



Project

Residential Development at  
Glencairn, Murphystown Way,  
Dublin 18.

p170074

Report Title

CONSTRUCTION & ENVIRONMENTAL  
MANAGEMENT PLAN

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## 1. WORKS PROPOSAL

This Construction Management Plan is for the works associated with the construction of a proposed residential development at Murphystown Way, Dublin 18. The construction management plan addresses noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound / public health facilities and staff parking, all associated with the construction works.

The site is bordered to the north by the existing M50 Motorway, to the south-west is the Murphystown Way. On the western border is the Green-line LUAS tracks with existing residential development located to the east. Located on the southern boundary of the site is the existing Glencairn House (UK Ambassador's Residence) whose future boundary wall with the application site is the subject of a separate approved planning permission D17A/0913.

The application site is located adjacent to Glencairn House. The proposed development seeks to demolish an existing house on site and provide for the construction of 341 no. residential units, a childcare facility, open space and all associated site and infrastructural works on a site of c. 9.59 hectares.

The associated site and infrastructural works include foul and surface water drainage, internal roads and footpaths, car parking spaces and bicycle spaces, public open space, landscaping, street lighting, walls and fences. The proposal includes for access to and improvements to the greenway to the south, to Murphystown Way to the west and connections to existing services adjacent to the application site.

The proposal seeks to relocate the entrance portal (including the archway, gates, flanking walls and railings), from the existing location at the entrance to the site, to a new location within the site in closer proximity to the permitted new entrance to Glencairn House (new entrance and boundary to Glencairn House permitted under Reg. Reg.: D17A/0913). A contemporary entrance arrangement is to be provided at the portal's existing location.

The residential development consists of 243 no. apartments and 98 no. houses, to be provided as follows:

- 45 no. 1-bed apartments;
- 174 no. 2-bed apartments;
- 24 no. 3-bed apartments;
- 39 no. 3-storey, 4-bed (Type A1) houses;
- 7 no. 3-storey, 4-bed (Type A2) houses;

- 3 no. 3-storey, 4-bed (Type A3) houses;
- 14 no. 2-storey, 3-bed (Type B1) houses;
- 3 no. 2-storey, 4-bed (Type B2) houses;
- 17 no. 2-storey, 3-bed (Type C1) houses;
- 4 no. 2-storey, 3-bed (Type C2) houses;
- 1 no. 2-storey, 3-bed (Type C3) houses;
- 2 no. 2-storey, 5-bed (Type D1) houses; and
- 8 no. 2-storey, 5-bed (Type D2) houses.

The 243 no. apartments are proposed to be provided within 7 no. apartment buildings (4 and 5 no. storeys in height), including undercroft basements. The childcare facility has an area of 300 sq.m and is located at the ground floor level of the apartment block within the south western section of the site. The houses consist of 2 and 3 storey semi-detached and detached dwellings.



Figure 1.1 – Site Location, Glencairn, Murphystown Way, Dublin 18 (Extract Google Maps)

## 2. COMPOUND FACILITIES / PARKING

The construction compound for the infrastructure works shall be entirely within the site boundary. The compound shall be constructed using a clean permeable stone finish and will be enclosed with security fencing. Site accommodation to be provided will include suitable washing / dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure.

A permeable hardstand area will be provided for staff parking and these areas will be separate from designated machinery / plant parking.

A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.

A series of 'way finding' signage will be provided to route staff / deliveries through the site and to designated compound / construction areas.

On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.

## 3. TRAFFIC MANAGEMENT

As part of Construction Stage Safety Plan for the works a Traffic Management Plan (TMP) will be prepared in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board;
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS)

The site will be accessed from the existing site entrances from Murphystown Way. Traffic volumes are not anticipated to be significant and turning movements into the site shall be accommodated without delay. Warning signage will be provided for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic

Management Plan and construction 'goal posts' will be set up at either side of LUAS tracks to control high-topped vehicles.

It is intended that the proposed junction works on Murphystown Way, with traffic signalisation at the existing 'northern' entrance to the site, will be completed in full at the initial stage of the project. Upon completion of the Murphystown Way works, this configuration will be used for all construction traffic accessing the site for the remainder (and majority) of the works duration. Until such time as the works on Murphystown Way are completed, it will be necessary to access the site from the existing 'southern' entrance off Murphystown Way. DBFL met with TII who are responsible for the LUAS tracks running along Murphystown Way, TII stated that construction traffic ideally should not use the site's existing 'southern' access, as construction traffic may protrude into the LUAS line or onto the Murphystown Way, however, it will be necessary to utilise the southern access for a short time in order to construct the permanent site entrance at the northern access.

