



Waterman Moylan
Engineering Consultants

Construction Environmental Management Plan

Proposed Residential Development at Rathmullan, Drogheda, Co.
Meath

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Comments

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1. Introduction

This report has been prepared by Waterman Moylan Consulting Engineers, on behalf of Trailford Ltd., for a residential development at Rathmullan, Drogheda, Co. Meath.

1.1 Site Location and Description

The site is located on Rathmullan Road in Drogheda, Co. Meath. The site is situated approximately 2.5 km west of Drogheda town centre as indicated in Figure 1 below.

The subject site is bounded to the north by the River Boyne, to the east by existing residential and agricultural areas, to the south by agricultural lands, and to the west by the M1 Dublin to Belfast Motorway.

The site area is c 26.21 hectares and is currently used for agricultural purposes. The lands generally slope from south-west to north-east towards the River Boyne with existing ground levels of between 38.0 m and 3.5 m OD Malin. The site is currently accessed via an existing entrance off Rathmullan Road.

Please refer to Waterman Moylan drawing No. 18-014-P001 for the exact site location and surrounding lands as outlined above.

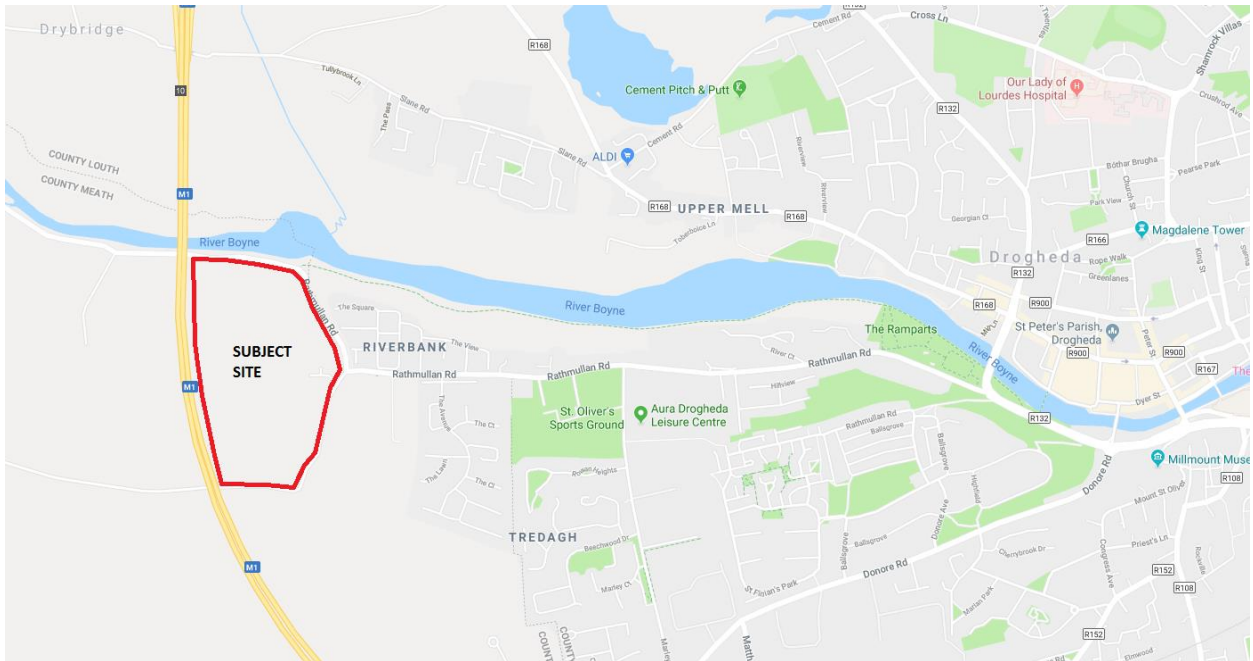


Figure 1: Site Location

1.2 Description of the Proposed Development

The proposed development consists of a Strategic Housing Development on residential zoned lands west of Drogheda town centre. The accommodation provided on the site consists of;

- 661 residential units with a crèche and retail unit,

This application includes all associated infrastructure necessary to service the above. This includes a network of foul water and storm water pipes, watermains, and a network of roads and footpaths.

