



**Waterman Moylan**  
Engineering Consultants

# **Construction Management Plan**

Dunshaughlin West / Phase 2 SHD, County Meath.

September 2020

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### Quality Assurance – Approval Status

This document has been prepared and checked in accordance with  
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015)

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<b>Issue</b>	<b>Date</b>	<b>Prepared by</b>	<b>Checked by</b>	<b>Approved by</b>
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## Disclaimer

This report has been prepared by Waterman Moylan, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the Client.

We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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# 1. Introduction

## 1.1 Background of Report

This Preliminary Construction Management Plan has been prepared by Waterman Moylan on behalf of Castlethorn Construction ULC to accompany a planning application to Meath County Council for the development of 415 No. residential units with 1 No. childcare facility in Dunshaughlin, Co Meath.

This document has been setup to be a 'living document' which will be updated by the Developer and Main Contractor as the project progresses.

The **Construction Management Plan** sets out typical arrangements and measures which may be undertaken during the construction phase of the project to mitigate and minimise disruption/disturbance to the area around the site. The purpose of this report is to summarise the possible impacts and measures to be implemented and to guide the Main Contractor who will be required to develop and implement the Construction Management Plan on site during the construction period.

As is normal practice, the Main Contractor for the project is responsible for the method in which the construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. The Main Contractor is also responsible for the design and installation of all temporary works required to complete the permanent works. The plan should be used by the Main Contractor to develop their Construction Management Plan/Construction and Demolition Waste Management Plan.

## 1.2 Site Location

The proposed development is the second phase of an overall development located adjacent to R125 Dunshaughlin Link Road approximately 1.0km west of Dunshaughlin Town Centre, west of the GAA Sports Grounds.

The Phase 1 residential development was approved by Meath County Council in April 2013 under Reg. Ref DA/120987, ABP Ref. PL17.241988 and is currently under construction nearing completion.

The Phase 2 residential development, subject to this planning application, is proposed to be delivered in two distinct areas, one to the north of L2208 (Drumree Road) and west of R125 (North Site) and the other to the south of the approved Phase 1 and east of R125 (South Site).

### North Site

The northern site is bounded by agricultural lands to the north and west, with Drumree Road running along its southern border and the R125 running along its eastern border. The north site also surrounds an existing residential property in the south eastern corner.

### South Site

The south site is bounded by the R125 to the west and by Phase 1 to the north. Agricultural lands are adjacent to its southern and eastern borders as shown in Figure 1-1 below.

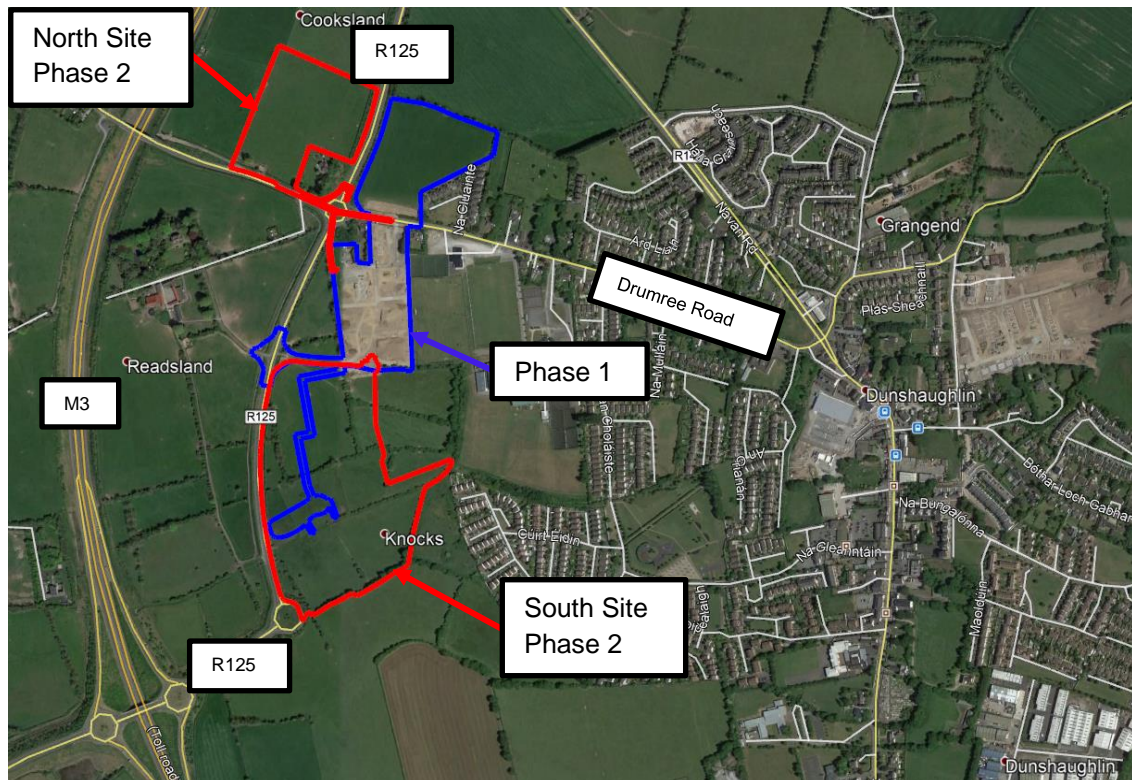


Figure 1-1: Site Location

As per the Meath County Development Plan 2013-2019 for Dunshaughlin, the subject lands are zoned 'A2-New Residential', as shown in Figure 1-2 below.