A banksman/traffic control manager will be employed at the existing southern entrance to control access to the site and construction traffic, pedestrian and regular vehicular movements across the LUAS tracks until such time as the Murphystown Way works are commissioned. Vehicle set-down areas will be provided at the southern access on entrance and exit from the site to ensure that vehicles do not protrude into the LUAS tracks or onto Murphystown Way when stopped. Furthermore, security personnel will man the gate to ensure no unauthorised vehicles or personnel will enter the site and will also ensure that vehicles exit safely and without causing disruption to road users and pedestrians.

The LUAS operator will provide a specific safety course for any party working adjacent to the LUAS line. Additionally, the relevant party will undergo a 'Train the Trainer' course. On completion of this course the relevant party may, with the agreement of the LUAS operator, provide the training to their own personnel.

In addition to the above, for the duration of the Murphystown Way works, the existing Garda hut will to be moved from its location at the existing northern entrance to a temporary location at the southern entrance. Only construction traffic carrying out to the construction works will be permitted to take a right turn from the site, all other traffic will be restricted to left in/left out. In addition, the site traffic manager will be cognisant of the LUAS timetable to coordinate traffic and pedestrian movements and minimise potential for conflicts.

It is expected that the Murphystown Way construction works will take approximately 2 months to complete, once the upgrades and new access road to the development are completed, the southern site entrance will no longer be used for construction access and construction traffic to the site will enter via the northern site entrance only.

In general, the impact of the construction period will be temporary in nature and less significant than the final post development operational stage.

All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the final details of which will be agreed with Dun Laoghaire Rathdown County Council and TII prior to the commencement of construction activities on site. The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction phase upon the public (off-site), visitors to the subject site (on-site) and internal (on-site) workers environments, are fully considered and proactively managed/programmed thereby ensuring that safety is maintained at all times, disruption is minimised and undertaken within a controlled hazard free/minimised environment.

During the general excavation of the foundations there will be additional HGV movements from the site. All suitable material will be used for construction and fill activities where possible and appropriate. All spoil material will be removed to a registered landfill site which will be agreed in full with Dún Laoghaire Rathdown County Council.

In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be off-peak hour. Such trips would generally be spread out over the full working day and are unlikely to be higher than the peak hour predicted for the operational stage.

Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff. On-site employees will generally arrive before 07:30, thus avoiding the morning peak hour traffic. These employees will generally depart after 18:00. It should be noted that a large proportion of construction workers would arrive in shared transport. The site is readily accessible by public transport with Dublin Bus services and LUAS stops all within nearby walking distance.
- Excavation plant and dumper trucks involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

Deliveries would arrive at a steady rate during the course of the day. It is estimated that peak delivery rates would be in the region of 1 - 2 deliveries per hour throughout the day.

In the absence of a final construction programme it is difficult to assess the exact impact during the construction period. Nevertheless; the following estimates have been made in respect of the construction period impacts:

- Appropriate on-site parking and compounding will be provided to prevent overflow onto the local network.
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential.
- During the period of excavation and disposal off site, it is likely that up to 2 no. truck trips per hour (maximum) will be generated by vehicles removing unsuitable spoil from the site to allow for the construction of the development and for the removal of demolition waste.

Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period. Initially, hard-standing parking areas will be provided and as the development progresses, employees will use constructed car-parking spaces, as they become available.

## REDUCTIVE/MITIGATION MEASURES

### Traffic Management during Construction

A Traffic Management Plan will be prepared prior to the commencement of construction work on site. This plan will be prepared in consultation with Dún Laoghaire Rathdown County Council in order to agree on traffic management and monitoring measures are outlined below:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- The surrounding road network will be signed to define the access and egress routes for the development.
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- All employees and visitors vehicle parking demands will be accommodated on-site.
- A programme of street cleaning (at site frontage on Murphystown Way) will be implemented.

#### **4. ROAD CLEANING**

Provision will be made for the cleaning by road sweeper etc. of all access routes to and from the site during the course of the works. Road cleaning shall be undertaken as required during the completion of the works.

