Appendix 3-2

Construction Environmental Management Plan

Construction and Environmental Management Plan (CEMP)

JJ Rhatigan
Building Contractors

The Crown Square
Development,
Mervue Industrial Estate,
Tuam Road,
Mervue,
Co. Galway.

Revision No.	Date	Revision Details
Rev 01	7/06/2019	Original – "For Construction Issue"

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1. Introduction

This Construction and Environmental Management Plan (CEMP) has been developed by JJ Rhatigan & Company on behalf of our Client Crown Square Developments Limited. Planning permission has been granted for Phase 1 Works (Planning Ref 18/363, 14th March, 2019) to construct a double basement, 5nr Commercial office Blocks and Hotel on an integrated campus.

The CEMP has been updated in line with the conditions and obligations contained in the grant of permission (Planning Ref 18/363, 14th March, 2019). The CEMP due to its structure and nature will also require updating and revision throughout the construction period as set out below. Therefore, this is a working document and will be developed further during construction period of the project.

Triggers for amendments to the CEMP will include:

- When there is a perceived need to improve performance in an area of environmental impact;
- As a result of changes in environmental legislation applicable and relevant to the project;
- Where the outcomes from auditing establish a need for change;
- Where Work Method Statements identify changes to a construction methodology to address high environmental risk; and
- As a result of an incident or complaint occurring that necessitates an amendment.
- Any updates to the Construction Traffic Management Plan for the project.

This report provides the Construction and Environmental management framework to be adhered to during the pre-commencement and construction phases of the proposed development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

1.1 Scope of the Construction and Environmental Management Plan

This report is presented as a guidance document for the construction of the proposed Crown Square project at Mervue Galway. The CEMP outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner.

The report is divided into nine sections, as outlined below.

- **Section 1** provides a brief Introduction as to the scope of the report
- **Section 2** outlines the Site and Project Details, detailing the targets and objectives of this plan along with providing an overview of construction methodologies that will be adopted throughout the project.
- **Section 3** sets out details of the environmental controls on site including noise, dust and vibration controls.
- **Section 4** sets out a fully detailed implementation plan for the environmental management of the project outlining the roles and responsibilities of the project team.
- **Section 5** outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site Health & Safety and Environmental protection.
- **Section 6** consists of a summary table of all mitigation proposals to be adhered to during the project.
- **Section 7** consists of a summary table of all monitoring requirements and proposals to be adhered to during the project.
- **Section 8** sets out a programme for the timing of the works.

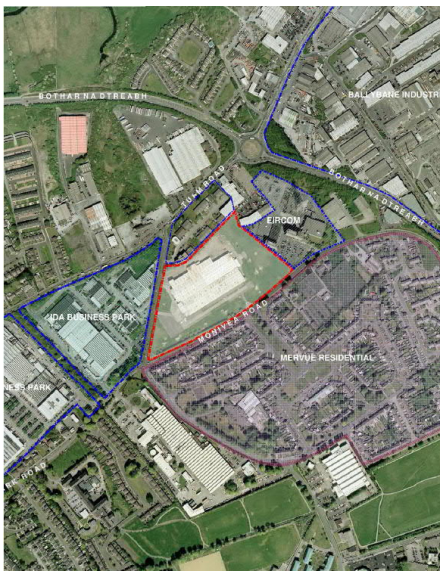
- **Section 9** outlines the proposals for reviewing compliance with the provisions of this report.
- **Section 10** – Appendix 1.0 - JJ Rhatigan Construction Stage Traffic Management Plan, Rev 01

2. Project Details

2.1 Site Location and Description

The site of the Proposed Development is located at the former Crown Equipment site at Mervue with road frontage to the Monivea and Joyce Roads. The Crown factory has been demolished.

The Mervue and IDA Business Parks as well as the Eircom telecommunications centre are immediately adjacent.

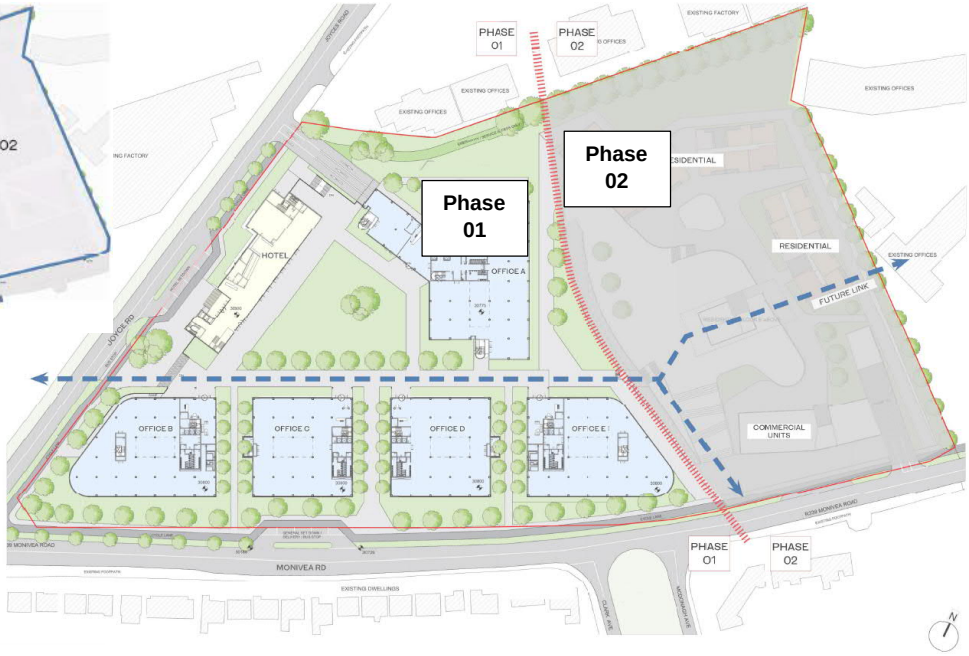


Crown Square, Galway

2.2 Description of the Development

The development comprises commercial office, technology and hotel uses on an integrated campus with residential, leisure, local service and ancillary accommodation. Phase 1 will be to the west of the site along the Monivea and Joyce Roads and includes Basement, Commercial and infrastructure works. Phase 2 will front the eastern end of the Monivea Road frontage and extend to the northern site boundary over the Phase 1 Basement level completion. Phase 2 works encompasses Residential, Leisure and local service elements.

Phasing Diagram



2.3 Targets and Objectives

In so far as they have been completed to date, or are to be further completed in future, the construction phase works are designed to approved standards, which include specified materials, standards, specifications and codes of

practice. The design of the project has considered environmental issues and this is enhanced by the works proposals.

The key site targets / objectives are as follows:

1. Ensure construction works and activities are completed in accordance with any planning conditions for the development.
2. Ensure construction works and activities have minimal impact/disturbance to the local community and businesses.
3. Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible.
4. Correct fuel storage and refuelling procedures to be followed.
5. Air and noise pollution prevention to be implemented.
6. Good waste management and house-keeping to be implemented;
7. Provide adequate environmental training and awareness for all project personnel.

2.4 Construction Methodologies Overview

2.4.1 Introduction

The appointed Subcontractors, Specialists and site personnel will be required to comply with this CEMP and any revisions made to this document for the construction phase of the proposed development. An overview of the proposed Construction Methodologies is provided below.

2.4.2 Overview of Proposed Construction Methodology

The proposed anticipated construction methodology is set out below under Phase 1 and Phase 2 works.

Phase 1

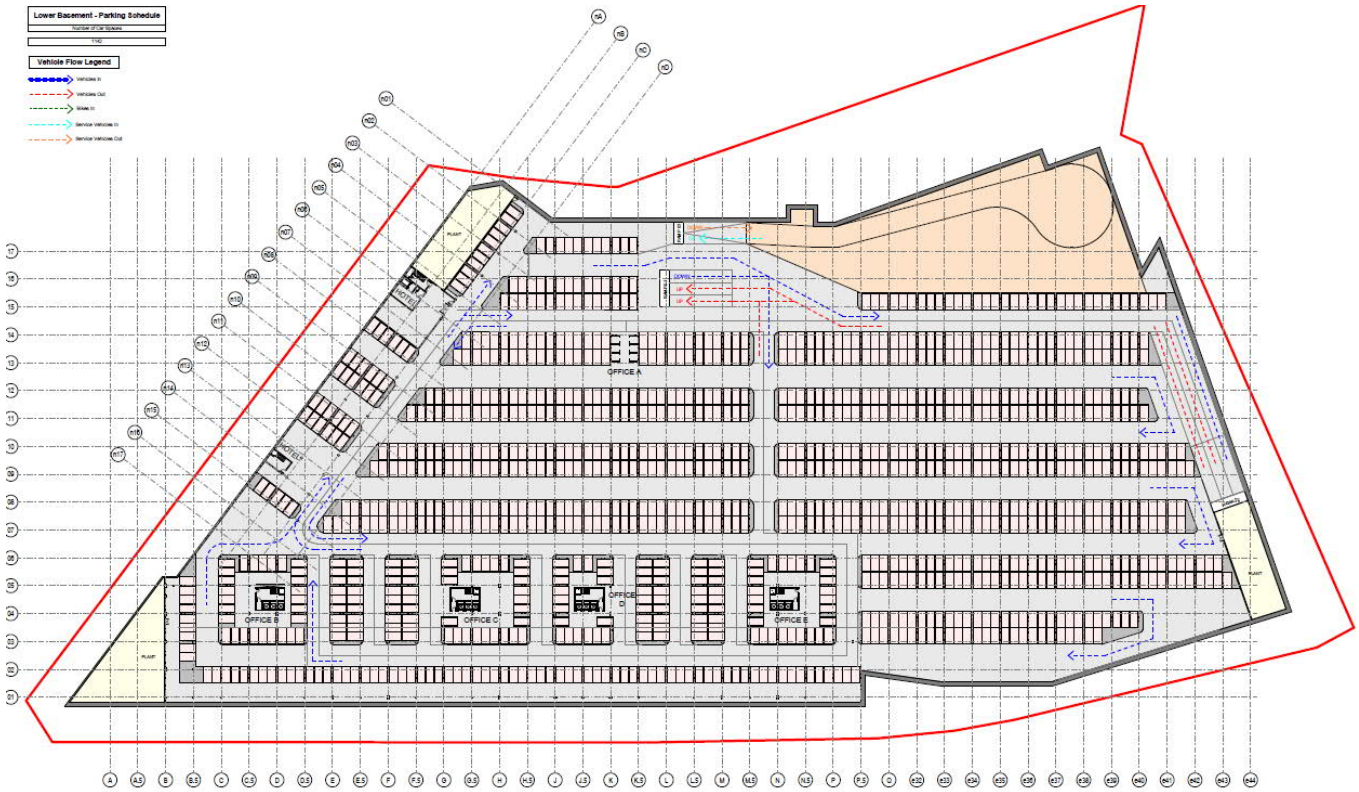
Phase 1 works includes basement level completion, office, hotel and local service elements. Key phases of construction are set out below.

- Temporary site accommodation & welfare facilities
- Final breaking/trimming of rock to formation
- Pads/foundations
- Lower basement drainage
- Lower basement slab – B2 Level
- Rising elements lower basement / upper basement
- Upper basement slab – B1 Level
- Rising elements upper basement / podium
- Podium / Ground floor slab
- Office A, B, C, D, E and hotel superstructure
- Office A, B, C, D, E and hotel façade / roof
- Boundary treatments
- Completion of vehicular access, car and cycle parking
- Office A, B, C, D, E fitout
- Hotel fitout
- Podium slab / courtyard hard/soft landscaping