The total surfaced area of the proposed development, including roads, roofs, and other paved areas is approximately 10.4 Ha.

The proposed estate road levels around the site range from 19.50 to 36.50 m OD Malin and proposed finished floor levels range between 19.90 to 36.70 m OD Malin.

The main access for the site will be provided via a new 4 arm signalised junction with arms linking the Rathmullan Road (East), the Rathmullan Road (West) the proposed site access and the local access road to the south of the roundabout. A second access into the housing development is proposed via a new priority junction to the south of the site onto the existing local access road.

The design and layout of the proposal has been prepared to fully comply with the current relevant design standards and specifications applicable to this form of development. The applicant has drawn upon considerable experience in the design and implementation of such proposals.

1.3 Proposed Construction Programme

The proposed work will consist of the following:

- Site preparation;
- Erection of security fencing/perimeter fencing;
- Setting up a secure site compound including wash down area;
- Site clearance including topsoil stripping;
- Construction of infrastructure including roads, drainage and services;
- Provision of road upgrades and pedestrian links;
- Construction, on a phased basis, of 661 No. residential units, a creche, and a retail unit.

2. Summary of Mitigation Measures

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Special Area of Conservation (River Boyne). All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001);
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- BPGCS005: Oil Storage Guidelines;
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.

An Environmental Impact Assessment Report has been produced for the proposed development and is included under separate cover.

The schedule of mitigation presented within Table 1 summarises measures that will be undertaken in order to reduce impacts on ecological receptors within the zone of influence of the proposed development.

Table 1: Schedule of Ecological Mitigation

No.	Impact Identified with Biodiversity Chapter of EIAR and/or Natura Impact Statement	Mitigation	Result of Mitigation
1	All construction phase impacts	Employment of Environmental Specialist to monitor works	Undertakes pre-construction checks for protected species, reviews method statement of contractor to ensure that it incorporates all aspects of CEMP. Provides tool box talks and other training, and ensures understanding by all involved of all mitigation measures. Assesses effectiveness of mitigation, checks weather forecast and site conditions where trigger levels are required, checks for adequacy of infiltration where water is being pumped, undertakes weekly water-quality monitoring.
2	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Designated parking at least 50m from any watercourse.	Ensures no soil disturbance or hydrocarbons leak near aquatic zone
3	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	The site compound will be located at least 50m from any watercourse. All potentially polluting materials will be contained within bunds with a capacity of 110% of their contents.	Prevents pollution of the aquatic zone from toxic pollutants
4	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Fuels, oils, greases and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or at a location at least 50m from any stream. Bunds are to be provided with 110% capacity of storage container. Spill kits will be kept on site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided the Contractor for review by the Employer's Representative.	Prevents contamination of aquatic zone by toxic pollutants
5	Water quality impacts Reduction in habitat quality	Silt barrier devices will be installed between the works area and any watercourses to prevent any construction related sediments from entering the existing ditches and watercourses.	Ensures no movement of soil or contaminated water from the construction site to the River Boyne

6	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Pouring of concrete will not be permitted within 50m of any watercourse during inclement weather	Prevents pollution of the aquatic zone by toxic pollutants
7	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off site
8	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to ground water	Prevents contamination of aquatic zone by petrochemicals
9	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse	Prevents contamination of aquatic zone by petrochemicals
10	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	All silt fencing remains actively managed and regularly checked until the construction works are completed The responsibility, reporting and management of silt fencing during the period after the construction has been completed will be clearly stated in the contract documents	Prevents contamination of aquatic zone by suspended solids from bare soil
11	Unforeseen discovery of bats	Tree inspection surveys will be undertaken by a licenced bat worker to assess whether the trees marked for felling have any suitability to support roosting bats. If the trees are confirmed to have potential roosting features, these trees must be inspected at height for roosting bats the day prior to felling works. Once surveyor is satisfied that bats are not present within potential roosting features, the tree will be felled. If bats are encountered during any works at the site the relevant works will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site.	Compliance with legislation protecting bats Avoidance of impacts on roosting bats