All road sweeping vacuum vehicles will be emptied off site at a suitably licensed facility.

#### **5. WORKING HOURS**

For the duration of the proposed infrastructure works the maximum working hours shall be 07:00 to 19:30 Monday to Friday (excluding bank holidays) and 08:00 to 14:00 Saturdays, subject to the restrictions imposed by the local authorities. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the local authorities out of hours working may be required for the services connections.

#### **6. CONSTRUCTION METHODOLOGY**

##### **Protection of Adjacent Areas**

Work areas will be segregated from the adjacent public areas for the extent of the project by means of a suitable hoarding fence. All hoardings will be designed by a competent Structural Engineer to resist wind loads.

All materials being hoisted by crane or other means will be controlled using guide ropes where possible.

##### **Excavation and Rock Breaking**

A specialist ground works contractor will be appointed to carry out the excavation and rock breaking works. The appointed specialist contractor will carry out a full risk assessment prior to the commencement of work.

Trial pits have been carried out and the ground conditions are consistent across the site. These comprise topsoil over soft to firm brown gravelly clay above weathered rock which generally extends from a depth of 1m to 2m below ground level. The weathered rock overlies strong solid granite. It is anticipated that the consistency of the weathered rock will facilitate its removal due to the fact that it is in the form of wall graded sandy, slightly clayey gravel and can be excavated by machine.

Beneath the weathered rock a depth of approximately 2m of the solid granite will have to be excavated to reach formation level for a small localised extent of the undercroft / basement car parks. In the north-western area of the site where the undercroft / basement carpark is close to

the LUAS tracks, stitch drilling will be carried out at 1.0m centres to reduce the requirements for the use of a rock breaker adjacent to its perimeter.

The maximum allowable vibrations (as measured by peak particle velocity (PPV)) along the LUAS tracks due to the breaking out of the rock will be in accordance with TII document "Code of Engineering Practice for Works on, near, or adjacent the LUAS Light Rail System."

The ground works operation will be carried out in order to ensure that material removed from the ground is taken away at regular intervals in order to reduce the amount of material that can be stored on site.

### **Material Hoisting**

It is envisaged that tower cranes will be erected to hoist materials on site in the construction of apartments. The cranes will be erected within the building envelope. Openings will be left within the floor plate to facilitate the cranes. The cranes will be designed by a specialist to free stand full height without the need to be connected to the structure.

The crane will be founded on a concrete base foundation. The size of the base will be dependent on the ground conditions encountered. It is intended that the tower crane will be erected by a mobile crane from within the site boundary.

Careful consideration will be given to the recruitment of suitably qualified crane drivers and banksmen given the location of the site and the proximity of neighbouring properties and the LUAS line.

In order to control the risks associated with lifting operations beside the live LUAS tracks where there are overhead cables present, an electronic limiting system will be fitted to the cranes. This system will prevent the crane operator from deviating from the previously agreed operating environment. At no point will load be permitted to overhang over the LUAS line.

### **Waste Management Plan**

A detailed waste management plan will be agreed with Dun Laoghaire Rathdown County Council and put in place in order to improve waste management on site, increase segregation and minimise construction waste costs. Waste arising from the site will be considered in relation to the waste management hierarchy of prevention, reduce, reuse, recycle, energy recovery and disposal.

## 7. **WORKING ADJACENT TO THE LUAS LINE**

### **Construction Works Adjacent to the Live LUAS Line**

The close proximity of the LUAS light rail system will be considered during the design of the excavation works. The works will comply with the TII document “Code of Engineering Practice for Works on, near, or adjacent to the LUAS Light Rail System”. The following section outlines the actions to be taken to address the following:

- safety of the public;
- the LUAS tracks remain active during the construction process;
- arcing of the overhead power lines.

### **Works Access Permit**

Since some of the works are located adjacent to a live LUAS track, it will be necessary to obtain a works access permit from the operator of the LUAS prior to the commencement of any of these works. This works access permit is a written declaration issued by the operator detailing the conditions under which the works can be carried out.

### **Induction and Training**

The LUAS operator will provide a specific safety course for any party working adjacent to the LUAS line. Additionally, the relevant party will undergo a ‘Train the Trainer’ course. On completion of this course the relevant party may, with the agreement of the LUAS operator, provide the training to their own personnel.

