

Chapter 15:

Summary of EIA Mitigation and Monitoring Measures

15.0 SUMMARY OF EIA MITIGATION & MONITORING MEASURES

15.1 INTRODUCTION

The central purpose of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document has been prepared by **John Spain Associates** and sets out a summary, for ease of reference, of the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring during the construction and operational phases of the proposed development. It is intended that this chapter of the EIAR document will provide a useful and convenient summary to the competent/consent authority of the range of mitigation and monitoring measures proposed.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the Impact Anticipation and Avoidance strategy. Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration and timing of the measures to be implemented. A secondary role of EIA related conditions is to ensure that resources e.g. bonds / insurances will be available and properly directed for mitigation, monitoring or remedial action, in the event that the impacts exceed the predicted levels.

Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions.

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which if exceeded cause a clearly defined set of actions to be implemented.

The 2018 EIA Guidelines published by the Department of Housing, Planning and Local Government state:

“While not a mandatory requirement an EIAR can very usefully include a summary table of features and/or measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects of the proposed development, and a timescale for the implementation of proposed mitigation measures.”

Given the complexity of the scheme in question, and the detail provided within this EIAR, this chapter seeks to provide a complete overview of mitigation and monitoring measures proposed, in the spirit of the above statement within the EIA Guidelines albeit not formatted as a table.

15.2 MITIGATION STRATEGIES

15.2.1 Introduction

There are three established strategies for impact mitigation - avoidance, reduction and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

15.2.2 Mitigation by Avoidance

Avoidance is generally the fastest, cheapest and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes. The consideration of alternatives with respect to the development of the subject lands has been described in Chapter 2.

15.2.3 Mitigation by Reduction

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "*end of pipe*" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

15.2.4 Reducing the Effect

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

15.2.5 Reducing Exposure to the Impact

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

15.2.6 Mitigation by Remedy

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

15.3 MITIGATION AND MONITORING MEASURES

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

15.3.1 Project Description & Alternatives Examined

Construction Phase

PD&AE CONST 1: It will be necessary for the appointed contractor to prepare and implement a Construction and Environmental Management Plan (including traffic management) to reduce the impacts of the construction phase on local residents and ensure the local road network is not adversely affected during the course of the construction project.

PD&AE CONST 2: The appointed contractor should prepare a Construction and Operational Waste Management Plan for the proposed development as part of their contractual responsibilities. The Waste Management Plan should meet the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects.

Operational Phase

Not applicable.

Monitoring

Not applicable.

15.3.2 Population and Human Health

Construction Phase

POP & HH CONST 1: In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction and Environmental Management Plan (including traffic management) should be prepared by the contractor and implemented during the construction phase.

Operational Phase

Not applicable.

Monitoring

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in regards to the other environmental topics such as water, air quality and climate and noise etc. sufficiently address monitoring requirements.

15.3.3 Archaeology and Cultural Heritage

Pre-Construction Phase

CH PRE-CONST 1: Conservation and Stabilisation

In order to secure the structural remains of the castle the conservation (repair), consolidation and stabilisation of the ruins will be undertaken well in advance of the construction works. All works carried out to the castle will be subject to a conservation plan/method statement which will be developed in discussion with and approval from the DCHG. The works will be carried out under the direction of a conservation engineer/ architect in accordance with best conservation practice and under the supervision of an archaeologist under licence to the Department of Culture, Heritage and the Gaeltacht (DCHG).

CH PRE-CONST 2: Construction Management

It is recommended that a construction management plan for the castle be developed with the site contractor after the conservation and stabilisation works have taken place and in advance of the construction works. The plan will include details of:

- The cordoning off of the established buffer zone;
- The bracing of the conserved castle structure during construction phase (under the direction of conservation engineer and conservation architect);
- The installation of a vibration monitor, with vibration limits set in accordance with international best practice for historic structures, to be placed on the monument and to be monitored by a licenced archaeologist to ensure that no inadvertent damage occurs as a result of the construction works;
- The proposed landscaping works.

The exclusion zone will remain free of all development and will not be used for temporary storage, stockpiling of topsoil or equipment etc. No excavation work should be undertaken in the sensitive area around the castle without prior consultation with and approval from the licenced archaeologist. All contractors and site personnel will be made aware of the demarcated archaeological buffer zone and the reason for its exclusion. It will also be highlighted on site through signage.