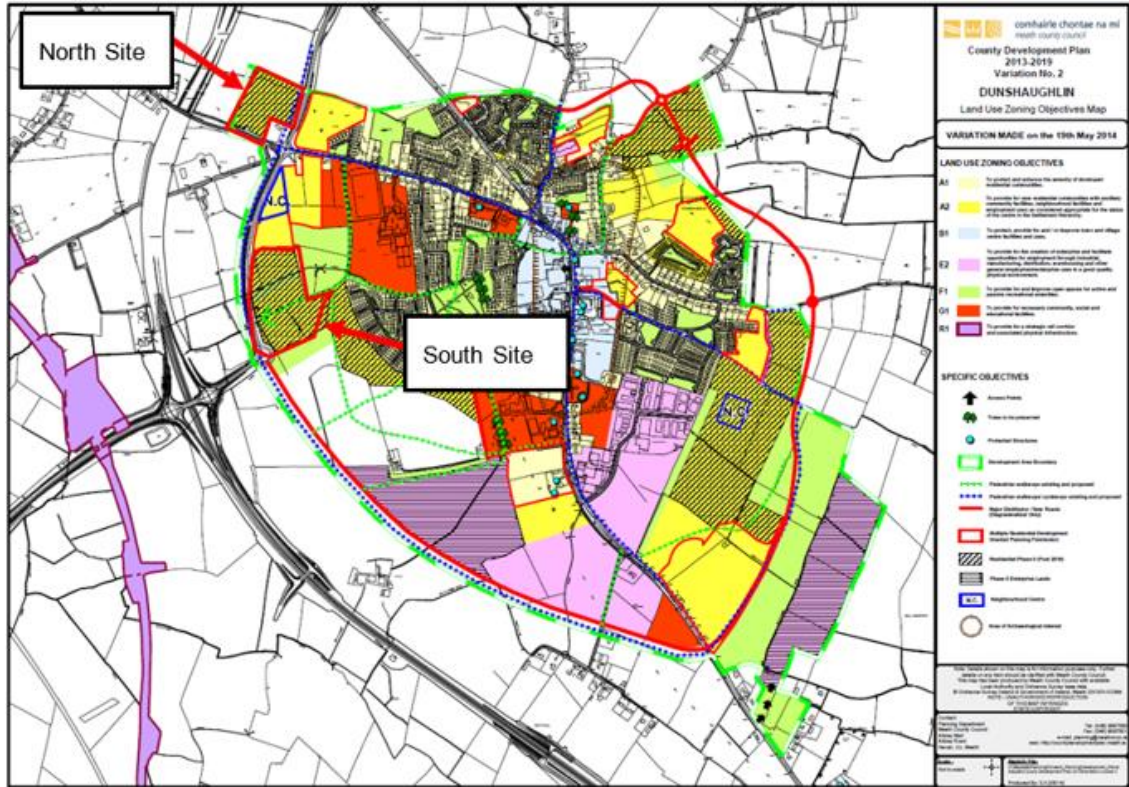


Figure 1-2: Meath County Council Development Plan 2013-2019 Map



### 1.3 Site Access

The subject site will be constructed in three phases, as described below:

- Phase 1 – construction pertaining to the northern portion of the south site;
- Phase 2 – construction pertaining to the southern portion of the south site;
- Phase 3 – construction pertaining to the north site.

Three site access locations have been identified, one per construction phase.

Phase 1 construction access will be via the R125, traversing the eastern edge of the site, around the access junction and into the road constructed between Phase 1 and the northern portion of the Phase 2 south site. The access location will be on the north side of the northern portion of the Phase 2 south site.

Phase 2 construction access will follow a similar route via the R125, with the access point located at the south west corner of the Phase 2 south site.

Phase 3 construction access will be via the R125, connecting onto Drumree Road. The access location will be at the north site development entrance, which is located on Drumree Road, east of the junction round-about.

For further details on the established site access routes for Phase 2, refer to Waterman Moylan Drawing 12-081A-SK005.

## 2. The Site and the Surrounding Environs

### 2.1 Site Description

The overall site area is approximately 14.84 Ha. Both sites are currently greenfield lands

#### North Site

The north site area is approximately 4.32 Ha and generally falls c. 1/67 from north to south. With a high point of 107.84m OD Malin and a low point of 104.44m OD Malin.

#### South Site

The south site area is approximately 10.52 Ha and is split into two catchments by the Skane River. Approximately 297m of Skane River traverses the site dividing the south site into two catchment areas. Catchment A lies to the north and catchment B lies to the south of the Skane River.

Catchment A falls c. 1/80 from north to south towards the river and has a high point of 98.76m OD Malin. Catchment B falls c. 1/42 from from south to north, towards the Skane River, and has a high point of 96.63m OD Malin. The entire south site has a low point of 91.46m OD Malin at the R125 culvert where Skane River leaves the subject site.

Figure 2-1 below shows the contours of the subject lands and various catchments.

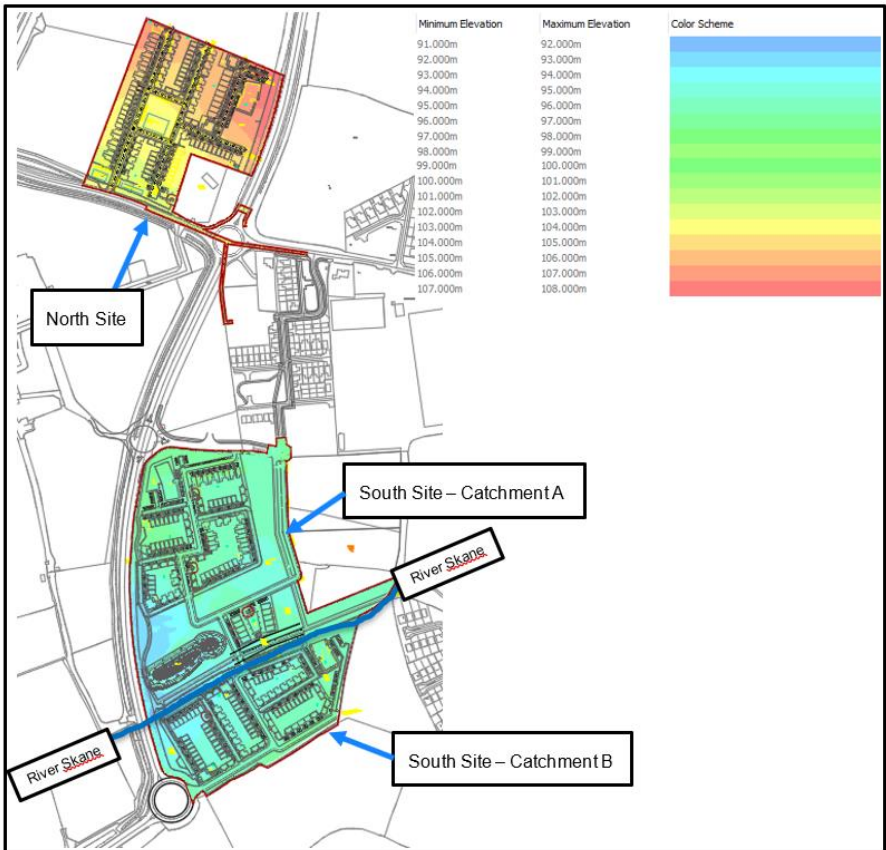


Figure 2-1: North & South Sites Existing Contours & Catchment Areas

## 2.2 Surrounding Environs

The infrastructure of the proposed development is directly linked to the infrastructure constructed and approved under the previous Phase 1 development DA/120987, which is currently under construction to the east of R125 and north and south of Drumree Road, and forms part of the Meath County Development Plan (MCCDP) 2013-2019 for Dunshaughlin.

