cleaning

A wheel wash facility will be provided prior to exit of the site when required throughout the various stages of construction on-site. This is to ensure that minimal suspended solids reach

nearby waterbodies or surface water drainage systems, and that minimal road sweeping will be required on the public roads. Although a requirement for road sweeping cannot be eliminated entirely, control measures within site are aimed at limiting the need for road sweepers. If conditions require it, then a manned power washer shall be put in place to assist the wheel wash system.

Road sweeping operations to remove any project related dirt and material deposited on the road network by construction/ delivery vehicles will be utilised as required. It is recommended that road sweepers used have a vacuum function that can remove fine silt and dust from nearby surfaces effectively and prevent them from entering nearby waterbodies and drainage systems. All material collected will be disposed of to a licensed waste facility.

The following additional measures will be taken to ensure that the site, public roads and surroundings are kept clean and tidy:

- A regular program of site tidying will be established to ensure a safe and orderly site.
- Food waste will be strictly controlled on all parts of the site.
- Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate. This process is pertinent in cases of heavy rainfall where sediments can more easily reach nearby waterbodies and drainage systems.

5.8 Road Condition

The higher volume of heavy vehicle traffic movements and the nature of the payload may create problems to the local road network in terms of:

- Fugitive losses from wheels, trailers, or tailgates.
- Localised areas of subgrade and wearing surface failure.

The main contractors shall ensure that:

- Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation.
- The transportation contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive loses from a vehicle during transportation to and from site, including but not limited to:
- Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss.
- Utilisation of enclosed units to prevent loss.
- Roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required.

5.9 Enforcement of TMP

The traffic management plan will be enforced by both the Construction Project Manager and the Resident Engineer.

All project staff and material suppliers will be informed of the measures proposed by the TMP during site induction and will be required to adhere to the final TMP. As outlined above, the contractor shall agree and implement monitoring measures to confirm the effectiveness of the TMP.

5.10 Working Hours

Deliveries of materials to site will generally be between the hours of 08:00 and 19:00 Monday to Friday, and 08:00 to 14:00 on Saturdays. No deliveries will be scheduled for Sundays or Bank Holidays.

5.11 Emergency Procedures

The main contractor shall ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses. The contractor shall provide to the local authorities and emergency services, contact details of the contractor's personnel responsible for construction traffic management. In the case of an emergency the following procedure shall be followed:

- Emergency Services will be contacted immediately by dialling 112.
- Exact details of the emergency/ incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner.
- The emergency will then be reported to the Site Team Supervisors and the Safety Officer.
- All construction traffic shall be notified of the incident (where such occurs off site).
- Where required, appointed site first aiders will attend the emergency immediately.
- The Safety Officer will ensure that the emergency services are on their way.

5.12 Communication

The main contractor shall ensure that close communication with Dun Laoghaire Rathdown County Council and emergency services is maintained throughout the construction phase. Such communications shall include:

- Submissions of proposed traffic management measures/ closures for comment and approval.
- Ongoing reporting relating to the condition of the road network and updates to construction programming.
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic aimed towards implementing alternative measures to avoid such conflicts.
- The contractor shall also ensure that the local community is informed of any proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Such information shall contain contact information for members of the public to obtain additional information and to provide additional knowledge

such as local events, sports fixtures, etc., which may conflict with proposed traffic management measures.

6 Implementation

6.1 Role and Responsibilities

Due to the scale and nature of this development, the appointment of a full-time environmental manager is deemed surplus to requirements for the duration of the project. The Construction Project Manager will be responsible for the day-to-day implementation of the measures outlined in the Project CEMP. The Construction Project Manager will be supported by an Environmental Consultant who will be involved in the project on an ad-hoc basis should unforeseen or significant environmental incidents arise.