12	Nesting birds	<p>All tall woody and herbaceous vegetation in worked areas should be removed outside of the breeding bird season (1st March to 31st August, inclusive) to avoid the destruction of nests or disturbance of breeding birds</p> <p>If this is not possible, trees will be inspected by a qualified ecologist immediately prior to removal. If it is found that breeding birds are present, felling works must be suspended immediately and cannot recommence until chicks have fledged and the nest has been abandoned.</p>	Compliance with legislation protecting birds
13	Woodland and hedgerows	<p>All hedgerows and immature woodland marked for retention will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (National Roads Authority, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees);</p> <p>Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals)</p> <p>Soil will not be placed within the Root Protection Area of trees or within 5m of hedgerows;</p> <p>The woodland will not be lit during the construction or operational phases of the development; and,</p> <p>The construction compound will be located a minimum of 50m from watercourses.</p>	Avoidance of impacts on KER habitats

3. Management of Environmental Impacts

Construction is envisaged to commence once final planning permission has been obtained. It is anticipated that the development will be constructed over a period of 3 to 5 years depending upon the housing demand.

The proposed potential pollution mitigation measures outlined below will be implemented in accordance with 'CIRIA C532 – Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' – CIRIA-2001.

3.1 Roles and Responsibilities

3.1.1 Construction Waste Manager

A Construction Waste Manager shall be appointed from the Contractor's Staff and have overall responsibility for the implementation of the project Waste Management Plan (WMP) during the construction phase. The Construction Waste Manager will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the WMP. At the operational level, a designated person from the main contractor and from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the WMP are performed on an on-going basis.

Copies of the Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Waste Management Plan. Posters will be designed to reinforce the key messages within the Waste Management Plan and will be displayed prominently for the benefit of site staff.

3.1.2 Environmental Officer

The Environmental Officer will be responsible for, but not limited to, the following activities:

- Ensuring that the requirements of the CEMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements;
- Reviewing the Environmental responsibilities of other managed Contractors in scoping their work and during Contract execution;
- To ensure that advice, guidance and instruction on all CEMP matters are provided to all their managers, employees, construction contractors and visitors on site;
- Report to the Construction manager on the environmental performance of the Line Management, Supervisory Staff, Employees and Contractors; and,
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.

3.1.3 Project Environmental Consultant

The Project Environmental Consultant will be responsible for, but not limited to, the following activities:

- Preparation of the CEMP, environmental control plans, supporting procedures;

- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters;
- Ensure adherence to the specific measures listed in the Planning Conditions and in the Natura Impact Statement (NIS) Mitigation matters;
- Advise upon the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce;
- Investigate incidents of significant, potential or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence; and,
- Be responsible for maintaining all environmental related documentation.

3.1.4 Project Ecologist

The Project Ecologist is required to:

- Undertake pre-construction checks for protected species
- Review method statement of contractor to ensure that it incorporates all aspects of CEMP
- Provide tool box talks and other training, and ensure understanding by all involved of all mitigation measures
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required
- Check for adequacy of infiltration where water is being pumped

3.1.5 Site Supervisor

Site Supervisors are required to:

- Read, understand and implement the CEMP;
- Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance. Where necessary seek the advice of the Environmental Officer;
- Ensure that the environmental matters are taken into account when considering contractors' construction methods and materials at all stages;
- Be aware of any potential environmental risks relating to the site, plant or materials to be used the premises and bring these to the notice of the appropriate management;
- Ensure plant suggested in environmentally suited to the task in hand;
- Co-ordinate environmental planning of the construction activities to comply with environmental authorities requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists;
- Where appropriate, ensure Contractors method statements include correct waste disposal methods;
- Be aware of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management

3.1.6 Site Personnel

All Contractors, and other site personnel, on the project will adhere to the following principal duties and responsibilities:

- To co-operate with the construction management team and the Environmental Officer in the implementation and development of the CEMP at the site;
- To conduct all their activities in a manner consistent with regulatory and best environmental practice;
- To participate in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the site; and,
- Adhere to the requirements of the site environmental rules.

3.2 Hours of Working

Typical working hours for the site would be 08.00 to 19.00 Monday to Friday and 08.00 to 14.00 Saturday. No Sunday work will generally be permitted. The above working hours are typical, however, special construction operations may need to be carried out outside these hours in order to minimise disruption to the surrounding area.

Weather restrictions may apply, i.e. no cement pouring during heavy rainfall. To be determined by the project ecologist.

3.3 Pre-Construction Plan

3.3.1 Designated Storage Area & Site Compound

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site.

The main contractor will be required to schedule delivery of materials on a daily basis. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

3.3.2 Cut Off Trenches

To prevent silt runoff from the development site the contractor will excavate a number of temporary cut off trenches along the northern development boundary in advance of stripping topsoil. These cut off trenches will be connected to a temporary settlement pond. Straw bales will be placed within the cut off trenches at strategic locations and at the outfall from the settlement pond. Indicative details are attached in Appendix A.

3.3.3 Deliveries and Site Access

Deliveries and access to the construction site will typically be made via Rathmullan Road. Construction traffic will not be permitted to use the River Road to the north of the site or the local Road to the south of

the site as these would be considered unsuitable for construction traffic. Haul roads for construction traffic purposes will generally be 6.0 m wide and will be constructed using 300 mm min. capping layer material (clean broken stone).

In the event that large concrete pours are required which may result in congestion at the entrance to the site the deliveries will be organised such that concrete trucks will queue at a pre-determined staging point (such that they do not cause an obstruction to general traffic in the area) and will then be called in by radio as appropriate to the site, via a pre-determined route and to the required access gate.

Set procedures and designated wash-out areas will be provided.

All delivery vehicles will be co-ordinated as required at the relevant access point.

3.4 Construction Plan

3.4.1 Dust and Dirt Control

Nuisance dust emissions from construction activities are a common and well recognised problem. Fine particles from these sources are recognised as a potential significant cause of pollution.

The main contractor will be required to demonstrate that both nuisance dust and fine particle emissions from the site are adequately controlled and are within acceptable limits.

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through carefully selected mitigation techniques and effective management. Once particles are airborne it is very difficult to prevent them from dispersing into the surrounding area. The most effective technique is to control dust at source and prevent it from becoming air borne, since suppression is virtually impossible once it has become air borne.

The following are techniques and methods which are widely used currently throughout the construction industry and which may be used in the proposed development.

- The roads around the site are all surfaced and no dust is anticipated arising from unsealed surfaces.
- Vehicles travelling on any unsurfaced site roads should have their speed restricted to 20 kph.
- A regime of 'wet' road sweeping can be set up to ensure the roads around the immediate site are as clean and free from dirt / dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
- Footpaths immediately around the site can be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding can be cleaned regularly using safe 'wet' methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings can be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Vehicle and wheel washing facilities can be provided at site exit(s) where practicable. If necessary vehicles can be washed down before exiting the site.
- Netting can be provided to enclose scaffolding in order to mitigate escape of air borne dust from the existing and new buildings.
- Vehicles and equipment shall not emit black smoke from exhaust system, except during ignition at start up.
- Engines and exhaust systems should be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.