Public transport routes exist in the vicinity of the subject site, the option for construction workers to use this public transport to the subject site is a possibility.

### Bus

The proposed development site is currently served by Bus Eireann service routes 109, 109A and 109B which serve public bus stops located in Dunshaughlin Town Centre, approximately 1km east of the subject site. These routes connect Dunshaughlin to Dublin Airport, Dublin City Centre and Dublin Busaras Terminal. In the opposite direction, these routes connect Dunshaughlin to Navan, Kells and Trim.

A summary of the peak hour frequencies of these Bus Eireann Routes is presented in Table 2-1.

Table 2-1: Bus Eireann Service Routes.

Route No.	Bus Eireann Service Route	Peak Hours Frequency
<b>109</b>	Dublin – Dunshaughlin – Navan - Kells	30 minutes
<b>109A</b>	Dublin Airport / City Centre – Ashbourne – Ratoath – Dunshaughlin – Navan – Kells	Hourly
<b>109B</b>	Dublin – Dunshaughlin – Kilmessan – Trim	Every Two Hours

Access from the proposed development sites to the subject bus stops in Dunshaughlin Town Centre is via Drumree Road. The location of the subject bus stops in relation to the proposed development sites is illustrated in Figure 2-2 below.

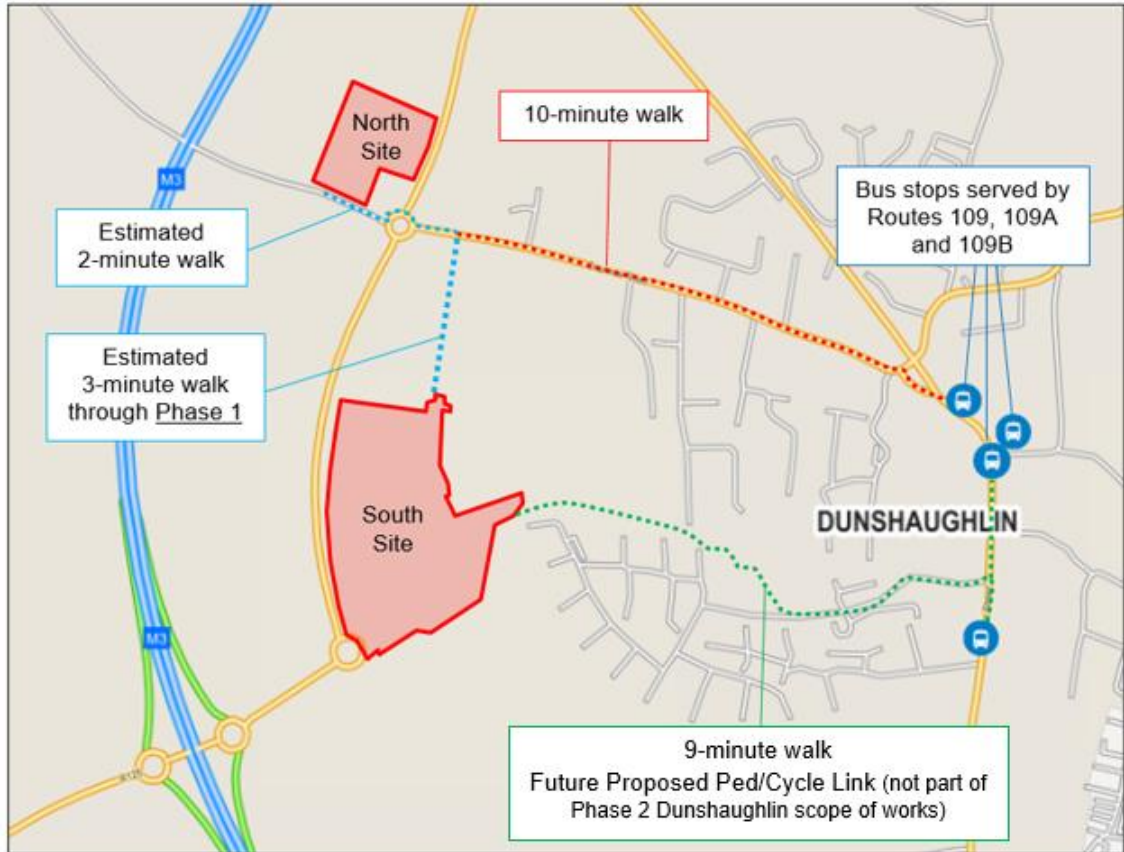


Figure 2-2: Bus Stop Locations and walking distance.

## 2.3 Development

It is proposed to construct a total of 415 No. residential units comprising of 254 dwelling houses, 55 duplex apartments and 106 apartments, and a supporting crèche facility for 80 children and 16 staff. The developer will construct all associated infrastructure to service the development including a network of foul water and surface water drains, watermain network and new access roads and footpaths.

### 3. General Site Set-Up and Pre-Commencement Measures

The following measures will be carried out by the Main Contractor:

1. A general condition survey of the roads and infrastructure in the area prior to any work being carried out on the site. This condition survey to include the roads adjacent to the site.
2. Prior to any site works commencing, the Main Contractor will investigate/identify the exact location of and tag all existing services and utilities around and through the site.
3. 3 No. site compounds including offices and welfare facilities as well as parking to accommodate all operates will be set up by the Main Contractor. These secure compounds are to be located within the subject sites as outlined within Section 11 of this report.
4. No parking of construction related vehicles will be permitted on the adjoining road network and adequate parking facilities will be made available within the Construction Compound for all site workers during the course of construction.
5. The developer has appointed a Project Manager to manage the construction process on site.
6. Access to the site is highlighted within Section 5 of this report.
7. The vehicular entrance to the site will be provided with suitable wheel washing facilities for vehicles which have operated outside the hardstanding stores area. The wheel washing facility will include a rumble ramp which will assist in removing loose mud from the undercarriage of vehicles leaving the site.
8. A banksman will be employed to control the site access and to monitor the surrounding road network to ensure that the roads and footpaths affected by the construction works are maintained in a safe and tidy condition. Road sweepers will be utilised as required.
9. Site security lighting will be located and designed so as not to result in glare on the public road or to impact negatively on any nearby dwellings.  
  