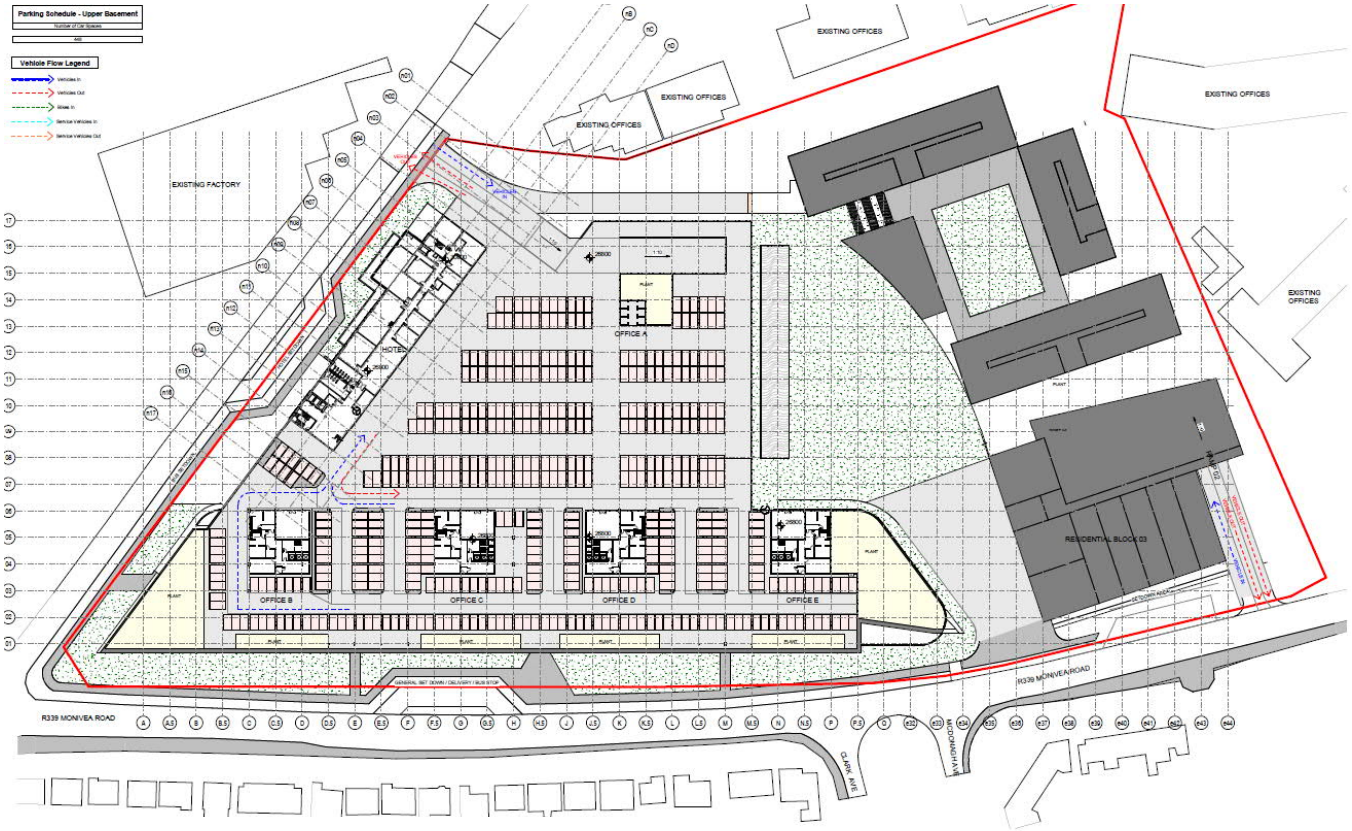
Phase 2

Phase 2 works includes B2 & B1 basement level completions, Residential Block J (South), Residential Block H (Middle) and Residential Block G (North) construction together with retail & commercial units at ground level and local service elements. Key phases of construction are set out below.

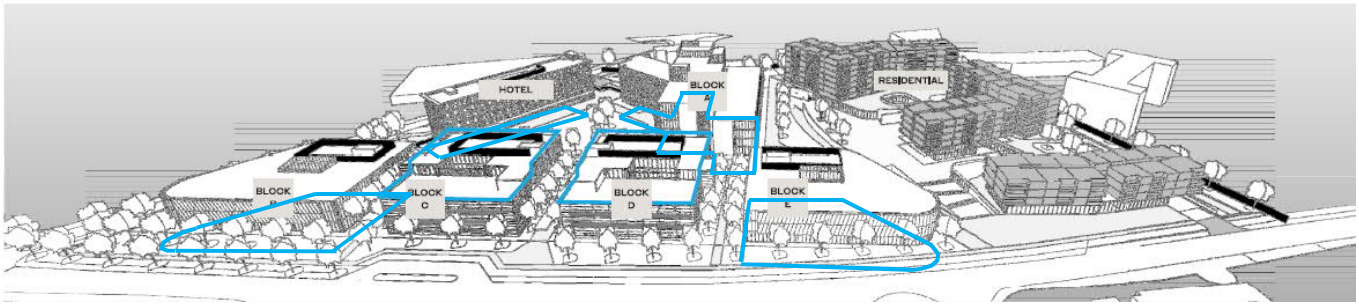
- Final breaking/trimming of rock to formation
- Pads/foundations
- Lower basement drainage
- Lower basement slab – B2 Level
- Rising elements lower basement / upper basement
- Upper basement slab B1 Level
- Rising elements upper basement / podium
- Podium / Ground floor slab
- Retail & Commercial Units at ground floor level
- Residential Blocks J, H & G superstructure
- Residential Blocks J, H & G façade / roof
- Boundary treatments
- Completion of vehicular access, car and cycle parking
- Retail & Commercial Units fitout
- Residential Blocks J, H & G fitout
- Podium slab / courtyard hard/soft landscaping



Lower Basement- Parking Layout - Car / Bikes.



Upper Basement- Parking Layout - Car / Bikes.

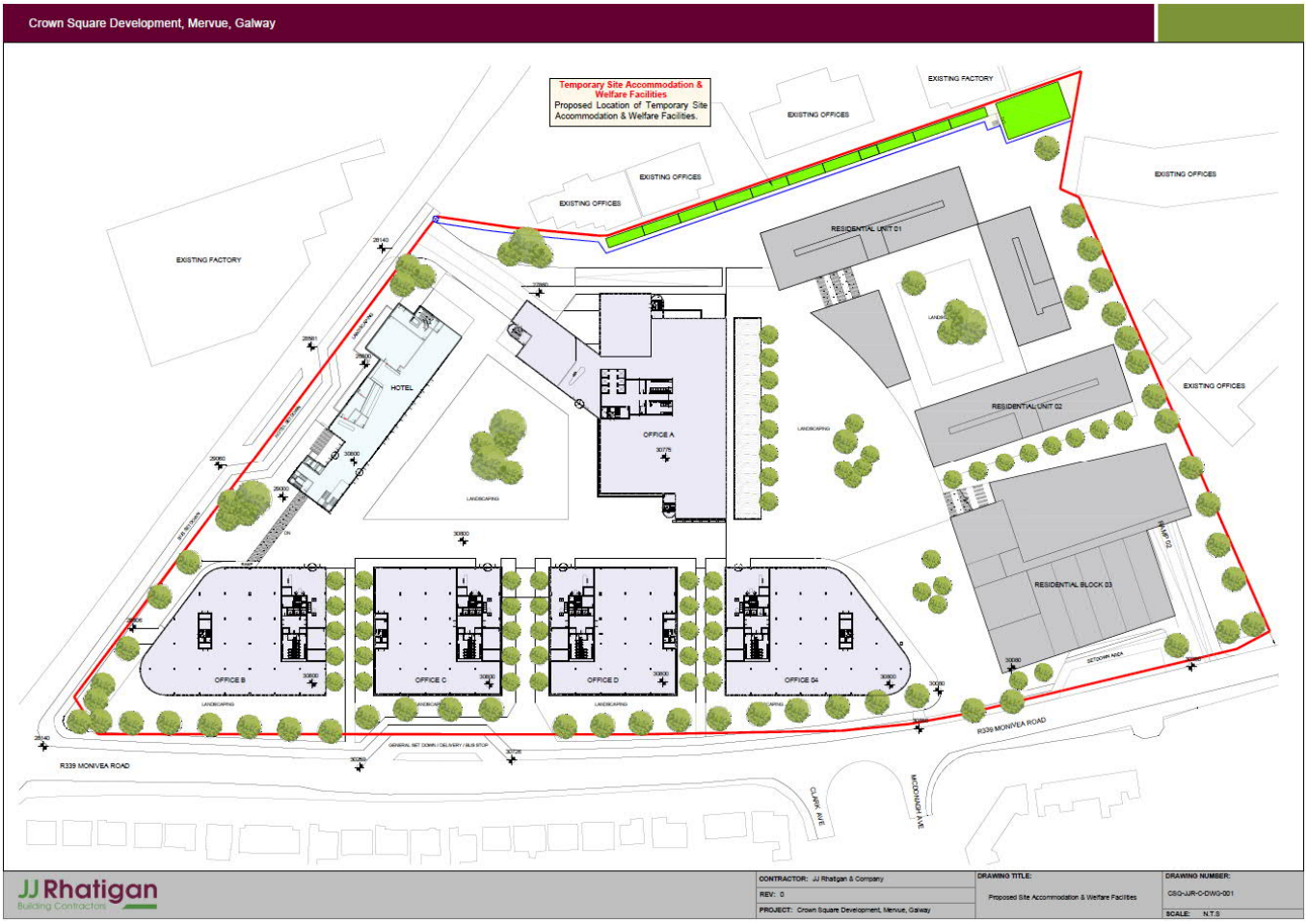


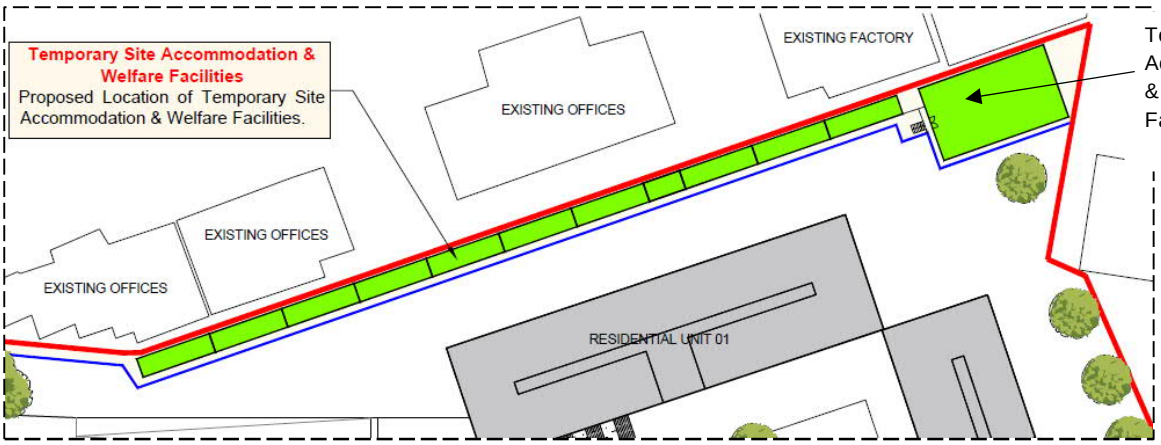
Phase 1 - **Basement, Office Blocks A, B, C, D & E, Hotel**

Phase 2 - **B1 & B2 Basement, Residential Block J (South), Residential Block H (Middle) and Residential Block G (North) construction together with retail & commercial units at ground level**

2.4.2.1 Temporary Site Accommodation & Welfare Facilities

It is proposed to locate the temporary site accommodation and welfare facilities in the north east of the site as shown on the Site Layout Drawing CSQ-JJR-C-DWG-001 below.





2.4.2.2 Final breaking/trimming of rock to formation

The basement excavation including rock breaking has already been completed. Any remaining rock breaking to formation including pad / strip foundations will be carried out with modern equipment and will comply with the European Communities (Construction Plant and Equipment Permissible Noise Levels) Regulations.

Method of Monitoring Noise & Vibration

The Svantek 977 and Svantek 958 or similar equipment will be used to monitor noise and vibration. The following information will be recorded:

LA eq	The average noise in decibels, over a given period of time
LA max	The maximum noise created within the LA eq time period
LA min	The minimum noise created within the LA eq time period
PPVmm/sec	Peak Vector Sum of vibration created during the period of monitoring

The units will be set up in in accordance with BS 5228 and will record noise over 15-minute intervals 24 hrs a day. Vibration levels will be monitored in accordance with British Standard 7385 part 1 and part 2.

2.4.2.3 Pads/foundations

Reinforcement and column starter bars for pad foundations to Structural Engineers design (c.1500mm x 1500mm x 800mm) will be placed prior to casting of insitu concrete C 30/37 to EN 206:2013. Pre-pour Quality Check sheet *EQS-15 (07) Rev 3-Concrete Pour Inspection* will be used for sign-off.

2.4.2.4 Lower Basement Drainage

The balance of the lower basement drainage will be installed and tested prior to casting of the insitu lower basement slab. Quality Check sheet *EQS-15 (13) Rev 2-Drain Test Certificate* will be used to record results of the inspections, testing and sign-off for each section of pipework / underground services prior to backfilling. A traceability drawing and date stamped photographs will accompany each Check sheet as proof of compliance.

2.4.2.5 Lower Basement Slab – B2 Level

The remainder of the lower basement slab will be cast in sections. Suitable spacers will be used as necessary to support the bottom mat reinforcement in position. Steel chairs will be used in the spacing of top reinforcement and will be of suitable strength and number to hold the reinforcement in its correct position. Following pre-pour inspection and sign-off using Quality Check sheet *EQS-15 (07) Rev 3-Concrete Pour Inspection* the lower basement slab will be cast in segments using a mobile concrete pump. Manual compaction will only be carried out with approved compaction equipment. Column and wall starters bars will be protected with rebar protection caps.

2.4.2.6 Rising elements lower basement / upper basement

Rising elements from lower basement to upper basement will consist of precast concrete columns, beams, twinwall and hollowcore to precast manufactures design and Structural Engineer sign-off. Erection will be by mobile crane and specialist crews. Tanking to wall face will be to approved Architects details. Precast Check sheets *EQS-11, 19, 20, 21* will be used for inspection and sign-off.

2.4.2.7 Upper Basement Slab – B1 Level

Following fixing of reinforcement, insitu concrete and structural screeds to Engineers design over hollowcore/plate flooring will be placed by mobile concrete pump.

2.4.2.8 Rising elements upper basement / podium

Rising elements from upper basement to podium will consist of precast concrete columns, beams, twinwall and hollowcore to precast manufactures design and Structural Engineer sign-off. Erection will be by mobile crane.

2.4.2.9 Podium / Ground floor slab

The podium slab will consist of insitu concrete, structural screeds over hollowcore/plate flooring all to Engineers design. Placing of concrete will be by mobile concrete pump.