- Servicing of vehicles and plant should be carried out regularly, rather than just following breakdowns.
- Internal combustion plant should not be left running unnecessarily.
- Exhaust direction and heights should be such as not to disturb dust on the ground and to ensure adequate local dispersal of emissions.
- Where possible fixed plant such as generators should be located away from residential areas.
- The number of handling operations for materials will be kept to a minimum in order to ensure that dusty material is not moved or handled unnecessarily.
- The transport of dusty materials and aggregates should be carried out using covered / sheeted lorries.
- Material handling areas should be clean, tidy and free from dust.
- Vehicle loading should be dampened down and drop heights for material to be kept to a minimum.
- Drop heights for chutes / skips should be kept to a minimum.
- Dust dispersal over the site boundary should be minimised using static sprinklers or other watering methods as necessary.
- Stockpiles of materials should be kept to a minimum and if necessary, they should be kept away from sensitive receptors such as residential areas etc.
- Stockpiles where necessary, should be sheeted or watered down.
- Methods and equipment should be in place for immediate clean up of spillages of dusty material.
- No burning of materials will be permitted on site.
- Earthworks excavations should be kept damp where necessary and where reasonably practicable.
- Cutting on site should be avoided where possible by using pre-fabrication methods.
- Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, should be employed.
- Where scabbling is to be employed, tools should be fitted with dust bags, residual dust should be vacuumed up rather than swept away, and areas to be scabbled should be screened off.
- Wet processes should be used to clean building facades if possible. If dry grit blasting is unavoidable then ensure areas of work are sealed off and dust extraction systems used.
- Where possible pre-mixed plasters and masonry compounds should be used to minimise dust arising from on site mixing.
- Prior to commencement, the main contractor should identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor should prepare environmental risk assessments for all dust generating processes, which are envisaged.
- The main contractor should allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues should be displayed on the site boundary, this notice board should also include head/regional office contact details.

The contractor will be obliged to implement the mitigation measures outlined in the EIAR in respect of dust / dirt control.

3.4.2 Noise Control

The main contractor will deal with the immediate dangers to hearing etc. associated with high noise levels and the impact of same on construction operatives, by means of risk assessment and mitigation / precautionary measures and equipment, all pursuant to the current health and safety legislation.

The main contractor should carry out a noise assessment in relation to the proposed works at construction stage. This noise assessment should be carried out by a competent person (or specialist firm) with specialist training in this area.

The noise assessment should include the following steps:-

- Identify and list all construction work activities where there is likely to be a significant noise hazard.
- Determine the hazards / nuisance.
- Identify all third parties likely to be exposed to the nuisance.
- Measuring the risk: The level of noise in dBA.
- Considering and Implementing Control Measures.
- Control exposure to noise.
- Record the findings of the noise assessment.
- Review and revise.

The contractor will be obliged to implement the noise mitigation measures set out in the EIAR.

3.4.3 Protection of Soils and Groundwater

In order to preserve the topsoil on the site, topsoil will be removed to stockpiles and protected during the construction period for reuse on completion of the works. Topsoil will be stored in mounds and suitably protected to prevent water logging during wet weather. The stripping of topsoil will be undertaken on a phased basis so that no area is stripped until such time as works are imminent in that area.

Levels of the proposed roads will be established to minimise the quantity of fill material to be imported to the site. Surplus subsoil will be used for landscaping where possible.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, if required, to prevent the build-up of soils from the development site on the existing blacktop roads.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

Cut off trenches along the northern boundary of the development boundary will be constructed prior to stripping topsoil. These cut off trenches will have a settlement pond / silt trap at the end of each trench with an overflow. Straw bales will be placed within the cut off trenches at strategic locations and at the outfall of the settlement ponds to the overflow. These measures will be implemented and maintained during the construction phase to prevent silt runoff into the existing ditches / watercourses during the drainage works.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

After implementation of the above measures the proposed development will not give rise to any significant long term adverse impact. Negative impacts during the construction phase will be short term only in duration.