All lighting will be checked by the Project Manager after being installed to ensure that there are no adverse impacts on the public and surrounding dwellings.
10. Typical working hours for the site will be 07:00 to 18:30 Monday to Friday and 08:00 to 14:00 Saturday. No Sunday work is generally permitted. Special construction operations may need to be carried out outside these hours in order to minimise disruption to the surrounding area, which will be subject to agreement with the Planning Authority.

## 4. Construction and Demolition Waste Management

### 4.1 Policy and Legislation

The principles and objectives to deliver sustainable waste management for this project have been incorporated in the preparation of this report and are based on the following strategic objectives:-

- National Policy: The Waste Management Acts 1996 to 2005

This Waste Management Plan is also in accordance with the following guidance note published by the Department of the Environment, Heritage and Local Government in July 2006:-

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition (C&D) Projects 2006.

The hierarchy of waste management sets out the guiding principles in order of importance as follows:-

1. Reduction of the amount of waste generated by the construction process.
2. Segregation of waste is a key concept that will be implemented during the course of the construction phase of the development to enable ease in re-use and recycling, wherever appropriate.
3. Recycle waste material where feasible, including the use of excess excavations as fill material, recycling of various waste fractions such as metals and packaging etc.

This framework is the guide by which we will manage waste generated on this project. The concept ranges from the 'Most favoured to the least favoured options, as follows:

- Prevention-This proposes the prevention of generation of waste. This entails an efficient method of management of the construction processes to prevent, where possible, the generation of waste in the first instance.
- Minimisation-Reducing the quantities of waste generated where prevention is not fully possible.
- Re-use of materials where that may be possible. Example would be the re-use of excavated materials as fill materials elsewhere within the Dunshaughlin Project.
- Recycling - There will be some timber waste generated on this project and such material will be segregated so that it can be removed and recycled by licenced operators.
- Energy Recovery - Waste generated will be segregated for licenced operators to utilise this method in keeping with the characteristics of the material in question.
- Disposal-By following the hierarchy noted above we will ensure that any disposal will be minimised and managed in a controlled way.

## 4.2 Typical Construction Waste

Typical construction waste which will be generated by the development is as follows :-

- General site clearance waste including tree stumps etc.
- There is no known contaminated soil present on the site but if contamination is discovered during the course of construction the excavated material will be required to be disposed of in a licensed landfill site.
- Surface water runoff.
- Packaging and waste construction materials generated during the construction activities.

## 4.3 On-Site Construction Waste Management

All arisings and surplus materials will be disposed of off-site to permitted/licensed facilities, please refer to Section 4.4 below.

All waste concrete and masonry will be stored and if appropriate will be crushed on site and used for site haul roads in later stages of the project.

Skips will be provided for the disposal of wood from the site. It is envisaged that the majority of the wood for disposal will come from pallets used for the transport of construction materials.

Other non-hazardous waste generated by the site (packaging and running of site offices) will be collected in separate roll-on skips.

Any hazardous material encountered will be disposed of to a suitably licenced tip.

The Purchasing Manager will ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

Table 4-1: Estimated C&D Waste Arisings on Site

<b>C &amp; D Waste Material</b>	<b>Quantity (tonnes)</b>
Clay and stones	<i>Minimum anticipated. Arisings will be used as fill and landscaping on the site.</i>
Concrete & Masonry	<i>Minimum anticipated. Arisings will be crushed and used as site haul roads.</i>
Masonry	<i>Minimum anticipated. All arisings will be crushed and used as site haul roads.</i>
Wood	<i>To be Completed by C&amp;D Waste Manager</i>
Packaging & Other Waste Materials	<i>To be Completed by C&amp;D Waste Manager</i>

<b>C &amp; D Waste Material</b>	<b>Quantity (tonnes)</b>
Hazardous Materials	<i>To be Completed by C&amp;D Waste Manager</i>
TOTAL ARISINGS OFF-SITE	<i>To be Completed by C&amp;D Waste Manager</i>

#### **4.4 Off-Site Waste Management Licensing/Permitting**

All waste materials (where necessary, after in-situ reuse and recycling options have been fully considered) will be disposed of off-site, under the appropriate Duty of Care and subject to approvals/consents from the relevant statutory bodies. It is the responsibility of the Main Contractor to ensure that any company to whom waste is transferred is legally permitted to do so and that the facility they bring the waste to is licensed to handle that type of waste as outlined in the Waste Management Acts 1996-2005. The Waste Collection Permit Register, in accordance with the Waste Management (Collection Permit) Regulations 2001 will be consulted to ensure that waste carriers hold the appropriate permit.

The relevant waste collection permits and waste licences will be provided by the Main Contractor.

An inspection of the site will be made by the Main Contractor for hazardous substances, gas cylinders and the like. If such substances are encountered during the course of construction, then works must be halted. The project supervisor for construction stage (PSCS) and the responsible Statutory Authority will be informed immediately.

The Main Contractor will prepare a detailed inventory of construction based hazardous waste generated, such as tars, adhesives, sealants and other dangerous substances, and these will be kept segregated from other non-hazardous waste to prevent possible contamination. Arrangements will be made for such substances for disposal in a safe manner to an authorized disposal site or by means acceptable to the relevant Authority.

The Main Contractor will ensure that the excavation works are carried out in accordance with best standard practice and excavation materials are well segregated to minimize any potential cross-contamination.

The Main Contractor will carry out appropriate environmental chemistry testing in order to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator and the testing will be carried out by an accredited laboratory.

Should excavation materials be assessed to be hazardous, the Main Contractor will carry out pre-treatment of the waste soils to a methodology that is agreed with the receiving landfill operator and in accordance with Environmental Protection Agency guidance.