6.1.1 Construction Project Manager

The Construction Project Manager will have the overall responsibility of ensuring the measures outlined in the Project CEMP are adhered to for the duration of the construction phase. The primary responsibilities of the Construction Project Manager are as follows:

- Promotion of awareness of environmental issues associated with each project phase.
- Ensure adherence with all environmental and traffic management standards listed in the Project CEMP.
- Facilitate environmental audits and site visits.
- Monitor the impact of construction traffic on local traffic conditions.
- Awareness and implementation of relevant legislation, codes of practice, guidance notes as stated in the CEMP.
- Conduct regular site inspections to facilitate the timely identification of environmental risks or incidents.
- Ensure all construction activities are carried out with minimal risk to the environment.
- Report environmental incidents in a timely manner to the project Environmental Consultant and the relevant authorities.

6.1.2 Construction Project Manager Contact Details

Contact details of the project manager are pending until a project manager has been appointed.

- Name: Pending
- Telephone: Pending
- Email: Pending

6.1.3 Project Environmental Consultant

As mentioned above the Construction Project Manager will assume the role of Project Environmental Consultant. Should any issues or impacts arise throughout the project then a suitable Environmental Contractor will be contacted. The primary responsibilities of the Project Environmental Consultant are as follows:

- Quality assurance of the Project CEMP.
- Update of the Project CEMP as required paying particular attention to site-specific environmental hazards or changes in legislation.

- Ensuring compliance of Project CEMP with the conditions of the Planning Permission.
- Provide expertise to the Construction Project Manager on environmental concerns.
- Conduct the various specialist environmental monitoring tasks outlined within the Project CEMP (noise, dust, surface water monitoring etc.).
- Prompt response to environmental issues if they arise.

6.1.4 Resident Engineer

Typically, the Resident Engineer's primary role involves assurance that the construction work of a project is carried out according to the quality, time and cost requirements of the contract. A significant degree of cross-over can usually be anticipated between the roles of a Resident Engineer, a Construction Project Manager and an Environmental Consultant. With respect to the Project CEMP, the Resident Engineer is expected to play a crucial role in the Traffic Management Plan (TMP) along with the following responsibilities:

- Performing or coordinating site inductions.
- Monitoring the performance of subcontractors.
- Monitoring the performance of the traffic management plan.
- Managing and supervising less experienced site engineers and operatives.
- Ensuring that work activities have been carried out in accordance with the plans, specifications, and industry standards.
- Ensuring that tests and inspections are performed.
- Liaising with construction management to remove any hazards associated with work activities.
- Ensuring that delivered materials meet specifications and established quality standards.
- Initiating and maintaining records, back-charge procedures, progress reports etc.

6.2 Awareness and Training

6.2.1 Environmental Induction

The key environmental topics outlined in the Project CEMP will be summarised and integrated into the general site induction. Site-specific concerns and best work practices will be outlined to all contractors and sub-contractors due to carry out work at the site. As a minimum this will include:

- The roles and responsibilities of the Construction Project Manager the Environmental Consultant and the Resident Engineer along with the responsibilities of contractors/sub-contractors themselves.
- Incident and complaints procedure.
- Outline of the CEMP structure.
- Site-specific environmental concerns.
- Best work practices

6.2.2 Toolbox Talks

Daily toolbox talks will be conducted by the Construction Project Manager as standard practice. It is the duty of the Construction Project Manager to liaise with the Project Environmental Consultant and Resident Engineer to assess site operations for environmental concerns particularly as the project advances and new activities commence. Appropriate mitigation measures will be devised and communicated to the relevant personnel prior to the commencement of any such activities.

6.3 Environmental Incidents and Complaints Procedure

The Construction Project Manager will maintain a register of environmental incidents which will document the nature, scale and severity of any environmental incident or complaint which arises due to site activities. In the event of an environmental incident the following steps must be followed:

- The Project Environmental Consultant is notified immediately.
- The Project Environmental Consultant will liaise with the competent authority if necessary.
- The details of the incident will be recorded on an Environmental Incident Form which will record the following details:
 - 1. Cause of the incident
 - 2. Extent of the incident
 - 3. Immediate actions
 - 4. Remedial measures
 - 5. Recommendations made to avoid reoccurrence
- If the incident has impacted on an ecologically sensitive receptor (SPA, SAC, NHA) an ecological specialist will be consulted.
- The Project Environmental Consultant and Construction Project Manager will fully cooperate with any investigations conducted by the competent authority.

