CONSULTING ENGINEERS

BLOODMILL ROAD EXTENSION, LIMERICK

FOR LIMERICK CITY & COUNTY COUNCIL

Outline Construction Environmental Management Plan

JULY 2023

MHL & Associates Ltd.
Consulting Engineers

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1 INTRODUCTION

1.1 OUTLINE DESCRIPTION

MHL Consulting Engineers have been appointed by Limerick City and County Council (LCCC) to design and manage the delivery of the Bloodmill Road Extension Scheme, at Towlerton, Ballysimon, Limerick.

The aim of the project is to realign the existing Bloodmill Road to link with the recently constructed developer provided link road to the Northern Trust Roundabout on Groody Road. The scheme will implement improved Active Travel measures for pedestrians, cyclists and public transport to serve the currently under construction secondary school and private hospital on surrounding zoned lands. The scheme should encourage the uptake of more sustainable transport options by providing safer road infrastructure for vulnerable road users. The scheme will provide high quality facilities for pedestrians, cyclists and the mobility impaired with a view to encouraging modal shift from private car use to more sustainable, active travel options such as walking and cycling.

This is a strategically important link road required for connectivity in the Towlerton/Ballysimon/Castletroy area as well as for opening up zoned lands for development in this rapidly growing suburban district centre. The delivery of the road will provide alternative traffic routing in the area and provide access to the new secondary school, new private hospital and other public and commercial buildings that will be constructed adjacent to the road in the future.

The purpose of the outline CEMP is to provide details of waste, proposals for noise reduction, proposals for dust reduction, invasive species management and details on how the proposed project is intending to use a comprehensive and integrated approach to protecting the Towlerton Stream and other sensitive receptors within the potential zone of influence. The following CEMP outlines the potential impacts of the road extension, details the sensitive receptors, environmental controls and the mitigation measures that will be implemented to minimise impacts. The CEMP also details the specific requirements that need to be addressed during project stages and also includes the related roles and responsibilities of individuals involved in the project.

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

- Final planning permission granted and conditions.
- Compliance requirements of Limerick City and County Council.
- Requirements by other bodies including Inland Fisheries Ireland.
- Concerns raised by residents affected by the works.

This outline CEMP is to be submitted prior to commencement of the relevant phase on site and will be subject to periodic review as part of the management of the construction process.

The construction phase of the project needs to be carefully controlled so as not to have any significant impact on the environment and the local community. The Client and Construction Contractor both have key responsibilities to ensure that these environmental impacts are controlled adequately. Management during the construction works will be delivered through the development of an Outline Construction

Environmental Management Plan (CEMP). The CEMP outlines generally details how the construction will be undertaken and managed in accordance with the planning, legislative requirements and construction industry best practice.

The works contractor on site should be provided with the Site Closure Report which sets out a detailed description of the site conditions and particulars.

1.2 SITE DESCRIPTION

The site is located on the south-eastern side of Limerick City. The existing Bloodmill Road is approximately 1.6km long and connects Childers Road to Ballysimon Road. The aim of the project is to realign the existing Bloodmill Road through agricultural lands to link with a recently constructed developer provided link road section. The completed road will link Groody Road to Childers Road and open up zoned lands for development. Approximately 60m of new road corridor will be constructed in agricultural lands and approximately 200m of existing road corridor will be widened into adjacent agricultural lands.

Figure 1.1 below shows the site location in the south-eastern side of Limerick City centre.

The works will include road realignment, road widening, a new river culvert to bridge the proposed new road over the Towlerton stream, road reconstruction and resurfacing, new footpath construction, new cycle track construction, services diversions and new ducting for telecommunications, gas, power supply, watermain replacement, a new surface water drainage system, a new road lighting scheme, new boundary treatments, retaining walls, embankments, accommodation works driveways, walls, gates and fences, new landscaping, new road markings, upgraded road signage and street furniture and all ancillary works necessary for completion. Detailed layout drawings for the proposed upgrade works are provided in the enclosed drawing pack.

The proposed culvert has been designed for a 1 in 100-year rainfall event plus 20% climate change allowance. The dimensions of the new bridge aperture to accommodate these flows will be 1.8m width x 2.1m in height (including associated freeboards). The length of the culvert will be 18.0m. The proposed culvert design is subject to approval of a pending Section 50 application to the Office of Public Works.

All storm water generated on the upgraded road surface will be collected in roadside drainage gullies and conveyed in a new surface water drainage pipe network. All road gullies will have silt traps for the collection of debris. The drainage pipe network will pass through a large silt trap chamber, hydrocarbon interceptor chamber and a 220m^3 attenuation tank before out falling to the Towlerton Stream.

Figure 1.1 Site Location Map

1.3 CEMP SPECIFICS

The CEMP shall include details on the project organisation and responsibilities, project communication and co-ordination, analysis of potential impacts, environmental control measures, control of pollution, watercourses, construction management information, construction scheduling, site traffic/deliveries, waste mitigation measures, air and noise control measures, sensitive receptors, invasive species, monitoring and emergency procedures.

The highlighted measures require training, operational control, checking and corrective action and a complaints mechanism.

The work's contract documentation will ensure that the contractor is obliged to comply with the actions set out in the CEMP and to demonstrate to the Client how they intend to identify further environmental impacts and implement the detailed mechanisms for managing the impacts of works on site.

All site works should be undertaken in compliance with the CEMP, reviewed during the construction process and include information on the review procedures.

2 PROJECT PARTICULARS

2.1 SERVICES ON SITE

Figure 2.1 below illustrates the existing utility services running through the site, both above ground and underground.