The Main Contractor is encouraged to reuse and recycle any waste materials as far as is reasonably practicable.

In respect of any liquid disposal including underground water, The Main Contractor will carry out appropriate environmental chemistry testing in order to determine whether the liquid is contaminated



or not. The test regime will be agreed with the receiving disposal facility and the testing will be carried out by an accredited laboratory.

The Main Contractor will manage and carry out the works in accordance with best environmental practice and in accordance with the requirements of Local Authority, EPA and all requirements as specified in this document.

#### 4.5 Appointment of C&D Waste Manager

The Main Contractor will appoint a C&D Waste Manager. The C&D Waste Manager will have overall responsibility for the implementation of the project Waste Management Plan (WMP) during the construction phase.

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

#### 4.6 C&D Record Keeping

It is the duty of the C&D Waste Manager to ensure that necessary licenses have been obtained as needed. Each consignment of C&D waste taken from the site will be subject to documentation which will conform with the table below along with Transportation Dockets to ensure full traceability of the material to its final destination.

Table 4-2: Details of Materials Taken from Site

<b>Detail</b>	<b>Particulars</b>
Project of Origin	Readsland, Roestown and Knocks, Dunshaughlin, Co. Meath
Material being Transported	<i>To be completed by C&amp;D Waste Manager</i>
Quantity of Material	<i>To be completed by C&amp;D Waste Manager</i>
Date of Material Movement	<i>To be completed by C&amp;D Waste Manager</i>
Name of Carrier	<i>To be completed by C&amp;D Waste Manager</i>
Destination of Material	<i>To be completed by C&amp;D Waste Manager</i>
Proposed Use	<i>To be completed by C&amp;D Waste Manager</i>

## 4.7 Topsoil

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- It is important that topsoil is kept completely separate from all other construction waste as any cross-contamination of the topsoil can render it useless for reuse.
- It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height the soil matrix (internal structure) can be damaged beyond repair. It should also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

## 4.8 Earthworks – Cut and Fill Policy

In order to optimise the impact of the generation of surplus material due to excavation the following principles will be considered during the detail design and construction phase: -

- The quantity of excavated materials to be removed from or imported into the site has been reduced by establishing levels of the proposed buildings which optimise the volume of cut and fill as best as possible.
- Unsuitable sub-soils generated by excavations on site will be reviewed for reuse as landscaping or non-engineering fills on adjoining or other construction sites within the region.
- Careful separation of builder's rubble packaging and contaminated waste from re-usable material will result in the minimisation of the disposal of material to landfill.

## 5. Deliveries

The primary issues that affect construction projects include:

- General site access and egress;
- Interaction with existing facilities and operations;
- The location and amount of parking;
- The timing and extent of material deliveries;
- Traffic conflicts with both existing vehicles and other construction traffic;
- Traffic congestion and conflicts on external roads;
- Signage and directions;

The Main Contractor will take a proactive role in the management of construction traffic generated by the construction works and will appoint a Construction Manager who will be responsible for the development and implementation of the CMP.

The Main Contractor will be obliged to appoint a Temporary Traffic Management Designer who will provide the Construction Stage Traffic Management Plan

Actions which will be implemented to manage these construction traffic issues and to minimise their conflicts with other activities are detailed below.

Site access during construction will be as per Section 1.3 of this report.

### 5.1 Traffic Management Measures

All traffic management control measures will comply with:

- Department of Transport Traffic Signs Manual, Chapter 8 Temporary Traffic at Roadworks October 2010,
- Guidance for the Control and Management of Traffic at Roadworks 2007,
- Safety Health and Welfare (Construction) Regulations 2013
- Safety Health and Welfare at Work (General Application) Regulations 2007.

Signage and traffic management measures will be revised to reflect the progress of the work and any other significant changes that occur.

The Construction Manager will be responsible for providing the external directional signage and on-site signage regarding traffic management.

On-site signage, speed limits and speed reducers will be used to ensure drivers use appropriate routes through the site and to and from the site access points.

The following Traffic Management measures will be implemented during the course of the construction period:

1. Construction traffic will use designated access and egress routes to the project. The site access gates will be clearly marked "For Construction Access Only".
2. No parking for staff or visitors will be allowed outside the confines of the site boundaries. Sufficient parking will be provided within the site itself.
3. No material deliveries will be permitted to unload outside the confines of the site boundaries.
4. Continuous material deliveries, such as major concrete pours, will be phased and delivery vehicles will be timed, where possible, to ensure that delivery trucks are not parked on the public road awaiting access to the delivery area.
5. All routine material deliveries will be timed to arrive at the site outside peak traffic hours on the local road network, wherever possible.
6. Removal of waste material from the site will be timed to leave the site outside peak traffic hours on the local road network, wherever possible.
7. The Main Contractor will arrange for an information package to be issued to staff and haulage sub-contractors advising them of the routes for HGV's, parking restrictions and the timing of deliveries or collections to and from the site.
8. The Main Contractor will manage the access point to the site, ensuring that all vehicles leaving the site are clean and will direct vehicles to the wheel wash if necessary.
9. The Main Contractor will ensure that the public roads adjacent to the site are kept clear and clean at all times.
10. Temporary road closures and relocations during the construction period, if required, will be subject to coordination with the Local Authority, Fire Brigade, Dublin Bus, the Gardaí and other appropriate authorities. Existing hydrants will remain accessible or will be relocated if required.
11. The Construction Manager/Site Manager will review and analyse the cause of detected non-conformance related to traffic management and develop a corrective action to prevent recurrence.
12. Prior to commencing any works on the public road a detailed temporary traffic management plan will be prepared by the Contractor and agreed with Meath County Council.

## **5.2 Traffic Management Implementation**

The Construction Manager will report to the Developer, when required, on the implementation of the Construction Management Plan. The Construction Manager will periodically update the plan in order to reflect the progress of the construction works and to take into account any significant changes. These changes will include, but are not limited to:

- Access points in use;
- Location of parking areas;
- Variations to traffic management plans.

## **6. Parking and Storage**

A site compound including offices and welfare facilities as well as parking to accommodate all working staff will be set up by the Main Contractor. This secure compound is to be located within the subject site. For detail of the location of the site compounds for each of the 3 No. construction phases please refer to Section 11 of this report.