2.4.2.10 Office A, B, C, D, E and Hotel Superstructure

The Office and Hotel superstructure will be formed in precast concrete (columns, beams, walls, stairs, hollowcore/plate flooring) all to precast manufactured design and Structural Engineers sign-off. Erection will by mobile crane and specialist precast erection crews as per approved RAMS. Structural screeds will follow in tandem, poured using mobile concrete pumps.

Typical Office floor plates are 16m wide, arranged around a central core and atrium. The typical office floor plate is subdivided in 2no. / 5no. parts, providing for whole building, whole floor or partial floor occupancies. Structural columns are arranged to maximise open space and provide flexible and substantial floor plates. Fire safety design (Fire Safety Certification) is planned on this basis.

The hotel is a freestanding block fronting both the Joyce Road and the Phase 1 public space. The main public entrance is on the Joyce Road where there is a vehicular set-down area. Guest and service vehicular access is also via basement levels.

2.4.2.11 Office A, B, C, D, E and Hotel Façade / Roof

Following façade Technical & Sample Submittal approval process installation of facades will follow superstructure erection sequence. Regular inspections and use of our suite of Façade Quality Check sheets will safeguard stringent compliance. The external experience of the overall development will respect the scale of its surroundings.

The office facades will be substantially enclosed by proprietary curtain wall glazing with external privacy screening and solar shading where required. The glazing will be a thermally broken structural glazing curtain wall system. Stone faced cladding to solid walls, stair cores and similar will be to Architects design.

Roof finishes will progress in tandem and will consist of modified bitumen sheet ‘warm roof’ incorporating insulation achieving the required u-value in accordance with the requirements of TGD L of the Building Regulations.

2.4.2.12 Boundary treatments

Boundary walls, railings etc will progress concurrently as per Engineers and Architects design/details. Works will include Hotel set down, bus stop and cycle lane along the Joyce Road interface and general set down, delivery, bus etc.

2.4.2.13 Completion of vehicular access, car and cycle parking

Completion of vehicular access, car and cycle linemarking, racks, signage will provide vehicular access to basement levels with emergency vehicle access only interfacing with pedestrian and cycle access at ground level. Vehicular set-down access will be provided on both the Monivea and Joyce Roads.

Visitor, delivery service and additional commercial and residential access will be provided in a centrally managed and secure basement car-park facility. Cycle access and parking will be separated from vehicular access, located is secure locked areas.

2.4.2.14 Office A, B, C, D, E fitout

The office buildings will provide multi-tenant occupancy shell & core. Fit-out will be bespoke to suit tenants needs and will be progressed to completion once tenants have signed lease agreements.

2.4.2.15 Hotel fitout

The hotel is arranged as a 175 bed 3-4-star hotel with bar, restaurant/ cafe and meeting/conference facilities. The hotel entrance is at ground level opening on Joyce Road and opening with bar and restaurant also to the principal

site public open space. The Hotel fit-out will be progressed on a top down basis as the building becomes weathered. In order to streamline the construction process, it is proposed to install Bathroom Pods resulting in many efficiencies including high quality and less waste. All works will be inspected and signed off prior to closing up utilising our suite of Quality Check sheets.

2.4.2.16 Podium slab / courtyard hard/soft landscaping

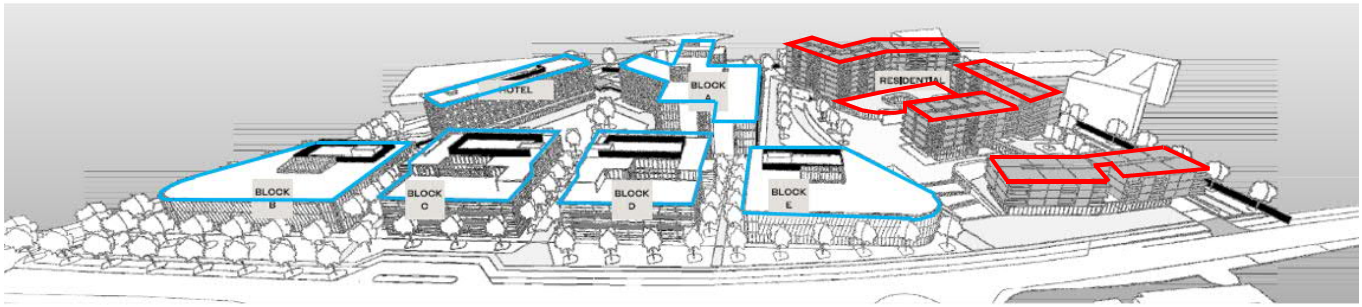
Hard and soft landscaping will be to Landscape Architects Design & Specification. Planting of bareroot and rootballed stock will take place in the planting season from completion of topsoil works; namely November / March. Container grown stock and grass seeding will be carried out in the appropriate weather conditions following completion of topsoil works. All trees will be full and well-shaped, bark unmarked and have healthy root systems. All planting operations will be carried out in accordance with BS 4428 and good horticultural practice. All shrubs will be pit planted in locations as shown in the plans. The construction of hardworks will be carried out in tandem with the main construction programme whereby care is taken to avoid any unnecessary machinery traffic on completed areas.

Phase 2

Phase 2 works comprise residential, leisure / fitness facility, cafe, restaurant and local service elements. Key phases of construction are set out below.

- Residential superstructure
- Residential façade / roof
- Boundary treatments
- Residential fitout
- Other Facilities fitout incl: leisure / fitness facility, cafe, restaurant, convenience store, pharmacy
- Hard / soft landscaping

Other facilities itemised above are proposed at lower ground / ground and first floor levels fronting both Monivea road and the new Phase 2 public open space.



Phase 2 - **Residential, Leisure / Fitness Facility, Cafe, Restaurant, Local Service Elements**

2.4.2.17 Residential Superstructure

Residential blocks superstructure will be formed in precast concrete (columns, beams, walls, stairs, hollowcore/plate flooring) all to precast manufactured design and Structural Engineers sign-off. Erection will by mobile crane and specialist precast erection crews as per approved RAMS. Structural screeds will follow in tandem, poured using mobile concrete pumps.

2.4.2.18 Residential Façade / Roof

Following façade Technical & Sample Submittal approval process installation of facades to Architects details and specification will follow superstructure erection sequence. Regular inspections and use of our suite of Façade Quality Check sheets will safeguard stringent compliance.

2.4.2.19 Boundary treatments

Boundary walls, railings etc will progress concurrently as per Engineers and Architects design/details including completion of boundary works along the R339 Monivea Road.

2.4.2.20 Residential fitout

Residential fit-out will be progressed on a top down basis as the buildings becomes weathered in stages. Bathroom Pods will be fitted throughout. All works will be inspected and signed off prior to closing up utilising our suite of Quality Check sheets.

2.4.2.21 Other Facilities fitout incl: leisure / fitness facility, cafe, restaurant, convenience store, pharmacy

Fit-out works to other facilities will be bespoke to their needs and will be progressed to completion once tenants have signed lease agreements.

2.4.2.22 Hard / soft landscaping

Hard and soft landscaping will be to Landscape Architects Design & Specification. Planting will take place in the planting season from completion of topsoil works i.e. November / March. All planting operations will be carried out in accordance with BS 4428 and good horticultural practice. The construction of hardworks will be carried out in tandem with the main construction programme whereby care is taken to avoid any unnecessary machinery traffic on completed areas.

2.4.3 General Construction Measures

Prior to any works commencing a dilapidation / condition survey will be conducted of the adjoining roads, footpaths and adjoining buildings, photographing and noting any existing damage or defects to structure or road surfaces. A copy of this survey will be retained on site and issued to Galway City Council if required.

Communication with the public, local residences and businesses adjacent the development will be an important responsibility of the Senior Project Manager and delegated persons. All parties will be kept up to date and informed both shortly prior and during the construction period at all times. Two to three weeks before any work commencing reasonable efforts will be made to inform all parties of the oncoming works.

A Traffic Management Plan (TMP) will be issued to Galway City Council for approval prior to works commencing on site – see section 10 – Appendix 1.0. The approved TMP and any revisions thereof will be set up and implemented on site. All necessary signage will be erected in the weeks prior to any works commencing along and on adjacent roads to the proposed development giving advance warning to traffic, pedestrians / members of the public. Every effort will be made to minimise the impact of the above works on local residences and traffic.

- All personnel will be inducted and made familiar with Risk Assessments / Method Statements (RAMS) and Traffic Management Plans.
- All site-specific safety rules will be adhered to.
- All plant operators will have appropriate CSCS training.
- All personnel will have SOLAS Safe Pass training
- Fire extinguishers and first aid supplies will be available in the work area.
- All adjacent roadways will be maintained in clean condition at all times.
- Helmets, high visibility clothing and safety footwear will be worn at all times.
- Competent foremen will be on site at all times.
- Biometric turnstiles will be used to prevent unauthorised access to the site.

3. Environmental Management

3.1 Introduction

This CEMP has been prepared and presented as a standalone document and includes all noise, dust and vibration control measures refuelling, hazardous material storage and a Waste Management Plan for the site.

3.2 Noise & Vibration Control Measures

The operation of plant and machinery, including construction vehicles, is a source of potential impact that will require mitigation at all locations within the site. Proposed measures to control noise include:

- Ensure that operations are designed to be undertaken with any directional noise emissions pointing away from noise-sensitive receptors.
- Local hoarding, screens or barriers will be erected as required to shield particularly noisy activities.
- Drop heights will be minimised when loading vehicles with rubble.
- Vehicles will be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors.
- The use of particularly noise plant will be limited, i.e. avoiding use of particularly noisy plant early in the morning.
- All pneumatic tools will be fitted with silencers/mufflers.
- Diesel generators will be sound proofed to minimise the potential for noise impacts.
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used onsite will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations.
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.
- Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines, which are used intermittently, will be shut down during those periods when they are not in use.
- Tool Box Talks will be provided to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,
- Access routes will be condition monitored and maintained in a clean condition.

Specific mitigation measures will be implemented during those construction activities identified as having the highest potential to cause disturbance from either noise and or vibration. For example, final trimming / breaking of Basement rock (Basement excavation / rockbreaking already completed) will be carried out by excavators fitted with shrouded breakers to minimise noise/vibration transfer.

Breakers with top and side buffers to absorb vibration and noise will be the preferred option.

A regular programme of noise and vibration monitoring will be implemented. Noise baseline levels will be agreed prior to commencement of construction.

3.3 Dust Control Measures

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along haul routes.

Proposed measures to control dust include:

- Any site haul roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by the foremen for cleanliness, and cleaned as necessary.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting or sprays will be used if required particularly if dusty activities are necessary during dry or windy periods.
- All construction related traffic will have speed restrictions on un-surfaced roads to 15 kph.
- Daily inspection of the construction site to examine dust measures and their effectiveness.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper; and
- All vehicles leaving the construction areas of the site will pass through a wheel cleansing area prior to entering the local road network.

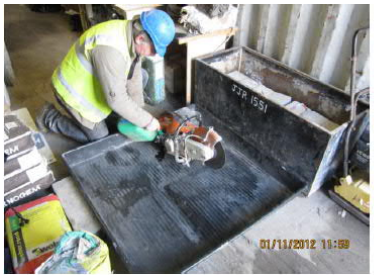
3.4 Refuelling, Fuel and Hazardous Material Storage

The following mitigation measures are proposed to avoid release of hydrocarbons at the site:

- Minimal maintenance of construction vehicles or plant will take place on site.
- Drip trays will be used to control on-site refuelling at controlled fuelling stations.
- On-site diesel tanks will be double skinned to 110% of their capacity.
- Containment stores will be used for refuelling of small plant such as consaws etc.
- Any fuel bowsers used on site will be custom-built / bunded to 100% of capacity. Fuel bowsers will be parked on a level area in the construction compound when not in use.
- Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Fuels volumes stored on site will be minimised. Any fuel storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction.
- Plant used will be regularly inspected for leaks and fitness for purpose.
- Any Hazardous Materials will be stored in drip trays in secure containment stores.
- Refuelling / containment store signage will be erected at predetermined locations around the site.
- An emergency plan for the construction phase to deal with accidental spillages will be contained within Environmental Management Plan. Spill kits will be available to deal with any accidental spillage in and outside the refuelling area.

CONTAINMENT STORE

Example of JJ Rhatigan & Company refuelling of small plant carried out in Containment Store with drip tray protection / refuelling signage.



3.5 Water Management / Water Quality

As the basement is already excavated only minimal water / rainwater will need to be removed from site. It is planned to let rainwater soak naturally back into the ground in areas not being worked on. In zones under construction it is proposed to run any excess water through an environmental structure such as a settlement tank / silt trap and pump clean water into the combined sewer at an agreed discharge rate during the construction phase (subject to Galway City Council agreement). A discharge monitoring inspection programme will be put in place and agreed with the Galway City Council Drainage Engineer. This methodology safeguards water quality and provides a solution for catching suspended solids and sediment prior to discharge into the combined sewer.

3.6 Waste Management Plan

A project specific Waste Management Plan (WMP) has been prepared to accompany the CEMP which outlines the best practice procedures during the construction phases of the project. The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage. Recycling of waste will be the preferred option with disposal of waste to landfill minimised as much as possible.

3.6.1 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing waste in the following order:

Prevention and Minimisation:
The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.

Reuse of Waste:
Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill.