Personal Protective Equipment (PPE) will be worn by all personnel working on the project. Any personnel working close to the LUAS line will be required to wear PPE as agreed with the LUAS operator prior to the commencement of the project. This will include high visibility clothing, safety helmets and safety footwear as a minimum.

### **Person in Charge of LUAS Works (PICLW)**

A Person in Charge of LUAS Works (PICLW) will be appointed by the contractor for the duration of the project. The PICLW will be over 18 years old and have appropriate safety awareness training, sufficient technical knowledge or experience to avoid danger in the works that they are required to undertake. The PICLW will be obliged to have the written approval of the LUAS operator to work within the immediate vicinity of the LUAS track, to arrange protection and supervise the working parties, and to accept any safety documents required for the project.

If the PICLW is to be replaced, the outgoing PICLW will advise the incoming PICLW of the full details of the arrangements associated with project, hand over all relevant documentation to the incoming PICLW and advise the name of the incoming PICLW to the authorised person who will keep a record of all such details. The incoming PICLW will sign all the relevant documentation at the time of replacing the outgoing PICLW.

### **Working Hours adjacent to LUAS**

It is noted that the LUAS is in operation during the following hours:

Monday – Friday	05:30am – 00:30am
Saturday	06:30am – 00:30am
Sunday and public holidays	07:00am – 11:30pm

During these periods, the scope of trackside activities will be confined to works which are essential to be carried out at these times.

In some circumstances it may be required to carry out works within the engineering hours, as set out by the LUAS operator, to minimise the effect of the construction work on the operation of the LUAS. The engineering hours for the LUAS are generally 2am – 4am every day.

### **Weekly Engineering Meetings**

It is understood that the Luas operator will hold a regular engineering meetings to ensure there are no conflicts between the construction project and the operations of the LUAS. The meetings will discuss and resolve the current work request forms and the following week's programme. The LUAS operator may request the presence of the relevant party to the weekly engineering meeting in order to reschedule the requested works to a different time as that requested on the works request form.

### **Dangers of Overhead Conductor System (OCS)**

Contact with the OCS will be risk to the construction process as well as to the general public and LUAS users. The OCS shall be considered live at all times unless expressly certified otherwise by the LUAS operator. The breaking out of rock to facilitate the construction of the basement will be the highest risk activity with respect to the OCS. In order to minimise the risk of contact with the OCS the following precautions will be taken:

- Complete a risk analysis;
- Notify all relevant bodies;
- The risk will be considered at design stage;

- Tower crane zoning systems;

A risk analysis will be carried out for the OCS. The analysis will outline the dangers associated with working within the close vicinity of a light railway system with OCS. All risk assessments will be accompanied by a list of control measures to eliminate or manage the hazard. The risk assessment will be carried out prior to the commencement of works on site.

All contractors will be notified of the existence of the OCS. Each contractor will implement specific control measures to reduce the risk of contact with the OCS where appropriate.

To reduce the risk of contact with the OCS when hoisting materials, at no point will load be slung over the LUAS tracks. A lifting plan will be implemented for each component to be lifted.

Any operation regarded as high risk will be accommodated by working out of hours during a previously arranged possession of the defined part of the LUAS line as described previously in section 4.5.

An electronic limiting system will be incorporated onto any cranes working on the site. This system is a computerised device that will restrict the crane driver from deviating from a previously agreed lifting environment. Therefore, the crane will not enter the zone of the OCS. At no point will load be slung over the LUAS line.

### **Noise, Vibration and Settlement near LUAS Lines**

The breaking out of rock will be the main concern with regard to noise, vibrations and settlement. Various measures will be taken to control the noise, settlement and vibration during the project. A comprehensive method statement and risk assessment will be submitted to the LUAS operator for agreement prior to any works being carried out.

Noise monitors will be erected and data collected to assess sound levels. Ear protection zones will be established and all personnel will be trained on ear protection.

Vibration in the vicinity of the LUAS tracks will be minimised by using relatively new vibrating roller machinery with engines equipped with sound attenuators. Vibration monitors can be erected prior to the works along the track side to analyse the vibration emitted during the process. The data will be collated and changes to the work practices will be made should the vibrations exceed trigger values in accordance with TII “Code of engineering practice for works on, near, or adjacent the LUAS light rail System” – Appendix 3 “Vibration and Settlement”.