3.4.4 Protection of Surface Waters

- The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.
- Cut off trenches along the northern boundary of the development boundary will be constructed prior to stripping topsoil. These cut off trenches will have a settlement pond / silt trap at the end of each trench with an overflow. Straw bales will be placed within the cut off trenches at strategic locations and at the outfall of the settlement ponds to the overflow. These measures will be implemented and maintained during the construction phase to prevent surface water runoff from discharging directly into the local water course. An indicative layout for the proposed cut off trenches is set out in Appendix A of this EIAR.
- Settlement ponds / silt traps as outlined above will be provided to prevent silt runoff into the existing ditches / watercourses during the drainage works
- Regular testing of surface water discharges will be undertaken at the outfall from the subject lands. The location will be agreed between the project ecologist and the site foreman at the commencement of works. Trigger levels for halting works and re-examining protection measures will be: pH >9.0 or pH <6.0; and/or suspended solids >25 mg/l. These trigger levels are based on those outlined within 'Guidelines on Protection of Fisheries During Works in and Adjacent to Waters (IFI, 2016)'.
- Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.
- All fuels and chemicals will be bunded, and where applicable, stored within double skinned tanks / containers with the capacity to hold 110% of the volume of chemicals and fuels contents. Bunds will be located on flat ground a minimum distance of 50 m from any watercourse or other water conducting features, including the cut off trenches.
- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- Temporary traffic management will be implemented as appropriate during the construction of the outfalls on Rathmullan / River Road.

3.4.5 Flora and Fauna

Field surveys were undertaken by Scott Cawley Ltd. to inform the Biodiversity chapter of the EIAR and the NIS accompanying the application for the development. Mitigation measures within this section cover all potential construction-phase impacts on flora and fauna.

The site is located directly south of the River Boyne and is therefore hydrologically connected to four European sites and one Nationally designated site: the River Boyne and Blackwater SAC (002299), River Boyne and Blackwater SPA (004080), Boyne Coast and Estuary SAC (001957), Boyne Estuary SPA (004080) and the Boyne River Islands pNHA (01862). The mitigation measures outlined in this CEMP are designed to prevent pollutants from entering the River Boyne.

Roosting bats were discovered inside the derelict farm buildings onsite and bats were recorded using the treelines and hedgerows for commuting and foraging. The mitigation measures outlined in this CEMP will prevent disturbance and mortality to bats during the construction phase of this development.

A number of bird species were recorded within the hedgerows and treelines on the proposed development site. The mitigation measures outlined in this CEMP will prevent disturbance and mortality to birds during the construction phase of the development.

The subject lands contains woodlands and hedgerows which are at risk of damage during construction. The mitigation measures outlined within this CEMP will prevent accidental damage to trees in hedgerows and woodland in the site.

Protection of Bats

- Roosting bats were found to be present within the existing farm buildings onsite. A draft derogation licence application has been submitted to the NPWS to allow for the demolition of the buildings. The mitigation measures as outlined below and in Table 1 of this report must be adhered to in order to avoid disturbance or mortality of bats;
 - Tree inspection surveys will be undertaken by a licenced bat worker to assess whether the trees marked for felling have any suitability to support roosting bats. If the trees are confirmed to have potential roosting features, these trees must be inspected at height for roosting bats the day prior to felling works. Once surveyor is satisfied that bats are not present within potential roosting features, the tree will be felled; and/or,
 - If bats are encountered during any works at the site the relevant works will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be obtained from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site.