No parking of construction related vehicles will be permitted on the adjoining road network and adequate parking facilities will be made available within the Construction Compound for all site workers during construction.

The Main Contractor will be required to schedule delivery of materials strictly daily.

## 7. Dust and Dirt Control

Excavation activities will by their nature generate mud during wet periods and dust during dry periods. Mud and dust on site will be controlled as far as practical by the use of water bowsters during dry periods and by mechanical street sweepers as required. Suitable wheel washing facilities will be provided.

The public roads which provide access to the site will be monitored and cleaned as necessary to ensure that the road is free from any deleterious materials arising from the construction works.

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

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

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

### 7.1 Mitigation Measures

The following are techniques and methods which are widely used currently throughout the construction industry to control dust and dirt emitting from the site, and which may be used in the proposed Phase 2 Dunshaughlin, within the County Meath development.

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

10. Servicing of vehicles and plant should be carried out regularly, rather than just following breakdowns.
11. Internal combustion plant should not be left running unnecessarily.
12. Where possible fixed plant such as generators should be located away from residential areas.
13. The number of handling operations for materials will be kept to a minimum to ensure that dusty material is not moved or handled unnecessarily.
14. The transport of dusty materials and aggregates should be carried out using covered / sheeted lorries.
15. Material handling areas should be clean, tidy and free from dust.
16. Vehicle loading should be dampened down and drop heights for material to be kept to a minimum.
17. Drop heights for chutes / skips should be kept to a minimum.
18. Dust dispersal over the site boundary should be minimised using static sprinklers or other watering methods as necessary.
19. Stockpiles of materials should be kept to a minimum and if necessary, they should be kept away from sensitive receptors such as residential areas etc.
20. Stockpiles where necessary, should be sheeted or watered down.
21. Methods and equipment should be in place for immediate clean-up of spillages of dusty material.
22. No burning of materials will be permitted on site.
23. Earthworks excavations should be kept damp where necessary and where reasonably practicable.
24. Cutting on site should be avoided where possible by using pre-fabrication methods.
25. Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc., which minimise dust emissions and which have the best available dust suppression measures, should be employed.
26. Where scabbling is to be employed, tools should be fitted with dust bags, residual dust should be vacuumed up rather than swept away, and areas to be scabbled should be screened off.
27. Wet processes should be used to clean building facades if possible. If dry grit blasting is unavoidable then ensure areas of work are sealed off and dust extraction systems used.
28. Where possible pre-mixed plasters and masonry compounds should be used to minimise dust arising from on-site mixing.
29. Prior to commencement, the Main Contractor should identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions. Furthermore, the Main Contractor should prepare environmental risk assessments for all dust generating processes, which are envisaged.
30. The Main Contractor should allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.

## **8. Surface Water**

Following completion of any required initial dewatering of excavations for the drainage pipes, water supply, utilities and foundations, it is expected that flows of water into the excavation will be relatively small. These flows will be managed by sump pumping as required.

During any discharge of surface water from the excavations, the quality of the water will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

The surface water runoff during construction, from north site, will be pre-treated within the site and sediments removed before discharging into the existing drainage network on Drumree Road, which ultimately terminates in the River Skane.

The surface water runoff during construction, from south site, will be pre-treated within the site and sediments removed before discharging into the existing drainage network constructed under Phase 1, or before discharging into the River Skane.



## 9. Noise Assessment and Control Measures

The Main Contractor will deal with the immediate dangers to hearing etc. associated with high noise levels and the impact of same on construction operatives, by means of risk assessment and mitigation/precautionary measures and equipment, all pursuant to the current health and safety legislation and B.S.5228 Noise Control on Construction and Open sites.

Current legislation limits, assessment period of 8 hours of one week (noisiest 8 hours likely to experience):

- Lower Action Value (LAV) – 80 dBA  $L_{EX,8}$ , 135 dB Peak – Hearing Protection will be made available and information will be provided.
- Upper Action Value (UAV) – 85 dBA  $L_{EX,8}$ , 137 dB Peak – Use of Hearing Protection is mandatory, measures to eliminate the noise as much as possible will be applied.
- Exposure Limit Value (ELV) – 87
- dBA  $L_{EX,8}$ , 140 dB Peak – Not to be exceeded

Protection by ear plugs/muffs given by their Signal-to-Noise Ratio (SRN) or Noise Reduction Rating (NRR) is typically 20 – 30 dB.

- Exposure =  $L_{EX,8} - (SNR - 10)$

As a guide, if it is difficult to hear a normal conversation at a distance of 2m or a workplace is consistently noisier than a busy street, it is likely that the noise levels in the area are above 80 dBA.

### 9.1 Potential Noise Sources

It is not envisaged that any excessively noisy activities to be carried out over extended periods of time during the construction stage. However, due to the nature of the construction works, exposure to noise levels more than 80 dBA (Safe Working Limit) may occur occasionally. The Main Contractor will carry out a noise assessment in relation to the proposed works at construction stage. The noise assessment will identify, but not limited to, the following steps in its analysis; -

1. Potentially Hazardous Activities
2. Potential Hazards
3. Persons at Risk
4. Risk of Exposure to the Potential Hazard
5. Risk Assessment before the Implementation of Control Measures
6. Risk Assessment after the Implementation of Control Measures
7. Control Measures Implemented by: Site Manager / Works Supervisor

## 10. Erosion and Sediment Control

### 10.1 Run-Off to Ditches

Significant quantities of waste and potential pollutants can be generated during construction. Controls must be put in place to prevent these pollutants from washing into the local storm water system.

The surface water runoff from the site will initially be treated within the site and then pass through the existing surface water systems and ultimately discharge into the River Skane.

Protection of the water courses is paramount during the construction stage of the subject development. Temporary measures will be put in place to remove sediments, oils and pollutants.

The recommendations as outlined in the Eastern Regional Fisheries Board document outline the following seven items to be considered for the protection of adjacent water courses during the construction stage:

1. Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from the watercourse. Refuelling of machinery, etc., should be carried out in bunded areas.
2. Runoff from machine service and concrete mixing areas must not enter the watercourse.
3. Stockpile areas for sands and gravel should be kept to minimum size, well away from the watercourse.
4. Runoff from the above should only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels.
5. Settlement ponds should be inspected daily and maintained regularly.
6. Temporary crossings should be designed to the criteria laid down for permanent works.
7. Watercourse banks should be left intact if possible. If they have to be disturbed, all practicable measures should be taken to prevent soils from entering the watercourses.