Recycling of Waste:
There are a number of established markets available for the beneficial use of Construction and Demolition waste such as using waste concrete as fill for new roads. At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

3.6.2 Roles and Responsibilities for Waste Management

Prior to the commencement of the proposed development a member of the on-site construction management staff will be assigned the role of Waste Management Coordinator. The Waste Management Coordinator will be in charge of the implementation of the objectives of the WMP, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated will have sufficient authority so that they can ensure everyone working on the proposed development adheres to the WMP.

3.6.3 Waste Management Plan Conclusion

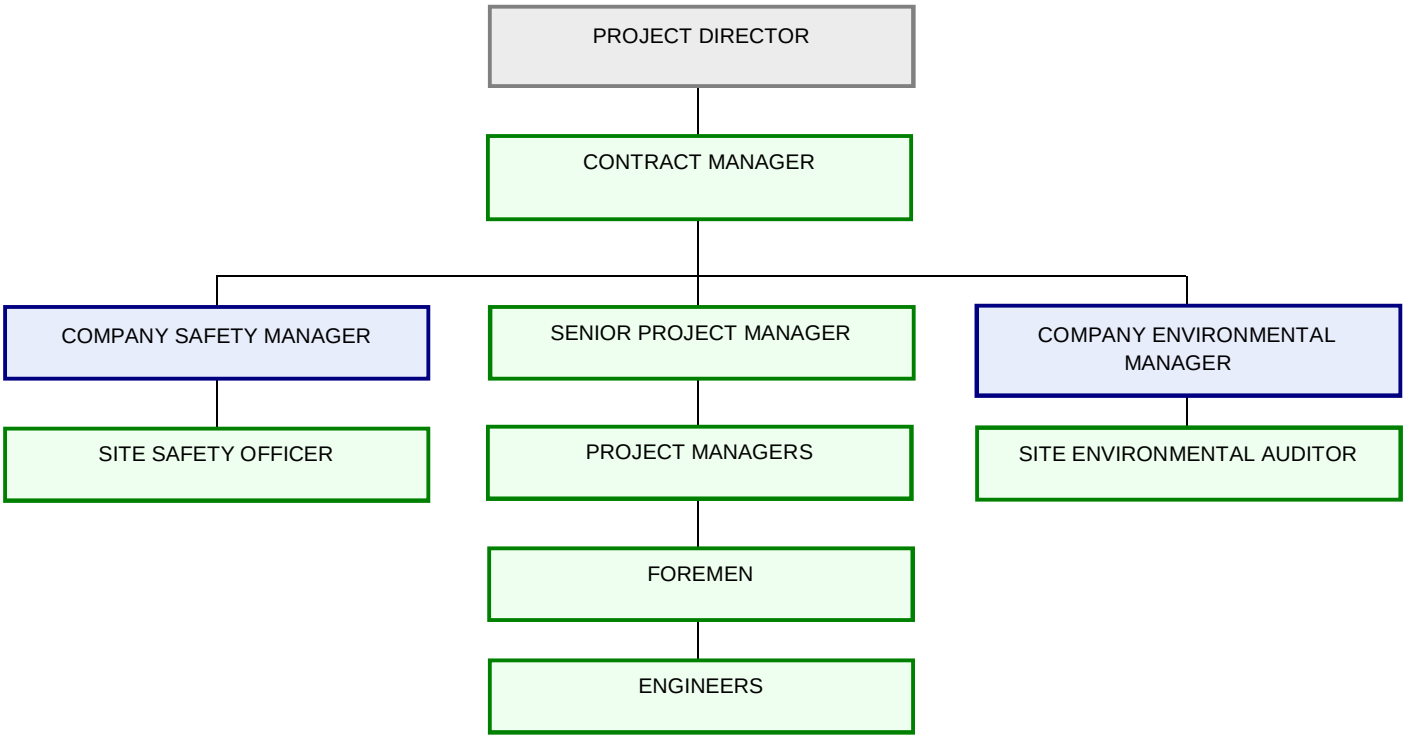
The WMP will be adhered to by all Subcontractors / Specialists and all other site personnel involved in the project. The WMP which will be explained during the induction process for all site personnel. The waste hierarchy will always be employed to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes such as broken rock will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

4. Environmental Management Implementation

4.1 Roles and Responsibilities

The Site Contracts Manager / Senior Project Manager / Foremen / Engineers are the project focal point relating to construction related environmental issues. In general, the Senior Project Manager will maintain responsibility for monitoring the works and Subcontractors / Specialists / Site Personnel from an environmental perspective. The Senior Project Manager will act as the regulatory interface on any environmental matters by reporting to and liaising with Galway City Council and other statutory bodies as required.

The Senior Project Manager will report directly to the Site Contracts Manager, Company Environmental Manager and Company Safety Manager. The Contracts Manager will report directly to the Project Director. This structure provides a “triple lock” review / interaction process. An organogram structure for the construction stage is as follows:



4.2 Environmental Awareness and Training

4.2.1 Environmental Induction

The Environmental Induction will be integrated into the general site induction on a case by case basis for each member of staff / personnel employed on-site depending on their assigned roles and responsibilities on site. Where necessary, the Environmental Induction will as a minimum include:

- A copy of the Environmental Management Site Plan and discussion of the key environmental risks and constraints.
- An outline of the CEMP structure.
- A discussion of the applicable Works Method Statement.
- The roles and responsibilities of staff, including contractors, in relation to environmental management; and,
- An outline of the Environmental Incident Management Procedure.

4.2.2 Toolbox Talks

Tool box talks will be held by a nominated person at the commencement of each day, or at the commencement of new activities. The aims of the tool box talks are to identify the specific work activities that are scheduled for that week or phase of work. In addition, the necessary work method statements and sub plans will be identified and discussed prior to the commencement of the week's activities.

Site meetings will be held on a regular basis involving appropriate site personnel. The objectives of site meetings are to discuss the coming weeks activities and identify the relevant work method statements and sub plans that will be relevant to that week's activities. Additionally, any non-compliance identified during the previous week will also be discussed with the aim to reduce the potential of the same non-compliance reoccurring.

5. Emergency Response Plan

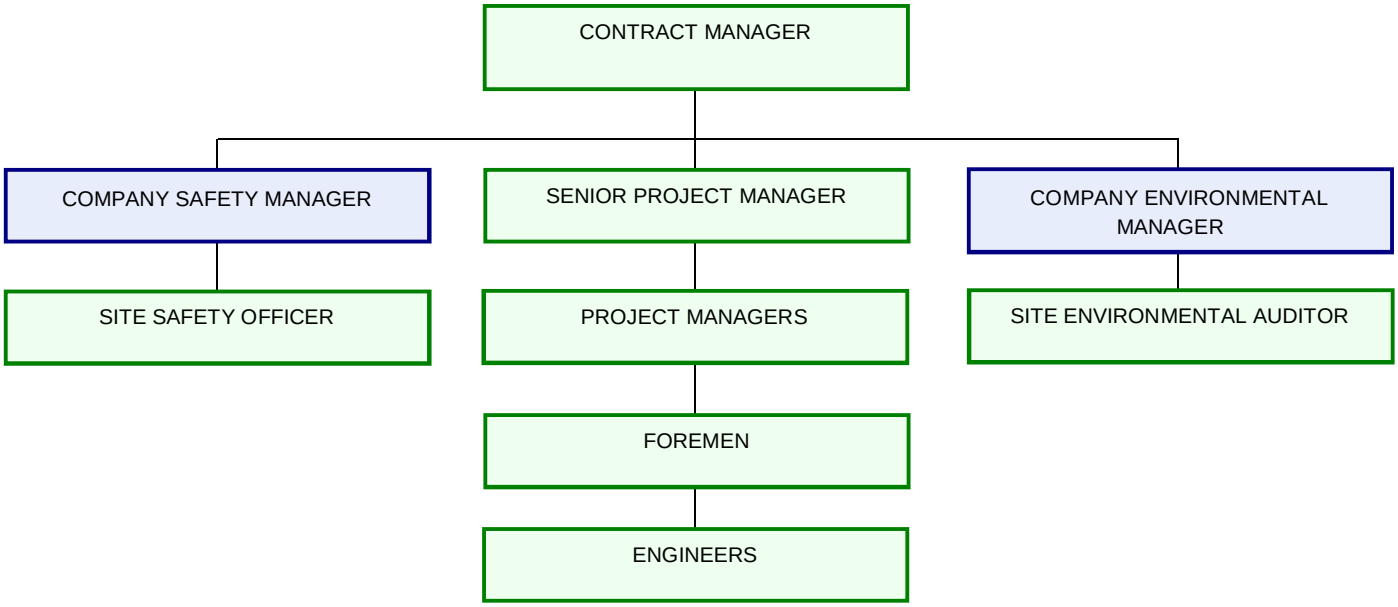
An Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

5.1 Emergency Response Procedures

The ERP provides details of procedures to be adopted in the event of an emergency and includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the project progresses. Where subcontractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the subcontractor's ERP within this document. This is a working document that requires updating throughout the various stages of the project.

5.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Senior Project Manager, will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 5.1 below. In a situation where the Senior Project Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 5.1. This will be updated throughout the various stages of the project.



5.1.2 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide the basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or fog horn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Safety Officer to account for all personnel on site.
- The Site Safety Officer will inform the Senior Project Manager when all personnel have been accounted for. At this time, the Senior Project Manager will decide the next course of action which be determined by the situation that exists at that time. The Senior Project Manager will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and record keeping of such drills.

5.1.3 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring is key. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they he can take appropriate action.
- The Environmental Manager will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Environmental Manager will notify the appropriate regulatory body such as Galway City Council, Department of Communications, Energy and Natural Resources (DCENR) and Department of Environment, Community and Local Government (DOECLG), if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.
- If necessary, the Environmental 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 Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident

- A record of all Environmental Incidents will be kept on file by the Senior Project Manager and the Environmental Manager. These records will be made available to the relevant authorities if required.
- The Environmental Manager / Senior Project Manager will be responsible for any corrective actions required as a result of an incident e.g. an investigative report and formulation of alternative construction methods.

5.2 Contacting the Emergency Services

5.2.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

Stay Calm
It's important to stay calm. Any situation that requires 999/112 is, by definition an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

Know the location of the emergency and the number you are calling from.
Confirmation of location and number you are calling from may be asked and answered a number of times. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for any reason you are disconnected, at least emergency crews will know where to go and how to call you back.

Wait for the call-taker to ask questions, then answer clearly and calmly.

If you reach a recording, listen to what it says.
If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

Let the call-taker guide the conversation.
He or she is typing the information into a computer. There's a good chance, however, that emergency services are already being sent while you are still on the line.

Follow all directions.
In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you don't understand.

Keep your eyes open.
You may be asked to describe the scene, vehicles / plant involved or other adjacent parts to the scene.

Do not hang up the call until directed to do so by the call taker.

5.2.2 Contact Details

A list of emergency contacts is presented in Table 5.2. A copy of these contacts will be included in the Site Safety Statement and in the site offices and the various site welfare facilities.

Table 5.2 Emergency Contacts

Contact	Telephone No.
Emergency Services - Ambulance, Fire, Gardaí	999/112
Doctor - Medical Centre, Mervue	091 773 000
Hospital - University Hospital Galway	091 524222
ESB Emergency Services	1850 372 999
Gardaí - Mill Street Garda Station	091 538000
Health & Safety Officer	Barry Brennan
Health & Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS) - Emmet Hynes	086 8103574
Project Supervisor Design Stage (PSDS)	Henry J Lyons Architects

6. Mitigation Measures

This section of the CEMP groups together the mitigation measures. It is intended that the CEMP will be updated prior to and during the course of the development to include all mitigations measures necessary. The CEMP will be submitted to the Planning Authorities for written approval.

For the purposes of demonstration, a table of selected mitigation measures providing the structure of how the measures are presented is outlined in Table 6.1. The selected mitigation measures have been grouped together according to environmental field/topic, as follows:

- Noise & Vibration Control
- Dust Control
- Fuel and Oil Control
- Run-off, Sediment and Erosion Control

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the project. The tabular format in which the below information is presented, can be further expanded upon during the course of the project phases to provide a reporting template for site compliance audits.

Table 6.1 Site preparation and Mitigation Measures (Example Format)

Mitigation Measures	Reference	Mitigation Measure	Audit Result	Action Required
1	Noise & Vibration Control CEMP Section 3	Noise & Vibration Monitoring control stations will be set up at pre-determined locations adjacent sensitive receptors. We will continue to ensure the monitoring stations are supported and the development team have access to the live data 24/7.		
2	Dust Control CEMP Section 3	If necessary water will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression.		
3	Fuel and Oil Control CEMP Section 3	On-site refuelling will be carried out at designated refuelling stations on site. Drip trays will be used when refuelling all plant. Absorbent material and pads will be available in the event of any accidental spillages. Alternatively, mobile double skinned fuel bowsers may be used. Fuel bowsers will be parked on a level area in the compound when not in use.		
4	Run-off, Sediment and Erosion Controls	Erosion and Sedimentation control measures such as sandbags around storm water gullies will be employed as required to prevent any silty runoff to the storm network.		

7 Monitoring Proposals

This section of the CEMP groups together the monitoring measures relating to the construction phases of the proposed development. It is intended that the CEMP will be updated prior to the commencement of the development, to include all monitoring measures, conditions and or alterations that may emerge during the course of the planning process, and will be submitted to the Planning Authority for written approval.

For the purposes of demonstration, a preliminary table of selected monitoring measures providing the structure of how the measures are presented can be found in Table 7.1. The monitoring proposals are presented in terms of frequency of monitoring, reporting measures and monitoring responsibility.