Protection of Birds

- All tall woody and herbaceous vegetation in worked areas should be removed outside of the breeding bird season (1st March to 31st August, inclusive) to avoid the destruction of nests or disturbance of breeding birds. It is particularly important that areas of dense vegetation be cleared in advance of the breeding bird season, as it is difficult to check or confirm presence/absence of nests in these areas during the breeding season.
- In instance where clearance of vegetation between 1st March and 31st August is unavoidable, vegetation will first be inspected by a qualified ecologist immediately prior to any scheduled clearance. Where birds or their nests are encountered, works may not proceed until chicks have fledged and the nest has been abandoned. The ecologist may need to implement a buffer area around the nest where works or personnel are not allowed to enter.

Protection of Aquatic Fauna and Habitats

- Aquatic fauna and habitats will be protected through the implementation of mitigation measures detailed within Table 1 of this CEMP.
- All hedgerows and immature woodland marked for retention will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (National Roads Authority, 2005-2011). In general, the RPA

covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees).

- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals).
- Soil will not be placed within the Root Protection Area of trees or within 5m of hedgerows.

3.4.6 Refuelling

- Construction plant and equipment will only be parked over-night within the site compound. Construction plant and equipment will be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear.
- Fuel will not be stored on site for the duration of the construction phase. Fuel will only be brought to site via mobile fuel bowser. For any liquid other than water, this will include storage in suitable tanks and containers which will be housed in the designated area surrounded by bund wall of sufficient height and construction so as to contain 110 percent (110%) of the total contents of all containers and associated pipework. The floor and walls of the bunded areas will be impervious of all containers and associated pipework. The floor and walls of the bunded area will be impervious to both water and oil. The pipes will vent downwards into the bund.
- Where Contractors are required to refuel vehicles, this will only be carried out at the designated refuelling location within the site storage compound, which must employ pollution control mechanisms to prevent escape of fluids to the river. No refuelling is permitted on site, i.e. within the river or adjacent due to risk of spillage.
- The local authority will be informed immediately of any spillage or pollution incident that may occur on-site during the construction phase.
- All small plant such as generators and pumps bunded and stood in drip trays capable of holding 110% of their tank contents,
- All small plant will be positioned on the bridge itself (within the designated works area – refer to Preliminary Traffic Management Plan), on the secured scaffolding/work platforms, or within the dewatered, 'dry' sections of the dammed river during the works.
- Waste oils, empty oil containers and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Act, 1996.

3.4.7 Site Tidiness and Housekeeping

- Construction works will be carried out according to a defined schedule agreed with the client and the relevant contractors, with regard to the hours of work outlined above. Any delays or extensions required will be notified at the earliest opportunity to the client and Contractors.
- Contractors will ensure that road edges and footpaths are swept on a regular basis.
- Any and all waste materials arising during the works will either be immediately taken to a location from which discharge to the River Boyne cannot take place, or temporarily stored/covered to prevent washout thereto.
- All Contractors will be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition.