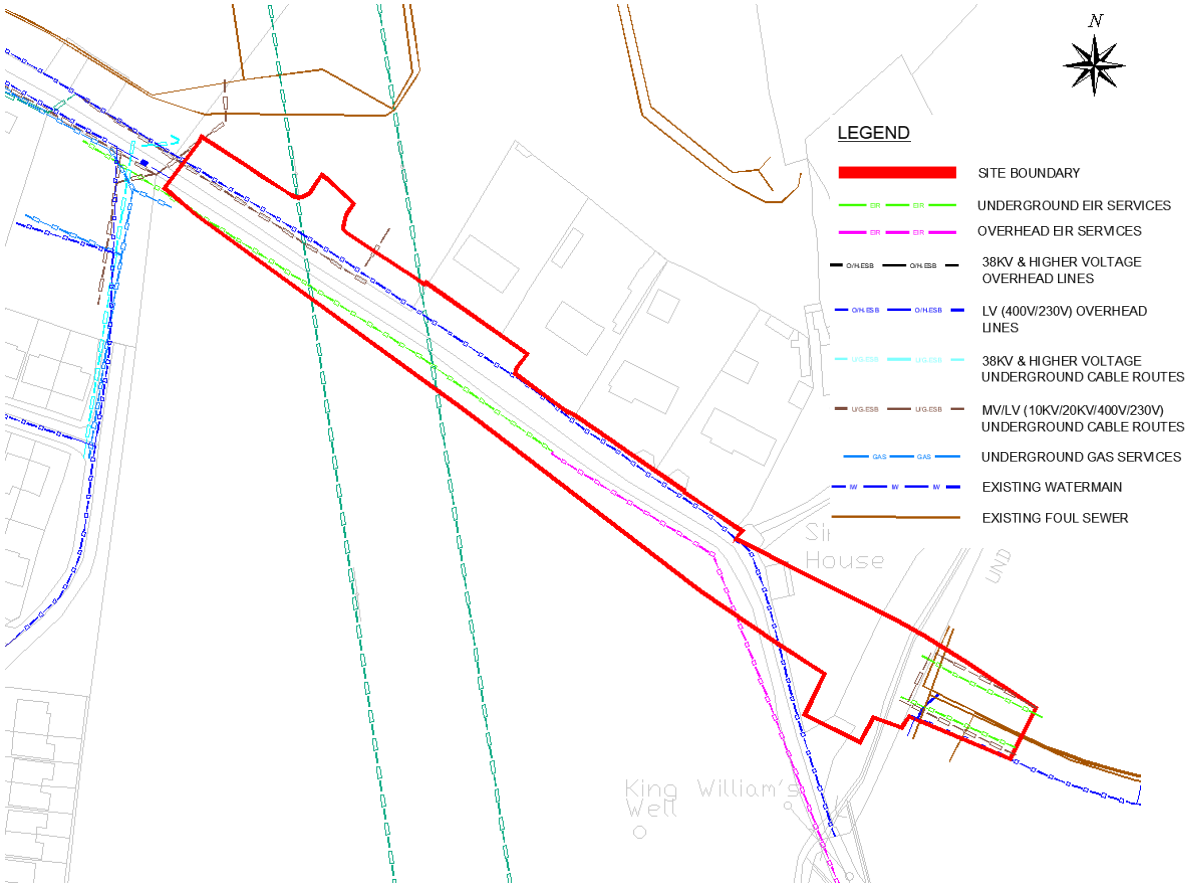


Figure 2.1 Existing site services

2.2 PROPOSED LINK ROAD PLAN

Figure 2.2 below illustrates MHL's proposed layout plan for the Bloodmill Road Extension.

Figure 2.2 Proposed Bloodmill Road Extension Layout Plan

2.3 ENVIRONMENTAL CONSTRAINTS & SENSITIVE RECEPTORS

Environmental Constraints consist of topography of the site, landscape, presence of natural watercourses (rivers, lakes,) living fisheries, geology, hydrogeology, proximity to designated sites or protected areas (SAC, NHA, SPA, ASI), nature reserves or national parks, woodlands and ecology (flora, fauna, habitats and protected species). It is apparent from having reviewed documentation and following a site visit that the obvious natural constraints on the site are:

- the presence of the Towlerton Stream at the eastern side of the site – flood risk issues, fisheries risk issue, wildlife habitat issue, risk to downstream Lower River Shannon SAC.
- proximity of site to the Lower River Shannon SAC – risk of pollution spills or contamination of water quality.
- hydrological pathway connecting the project to this Lower River Shannon SAC.
- presence of mature trees – potential habitat for bats, birds.
- presence of mature hedgerows – potential wildlife habitat.

An EIA Screening Assessment was carried out by Doherty Environmental Consultants Ltd. as part of the design process for the scheme. During the course of the EIA Screening Study, several ecological surveys were carried out on site.

The EIA Screening Assessment determined that the characteristics of the proposed development are considered not significant due to the scale and nature of the proposed road development, the characteristics and sensitivities of the receiving environment and design and standard best practice mitigation measures that will be implemented as part of the construction phase and operation phase of the proposed development.

The sensitive receptors in the vicinity of the proposed development are summarised and the potential impact/mitigation are seen in the Table below.

Sensitive Receptor	**Location/ Potential Impact**
Watercourses	Mitigation measures should be put in place to avoid impacting the Towlerton Stream and Groody River which provide a hydrological pathway to the Lower Shannon SAC. Onsite works will also involve ground clearance, re-profiling, groundworks and construction, with potential for runoff, dust, light and noise impacts that could impact on the biodiversity and/or water quality of the Towlerton Stream and Groody River. SUDS measures will be implemented as part of the detail design of the scheme. It is proposed that surface water runoff from the completed road will pass through a hydrocarbon interceptor and attenuation tank before being discharged to the Towlerton Stream.
Residents	A section of the site is bounded by a number of residential dwellings. Mitigation measures should be put in place to avoid impacting the residents during the site clearance and construction phase of the project.
Terrestrial Fauna and Flora	The potential impact on Fauna and flora within the site as outlined in the EIA Screening study and mitigation measures should be put in place to minimise impact during construction.
Birds	All areas. Clearance of the site, particularly the mature trees and scrub area in the site will result in the loss of nesting habitat. Subsequent planting should be supplemented with bird boxes.

Bats	All areas. Clearance of the site, removal of trees and hedgerows. Mitigation measures may include a pre-construction bat survey and measures to protect bats during site clearance, if individuals are found on site.

Table 2.1 Sensitive Receptors/ Potential Impact

3 PROJECT ORGANISATION AND RESPONSIBILITIES

The main contractor for the construction of the new road is to be confirmed. Any changes to these details during the proposed works will be notified to Limerick City & County Council and amended on-site. The following tables will need to be populated as part of the Project CEMP and placed in a prominent location, accessible to the general public and site staff.

Contractor Contacts

Position Title:	Name:	Phone:	Email:
Project Manager			
Construction Manager*			
Environmental Manager*			
Safety (PSCS)*			
Safety Officer*			
Site Emergency Number*			

**24 hour contact details required*

Employer Contacts

Organisation:	Position:	Name:	Phone:	Email:
Safety (PSDP)	Overall Project PSDP			
Employers Public Liaison Officer	Project Liaison Officer			
Employers Ecologist	Project Ecologist			
Employers Archaeologist	Project Archaeologist			

Third Party Contacts

Organisation:	Position:	Name:	Phone:	Email Address:
Inland Fisheries Ireland				
National Parks and Wildlife Service				
Environmental Protection Agency				
Local authority				
Department of the Environment, Heritage and Local Government				
Health and Safety Authority				
Emergency Services				
Other, as appropriate.				

3.1 CLIENT PROJECT MANAGER RESPONSIBILITIES:

- Review and approve the Contractor's CEMP together with any specialist procedures and identify the need for any improvements.
- Identify the competence of all contractors to be employed for the works.
- Review construction method statements with regard to environmental aspects and advise and agree any suggested improvements prior to works commencing.
- Provide main contact between Contractor and Client's project team on environmental and construction issues.

On appointment, the Main Contractor is to confirm the names of Contracts Manager and Site Manager.

3.2 CONTRACTS MANAGER RESPONSIBILITIES:

- Develop and review the CEMP, construction method statements, work instructions and other specialist procedures.
- Identify competence requirements for all staff and ensure delivery of training to the project team.
- Review and agree method statements for all environmental aspects of project works prior to works starting with client Project Manager.
- Monitor construction activities to ensure that identified appropriate control measures are effective and ensure compliance with the CEMP.
- Act as a main point of contact between the regulatory authorities and the project on all issues.
- Provision of advice and liaison with subcontractors to ensure that risks are identified, and appropriate controls developed, which are identified within method statements.
- Assist with the development and undertaking of training for site staff.
- Liaison with the Client Project Manager.

3.3 SITE MANAGER RESPONSIBILITIES

- Assist the contract manager in developing and maintain the CEMP together with other documentation.
- Monitor construction works to ensure necessary control measures are in place and meet requirements of the CEMP.
- Carry out weekly site inspections and complete inspection report identifying any actions required.
- Maintain training register and provide training where necessary.
- Assist in responding to complaints.
- In the event of an environmental incident, advise Contracts Manager and Client Project Manager immediately, confirm their instructions and ensure correct procedures are adhered to.
- Provide information on waste management/reduction procedures to relevant staff.
- Implementation and operation of environmental controls on site.
- Respond to any minor environmental incidents on site, such as spills.