Table 7.1 Schedule of Monitoring Measures (Example Format)

Mitigation Measures	Reference	Survey/Monitoring	Frequency	Reporting Measures	Responsibility
1	Noise & Vibration Control CEMP Section 3	Noise & Vibration monitoring will be carried out during the construction phases.	Daily	Weekly Noise & Vibration Monitoring reports	Senior Project Manager
2	Dust Control CEMP Section 3	Dust monitoring will be carried out during the construction phases.	Daily	Bi-weekly reports	Senior Project Manager
3	Fuel and Oil Control CEMP Section 3	On-site refuelling inspections.	Daily	Bi-weekly reports	Senior Engineer / Foremen
4	Run-off, Sediment and Erosion Controls	Erosion and Sedimentation Plan (ESCP) will be issued at pre-commencement. Monitored on a daily basis or after a storm event.	Daily	Bi-weekly reports or after a storm event	Senior Engineer

8. Programme of Works

It is expected that building works for the entire of Phase 1 will take in the region of 30 months to complete. Development of Phase 2 is expected to commence 18 months after Phase 1 commencement and will take circa 24 months to complete. These estimations are based on a high-level analysis of the site and proposed scheme. The total timeframe based on above is circa 42 months (3 ½ yrs.)

9. Compliance and Review

9.1 Site Inspections and Environmental Audits

Routine inspections of construction activities will be carried out on a daily and weekly basis by the Senior Project Manager, Senior Engineers and Foremen 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 this CEMP and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

9.2 Site Environmental Audit

Environmental audits will be carried out during the construction phase of the project. In contrast to monitoring and inspection activities, audits are designed to shed light on any underlying causes of non-compliance, and not merely detect the non-compliance itself. In addition, audits are the main means by which system and performance improvement opportunities may be identified. Environmental audits will be carried out by contractor staff. It is

important that an impartial and objective approach is adopted. Environmental audits will be conducted at planned intervals to determine whether the CEMP is being properly implemented and maintained. The results of environmental audits will be provided to project management personnel.

9.3 Environmental Compliance

The following definitions will apply in relation to the classification of Environmental Occurrences during construction of the proposed development:

Environmental Near Miss: An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident: Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Exceedance Event: An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary. Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter.

Environmental Non-Compliance: Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the EMP.

9.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Senior Project Manager, as advised by the Environmental Manager. Corrective actions may be required as a result of the following;

- Environmental Audits;
- Environmental Inspections and Reviews;
- Environmental Monitoring;
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to site management. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Senior Project Manager and the Environmental Manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.

9.5 Construction Phase Plan Review

This CEMP will be updated and reviewed prior to commencement of construction, and as required thereafter during the construction phases of the project.

10. Appendix 1.0

Crown Square – Construction Stage Traffic Management Plan Rev 01

TRAFFIC MANAGEMENT PLAN

JJ Rhatigan
Building Contractors

The Crown Square Development,
Mervue Industrial Estate,
Tuam Road,
Mervue,
Co. Galway.

Revision No.	Date	Revision Details
Rev 01	28/05/2019	Original

Traffic Management Plan – Crown Square Development

Scope:

This traffic management plan applies to construction related traffic entering, using, and leaving the Crown Development, for the duration of the construction stage. This traffic management plan will be reviewed and updated on an ongoing basis throughout all phases of the project.
This plan outlines the proposed access routes to and from site taking account of local traffic, local businesses, residential areas, and public footpaths, and shall outline the acceptable site construction traffic routes to and from the project.

Objectives:

This traffic management plan is designed to control the movement of traffic, both public & site related, and also to safely co-ordinate the delivery and loading / off-loading of materials and products. In particular the objectives of this traffic management plan include:

- To facilitate the construction of the Crown Development for the duration of the project and in minimising the impacts on the general public of construction related traffic, throughout all phases of the development.
- To ensure all modes of traffic along the route and adjoining junctions are catered for and considered, including public transport flows, disabled persons, pedestrians in general and cyclists and to warn all public/ site personnel of any hazards that may exist.
- Cater for all events in the surrounding areas.
- To have minimal impact on the businesses and local residents in the area in terms of noise, parking, and traffic flow.
- Include safety measures to provide for safe traffic flows for users and the general workforce including the measures to control all site vehicles during movement, reversing and turning so that no injury or damage may occur.
- Facilitate the needs of stakeholders including local authorities, Gardaí with responsibilities for roads and traffic in the area.
- Ensure safe access and egress for all construction personnel and visitors to the Crown Square project, and ensure safe passage for pedestrians at all site gateways
- To protect all site workers, members of the general public & drivers alike, from any injury involving site vehicles.
- This traffic management plan aims to minimise as much as possible the journey time delays to motorists and other road users and provide a safe traffic route for all construction and non-construction related traffic.

- During the construction stage, the traffic management plan will be managed by JJ Rhatigan & Co., who will ensure continuous distribution of information to all those affected by the plan.
- During construction works the JJ Rhatigan & Co. shall ensure that appropriate resources are in place for the implementation of this traffic management plan, and to plan works so as to reduce the need for vehicles to reverse wherever possible, and provide traffic control measures where necessary.

This Traffic Management Plan will cover 7 areas:

1. Delivery & Site Construction Vehicles
    I. Designated Traffic Access Routes
    II. Site Access – Vehicular & Pedestrian
    III. Site Access & Egress Routes
    IV. Internal Traffic Management Crown Square Development
    V. Exiting Site Lines of Sight
2. Personal Transport to Site
3. Footpaths & Road ways
4. Offloading
5. Emergency Services Access

1. Delivery & Site Construction Vehicles

The construction entrance gates will be adequately sign posted and will be accessible at agreed times between 08.00am to 18:00pm Monday to Friday, & 9.00am to 13.00pm on Saturday. The gate will be locked and controlled by designated key holders at all times. The key holder's numbers will be displayed prominently on the gates, and will be stated on all Purchase Orders issued by JJ Rhatigan & Co.

The Gate will only be opened when deliveries arrive to site/ leave site, and when construction vehicles need to enter/exit the site. The vehicular gates to the site will remain closed at all other times. The gate will be set back a sufficient distance from the road to facilitate deliveries on arrival, and keep the road clear.

JJ Rhatigan & Co. will endeavour to plan, as far as reasonably practicable, that deliveries will coincide with off peak traffic times, along with site requirements, in order to reduce or eliminate disruption to day-to-day traffic, and also to reduce the need for double handling materials once delivered. Planned deliveries will make the delivery process more efficient in terms of time, and reduced disruption. The benefits of this approach to deliveries include, a reduction in the volume of space required for material storage on site, reduction of waste through damage or materials being stolen, and site safety and site logistics benefit from a tidy and less cluttered site which leads to better productivity and improved safety standards.

Deliveries to site will be planned, coordinated and communicated between JJ Rhatigan & Co., subcontractors, and suppliers. Clear direction will be given to all subcontractors, suppliers, and visitors regarding the traffic management procedures before commencement on site. Representatives from appointed subcontractors, design teams, client etc. will be encouraged to visit the site before there

commencement on site to see the traffic management arrangements in person, which can then be communicated back to their workforces who will be involved in the project.

On PO's that are issued for deliveries, information will be detailed regarding the site directions, site restrictions, and numbers of the gatemen at the Crown Square Development. This information will be updated as required so that deliveries arriving to site can arrive knowing the procedure for access/egress and loading/unloading.

Delivery drivers will be under strict instruction as to the site rules. No parking or 'pulling up' will be permitted in any of the surrounding areas which may adversely affect the traffic flow, block footpath or driveways, or case obstruction to view for road users or pedestrians. In the event the delivery cannot be accepted to site immediately, the vehicles keep moving and return to site a time later as agreed with the gatemen.

- Site deliveries will only be allowed on site with the coordination of the JJ Rhatigan site management. This will be inclusive of the designated site access times and potential clashes with peak local traffic.
- Site deliveries must follow the designated access routes.
- Sub-Contractors are advised to source and utilise holding areas elsewhere on approach to the site, so as to ensure that the site deliveries are not causing disruptions to the normal flow of traffic.
- Site delivery vehicles delivering to the JJ Rhatigan & Co. Crown Square Project must adhere to the rules of the Road, in particular the designated speed limits.
- The onsite speed limit is 10km/h which will be posted on site in visible areas, while the approach road speed limit is 50km/h.
- Delivery vehicles must give way to pedestrians and take note of local traffic
- Site plant and delivery vehicles must only be operated by trained and competent people who hold all relevant certification and licenses.
- Flashing beacons and reversing sirens and all appropriate auxiliary devices as outlined by the H.S.A. must be fitted on all site vehicles.
- All delivery drivers must comply with the site safety rules at all times. Full PPE must be worn at all times while on site and out of the vehicle.
- All deliveries whereby working at height may be present must only be carried out with approved safe systems of works, as discussed and approved with site management.
- Any unusual loads or out of hour deliveries must be approved and coordinated with JJ Rhatigan & Co. and Galway City Council.
- Delivery vehicles must not be detrimental to the environmental rules of the site. This is inclusive of oil/fluid leaks.

- The ultimate and final responsibility for the manoeuvring of plant and delivery vehicles will rest with the driver of the vehicle / plant. All instruction issue by the JJ Rhatigan & Co. must be adhered to at all times.

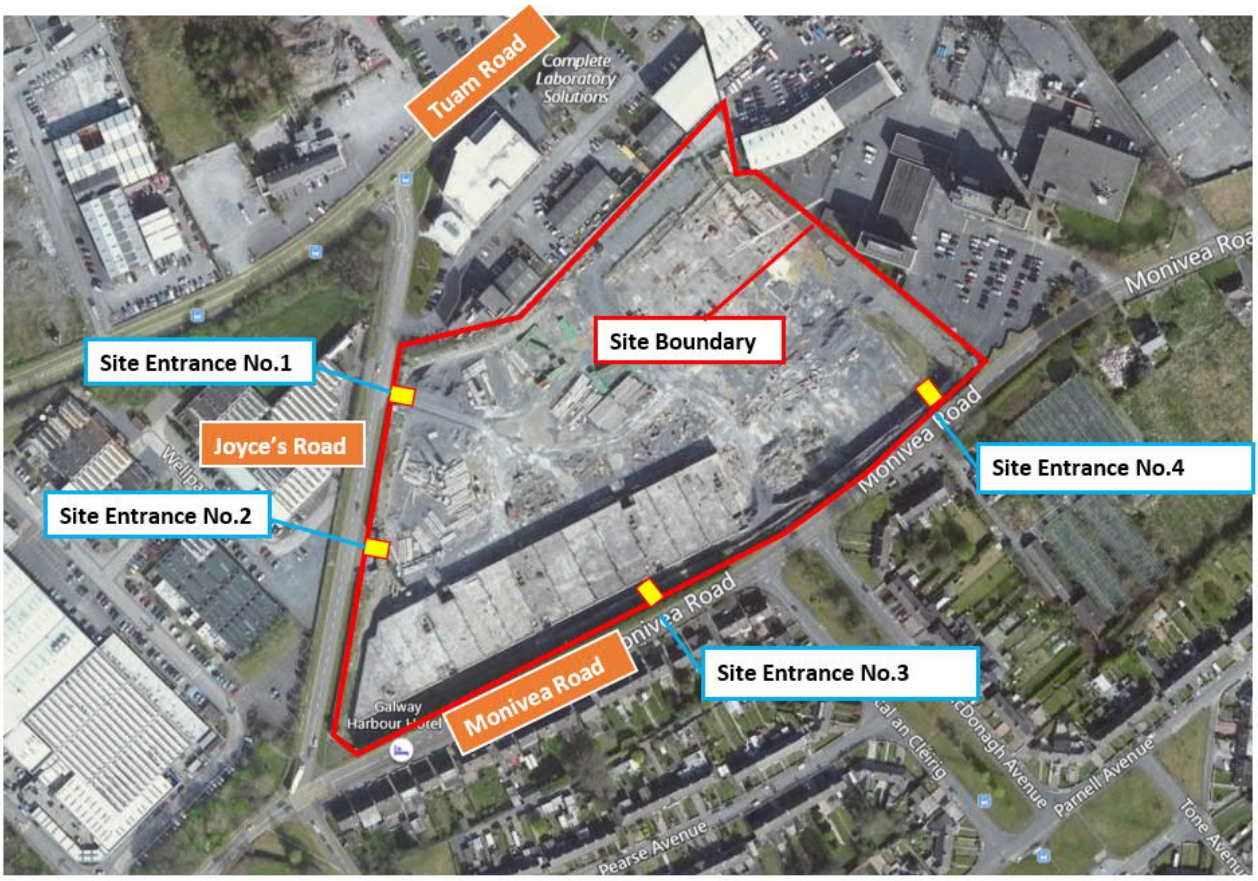


Figure 1: Site Location & Entrances (Entrances 1 -4 will be utilised at different phases of the development)