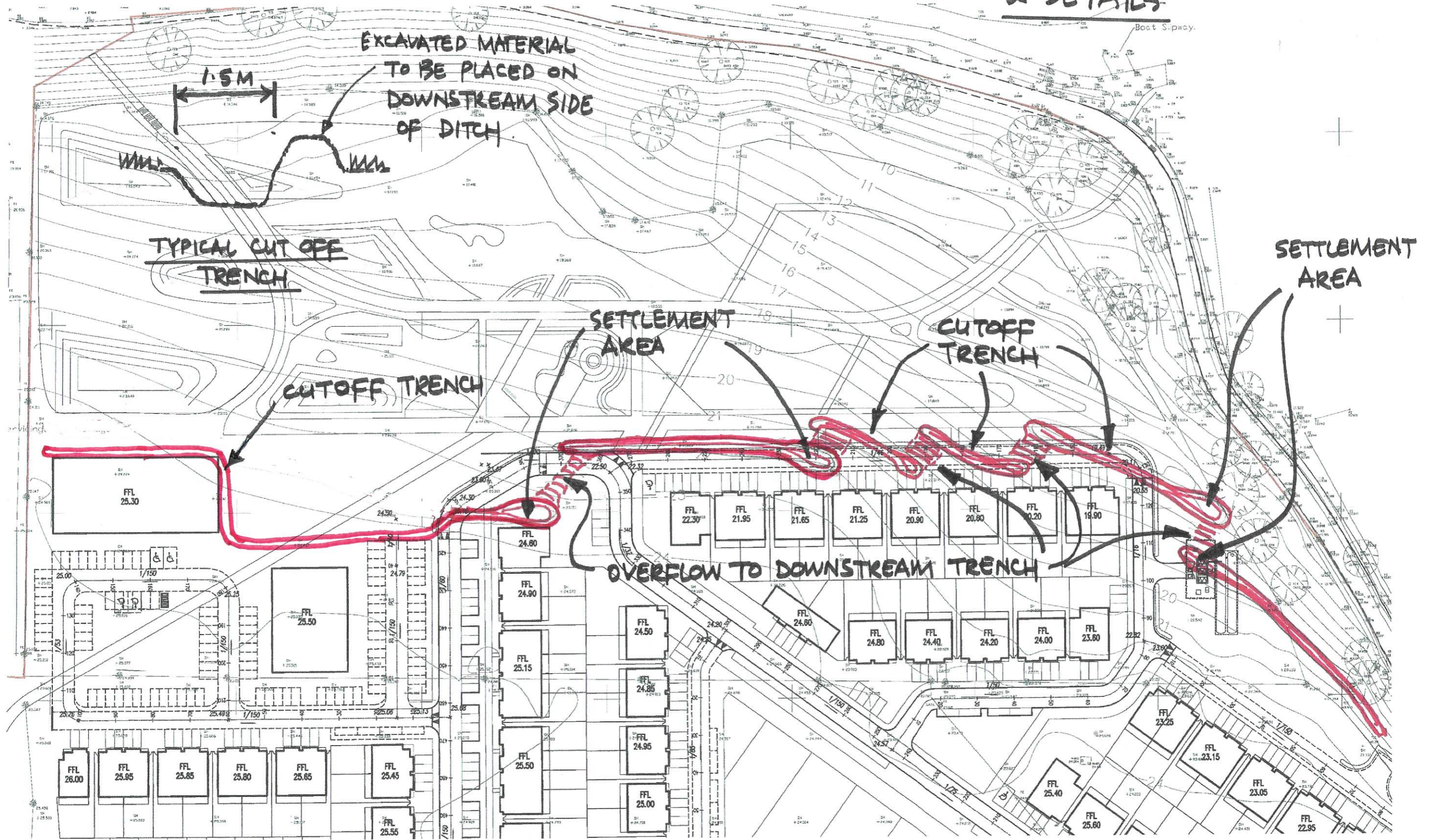
3.4.8 Monitoring, Inspection and Record Keeping

- The Project Ecologist will supervise the sampling of suspended solids downstream prior to commencement of works, and weekly during remediation works. Samples will be analysed on site. Should results show a 10% increase in suspended solids downstream of the site this will be brought to the attention of the contractor by the Project Ecologist and any suitable contingency measures will be instigated.
- Routine inspections of construction activities will be carried out on a daily basis by the contractor staff to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with the Project CEMP and that the requirements of the Conditions of Planning, the NIS and associated documentation are being adhered to during construction.
- The Contractor will develop their own site inspection programme, which will include an inspection procedure and relevant forms to record any issues.
- Only suitably-trained staff will undertake environmental site inspections.
- The Project Ecologist will keep records of works undertaken.

APPENDICES

A. Indicative Construction Stage Surface Water Runoff Management Strategy

RATHMULLAN - TEMPORARY CUT OFF TRENCH LAYOUT & DETAILS



NOTE : STRAW BALES TO BE PLACED AT APPROPRIATE INTERVALS ALONG THE CUT OFF TRENCHES AND AT THE OVERFLOW LOCATIONS.

UK and Ireland Office Locations