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

Figure 3.1 Personnel: Roles and Responsibilities

4 PROJECT COMMUNICATION AND COORDINATION

Periodic meetings will be held between the team members to discuss performance to date, the need for improvements (if any), results of inspections and any complaints received. Upcoming work operations will be reviewed in order to plan any necessary actions to mitigate risks and to disseminate information on best practice. If necessary, representatives of the Statutory Authorities may also be invited to attend such meetings, as and when required.

4.1 OPERATION CONTROL

Site works will be checked against the CEMP requirements. Any mitigation measures that have been agreed with the Statutory Authorities, or are part of the planning conditions, will be put into place prior to the undertaking of the works for which they are required, and all relevant staff will be briefed accordingly. Method statements that are prepared for the works will be reviewed/approved by the Client Project Manager.

4.2 CHECKING AND CORRECTIVE ACTION

Daily inspections of the site and the works will be undertaken to minimise the risk of environmental damage and to ensure compliance with the CEMP. Any environmental incidents are to be reported immediately to the Site Manager. The Contracts Manager will undertake weekly/fortnightly inspections as appropriate and complete an assessment of the project's performance with regard to the relevant standards/legislation and the contents of the CEMP. Following these inspections, the Manager will produce a report detailing the findings which will be provided to the Client Project Manager and reviewed at the fortnightly project meeting. The Client Project Manager will carry out weekly inspections of the works in addition to attending the fortnightly project meetings and will be present on site for certain key operations, e.g. decommissioning and removal of existing fuel tanks, installation of sheet piling for fuel/ attenuation tanks excavation and initial dewatering of same, installation of new fuel/attenuation tanks, air pressure testing of fuel tanks and lines, vacuum testing of tank/duct ground chambers, new service connections, review of building foundation ground, initial fuel delivery to new tanks, initial power up of site, etc.

4.3 ENVIRONMENTAL INCIDENTS / COMPLAINTS PROCEDURE

In the event of an environmental incident, or breach of procedure, or where a complaint is received, the contributing factors are to be investigated, and remedial action taken as necessary. The main contractor will ensure that the following response actions will take place:

- The Project Manager must be informed of any incident, breach of procedure and/or complaint received, and details must be recorded in the incident/complaint register
- The Project Manager is to conduct/co-ordinate an investigation to determine the potential influence that could have led to the non-compliance.
- The Project Manager is to notify and liaise with the appropriate site personnel where required,
  e.g. Site Environmental Manager, Project Ecologist Project Archaeologist
- If necessary, the Project Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.

- The details of the incident will be recorded on an Incident / Complaints Form which is to record information such as the cause, extent, actions and remedial measures used following the incident/complaint. The form will also include any recommendations made to avoid re-occurrence of the incident.
- The Project Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.
- The Site Project Manager is to ensure that the relevant environmental management plans/procedures are revised and updated as necessary.

4.4 ENVIRONMENTAL TARGETS AND OBJECTIVES

Targets:

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

Reporting Specific Objectives:

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

Site Specific Objectives:

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

5 POTENTIAL IMPACTS

The proposed road extension as mentioned will involve the removal of some of the existing hedgerows adjacent to Bloodmill Road, the construction of road embankments, the construction of a bridge culvert, road corridor construction and associated services. The new bridge culvert will cross the Towlerton Stream and as such there is potential for negative impacts on the Lower River Shannon SAC. As noted in the EIA Screening, standard best practice mitigation measures will be implemented as part of the construction phase and operation phase of the proposed development to reduce the likelihood of any negative impacts on the Lower River Shannon SAC.

5.1 CONSTRUCTION IMPACTS

This Outline CEMP has been prepared to outline the construction and operation phase mitigation measures in addition to detailing the potential impacts on sensitive receptors within the Zone of Influence (ZOI) and to designated conservation sites including the Lower River Shannon SAC downstream of the proposed road. The construction of the proposed road would potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance (including the removal of mature trees and hedgerows), placing and compaction of road embankment and the construction of the road corridor.

Runoff from the site during construction could impact on the Towlerton Stream and Groody River, with water quality or downstream/upstream impacts. Impacts on the Groody River would be seen as the primary vector for impacts on Lower River Shannon SAC. Ensuring water quality and compliance with Inland Fisheries Ireland procedures/ conditions and the Water Pollution Acts would be seen as the primary method of ensuring no significant impact on designated conservation sites.

The proposed works will be carried out based on best practice mitigation procedures, including the prevention of silt and or pollutants entering watercourses. In addition, the project will have to comply with SUDS, Limerick City & County Council requirements and the provision of additional measures such as hydrocarbon interceptors and silt interception. Standard construction phase and operational controls in relation to onsite drainage will be in place and no impact is foreseen in relation to designated conservation sites.

5.2 TERRESTRIAL ECOLOGY

Common mammalian species.
Loss of habitat and habitat fragmentation may affect some common mammalian species on the site.
Amphibians and reptiles.
Loss of open watercourses may affect amphibians and reptiles on the site.
Bat Fauna.
A bat survey may be required to consider the impact of the removal of the existing trees in advance of construction stage works.

5.3 OPERATIONAL IMPACTS

All storm water generated on the upgraded road surface will be collected in roadside drainage gullies and conveyed in a new surface water drainage pipe network. All road gullies will have silt traps for the collection of debris. The drainage pipe network will pass through a large silt trap chamber, hydrocarbon interceptor chamber and a 220m^3 attenuation tank before out falling to the Towlerton Stream.

The development must comply with Limerick City & County Council requirements and the Water Pollution Acts and measures will be in place to prevent downstream impacts. No significant impacts on designated sites are likely.

6 ENVIRONMENTAL CONTROL MEASURES

6.1 PRE-COMMENCMENT ACTIVITIES

Before works commences a number of preparatory activities will be carried out. The following key works will be undertaken as part of the site preparation and pre-development activities:

Pre-Commencement Surveys:

- Prior to any commencement of any physical works, a professional land surveyor shall be appointed to carry out demarcation works and establish bench-marks on site. Upon obtaining all the necessary survey data, a joint survey to check existing ground levels shall be carried out with the consulting engineers.
- Any detailed ground investigations required to support the site regrading process will be carried out and finalized.
- Any necessary pre-commencement environmental surveys.

Enabling Works:

- The initial enabling works, to be carried out in accordance with the Project specific CEMP (Traffic Management, control of surface water, storage of materials etc.), will be site clearance and diversion of the existing open watercourses.
- This will be followed by bulk excavation works in the area designated for the compound. These works will create a level platform, accessible from the main spine road, upon which the site compound and materials storage area will be constructed.

6.2 CONSTRUCTION PHASE TRAFFIC

In order to mitigate the impact of construction traffic during network peak hours, a Traffic Management Plan will be developed and implemented by the Contracts Manager.

This plan will focus on the:

- Co-ordination of car parking for construction personnel.
- Implementation of 'just in time' contract plant hire.
- Restriction of unnecessary vehicle movements during the day.
- Co-ordination of deliveries to arrive outside of peak times where appropriate.

6.3 AIR QUALITY

No specific mitigation, other than adopting best construction practices are proposed with regard to air quality. The CEMP will ensure that measures are in place to minimise dust during construction activities, during drier periods and earth works operations.