I. Designated Traffic Access Routes:

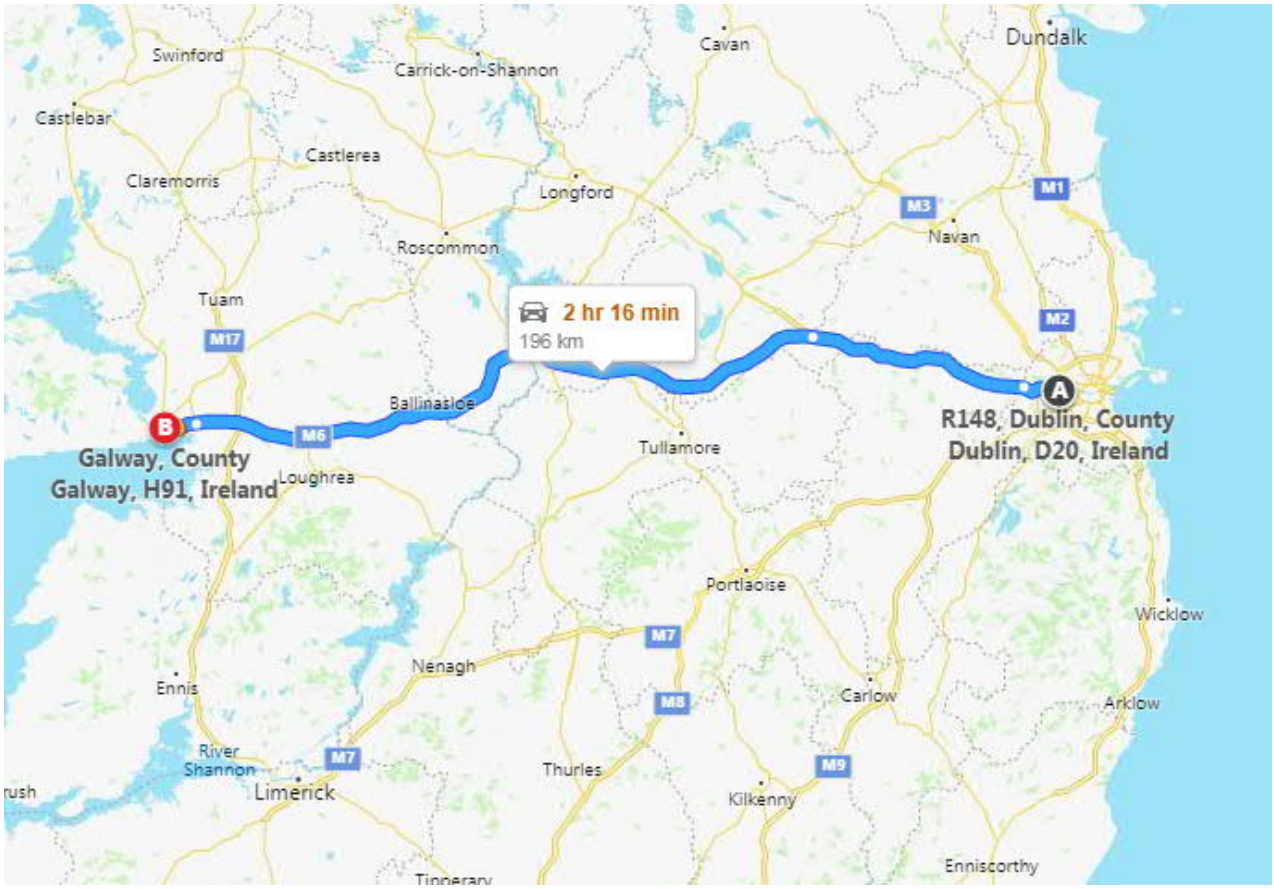
The agreed routes to site and away from site shall include the following direction:

Dublin → Crown Square Development Galway

A R148, Dublin, County Dublin, D20, Ireland

↑	1.	Depart **R148** toward Kennelsfort Road Upper	1.0 km
	2.	Road name changes to **N4**	6.4 km
	3.	Keep **straight** onto **M4** • *Entering County Kildare* • *Toll road* • *Entering County Meath*	45.0 km, 27 min
	4.	At exit **11**, take ramp **left** for **M6** toward **Athlone / B. Átha Luain / Gaillimh / Galway** • *Entering County Westmeath* • *Entering County Roscommon*	57.9 km, 36 min
	5.	Road name changes to **N6**	7.1 km
	6.	Keep **straight** onto **M6** • *Entering County Galway* • *Toll road*	71.5 km, 48 min
	7.	Road name changes to **N6**	3.7 km
↻	8.	At roundabout, take **2nd** exit	3.2 km
↰	9.	Bear **left** onto **R336 / Tuam Road**	0.4 km
↰	10.	Turn **left** onto **road**	0.2 km
	11.	Arrive The last intersection is Tuam Road If you reach R339 / Monivea Road, you've gone too far	

B Galway, County Galway, H91, Ireland

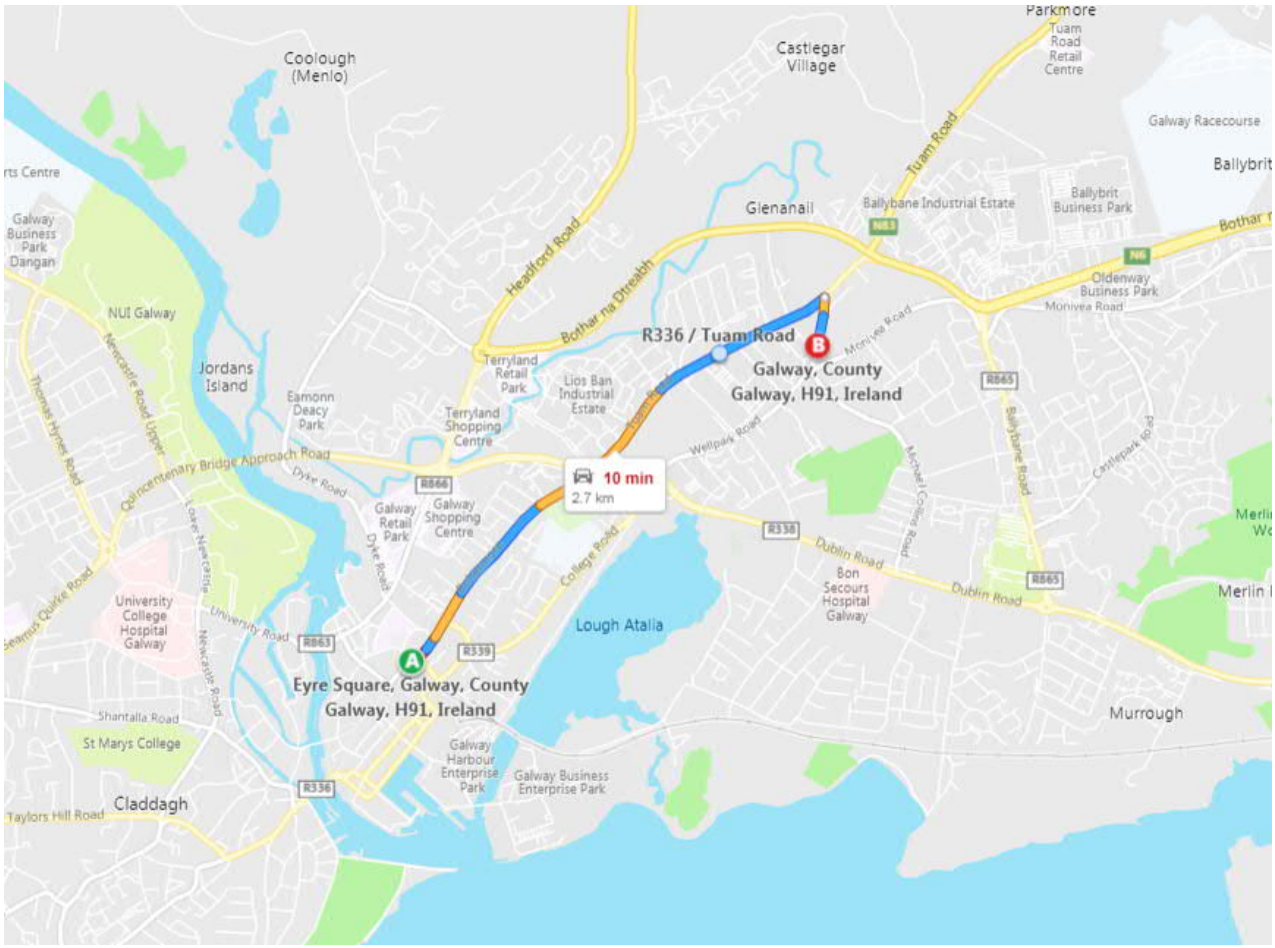

Swinford
Carrick-on-Shannon
Cavan
Dundalk
Castlebar
Castlerea
Claremorris
Longford
M1
M3
Navan
Roscommon
Tuam
M17
2 hr 16 min
196 km
M2
Ballinasloe
B
M6
Galway, County
Galway, H91, Ireland
Loughrea
Tullamore
A
R148, Dublin, County
Dublin, D20, Ireland
Portlaoise
Wicklow
M7
Nenagh
Ennis
M8
Carlow
Arklow
River
Shannon
M7
Thurles
M9
Limerick
Kilkenny
Enniscorthy

Galway City → Crown Square Development Galway

A Eyre Square, Galway, County Galway, H91, Ireland

↑	1.	Depart **R336 / Williamsgate Street / Eyre Square** toward R336 / Prospect Hill	1.1 km
↻	2.	At roundabout, take **3rd** exit	1.3 km
↱	3.	Turn **right** onto **road**	0.2 km
	4.	Arrive The last intersection is Tuam Road If you reach R339 / Monivea Road, you've gone too far	

B Galway, County Galway, H91, Ireland

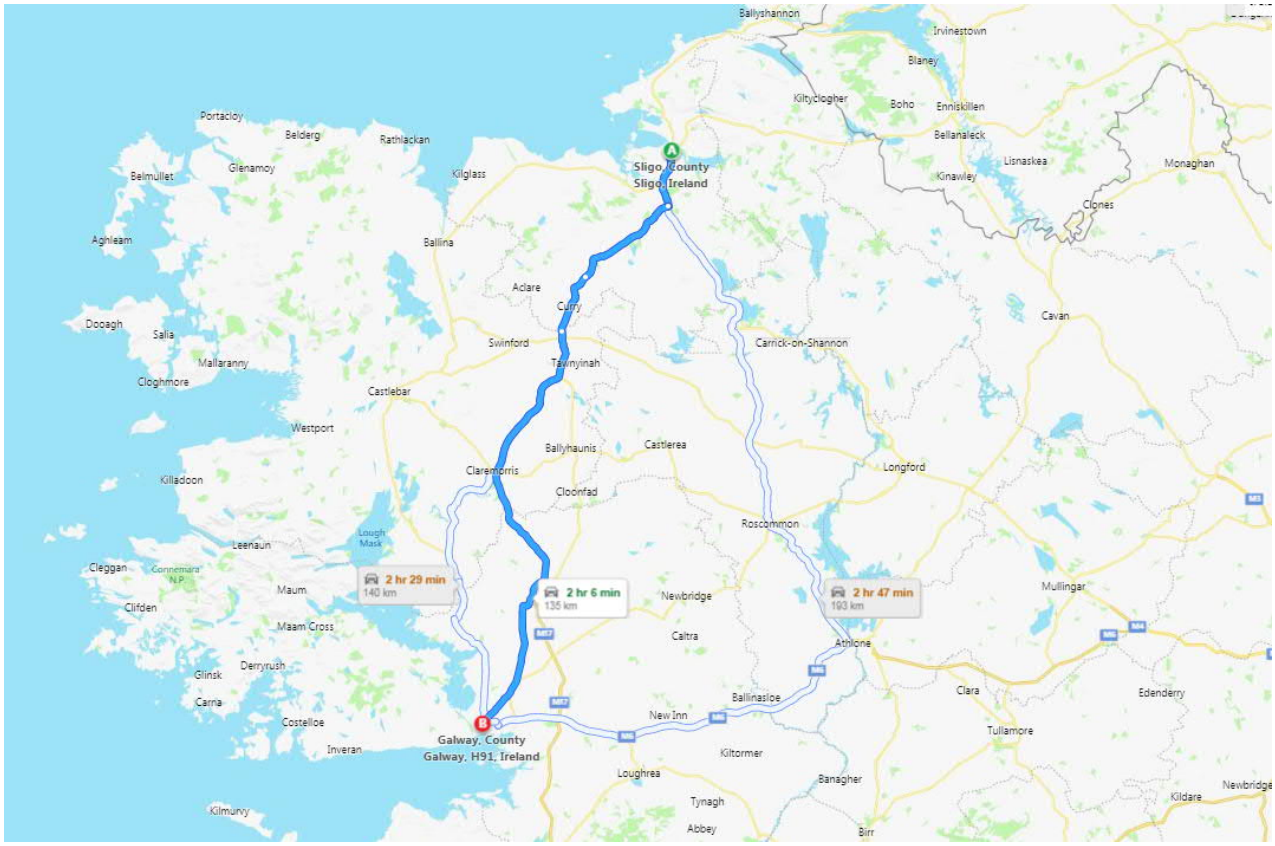


Sligo → Crown Square Development Galway

A Sligo, County Sligo, Ireland

↑	1.	Depart **Lower Knox Street** toward Wine Street	17 m
↑	2.	Road name changes to **Wine Street**	0.2 km
	3.	Road name changes to **R292 / Lord Edward Street**	74 m
↰	4.	Turn **left** onto **N4 / Joe Banks Road**	0.6 km
↻	5.	Pass through 2 roundabouts, remaining on **N4**	10.6 km, 9 min
↻	6.	At roundabout, take **3rd** exit onto **N17**	22.3 km, 21 min
↰	7.	Turn **left** onto **Humbert Street**	0.2 km
↑	8.	Road name changes to **Wolfe Tone Square**	64 m
↑	9.	Keep **straight** onto **R294 / Teeling Street**	0.5 km
↑	10.	Keep **straight** onto **N17 / Charlestown Road** • *Entering County Mayo*	11.2 km, 11 min
↖	11.	Bear **left** onto **N71 / Chapel Street**	44 m
↱	12.	Turn **right** onto **N17 / Ballyhaunis Road**	0.9 km
↻	13.	Pass through 3 roundabouts, remaining on **N17**	59.7 km, 50 min
↻	14.	At roundabout, take **3rd** exit onto **N83 / Galway Road**	28.0 km, 28 min
↑	15.	Keep **straight** onto **R336 / Tuam Road**	0.3 km
↰	16.	Turn **left** onto **road**	0.2 km
	17.	Arrive The last intersection is Tuam Road If you reach R339 / Monivea Road, you've gone too far	

B Galway, County Galway, H91, Ireland



Note: All delivery trucks entering and leaving the project shall follow the instructions issued in this Traffic Management Plan. Unless otherwise advised by JJR Project Management Team it is understood that vehicles will follow the designated routes on all journeys to and from site. This Traffic Management Plan will be issued to all subcontractors, suppliers, and visitors to the site to make it clear about the site working hours, parking arrangements, and restrictions around the local area.