The main pollutants of site water are silt, fuel/oil, concrete and chemicals. See Table 10-1 below for a list and brief description of pollution prevention measures.

<b>Source</b>	<b>Action</b>
Detergents	Use of detergents should be carried out in designated areas draining to the foul sewer.
Fuel/Oil	Fuel/oil stores must be located away from the site drainage system and the edge of watercourses.
Fuel/Oil	Ensure adequate measures are identified to prevent or contain any spillage such as creating a fall away from any drainage grid or blocking drainage points.
	Prevent oil pollution by: <ul style="list-style-type: none"> <li>• Suitable bunded storage of fuel/oil, and use of drip trays under plant, and</li> <li>• An oil separator, and/or</li> <li>• On-site spill-kit</li> <li>• Commercially available absorbent granules, pads or booms.</li> </ul>
Material Storage	Store drums, oil and chemicals on an impervious base and within a secured bund.
	Ensure topsoil and/or spoil heaps are located at least 10m away from water courses. Consider seeding them or covering with a tarpaulin to prevent silty runoff and losses due to wind.
Leaks and Spills	Storage facilities are to be checked on a regular basis to ensure any leaks or drips are fixed to prevent loss and pollution.
	Ensure appropriate spill response equipment is located near to the material in case of containment failure or material spills, and ensure site staff know how to use it.
	Adequate stocks of absorbent materials, such as sand or commercially available spill kits and booms should be available at all times.
Litter	Provide waste bins on-site as appropriate.
Construction Vehicles	Provide vehicle wheel washing.
Concrete, Cement and Bentonite	Washout of these materials should be carried out in a designated, impermeable contained area. The washout water itself should be disposed of off-site, or discharged to the foul sewer if authorised.

Table 10-1: Pollution Prevention Measures

## 10.2 Sediment Control

Construction runoff is heavily laden with silt which can block road gullies and reduce the hydraulic capacity in pipes and rivers, contributing to ponding and flooding. Continued development without appropriate controls will ultimately keep maintenance costs elevated, whether that be in cleaning gullies, jetting pipes or dredging. Sediment control plans can be implanted on site to mitigate these issues.

Sediment basins and traps should be installed before any major site grading takes place. Additional sediment traps and silt fences should be installed as grading takes place to keep sediment contained on site at appropriate locations.

Key runoff-control measures should be in conjunction with sediment traps to divert water from planned undisturbed areas away from the traps and sediment-laden water into the traps. Diversions should be installed above the areas to be disturbed before any grading operations. Any perimeter drains should be installed with stable outlets before opening major areas for development. Any additional facilities needed for runoff control should be installed as grading takes place.

During grading operations temporary diversions, slope drains, and inlet and outlet protection installed in a timely manner can be very effective in controlling erosion and sediment build up.

The main run-off conveyance system with inlet and outlet protection measures should be installed early and used to convey stormwater run-off through the development site without creating gullies or channels. Install inlet protection for storm drains as soon as the drain is functional to trap sediment on site in willow pools and to allow the flood flows to enter the storm drainage system safely. Install outlet protection at the same time as the conveyance system to prevent damage to the receiving waters.

## 10.3 Sediment Control Measures

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area should pass through a sediment entrapment facility before it exits the site and flows downstream.

- Straw Bales

Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance is necessary to ensure their performance.

- Silt Fencing

A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing can be placed as a temporary barrier along the contour at the base of a disturbed area, but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter should be considered.

- Silt Barriers

Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff should be collected in diversion drains and routed through temporary sediment basins.

- Diversion Drains

Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded they can be lined with geotextile fabric or large stones or boulders.

## 11. Construction Phasing and Programme

It is proposed that the development will be constructed in 3 phases. All three phases are separate self-contained sites with the likelihood of two phases being active at certain time periods within the overall construction timeframe.

During the first phase the section of South Site that is located north of the River Skane will be constructed, during the second phase the section of South Site located south of the River Skane will be constructed and finally, during the third phase the North Site will be constructed.

All three phases and the location of each construction compound to be utilised during each phase is indicated within Figure 11-1 and Figure 11-2. The legend shown in Figure 11-1 is to be used for both figures.

It is estimated that the duration of construction works will last 24 to 36 months depending on the sales velocities. During the initial periods of each phase it is estimated that typically 50 to 60 staff will be on site per day and during peak construction periods it would fluctuate up to 150 to 200 staff and contractors on site per day in total.