The Contractor shall take all necessary steps to control dust caused by construction traffic. This will include measures such as:

- Wetting of internal haul road and storage areas;
- Covering or dousing of any dry, imported or excavated material;
- Reducing the duration for stockpiling in fill materials;
- Use of a wheel-wash for construction traffic.

6.4 AIR QUALITY

The Contractor shall comply with the general recommendations set out in the Code of Practice BS 5228: "Noise Control on Construction and Open Sites" together with the specific requirements described below.

The Contractor shall employ the "best practicable means" to minimise noise and vibration from the site and compound and shall pay particular attention to the selection of the most appropriate available plant to ensure that neighbourhood noise (as defined in BS 5228 Part I, Section 3) is kept to a minimum.

All vehicles and mechanical plant used for the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order. In addition, all diesel engine powered plant shall be fitted with effective air intake silences.

The noise level limits within the Site shall be as per Table 6.1 below.

Assessment Category & Threshold Value Period (L_{Aeq})	Threshold Value, Decibels (dB)		
	Category A [A]	Category B [B]	Category C [C]
Night-Time (23:00 to 07:00hrs)	45	50	55
Evenings & Weekends [D]	55	60	65
Daytime (07:00 - 19:00) & Saturdays (07:00 - 13:00)	65	70	75

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.

D) 19:00 - 23:00 weekdays, 13:00 - 23:00 Saturdays and 07:00 - 23:00 Sundays.

Figure 6.1 Noise Levels

All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic overs which shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.

Machines in intermittent use shall be shut down in the intervening periods between work.

All ancillary plant, such as generators and pumps, shall be positioned so as to cause minimum noise disturbance. If operating outside the normal working week, acoustic enclosures shall be provided.

Vibration during construction operations is unlikely to be perceptible at any of the nearby vibration sensitive receptors due to their distance from the site. It is however,

recommended that construction vibration levels are subject to a watching brief with vibration measures taken as necessary.

7 CONTROL OF WATERCOURSES, GROUNDWATER

7.1 WATER MANAGEMENT & POLLUTION

Groundwater precautions will be taken prior to and during construction to ensure the protection of watercourses and groundwater against pollution. The measures would be informed by the site investigation works discusses above and also by CIRIA Report 532 'Control of Water Pollution from Construction Sites' and Environment Agency Pollution Prevention Guidelines, principally PPG6 - 'Working at Construction and Demolition Sites'.

The location of the road extension will involve the construction of a bridge culvert on the Towlerton Stream, and particular care will need to be taken to ensure that construction of the culvert does not result in pollutants entering the stream.

7.1.1 In Stream Works

It is expected that the Towlerton stream will need to be diverted locally around its current course in order to put the new culvert in place. A new course will be excavated for the stream in the ground to the west of the proposed new link road crossing point. See proposed stream diversion layout in Figure 7.1 below. This stream diversion will be temporary, and its construction methodology will be subject to agreement with Inland Fisheries Ireland. Once the excavation works for the stream diversion are completed and all bank and bed finishes are in place, the downstream embankment opening will be made first and then the upstream embankment will be opened to allow the waters flow through the diversion. The existing river channel will be damned using sandbags. Once the riverbed has dried out at the proposed culvert location the foundations and ground will be prepared to receive the new concrete culverts. These will be lifted into position in 2m precast unit lengths. The culvert units will be lifted into position and placed one by one. The backfill and surrounding fill to the culverts will be completed to formation level of the road. Once the newly placed culvert joints are dried and cured, the river will be re-diverted from the temporary loop through the completed culvert again by removing the temporary coffer dams. Using this approach there will be continued flow along the Towlerton Stream at all times during the bridge replacement works. All cofferdams, or other structure installed within the channel, to allow working in dry conditions will be designed by a competent person, be constructed of appropriate materials and take account of site conditions (i.e. depth of water, available space, bed substrate, flow velocities, flow patterns, duration of works, accessibility and potential ingress of water). During any working with cofferdams the following methods will be adhered to:

- The cofferdam will be inspected daily for any movement, leakage and general deterioration; any defects found will be remedied immediately.
- De-watering of the coffer dam may be required in order to maintain dry working conditions. Any water being pumped from the coffer dam will not be discharged directly into the Towlerton.
- Before removal of the cofferdam at completion of the works all materials, debris, tools, plant and equipment will be removed from the work area.
- The de-watered area will be re-watered before the cofferdam is removed to avoid the sudden ingress of water which may cause erosion of the replaced substrate.

- When re-watering is undertaken, the pump inlets will be screened appropriately to prevent the intake of fish or other aquatic animals.

- IFI's guidelines and advise will be followed right through the process. For example, any existing fish population may need to be removed by stunning and placed downstream before the commencement of the river diversion works to avoid fish kills.

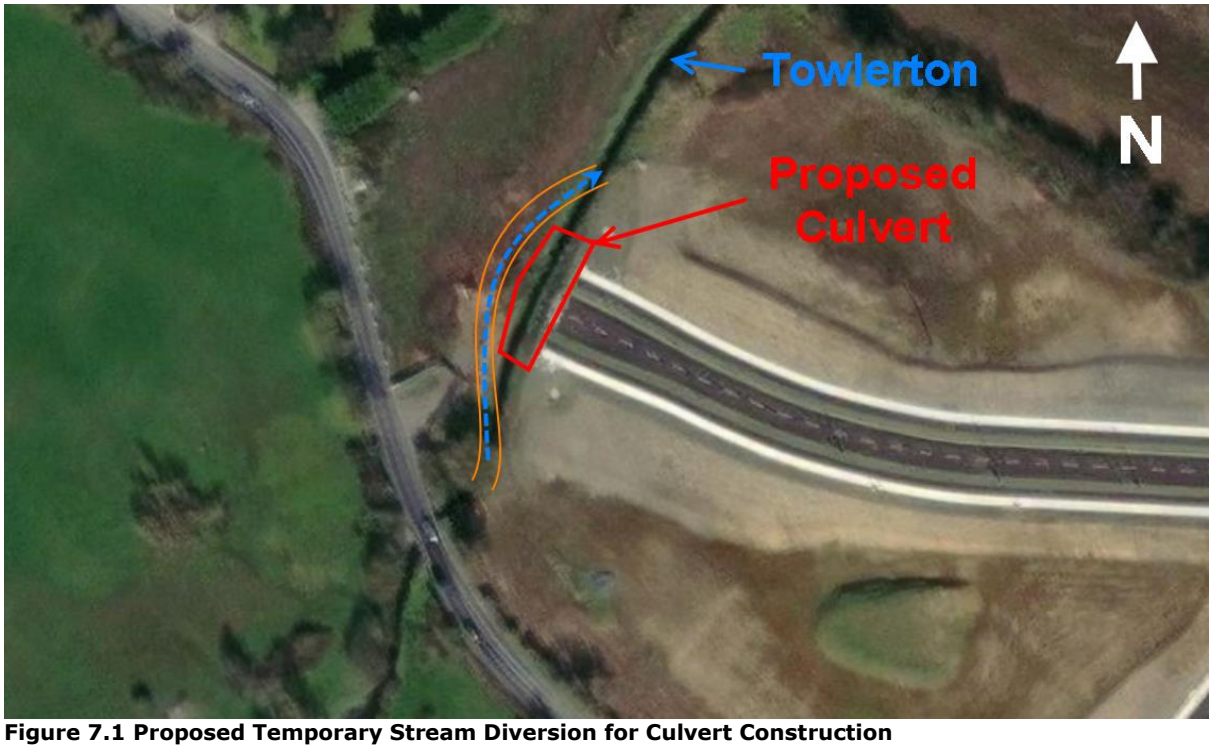


Figure 7.1 Proposed Temporary Stream Diversion for Culvert Construction

8 CONSTRUCTION SCHEDULE

It is proposed that there will be several phases of construction.