CH PRE-CONST 3: Site Interpretation

The on-site interpretation of the castle ruins through presentation, signage and interpretive panels is recommended to inform the public about the historical development of the site and its general context. The form of interpretation and its location should be agreed with the DCHG or local authority as a condition of planning when all the on-site and offsite (post excavation) archaeological works have been carried out, this will ensure an authentic interpretation of the castle. The results of the excavation should also influence the final landscaping proposals around the castle.

Mortar samples have been taken and will inform a conservation methodology and will assist in more closely dating the castle construction. A baseline laser survey has also been carried out.

For the operational phase of the development, a landscape maintenance plan for the castle and its environs must be agreed with the statutory authorities prior to the handover of the open space areas to the Local Authority.

CH PRE-CONST 4: Excavation

It is recommended that the area to the north of the castle (incorporating Trenches T6, T3, T1 and T2, Fig 4.13 and 4.14) be stripped of topsoil as an archaeological exercise, in advance of construction. Once the area has been stripped of topsoil any archaeological features revealed should be archaeologically excavated with provision made for reporting and post-excavation costs. All work is to be carried out under licence to the DCHG. This excavation will be an extension of what has taken place for the LUAS works (06E227ext).

CH PRE-CONST 5: Cultural Heritage

It is recommended that the wrought iron gates and any rubble stone boundary is retained in situ or appropriately re-used within the development. Although construction was primarily functional, this gateway exhibits visual appeal into the woodland area of the site which will be developed as a woodland walk and will add incident to the woodland valley park the north and is a worthy addition to the surviving heritage of the local area.

It is similarly recommended that a visual survey of the river valley woodland area which is currently a highly inaccessible is carried out in advance of the development and that any additional historic walls or features identified be recorded and retained in the park.

Construction Phase

CH CONST 1: General Mitigation

Given the rich archaeological assemblage in the surrounding area, it is recommended that all topsoil stripping for the proposed development be archaeologically monitored with provision made to deal with any archaeological features that may be uncovered. The archaeological monitoring will be carried out by a suitably qualified archaeologist under licence to the National Monuments Section at the DCHG. This will ensure the full recognition of, and the proper excavation and recording of all archaeological soils, features, finds and deposits which may be disturbed below the ground surface. If any features are identified the Department will be informed and will determine if further resolution is required. Further resolution may involve full archaeological excavation, i.e. preservation of the archaeology in record form of all archaeological soils or features encountered or preservation in-situ i.e. avoidance by redesign.

Operational Phase

N/A

Monitoring

Post development monitoring is not applicable in terms of the archaeological, architectural or cultural heritage

15.3.4 Architectural Heritage

Construction Phase

AH Const 1:

Avoidance of damage to historic fabric will follow a comprehensive protection plan forming part of the construction management plan. It is envisaged, in the instance of the entrance portal, that dismantling will take place prior to the setting up of the construction site, on the basis that to allow the portal to remain in situ during this process would place it at risk of damage. Similarly, its reconstruction will follow completion of heavy construction works in efforts to reduce risk of damage during reconstruction.

AH Const 2:

Wider remedial measures will ensure that the heritage characteristics of the site are restored to their present character on completion of the development. These will include protection of mature trees and planting during the construction phase that contribute to the sylvan character of the protected fabric. They will also include a full photographic survey of all historic elements that can inform a reinstatement strategy, in the unlikely event of irreversible damage requiring accurate reference.

Operational Phase

N/A

Monitoring

Conservation works

The proposed scope of conservation work to all historic building fabric will be executed by conservation contractors, who will monitor all specific and wider modifying works on a daily basis.

Qualified conservation architects will monitor the works intermittently.

General works in proximity to heritage buildings

The main contractor for the scheme will monitor works in the vicinity of heritage buildings to ensure that protection measures are observed at all times.

Qualified conservation architects will monitor works in the vicinity of heritage buildings intermittently.

15.3.5 Biodiversity

Construction Phase

BIO CONST 1: Habitats

As it is proposed to build on the site and replace the fields with a residential development it is not possible to mitigate all of the potential impacts on local ecological receptors. However there will be no loss of important habitats or key ecological receptors as all of the habitat loss will be in areas of no more than Local Importance (Lower Value),

In order to mitigate the habitat loss, and to maximise the biodiversity value of the retained habitat, both within the development area itself and in the woodland valley to the north, significant new planting will be incorporated into the landscape design for the proposed development. The proposed planting/landscaping strategy will use a mix of appropriate species to replace the trees and other habitats that are to be removed. The planting will also incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2015-2020. In addition, the woodland belt outside the proposed development area, which is to be taken in charge by Dún Laoghaire-Rathdown County Council, will be managed in a way that maximises the biodiversity value of the site.