The construction team will endeavour to minimise the effect of the project on the LUAS.

### **Urgent Works and Emergencies**

While working close to the LUAS line emergencies may arise. It may be the case that the contractor is the first person to be aware of the emergency and it is important that the right action is taken. The following procedures will apply:

1. Keep all personnel as far from the danger zone as possible and contact the LUAS operator as a priority. Do not leave the site unattended.
2. If necessary call the emergency services on 999 or 112.
3. It may be necessary to stop the LUAS or make dead the OCS. This can be done by contacting the LUAS central control room on the emergency contact line 01-4673040. The person making the call to the central control room is to state that it is an emergency call and as accurately as possible provide the location of the emergency by means of providing the number of the nearest OCS support pole or naming the tram stop. This person will then remain at the telephone until told what to do.
4. If it is necessary to stop approaching LUAS trains this will be done so by facing the train and raising both hands above the head or by waiving a red light at night or in poor visibility.
5. Under no circumstances will any worker attempt to recover equipment or rescue people from contact with the OCS. If a casualty is in contact with the OCS, do not touch the person until the correct procedure has been followed and it is safe to attend to the person.
6. All personnel working in the vicinity of the OCS shall be familiar with the procedure for dealing with cases of electric shock.

## **8. NOISE & VIBRATION**

During the construction works the Contactor shall comply with:

- BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1 and Part 2.
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRS, Revision 1, 2004)
- Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 50dB
- Evening (19:00-23:00) = 60dB
- Day (07:00-19:00) = 70dB

The total noise (LAeq) which should not be exceeded during daytime is therefore 70dB.

Vibration limits to be applied for the infrastructure works are those specified in the TII document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, Revision 1, 2004). These limits are outlined below:

Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of;

<u>Less than 11Hz</u>	<u>11 to 50 Hz</u>	<u>50 to 110 Hz (and above)</u>
3mm/s	3 to 8mm/s	8 to 11mm/s

All works on site shall comply with BS 5228 2009 which gives detailed guidance on the control of noise and vibration from construction activities. In general the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the Contractor shall ensure that:

- In accordance with Best Practicable Means, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.

A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

A noise and vibration monitoring specialist will be appointed to periodically carry out independent monitoring of noise and vibration during random intervals and at sensitive locations for comparison

with limits and background levels. It is proposed that noise and vibration levels be maintained below those outlined above as part of these infrastructure works.

All vehicles and mechanical plant used for the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order. In addition, all diesel engine powered plant shall be fitted with effective air intake silencers. All compressors shall be “sound reduced” models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silences of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.

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

Where construction activities are required in close proximity to neighbouring noise sensitive properties, a solid hoarding of approximately 2.5m in height should be erected to provide a degree of acoustic screening to the lower storeys.

Local screening should be provided for stationary plant such as generators and compressors.

An acoustically screened area should be provided on the site specifically for noisy operations such as grinding and cutting metal.

A noise liaison officer should be appointed and charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints.

## **9. SEDIMENT AND WATER POLLUTION CONTROL PLAN**

All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will co-operate in-full with the Environmental Section of Dun Laoghaire Rathdown County Council.

As part of the overall construction methodology, the following issues will be addressed and have been identified as being of particular risk and/or concern to pollution.

- Contamination of Watercourse / Groundwater – There is a risk that ground water could become contaminated with lime from cement which subsequently finds its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable, by the erection of a visible 1.0m high barrier along the watercourse. This will be formed by means of steel road pins, which will

be used to support a PVC 'orange' barrier with warning signs appropriately fixed at regular intervals. The signs shall read 'NOTICE – NO DISCHARGE OF ANY KIND IS PERMITTED IN THIS VICINITY OR BEYOND THIS EXCLUSION ZONE'

- Sediment & Erosion – Similar to the above, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. It should be noted that the former Racecourse Stream (at the northern edge of the site) no longer functions as a watercourse, however it is still proposed to provide sedimentation and erosion protection as part of the construction works. To prevent this from occurring surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. Alternatively, a 'siltbuster' silt control unit can be used on the outfall. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before being discharged in a control manner to the agreed outfall. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion in the vicinity of the inlet.
  - Minimisation of site disturbance
  - Implement sediment control (as outlined above)
  - Minimise the potential for erosion
  - Prevent sediment-contaminated water leaving the site

Such measures shall be agreed as part of the site's discharge licence.