8.1.1.1 Phase 1(a)- Site Set Up

Set up of a site office, hoarding to site perimeter to secure the construction site and erection of signage for site security and safety purposes. The provision of temporary welfare facilities will be provided close to the site office location. The welfare facilities will be portable type as there is no existing foul sewer network.

8.1.1.2 Phase 1(b)- Construction of the Bridge Culvert

The placing of the new culvert will take place ahead of construction of the new road and widening of the existing road.

8.1.1.3 Phase 1(c)- Excavation of Attenuation Tank

The proposed attenuation tank will be excavated to facilitate the attenuation of surface water from the proposed road. Hydrocarbon interceptor and silt traps to be put in place.

8.1.1.4 Phase 2(a)- Removal of topsoil under road corridor (New Road Section)

The topsoil under the proposed new section of road corridor will be removed. It is envisioned that topsoil will be stockpiled on-site in a designated area for re-use.

8.1.1.5 Phase 2(b)- Importation and compaction of road embankments (New Road Section)

Fill material will be required to construct the new road embankments. This phase of construction will involve the importation of fill material via truck and the placement/compaction of the fill material using excavators. The fill for the new section of road will firstly be placed and compacted.

8.1.1.6 Phase 2(c)- Road construction (New Road Section)

This phase will involve the installation of ancillary road services (drainage, public lighting ducts, utility ducts) and the construction of the road carriageway, kerbing, footpaths, cycle tracks and verges.

8.1.1.7 Phase 3(a)- Site Clearance to Facilitate Road Widening

Site clearance will include removal of the existing trees and hedgerows along the existing Bloodmill Road to facilitate widening and realignment of the road.

8.1.1.8 Phase 3(b)- Importation and compaction of road embankments (Widening of Existing Road)

This stage will involve the importation of fill material via truck and the placement/compaction of the fill material using excavators to facilitate the widening of the existing Bloodmill Road.

8.1.1.9 Phase 3(c)- Road construction (Widening of Existing Road)

This phase will involve the installation of ancillary road services (drainage, public lighting ducts, utility ducts) and the construction of the road carriageway, kerbing, footpaths, cycle tracks and verges.

8.1.1.10 Phase 4(a)- Installation of public lighting columns and road signage

This phase will involve the installation of public lighting columns, road signage and street furniture.

8.1.1.11 Phase 4(b)- Landscaping

Prior to the link road opening, all tree planting, verge planting and embankment planting will be carried out.

9 SITE COMPOUND/PUBLIC ROAD

The construction compound will be located on one of the new, unused serviced sites within the new development park to the east. These sites are well buffered (i.e. a minimum of 200m) from the Towlerton and any other watercourses.

The developer constructed section of Bloodmill Road will provide ideal access for construction traffic and construction staff as it is a newly constructed road that only services a new school and potentially other sites under construction adjacent to the road.

It will be the responsibility of all vehicle owners/operators to inspect their vehicles before they leave the site for stones or other debris caught in their tyres. Unauthorised entry to site will not be permitted and will be managed by a security company for entire construction period.

10 PROPOSALS FOR MINIMISATION, REUSE AND RECYCLING OF (C&D) WASTE AND ENVIRONMENTAL MITIGATION MEASURES

C&D waste will arise on the project mainly from excavation activities. It is expected that there will be unavoidable construction waste, material surpluses and damaged materials that will need to be disposed of. The developers shall ensure that materials are ordered so that the quantity delivered, and the storage is not conducive to the creation of unnecessary waste.

Where possible, construction works will employ prefabrication techniques, thereby minimising onsite waste in favour of an optimised industrial process with established recycling and waste minimisation procedures.

Excavated soil/stone will be carefully stored in segregated piles on the site for subsequent re-use within the development where it is deemed acceptable by the site Engineer to do so. Any hydrocarbon-contaminated soils encountered during construction works shall be set aside on a strong durable polythene sheet for testing and classification prior; to disposal to a licenced facility. Whilst it is not anticipated that there will be excess material, where excess should arise it will be removed from site to a suitable permitted C&D disposal site.

Concrete waste resulting will be minimal and will be generated from the construction process. This waste will be source segregated and will either be stored in piles for further processing on site or will be used as lean-mix in conjunction with hard-core fill. Where necessary, it is intended that hardened concrete waste will be crushed on site with the resulting aggregate being used as part of the hard-core fill (not used as fill under the building or footpaths). As any concrete waste will be the excess left as a result of ordering, there will not be any reinforcing steel to recycle.

Masonry waste resulting from the construction process will be source segregated and will be stored in piles for further processing on site.

Wood material generated as part of the site clearance will be minimal and will be source segregated for subsequent separation and recovery at a remote facility.

10.1 HAZARDOUS WASTES

The management of hazardous waste will comply with current legislation.

- The Waste Management Acts (WMA) 1996 to 2005
- Waste Management Regulations 1998

Hazardous waste which may be encountered on site/include:

- Waste oils or fuels
- Soils contaminated with waste oils or fuels
- Soils contaminated with septic tank runoff
- Used aerosol containers

Hazardous wastes will be kept from other C&D waste materials in order to avoid further contamination and will be stored on site in suitable receptacles for subsequent separation and disposal at a suitable permitted remote facility. Other C&D waste

materials will be collected in receptacles with other mixed C&D waste materials for subsequent separation and disposal at a remote facility. Packaging will be source separated for recycling and return to the suppliers.

Excavation soil and C&D waste derived aggregates are considered suitable for certain on-site construction applications.

Any waste materials resulting from excavation work that cannot be reused on site will have to be moved off site. It is intended to engage specialist waste service contractors, who will possess the requisite authorisations, for the collection and movement of waste off-site, and to bring the material to a facility which currently holds a Waste Permit.

10.2 SEGREGATION OF WASTE ON SITE.

The C&D WSA will have skips and receptacles for all recyclable wastes. The appointed waste contractor will collect and transfer the recyclable wastes as receptacles are filled. The non-recyclable waste will be transferred by an authorised waste collector to an appropriate facility. There are numerous waste contractors in the Limerick region who carry out this operation.

A successful C&D Waste Management Plan is largely dependent on how readily it can be integrated into normal site operations by the person responsible. It is recognised that the plan should not be obstructive to site operations and the construction programme by placing the responsibility of construction waste management with the Manager. All reuse, recycling, wastage and necessary disposal can be monitored as close to the source as possible. An Environmental Representative from each Works Sub-Contractor will also be nominated responsible for all waste management in their own operations. In this way, it is possible to identify where the greatest material waste occurs, with a view to implementing better management, both in this and future projects.

The site Construction Manager will be designated as the Responsible Person and have overall responsibility for the implementation of the on-site C&D WMP. The Responsible Person will be assigned the authority to instruct all site personnel to comply with the specific provisions of the plan. At the operational level, a nominated Environmental Representative from each subcontractor company on site shall be assigned the direct responsibility to ensure that the discrete operations stated in the C&D WMP are performed on an on-going basis.