The areas of open space within the development all incorporate planting that has an ecological focus. The planting, coupled with the retention and management of the woodland habitat (refer to Section 6.5.1) will, over time, provide replacement habitat of benefit to the bats and birds that will continue to use the site and its boundaries.

All site clearance and landscaping works will comply with current legislative requirements and best practice. In particular, trees to be retained will be treated in accordance with British Standard BS5837:2012 *Trees in Relation to Design, Demolition and Construction* – *Recommendations*, with protective fencing being installed around all trees and hedgerows to be retained, prior to commencement of development. All planting plans and landscaping proposals will further ensure that no invasive species are introduced, either deliberately or inadvertently, to the site. The invasive species management currently being implemented on site will be continued.

BIO CONST 2: Fauna

Where feasible and practicable, the removal of trees and other features suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1st March to 31st August). Should the construction programme require vegetation clearance between March and August bird nesting surveys will be undertaken by suitably experienced ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately.

No confirmed bat roosts have been recorded at Glencairn and it will not be necessary to apply for a derogation licence under Regulation 54 or 55 of *the European Communities (Birds and Natural Habitats) Regulations 2011* (S.I. 477/2011).

All mature trees shall be checked for bats by a bat specialist to identify trees with the highest potential prior to felling (this may change between the survey date and felling based on limb damage, storms etc.). From this, trees with the highest roost potential as determined by the bat specialist shall be subjected to a higher level of examination that shall include thorough checking of all suitable crevices, cavities, ivy cover or loose bark. This will require access via a hoist to reach all suitable cavities and crevices.

The trees with highest potential include all mature trees to be removed in Glencairn itself and trees within the north-eastern corner close to the LUAS line. The Leylandii to the south-east are of low potential and in essence, the lime trees outside of Glencairn have less potential than those within. All mature oak, chestnut and ash are of high value as roost trees but individual trees with cavities, crevices, loose bark etc. may be beneficial regardless of species.

Should bats be noted during this evaluation, a derogation shall be required from NPWS. This would list the tree / structure that is a bat roost, the species of bat or bats present and the location within the structure, the means by which the bat(s) would be removed without injury and the procedure for caring for and releasing the bat without exposing it to further risk. This would also require further mitigation measures including roost replacement such as bat boxes or other alternatives.

A total of 12 Schwegler bat boxes (2 x 3FF, 6 x 2F and 4 x 2FN) and four bird boxes (such as Schwegler 1B or similar) will be erected, with advice from the project ecologist, on mature trees, mainly in the woodland to the north of the proposed development area.

All new lighting for the proposed development at Glencairn has been designed taking account of the recommendations of Bat Conservation Ireland (2010). In summary, the following measures are proposed:

- No floodlighting will be used – this causes a large amount of light spillage into the sky. The spread of light will be kept below the horizontal.
- Hoods, louvres, shields or cowls will be fitted on the lights if necessary to reduce light spillage if high intensity lighting is required or to protect trees or other potential roosts from light overspill.
- Lights should be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
- Lights away from essential areas such as major roads should be motion sensitive rather than permanently lit and attached to a timer system to switch off quickly in the absence of sustained movement.
- Narrow spectrum lighting should be used with a low UV component. Glass also helps reduce the UV component emitted by lights.

The lighting scheme for the proposed development, designed by Penston MEP, adheres to these lighting design characteristics. In particular, the following measures have been designed:

- Luminaire selection limits upward light spill;
- Dimming lights by 30% post-curfew will reduce running and maintenance cost;
- The lighting scheme achieves the recommended lux levels in accordance with current regulations and standards;
- The lighting scheme achieves good uniformity throughout the development to ensure good visibility at night;
- Co-ordination with the landscape developers will ensure light positions do not clash with tree position, limiting light obstruction and future maintenance costs.

No badger setts will be in any way affected by the proposed development, and no mitigation measures will be required for the protection of badgers. Nevertheless, a watching brief will be maintained by the project ecologist throughout the construction phase, in the event that badgers, which are known to be present within 500m of the site (for example at Clay Farm to the south) should establish a territory at Glencairn.