Temporary mounding and sediment control would be implemented to ensure silts do not enter the existing ditch during the construction stage.

- Water quality monitoring – It is proposed to implement a programme for monitoring water quality at the outfall as part of the construction of this development, in agreement with the Planning Authority. This programme and locations of sampling will be agreed with Dun-Laoghaire-Rathdown County Council.
- Discharge Licences – It will not be permitted to discharge into any newly constructed storm water systems or watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Site Manager and Local Authority Area Engineer.

- Over Ground Oil / Diesel Storage – Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site however minor by containment /removal from site. Any accidental spillages will be dealt with immediately on site however minor by containment /removal from site.
- Disposal of Wastewater off Site – The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to insure its disposal in a traceable manner. These will be available for inspection by the Environment Section of Dun Laoghaire County Council at all times.
- Road Sweepers / Cleaning – The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.

## 10. BIODIVERSITY PROTECTION MEASURES

- All mitigation measures listed in the Biodiversity (Flora and Fauna) chapter of the Environmental Report prepared by Brady Shipman Martin will be implemented in full.
- Where practicable, the removal of trees and other features suitable for use by nesting birds shall be undertaken outside the bird nesting season (avoiding the period 1<sup>st</sup> March to 31<sup>st</sup> August). Should the construction programme require vegetation clearance between March and August bird nesting surveys shall be undertaken by suitably experienced ecologists. If no active nests are recorded, vegetation clearance shall take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone shall be maintained around the nest until such time as all the eggs have hatched and the birds have fledged. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place. Care must be taken during development to ensure that common lizards, common frogs and smooth newts (which are all protected under the *Wildlife Act (1976)* and subsequent amendments) are not harmed.
- All site clearance and landscaping works will comply with current legislative requirements and best practice. All retained trees that are within or close to the working wayleave of the proposed development will be protected in accordance with the requirements of British Standard BS5837:2012 *Trees in Relation to Design, Demolition and Construction* –

*Recommendations*, with protective fencing being installed around all trees to be retained, prior to commencement of development. The planting plans and landscaping proposals will ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.

## 11. SURFACE WATER DRAINAGE WORKS

It is proposed to construct drainage infrastructure in accordance with the plan shown on DBFL drawings 170074-3000.

All of the surface water drainage elements will be constructed in advance of future phasing and will be protected from potential damage during construction of future phasing of the development. Where drainage infrastructure serving a previous phase of development is located within a current phase of development, the drainage infrastructure will be constructed and protected through the following measures:

- Hoarding or fencing to be provided to cordon-off completed infrastructure works: As is standard practice on construction sites, elements of works may be completed on a phased basis. As works are completed and handed over within each phase, this area will be enclosed with hoarding or fencing offset a safe distance from the line of the existing infrastructure and no further excavation works will be allowed within this area unless agreed with site management.
- Contractor to produce as-built construction records of drainage infrastructure: As is standard good practice for management of a large construction site, the as-builts for each phase will be recorded by the contractor. These records will be submitted to the engineer for approval in advance of handover. The as-built records will be reviewed and will need to be approved by the engineer before practical completion can be certified. The as-builts will be used by site personnel as a working record of where drainage infrastructure is located. The locations of these will be recorded on the as-built and will be marked out on the ground in advance of any works commencing in later stages. This methodology will be formally incorporated into a method statement to be completed by the groundworks sub-contractor before excavations commence.
- Marker tape to be provided on top of sewers running through live areas of site: As part of the methodology laying of drainage pipes, drainage works will have marker tape placed at a depth of 300mm above the pipe to warn the excavator and banksman of the service below. It is noted that the placing of marker tape over drainage lines is not a standard construction detail. However, the vulnerability of live drainage infrastructure serving a previous phase of development is noted and these measures will form part of the works.
- Site personnel to be informed of works already completed and commissioned: As part of the Safe System of Work Plan (SSWP), site personnel will be made aware of the drainage lines

which are in operation. A site-specific method statement will be required in all cases where it is deemed that there is a risk of damaging such services. Those involved in direct management and supervision of site-based excavations require relevant competencies to deliver safety standards on site. They will have health and safety training in order to design safe systems of work that are appropriate to specific site conditions. They will need to prepare clear and simple safety method statements that can be used and understood by site workers. Ongoing checks will be carried out to ensure that appropriate equipment has been provided and is being used correctly.