10.2.1 Bedrock, Block & Concrete

Most of the C&D waste will be clean, inert material and it is proposed to reuse it for construction purposes, where possible. If bedrock is encountered during excavations, it will either be crushed on-site and used for infill during construction or be removed from the site by appropriately permitted waste collectors. Rock recovered from the site will be recovered at an authorised site locally.

10.2.2 Soil/Subsoil

Excess inert oils and sub-soils excavated that is not required for use as fill on site will be recovered off-site. Soil will only be removed by authorised waste collectors to an

authorised site. Any fill material excavated at the site, which is deemed to be contaminated (i.e., non-hazardous or hazardous) will be stored separately to the inert material, sampled and tested, in order to appropriately classify the material as on-hazardous or hazardous in accordance with Council Decision 2003/33/EC10, which establishes the criteria for the acceptance of waste at landfills before being transported to an appropriately authorised facility by permitted contractors.

10.2.3 Plastic

As plastic is now considered a highly recyclable material, much of the plastic generated during construction will be diverted from landfill and recycled. The plastic will be segregated at source and kept as clean as possible and stored in a dedicated skip.

10.2.4 Timber

There will be timber waste generated from the construction work as off-cuts, or damaged pieces of timber. Timber that is uncontaminated (i.e. free from paints, preservatives, glues, etc.) will all be recycled. It will be collected on-site in a designated area, and collected by a timber recycling company, or a recycling company that will pass it on to a timber recycling company. Such companies shred the timber and use it in energy recovery or for manufacture of wood products or for landscaping woodchips, etc.

10.2.5 Scrap Metal

Steel is highly recyclable material and there are numerous companies that will accept waste steel and other scrap metals, (Limerick Metals). A segregated skip will be available for steel/ metal storage o-site pending recycling.

10.2.6 Cardboard packaging

Cardboard packaging can be also can also be recycled. Cardboard will be flattened and placed in a covered skip to prevent it getting wet.

10.2.7 Plasterboard

Waste gypsum can be recycled into plaster new plasterboard. Ask it will be provided for the separate collection of waste plasterboard and collected as necessary.

10.2.8 Tracking and documentation procedures for on-site waste

The ways manager will maintain a copy of all waste collection permits. If waste (soil and stone) is being accepted on site, a waste docket must be issued to the collector. If the waste is being transported to another site, a copy of the waste permit or EPA waste licence for that site must be provided to the waste manager. If the waste is being shipped abroad, a copy of the trans frontier shipping TFS document must be obtained in Limerick City & County Council as this is the relevant authority on behalf of all authorities in Ireland and kept on site along with details of Final Destination (permits, licenses, etc). As well as a waste collection doctors, receipt from the final destination of the material will be kept as part of the on-site waste management records. All

information will be entered in the waste management system to be retained outside maintained on site.

10.2.9 Disposal of C&D waste

There will be a general skip or receptacle for C&D waste not suitable for reuse or recovery. This skip will include general way wet waste mixed food waste and food packaging, contaminated cardboard, contaminated plastic, etc. Workers on site will be encouraged to recycle as much municipal waste as possible, i.e., cardboard, plastic, metal, and glass. Prior to removal the municipal waste receptacle will be examined by the four person or a member of his or her team to determine if recyclable materials have been placed in there. If this is the case effort will be made to determine the cause of the waste not being segregated correctly.

11 SURFACE WATER PROTECTION MEASURES

- All storm water discharge during construction will be discharged through a mobile oil filter separator system, until construction programme has reached the stage when surface water discharges can be passed through a newly installed attenuation tank and hydrocarbon interceptor. From there the runoff will discharge via a hydro-brake flow control device into the Towlerton Stream.

- A method statement will be implemented for the cleaning and maintenance of the proposed storm drainage system during the operational phase. The OMS will specify that the two oil interceptors are cleaned twice yearly, and that the attenuation system is desludged biannually. Both frequencies can be increased if site operations deem it necessary.

- A foul water sewer may be constructed under the proposed new road to allow connections to future housing developments. The proposed storm network will be inspected following construction to ensure that no cross connection between the proposed foul system and storm network exists.

- The storm drainage system will be cleaned appropriately, and the entire system will be inspected prior to being fully commissioned i.e. before being allowed to accept any drainage runoff and/or discharge to the existing canal/stream network.

- A licenced waste management company will be retained to maintain the oil interceptors and the attenuation tank initial chamber: as necessary (at least annually).

- Detailed silt control methods will be required for all in-stream works. Any works in the Towlerton Stream will require effective control of silt and it is expected that a variety of methods may be required i.e. silt curtains, dewatering, silt sumps etc.

12 WASTE AUDITING

The main contractor will be responsible for the development and the implementation of the Construction and Environmental Management Plan and monitoring/mitigation measures. The implementation and monitoring (including Roles & Responsibilities) associated with the proposed development will be detailed in the final CEMP.

The C&D Waste Manager shall arrange for full details of all movements and the treatment of construction and demolition waste discards to be recorded during the construction stage of the Project. Each consignment of C&D waste taken from the site will be subject to documentation, which will ensure full traceability of the material to the final destination to the requirements and its disposal /recycling.

Details of the inputs of materials to the construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste. Measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences that can be applied to future projects.

The total cost of C&D waste management will be measured and will take account of the purchase cost of materials (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposals, etc.

A separate table is required to be compiled in respect of each waste material replacing 'Material' with the relevant item. Final details of the quantities and types of C&D waste arising from the Project will be forwarded to Limerick City & County Council Environmental Department.

12.1 ASSIGNMENT OF RESPONSIBLITIES

A Site Manager shall be designated as the C&D Waste Manager and have overall responsibility for the implementation of the Project C&D Waste Management. The manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the operational level, Senior Foreperson from the main contractor and Site Foreperson from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Project C&D Waste Management Plan are performed on an on-going basis.

12.2 TRAINING

Copies of the project C&D 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 Project C&D Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective material reuse techniques apply, each member of staff will be given instructions on how to comply with the Project C&D Waste Management Plan.

Posters will be designed to reinforce the key messages within the Project C&D Waste Management Plan and be displayed prominently for the benefit of site staff.

13 TRAFFIC

It is proposed that the main entrance to the site during construction of the road extension will be via the existing developer constructed section of the Bloodmill Road. The site entrance for the road extension is located just 1.8km from the M7 motorway via the Groody Road and Ballysimon Road, this area of Ballysimon is an industrial/commercial zone that caters to large numbers of HGV traffic daily.

The site has excellent access to the National Road and Motorway network and as such, construction traffic is not envisaged as causing a nuisance to local residences or businesses.

Movement of vehicles to/from the site will be confined to the working hours permitted by Limerick City & County Council. The existing developer constructed section of the Bloodmill Road will be used for inward and outward deliveries. This road will provide ideal access for construction traffic and construction staff as it is a newly constructed road that only services a new school and potentially other sites under construction adjacent to the road and it has a general width of 6.5m.

Refer to Appendix 1 of this Outline CEMP for drawings BR-CMP-D01 & BR-CMP-D02 (Construction Traffic Management Plans) that indicate proposed site compound location, staff parking area and indicative haul routes to and from the site.

13.1 CONSTRUCTION DELIVERIES

All construction deliveries will take place through the existing developer constructed section of the Bloodmill Road. The site operating hours will be from 07.30 to 18.00 Monday to Friday and 07.30 to 14.00 on Saturdays and all delivery vehicles entering and existing the site will do so during these hours. Should it be necessary to work outside these hours for some specific reason, Limerick City & County Council will be consulted, and appropriate permissions received.