II. Site Access – Vehicular & Pedestrian:

The access into the site is divided into the following:

i. 4no. controlled entrance gateways which will be used for site vehicles and deliveries entering/exiting the site. The main gate will allow access within the site compound to the lay-down area and turning circle where there is very limited space. Subcontractors are encouraged to utilise holding areas elsewhere off site on approach to the area where necessary, so as to ensure that the site works are not causing disruptions to the normal flow of traffic along the approach and access roads.

ii. A number of controlled pedestrian bi-metric turnstile access units will be situated at the site perimeter. The site can only be accessed by authorised site personnel through the site turnstile units. The turnstile units are a security measure to ensure no unauthorised persons can gain access to the site at any time.

These gateways will be adequately sign posted with the below signage at a minimum, to illustrate the above procedures. Public & Site awareness signs will be located at each access point to the Crown Square development.

III. Site Access & Egress Routes:

The management of Crown Square Development construction traffic on the public road network around the local area is an important part of the overall project, and will be actively managed by JJ Rhatigan & Co.

To combat any negative impact on local traffic and traffic in the surrounding areas of the city, JJ Rhatigan & Co. will instruct and direct all construction related traffic to use one route in and out of the city. The below route, which utilises the main transport infrastructure in Galway and the surrounding counties, aims to keep disruption to day to day traffic in the city to a minimum.

The M6 motorway shall be used as the main access route to the site from outside of the city. The M6 merges construction related traffic that may be coming from M17 and M18 and will filter this traffic through to the N6 until the Tuam Road is met. From here, the construction related traffic which needs to access the site (mainly deliveries) will turn left and head towards the city and take another immediate left onto Joyce's Road where the site entrances are located and will be signposted.

The construction related traffic that will be leaving site will be directed to leave via the same route onto the Tuam Road, N6, and then M6. From the Joyce's Road entrances and also the Monivea Road entrances, construction traffic must turn RIGHT when leaving site. The Monivea Road can be very congested at certain times and due to this, JJ Rhatigan & Co. shall instruct all construction traffic to avoid this route upon arrival, and exiting the city.

The site access and egress routes are located within an 50Km/h Zone. Traffic Management Signage shall be made from reflective orange metal with bold black writing will be erected on both approaches to the site access points at intervals of 100m, & 50m. These signs will highlight to all road users that "CAUTION CONSTRUCTION SITE ENTRANCE AHEAD 100M, & WK052 SITE ACCESS ON LEFT WK053 SITE ACCESS ON RIGHT.

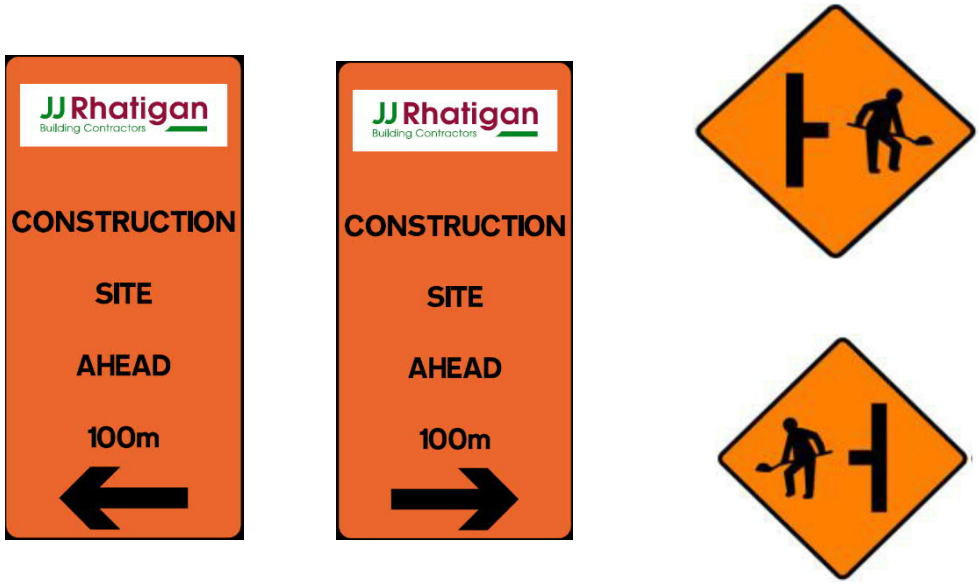


Figure 2 Traffic Management Signage that will be displayed upon approach to site

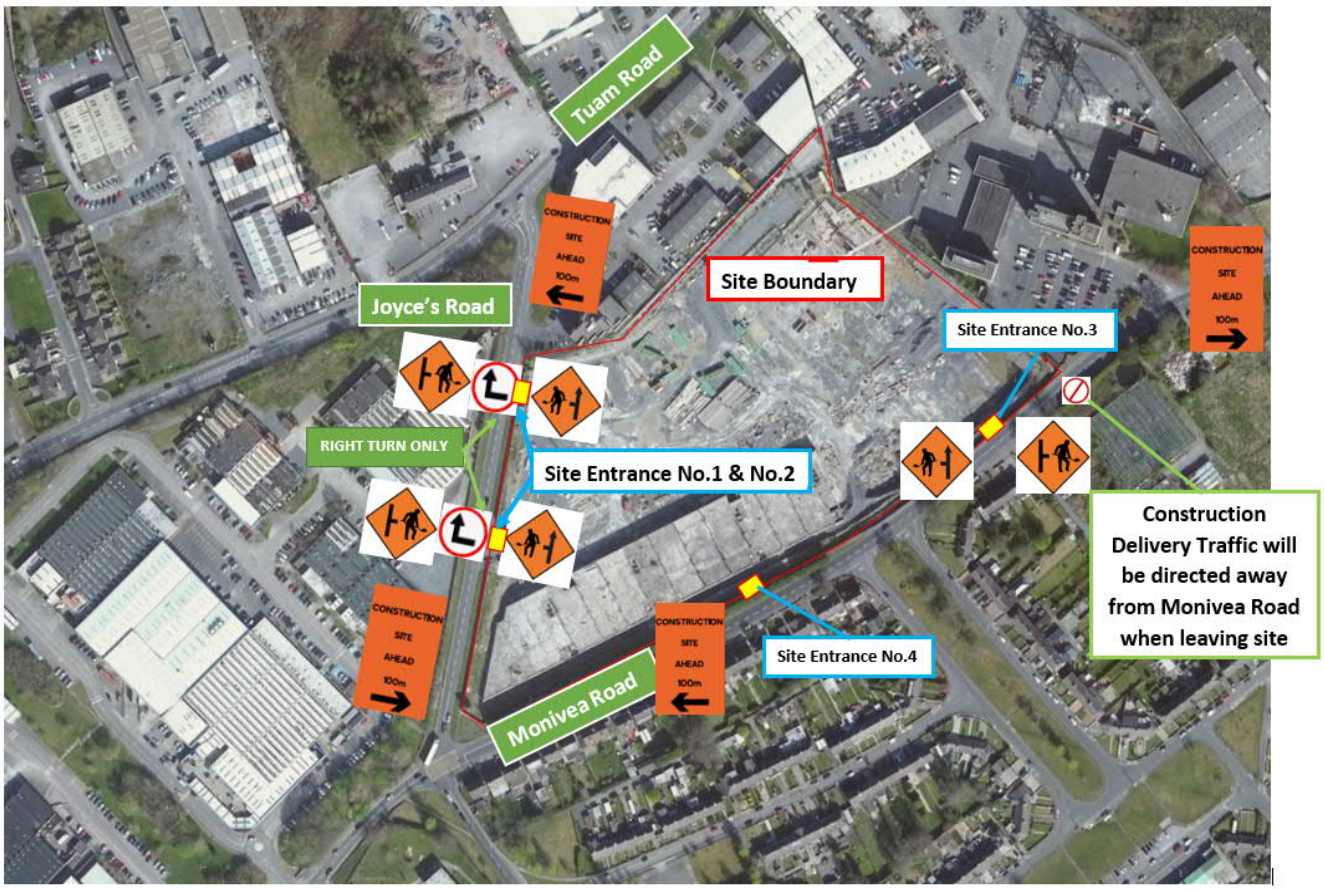


Figure 3 Traffic Management Layout

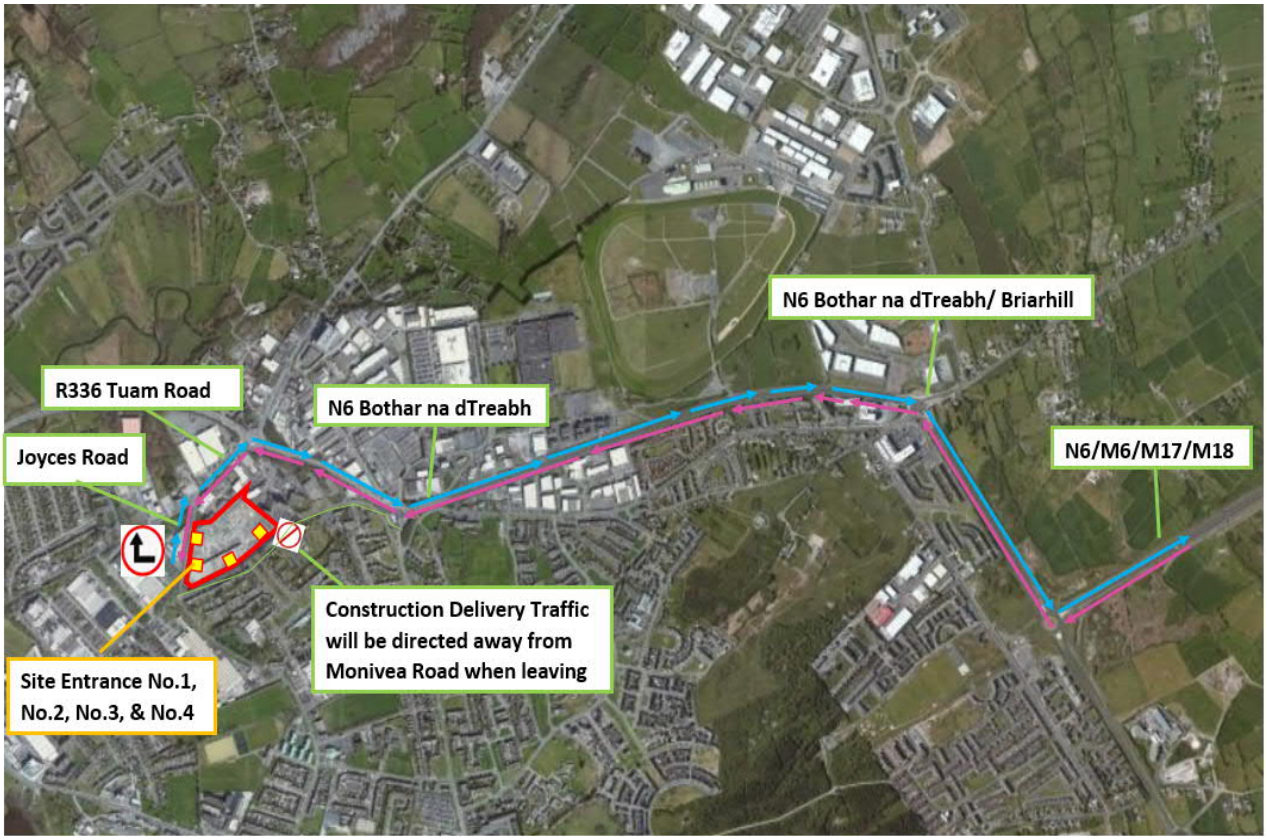


Figure 4 Site Access & Egress Route

The entrance vehicle and pedestrian gateways are the only locations where construction vehicles will interact with the public pedestrians and vehicles, therefore with the controls outlined above will minimise the risk of incident to members of the public, or other road users. The following signage shall be erected at the site exit points at the 4no. locations to warn drivers of the potential hazards:

1. STOP
2. ADVANCED WARNING – CAUTION PEDESTRIANS & OTHER ROAD USERS HAVE RIGHT OF WAY

IV. Internal Traffic Management Crown Square Development:

The traffic route within the site boundary will be set up by provision of haul roads and will be maintained in a clean environment.