7 Conclusion

This Construction Environmental Management Plan (CEMP) will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

Extensive measures shall be taken to prevent uncontrolled emissions to drains and gullies leading off the site. Noise mitigation measures will be utilised as required. Several measures have been outlined to ensure adequate dust suppression throughout the project. Noise and dust monitoring shall be carried out at various stages throughout the project to ensure compliance with the relevant standards.

Suitably qualified personnel including a Construction Project Manager, Project Environmental Consultant and Resident Engineer will be appointed to implement the procedures and protocols relevant to their profession as outlined in this CEMP.

The Client shall be responsible for ensuring that The Contractor manages the construction activities in accordance with this Construction Project Management Plan and shall ensure that any conditions of planning are incorporated into the final Construction Project Management Plan prepared by the appointed works contractor.

Appendix A: Risk Assessment as per Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Risk Assessment A – Locality/Site Information

	Low	Medium	High
Expected duration of work			
Less than 6 months			
6 months to 12 months			
Over 12 months			x
Proximity of nearest sensitive recep	tors		
Greater than 50 metres from site			
Between 25m and 50m		x	
Less than 25 metres			
Hospital or school within 100 metres			x
Day time ambient noise levels			
High ambient noise levels (>65dB(A))	x		
Medium ambient noise levels (55- 65dB(A)			
Low ambient noise levels (<55dB(A)			
Working Hours			
8am – 7pm Mon-Fri; 9am-2pm Sat	x		
Some extended evening or weekend work			
Some night-time working, including likelihood of concrete power floating at night			
SUBTOTAL A	2	1	2

Risk Assessment B – Works Information

	Low	Medium	High
Location of works			
Majority within existing building			
Majority External			x
External Demolition			
Limited to two weeks			
Between 2 weeks and 3 months			
Over three months			
Ground Works			
Basement level planned			
Non-percussive methods only			
Percussive methods for less than 3 months		x	
Percussive methods for more than 3 months			
Piling			
Limited to one week			
Bored Piling Only			
Impact or vibratory piling			
Vibration generating activities			
Limited to less than 1 week			
Between 1 week and 1 month		Х	
Greater than 1 month			
SUBTOTAL B	0	2	1

Total Risk Assessment

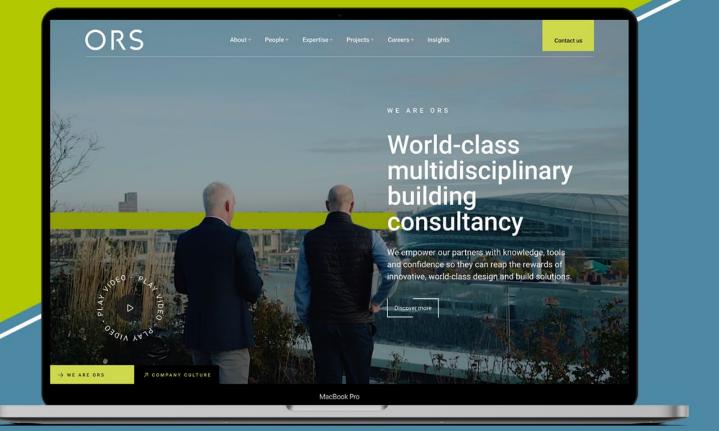
	Low	Medium	High
Risk Assessment A	2	1	2
Risk Assessment B	0	2	1
Total	2	3	3

The site is assessed as a low-to-moderate overall.



website.





Find Us Nationwide, on LinkedIn or on Youtube in 🕨

) Block A,

Marlinstown Business Park, Mullingar, Co. Westmeath, Ireland, N91 W5NN

Office 2, Donegal Town, Enterprise Centre, Lurganboy, Donegal Town, Co. Donegal, Ireland, F94 KT35 Suite: G04, Iconic Offices, Harmony Row, Dublin 2, Co. Dublin, Ireland, D02 H270

Office 4, Spencer House,
 High Road, Letterkenny,
 Co. Donegal,
 Ireland, F92 PX8N

Level One, Block B,
 Galway Technology Park,
 Parkmore, Co. Galway,
 Ireland, H91 A2WD

NSQ2,
 Navigation Square,
 Albert Quay, Cork
 Ireland, T12 W351