13.2 STAFF

It is proposed to provide a compound for staff parking within the site and no construction parking will occur on public roads. The site operating hours will be from 07.30 to 18.00 Monday to Friday and 07.30 to 14.00 on Saturdays, therefore staff traffic arriving and leaving the site will be before /after rush hour peak traffic, both morning and evening.

13.3 TRAFFIC CONTROL MEASURES

Generally, the main contractor shall ensure that all site hoardings shall in no way impinge on the existing Bloodmill Road and all delivery checks for vehicles entering the site shall be carried out inside the site. This will ensure the area outside the site entrance remains free at all times, other than during vehicle arrival/departure.

13.4 MATERIAL STORAGE

All material shall be stored in the site storage area, Refer to Appendix 1 of this Outline CEMP for drawings BR-CMP-D01 & BR-CMP-D02 (Construction Traffic Management Plan) that indicates proposed site compound location, staff parking area and indicative haul routes to and from the site.

13.5 ROAD OPENINGS

For any road openings, a road opening licence will be applied for, in which the traffic management proposal specific to that opening will be outlined and agreed with Limerick City & County Council.

13.6 ROAD SAFETY

The main contractor will organise the construction site so that vehicles and pedestrians are kept separate. Access gate personnel will ensure that the interface between deliveries and road traffic will be controlled at delivery gates. Effective management of transport operations throughout the construction process can and should prevented site vehicle incidents. By creating an off-loading area within the site boundary all offloading will be possible within the site boundary which will minimize any risk to the public.

Traffic management on site should:

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

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

14 EMERGENCY PROCEDURES

The risk of spilling fuel is at its greatest during refuelling of plant. All refuelling of major plant and equipment will take place on an impermeable surface within a designated area of the site compound. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in this area and operators will be fully trained in the use of this equipment. Diesel pumps and similar equipment will be placed on drip trays to collect minor spillages or leaks. All equipment must be checked regularly.

Fuel, oil and chemical storage will be sited within a bund of adequate capacity. The bund must be located at least 10 metres away from drains, ditches, excavations and other locations where it may cause pollution. All materials will be stored in accordance with the manufacturer's instructions.

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

15 NOISE & DUST

15.1 AIR

The principal sources of air emissions, particularly suspended particulates likely to occur from the construction site include:

- Site clearance
- Movement of construction vehicles within the site during dry, windy weather
- Soiling of the public road with subsequent dust emissions caused by passing traffic and/or in dry, windy weather
- Excavation and loading of trucks with C&D waste material

Dust emissions arise when an operation causes particulate matter to become airborne. This airborne dust is then available to be carried downwind from the source. The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to the following:

- The type and quantity of material and working method
- Climate/local meteorology and topography i.e., wind speed and direction.

Potential dust particles generated from site operations within the site are expected to comprise of large dust particulates (i.e. above 30 µm). These site operations include excavation, temporary stockpiling, loading and hauling of C&D waste. The maximum distance such particulars are likely to travel is 30 to 60m. Smaller dust particles will remain airborne for longer, thus dispersing over a wider area. Particulates below 30 µm0, and particularly below 10µm, typically only form a small fraction of dust emitted from construction sites.

The non-respirable dust fractions (i.e. >10µm) may generate a cumulative long-term impact if dust deposition outside the site boundary continues over a period of time without amelioration (eg. Staining of vegetation). Short-term impacts may occur from visible dust clouds being generated during windy dry weather events.
Respirable dust fractions (i.e. <10µm) potentially affect respiratory and cardiovascular systems. S.I. No. 271 of 2002 relating to limit values for particulate matter in ambient air indicates a 24-hour percentile (90.4%) limit value of 50pg/m3 MM10.
In dry periods it is intended to dampen down site surfaces with sprayed water to reduce and minimise dust emissions.

To avoid, reduce and /or mitigate potential dust nuisance, the contractor will introduce air emission abatement measures as follows:

- Any temporary site road will be dressed with crushed rock.
- In the event that the public road becomes soiled, the contractor will have available a sweeper to remove soil and debris promptly.
- Work areas will be sprayed during periods of dry weather in order to suppress dust migration from the site.
- Stockpiles will be sprayed during periods of dry weather to suppress dust migration from the site.
- A speed of 10kph will be enforced for all vehicles operating at the site.
- A wheel wash will be installed at the construction entrance for all delivery trucks.

15.2 NOISE

The road extension site is in an urban location with a number of residences along Bloodmill Road, adjacent to the site works. Background noise levels are expected to be elevated during daytime hours.

The principal sources of noise emissions from the site will be:
General construction activity, including HGV traffic to/from the site, use power tools, etc.

To reduce the impact of noise, the following work practices will be employed:
Working hours will be from 07.30 to 18.00 Monday to Friday and 07.30 to 14.00 on Saturdays. There will be no construction activity on Sundays or Bank Holidays

All site plant will be maintained in good working order and exhausts will be fitted with mufflers and unnecessary revving of engines will be avoided.

A speed limit of 15kph will be enforced at the site.

15.3 INVASIVE SPECIES

Prior to works commencing on site an Invasive Species Management Plan will be prepared. No other invasive species that could impact on the movement of soil on or off site were noted.