- Monitoring of excavation and prevention of undermining of infrastructure: Special care will be taken when digging above or close to the lines of services. The locations of these will be marked out on the ground in advance of any excavation being undertaken. In addition, careful consideration will be taken to ensure that any buildings and infrastructure built under earlier phases are not undermined by excavation works. The general principles outlined in the Health and safety Authority document: 'Code of Practice for Avoiding Danger from Underground Services' will be followed to ensure the safety of workers and to minimise the risk of damage to any existing pipelines or buildings.
- Water quality control of discharges to watercourse or drainage network: As detailed within the previous section, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. This includes preventing any sediment laden water from entering the surface water outfalls serving a previous phase of the development. To prevent this from occurring surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. Any manholes will need to be securely covered and gullies fitted with a geotextile filter to allow protection of the surface water within the pipe.
- Protection of services from breakage or crushing: Where drainage infrastructure serving a previous phase of development is located within a current phase of development, the drainage infrastructure will have to be protected from breaking or crushing. Consideration will be given to areas where heavy plant is going to be tracked across the existing drainage infrastructure. This may require construction of temporary protective concrete slabs to bridge across the existing lines where haul roads are required.

## 12. DUST CONTROL

The objective is to ensure that dust does not impact significantly at nearby receptors. Therefore, a *dust management plan* (DMP) will be formulated for the site, which will address the following:

- Specify a site policy on dust
- Identify site management of dust

- Develop documented systems for managing site practices and implementing management controls
- Outline how the DMP can be assessed

### **Site Management**

The siting of construction activities and storage piles will consider the location of sensitive receptors and prevailing wind conditions to minimise the potential dust nuisance. Site management will include the ability to respond to adverse weather conditions by either restricting operations on site or using effective control measure in a timely manner before potential for nuisance occurs.

- During working hours the site agent or another competent appointed member of staff shall monitor dust control methods;
- A register shall be kept on site logging all correspondence and telephone / verbal complaints regarding construction activities outlining remedial actions if any;
- A site representative responsible for matters relating to dust management will be appointed prior to construction on site.
- The site representative responsible for dust management shall ensure that dust management procedures are followed and ensure monitoring and assessment of same;

### **Dust Control Measures**

- Apply a speed limit of at least 20km/hr for on-site vehicles
- Provide water bowsers during periods of dry weather to ensure unpaved areas are kept moist. Spray exposed site haul roads during dry and / or windy weather.
- Ensure paved roads are kept clean and free of mud and other materials. Sweep hard surface roads, inside and outside the site, to ensure roads are kept clear of debris, soil or other material.
- Restrict un-surfaced roads to essential site traffic.
- Provide water bowsers during periods of high winds and dry weather conditions to ensure moisture content is high to increase the stability of the soil.
- During the proposed infrastructure works the following mitigation measures shall be implemented to minimise dust emissions:
  - Construction techniques shall minimise dust release into the air.
  - Protect overburden material from exposure to wind by storing the material in sheltered regions of the site.
  - Regular watering of stockpiles during dry and windy periods.
  - Located any stockpiles away from sensitive receptors, (i.e. receptors sensitive to dust release).
  - Provide tarpaulins over all unacceptable excavated materials being carted off site.

- Control vehicle speeds and impose speed restrictions, (speed can mobilise dust).
- During dry spells and if deemed necessary monitoring of dust levels shall be carried out using the Bergerhoff Method i.e. analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guidelines (TA Luft, 1972). Should an exceedance of the TA Luft limit occur during, additional mitigation measures, for example more regular spraying of water, shall be implemented.
- The excavating machines will be cleaned on a daily basis to ensure no excess grease and dust is left on the machine. This will be carried out at low level below the height of the hoarding to prevent any mud coming in contact with the public.

### **13. CONCLUSION**

The construction management plan addresses construction activities on site that may result in noise, air quality, water quality, biodiversity or waste management issues, should the plan not be put in place and implemented.

These include procedures for monitoring and tracking construction activities and ensuring construction personnel are trained and educated as necessary. The construction & environmental management plan should be reviewed as the construction phase progresses to accommodate any changes in activities on site.