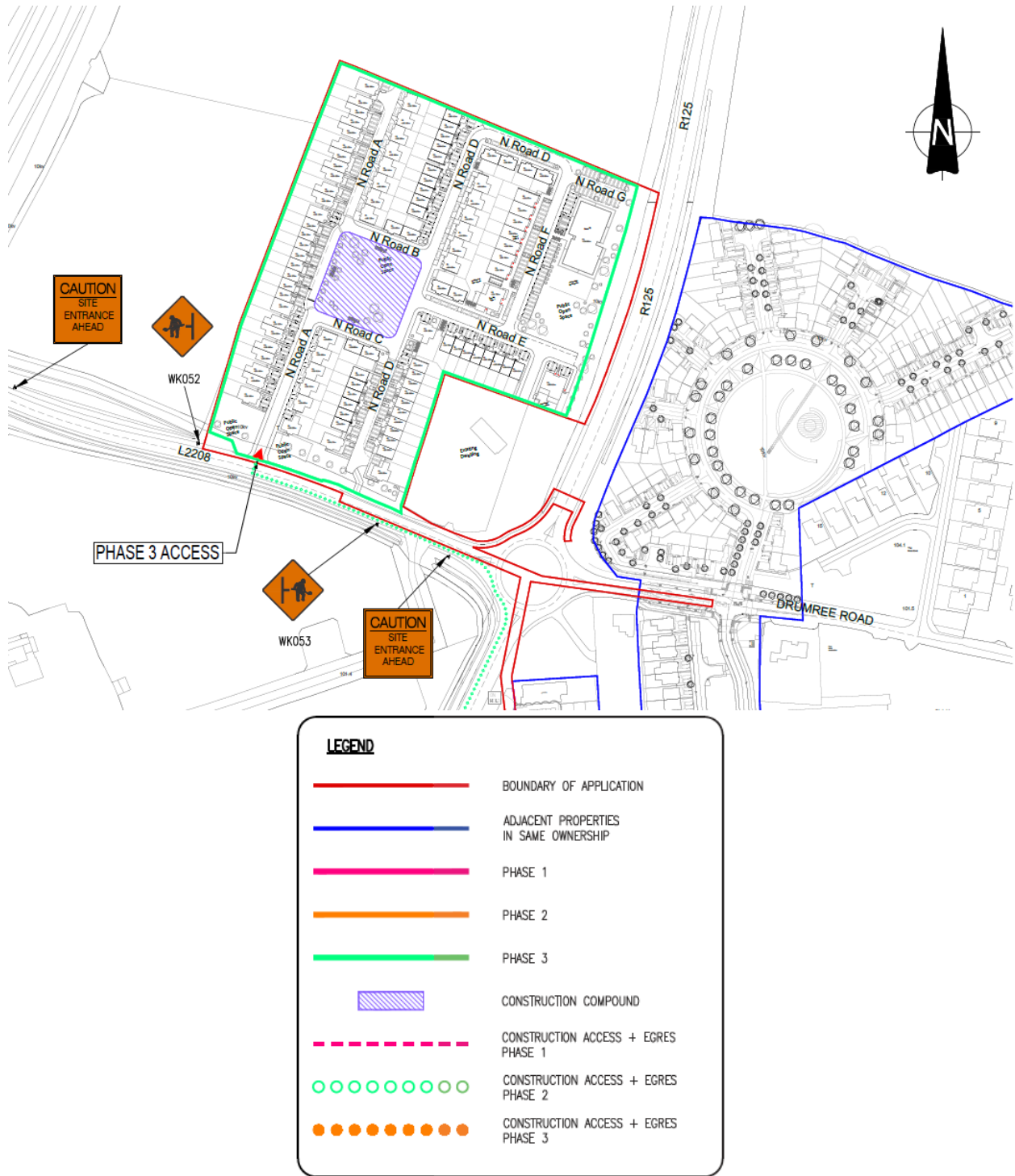


Figure 11-1: North Site - Site Construction Compounds

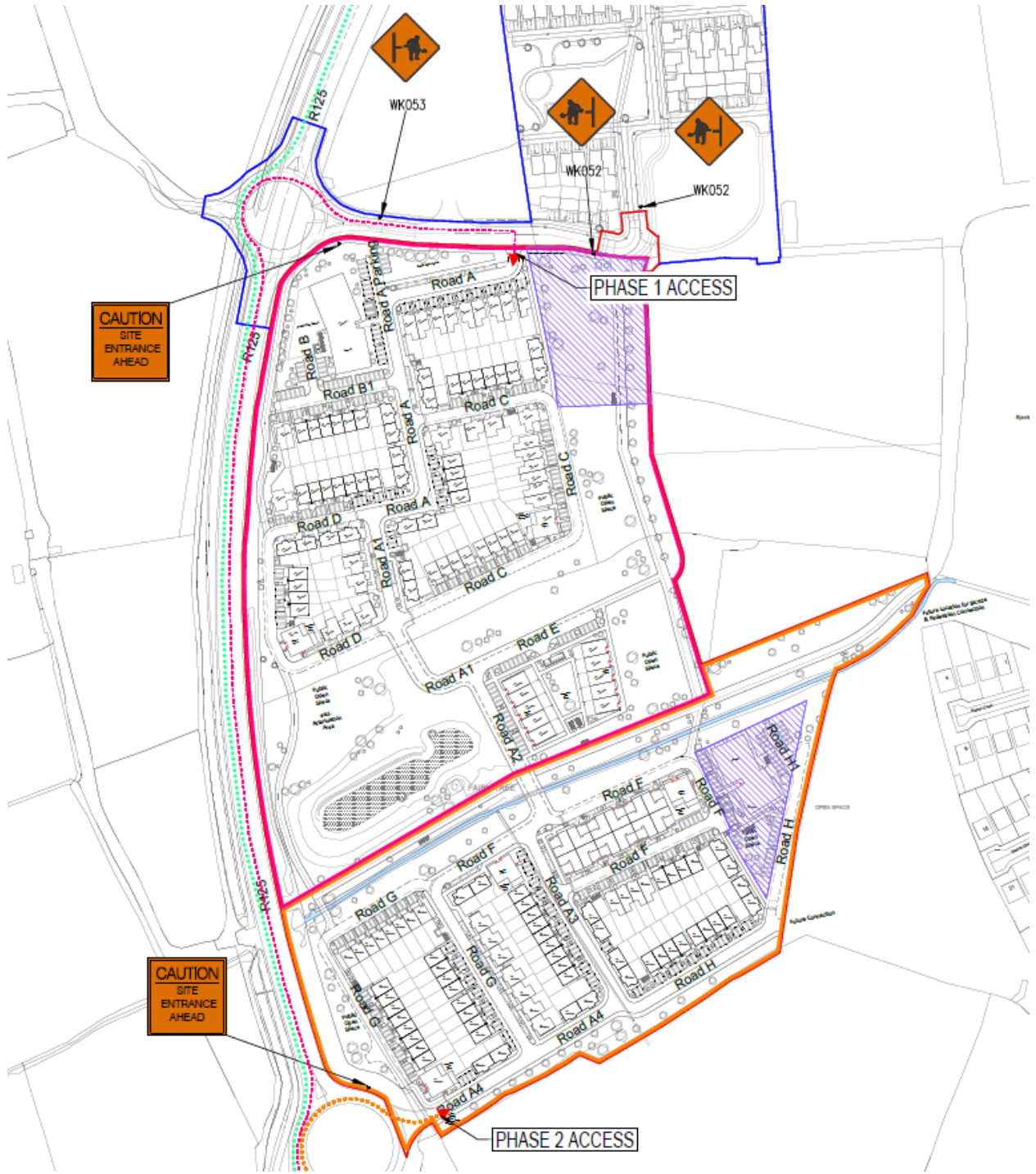


Figure 11-2: South Site - Site Construction Compounds



# UK and Ireland Office Locations