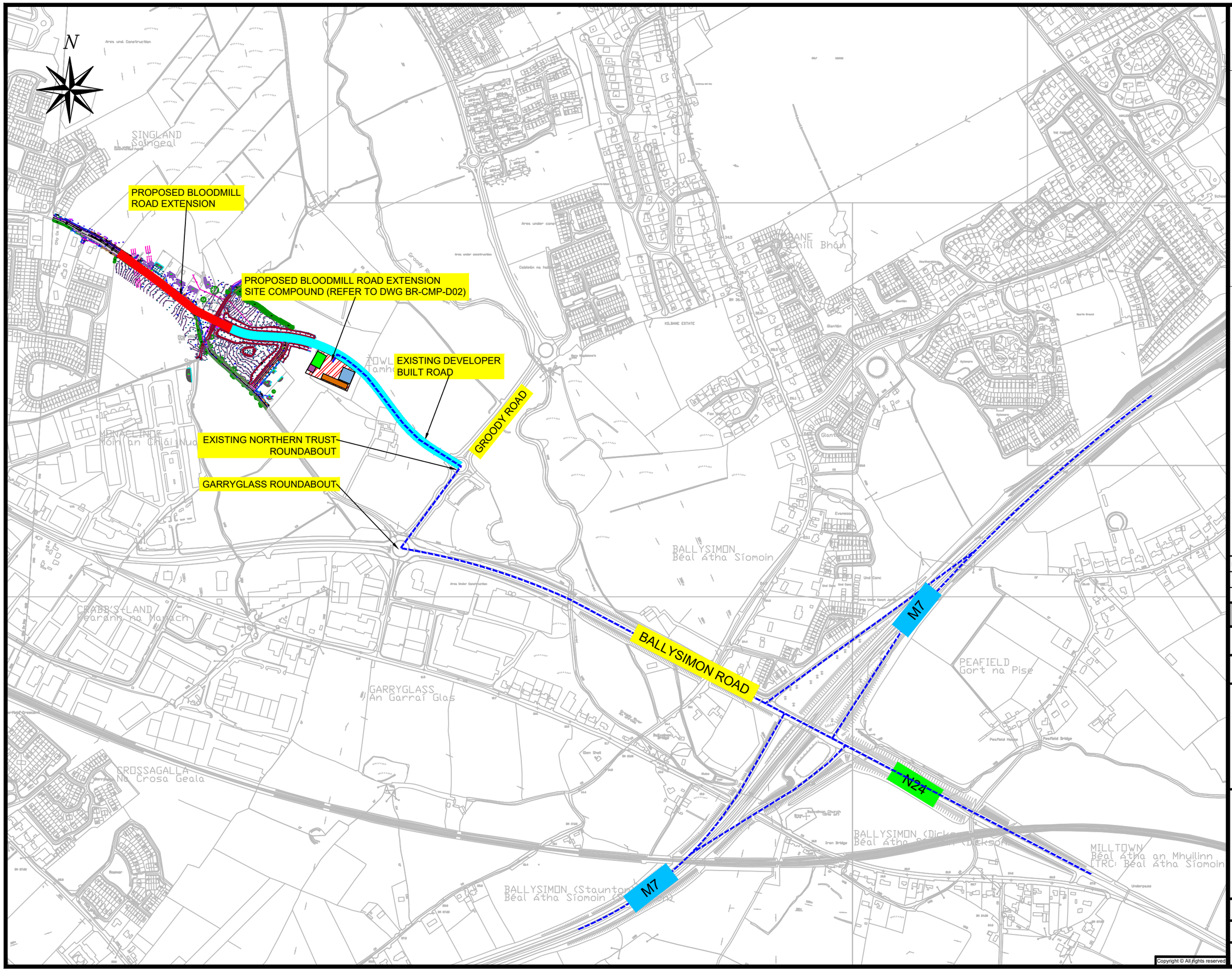
16 CONCLUSIONS

The environmental principles outlined in this outline CEMP should be adopted to ensure that potential environmental impacts and health and safety issues associated with the construction processes are effectively managed, minimised and / or eliminated.

The roles and responsibilities of the applicant, the site manager, project manager and site workers have been described and how these controls are to be implemented.

Regular updating and monitoring throughout the construction period will be required to ensure potential risks are adequately managed throughout the construction works.

17 APPENDIX 1 DRAWINGS



Notes:

Do not Scale from drawing.

For any comments, queries or discrepancies please contact the design office.

LEGEND:

- EXISTING DEVELOPER CONSTRUCTED ROAD
- PROPOSED BLOODMILL ROAD EXTENSION ROAD ALIGNMENT
- PROPOSED HAUL ROUTES TO AND FROM SITE

Rev.	By.	Date.	Description.

Drawing Status: INFORMATION

Project Title: Bloodmill Road Extension, Limerick

Drawing Title: Construction Traffic Management Plan Sheet 1 of 2

Client: Comhairle Cathrach & Contae Luimnigh / Limerick City & County Council; NTA Údarás Náisiúnta Iompair / National Transport Authority

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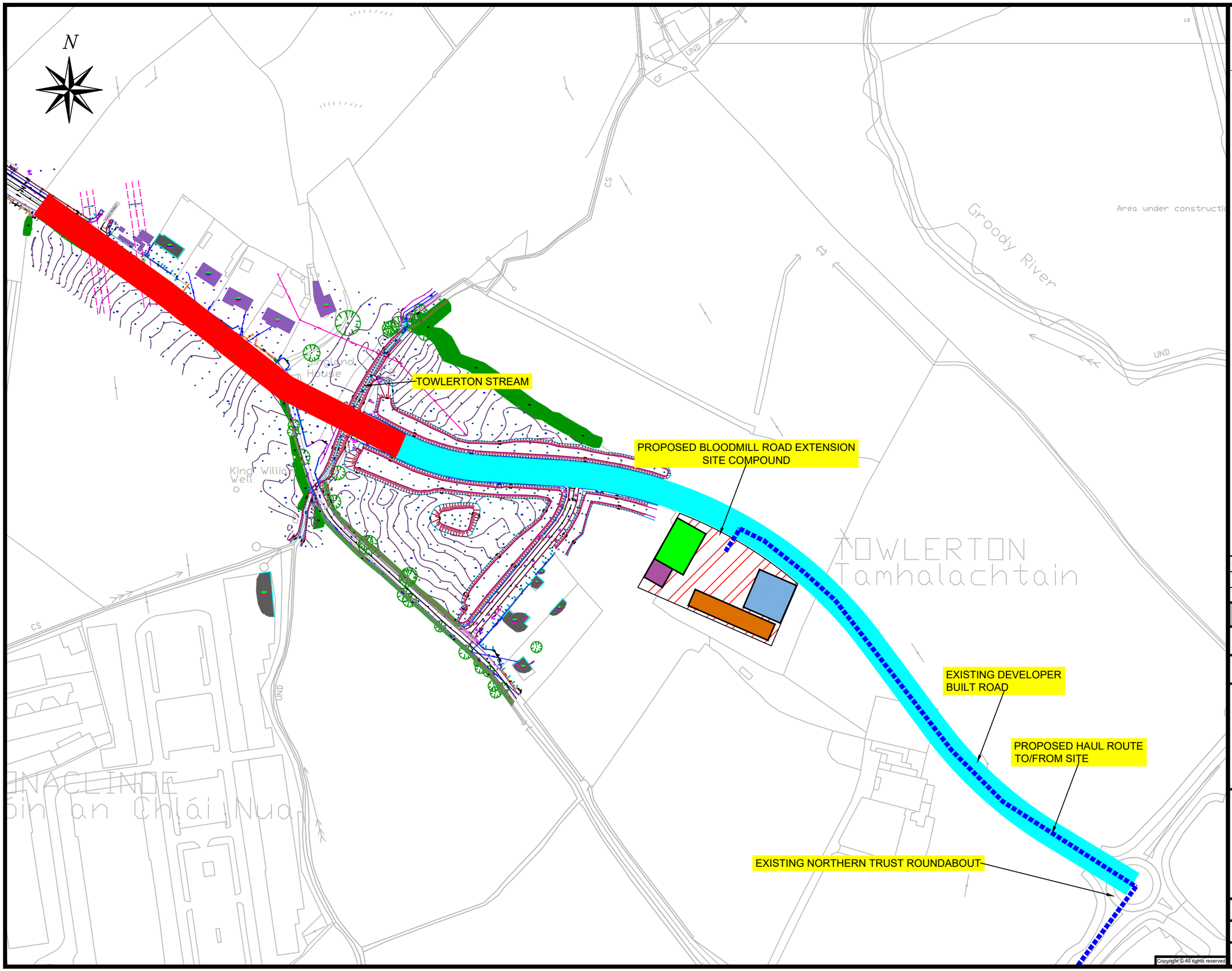

Notes:

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LEGEND:

- PROPOSED BLOODMILL ROAD EXTENSION ROAD ALIGNMENT
- EXISTING DEVELOPER CONSTRUCTED ROAD
- PROPOSED HAUL ROUTES TO AND FROM SITE
- EXCAVATED MATERIAL STOCKPILE
- STORAGE AREA
- SITE OFFICES
- STAFF PARKING AREA
- SITE COMPOUND

Rev.	By.	Date.	Description.

Drawing Status: INFORMATION

Project Title: Bloodmill Road Extension, Limerick

Drawing Title: Construction Traffic Management Plan Sheet 2 of 2

Client: Comhairle Cathrach & Contae Luimnigh / Limerick City & County Council; NTA Údarás Náisiúnta Iompair / National Transport Authority

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