The haul roads will be set up from the 4no. access gates to the Material Unloading and Laydown Areas which will be located around the site at various areas. The designated Material Unloading and Laydown Areas will be shown on a Site Logistics Plan. The Site Logistics Plan will be kept up to date with the phases of the development and changed/reviewed as necessary.

The haul roads will be used for deliveries to site and construction site vehicles. The gatemen situated at the site access gates will ensure site deliveries are banked to the laydown areas for unloading and loading.

Pedestrian crossings & walkways will be marked out using pedestrian & red 'loopover' barriers throughout the site. The pedestrian crossings will be marked and the below signage will be in place on both approaches. The red 'loopovers' act as a visual aid for operatives on site to enable them to clearly see the designated crossing points. The pedestrian routes on site will change regularly due to various activities on site and progress of the project.

Construction personnel will enter the site through the biometric turnstile units at the pedestrian entrances, and make their way to the site compound. From there they will be directed around the site via pedestrian direction signs and walkways, with the crossing points on internal roads indicated with the red 'loopovers'.

On occasions where large numbers of delivery vehicles are expected to be on site at one time such as during concrete pours JJ Rhatigan & Co. site management will ensure there is adequate capacity by enforcing the following:

i. JJ Rhatigan & Co. will control and co-ordinate all site movements and delivers to and from the site and be aware of the maximum vehicle capacity on site
ii. Ensure non-critical deliveries are not delivered during these periods.

The speed limit is 10Km/h within the confines of the site boundary and will be signposted accordingly.

V. Exiting Site Lines of Sight:

The pictures below are the sight lines either side of the site road entrance along the Monivea Road, and Joyce's Road. There are no obstacles and a clear view of road ahead on both sides of the site entrance.

R339 view to the left

R339 view to the right

Joyce's Road view to the left

Joyce's Road view to the Right

2.Personnel Transport to Site

There will be very limited onsite parking available for the project. JJ Rhatigan & Co. will monitor the construction personnel car parking to ensure the amenity, livelihood and trade of local residents and business people are not affected. Our site induction for all workers will be very clear on parking arrangements, as well as the issue of this traffic management plan to all appointed subcontractors and suppliers. Means of transportation to the site can be utilised by operatives by then following methods:

- Personal transport vehicle – Operatives can arrange for the legal parking of their own vehicle off site in nearby public car parks. We encourage operatives to car pool if taking this option to reduce the number of public parking used up in the City.
- Cycle – Operatives my choose to cycle to the construction site. In this instance, JJ Rhatigan & Co. will have bicycle stands provided for the securing of bicycles for those who choose to cycle to work.
- Public transport – There are a number of forms of public transport that operatives can avail of in order to get the construction site:
    - Bus services from local towns & villages in Mayo and Galway. Details http://burkesbus.com/
    - Bus services around Galway City. Details https://www.buseireann.ie/inner.php?id=459
    - Rail services into Galway City from a number of locations. Details http://www.irishrail.ie/travel-information/galway-ceannt
    - Public Bike Sharing – A number of options for this are available through the city. Details https://www.bikeshare.ie/galway.html

3. Footpaths & Road ways

All footpaths and roads surrounding the site will be kept clear of construction material and debris. Controls as discussed in the Exiting section of Site Construction Vehicles will be employed to ensure the roads are maintained clean. Construction vehicles will constantly travel on high quality stoned haul roadways within the site boundary which should ensure minimum or eliminate debris gathering to vehicle wheels and undercarriage.

Water hoses will be used inside site perimeter to minimize dust levels during dry weather. Temporary signage will be erected on approach to the main gate highlighting the fact that a construction entrance is ahead. The gatemen situated at the access point shall ensure that footpaths remain clear of debris, materials, and illegal construction vehicle parking. Under no circumstance will illegal parking be tolerated outside the side boundary.

4. Offloading

Offloading of deliveries will, were possible, occur from within the confines of the site footprint. Planned set down areas and unloading areas will be established inside the site, and these areas will be maintained for the duration of the project. Gatemen will aid in the safe access and egress of delivery vehicles to the site.

For deliveries vehicles which must be unloaded from outside the site, a task specific traffic management will be in place, as well as a detailed method statement outlining exclusion zones, safe access for public, and movement of vehicles. A fully segregated set down area will be established. Loads which must be unloaded from the road will be done in a planned manner with the main means of unloading being tower crane and telehandler. Banksmen will be on hand to assist in the unloading procedure which again will be planned and agreed with in advance.

5. Emergency Services Access

At all times throughout the duration of the project all roads will be maintained in a clear and safe fashion to not only provide access for construction vehicles but all emergency services vehicles. This plan will be continuously monitored and updated as necessary. As necessary JJ Rhatigan & Co. will make the site available to the emergency service so as to undertake drills or training or just to inspect the site to ensure that emergency vehicles can gain access to the necessary areas.

Communication:

Communication of this plan to subcontractors, suppliers, delivery companies will be by fax, post or e-mail when appointed. The plan will be communicated to site workers during site induction. Signage will be erected to communicate to the general public, as per the attached drawings.

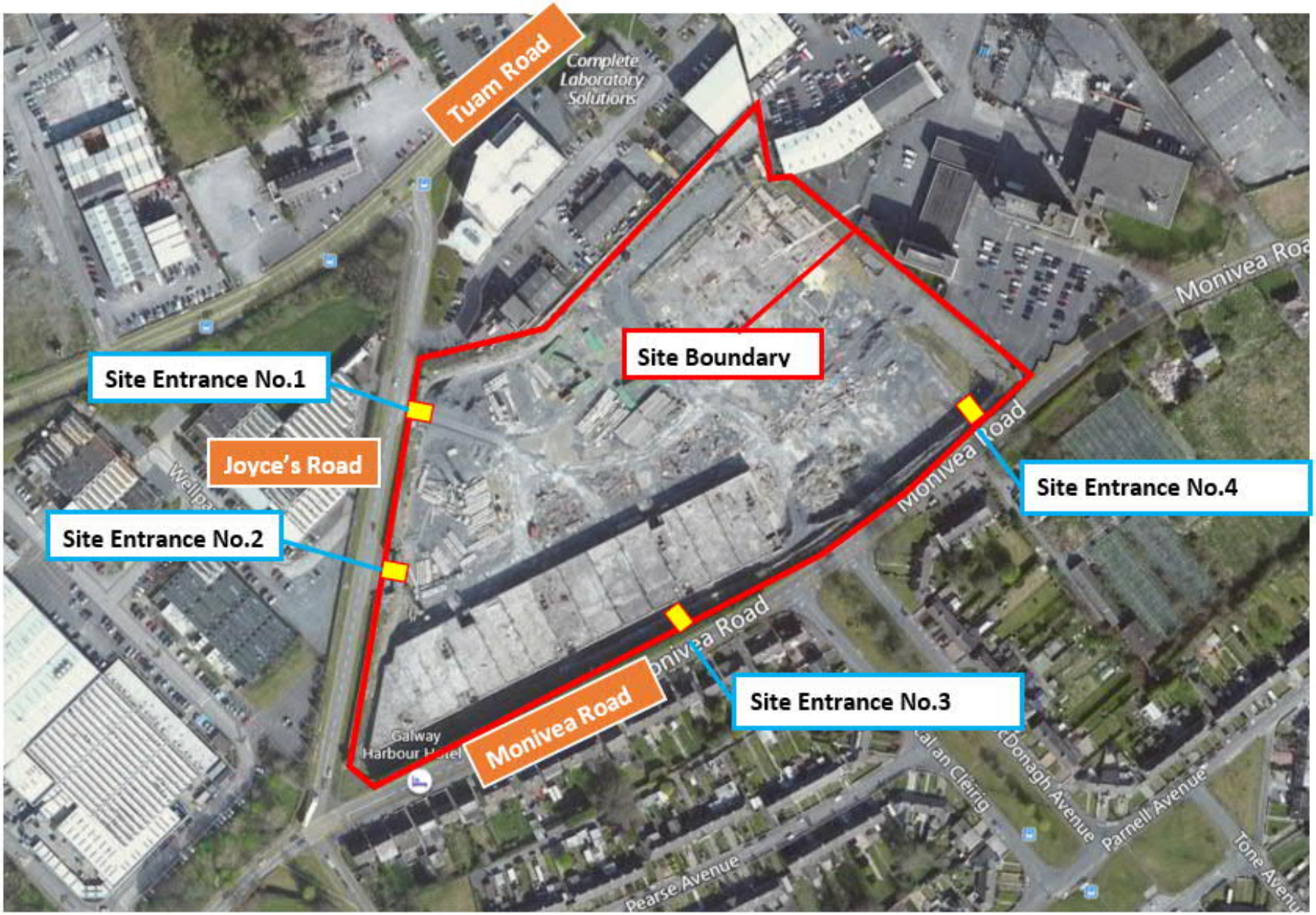
Monitoring & Corrective Actions:

The site management will monitor the compliance of delivery drivers with the requirements of this plan. Any non-conformances will be reported to the Site Management and will be dealt with immediately by notifying the individual driver and his employer, stating that the driver is no longer permitted to return to the site.

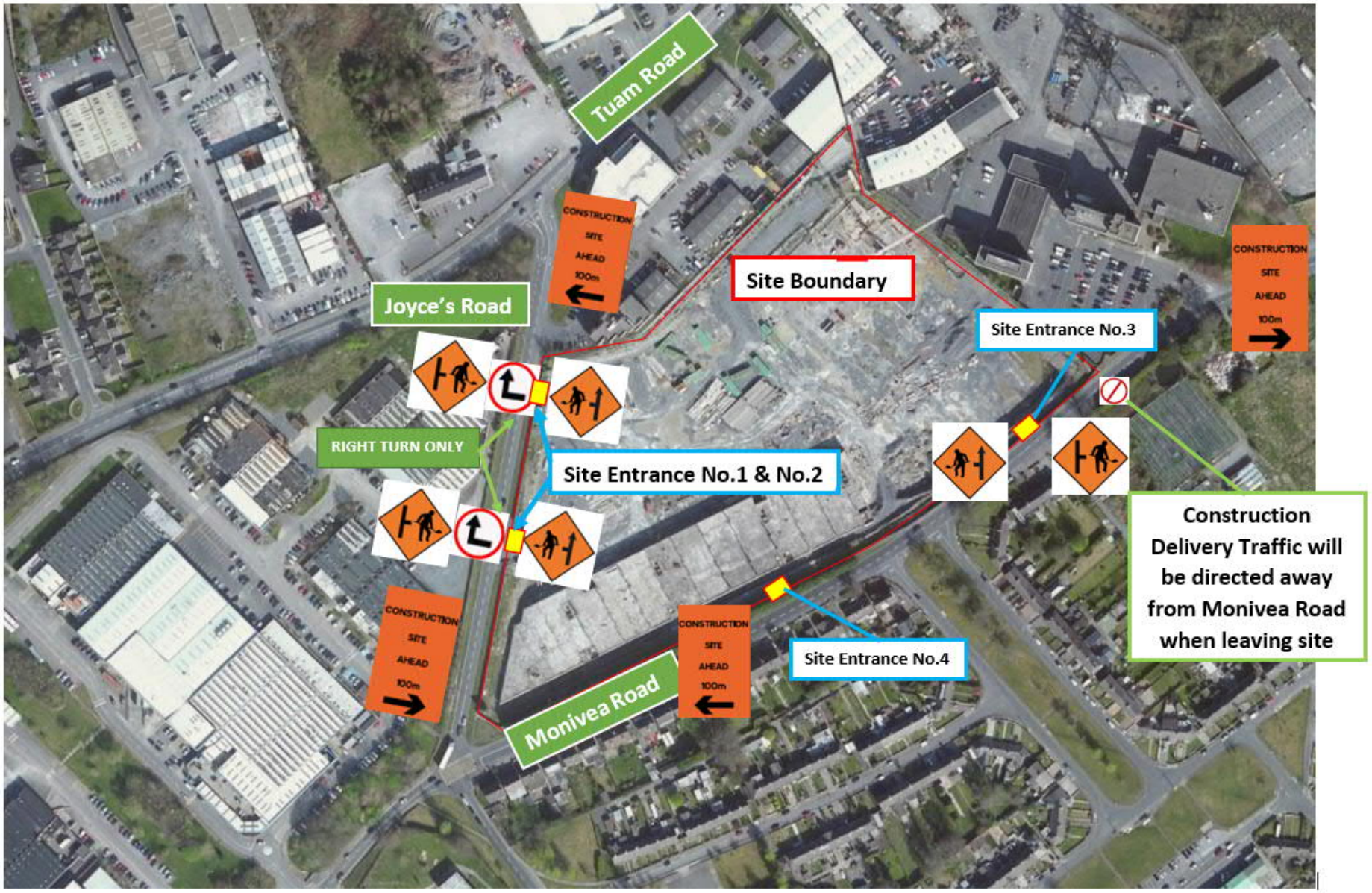
Signage:

JJ Rhatigan & Co. confirm they will use a competent sign provider and all signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 of the Traffic Signs Manual.

Crown Square Site Entrances



Traffic Management Plan Layout



Traffic Management Plan

Site Access & Egress Route