Any ponds present in the fields to be disturbed will be inspected by a suitably experienced ecologist prior to works being undertaken. Should any frog spawn or tadpoles be discovered, a licence to remove frog spawn may be required from NPWS.

BIO CONST 3: Aquatic Environment and Watercourses

Together with the Construction & Environmental Management Plan (prepared by DBFL Consulting Engineers), the following Best Practice measures will be adopted:

- The former Racecourse Stream and the newly constructed storm water systems will be protected from ingress of silt, debris and deleterious material during all phases of construction;
- Appropriately designed silt prevention measures will be installed if necessary along the northern boundary of the site and will be regularly maintained and retained in situ for the duration of the construction phase, until such time as all proposed permanent surface water protection measures are installed and operational;
- 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;
- Discharge of surface water from the construction site will be via silt/sediment trap and/or temporary hydrocarbon interceptors and will be monitored to meet any requirements set by the Local Authority/Environmental Protection Agency;
- No discharge will occur where there is a risk of cement or residue in the discharge;
- Concrete Washout – The washing out of concrete trucks on site will not be permitted as they are a potential source of high alkalinity in watercourses. Consequently it is a requirement that all concrete truck washout takes place back in the ready-mix depot;
- Control of spoil and other materials to prevent spillage, and through appropriate handling and selection of spoil/material storage locations;
- Careful siting and bunding of fuel storage facilities and any areas used for the storage of potentially hazardous materials;
- Appropriate construction techniques will seek to ensure that groundwater seepage into excavated areas does not take place;

The strategy for controlling and mitigating potential adverse environmental during construction will also include the following, as appropriate:

- If required, sampling and testing of excavated spoil in order to assess the suitability of materials for reuse on site;
- The use of piling systems designed to minimise impacts on the groundwater;
- Dust suppression from soils by the regular use of water sprays during any dry conditions, sheeting of haulage vehicle loads, use of wheel washers;
- Should invasive weeds (in addition to those already known from the site) be found, they will be treated as controlled waste and disposed of off-site at a landfill site that is licensed to receive such material;
- The storage of hazardous liquids (fuels and chemicals) will be avoided in so far as is possible. The handling and storage of any potentially hazardous liquids on site will be controlled and best practice guidance such as that published by the EPA, will be followed. Storage tank/container facilities will be appropriately bunded within designated compound areas and sited as far as possible from any watercourse or surface drain;
- If hazardous liquids escape during the works, the bunds and other protective measures will contain the spillage until remedial action, which will be taken as soon as possible;
- Procedures will be drawn up to control all potentially contaminating materials brought on site.

The implementation and effectiveness of these standard best-practice mitigation measures will be inspected and recorded regularly during the construction period and where deficiencies or faults are identified they will be remedied immediately by the contractor.

Operational Phase

BIO OPER 1: Foul drainage network

It is proposed to discharge foul water from the development to the existing foul sewer located Orby Way to the east of the site, and then to Shanganagh Wastewater Treatment Works for treatment and ultimate discharge to St. George's Channel in the Irish Sea, which, according to information provided by the EPA (<http://gis.epa.ie/Envision/>), is classified as unpolluted.

Shanganagh Wastewater Treatment Works has been upgraded as part of the Shanganagh Bray Wastewater Project, to cater for existing and all projected future catchment development flows. It has the capacity to treat effluent from 186,000 population equivalent with the potential to increase capacity to 248,000 in the future.

A pre-application enquiry was made to Irish Water in Summer 2017 and a response was received in February 2018 (reproduced in Appendix B of the Engineering Services Report prepared by DBFL Consulting Engineers) stating that "*subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network can be facilitated.*"

BIO OPER 2: Surface water drainage network

The design of the surface water drainage network for the proposed development incorporates a number of SuDS measures, including filter strips, swales, filter drains, permeable paving, green roofs, a cellular attenuation system and a petrol interceptor.

After attenuation, surface water from the proposed development will be discharged to the culvert that runs under the M50 (on the line of the former Racecourse Stream) via a new surface water pipeline and headwall.

The final combined discharge rate from the outlet will be kept at (or below) the total permissible discharge rate for the site.

No further mitigation is required and full details are included in Chapter 9 (Water).

Monitoring

A Project Ecologist will be retained for the duration of the construction phase, and will ensure that all construction works take place in accordance with the project CEMP and the mitigation measures set out in the EIAR. A programme of reporting and monitoring will be agreed with the Planning Authority prior to the commencement of construction.

15.3.6 Landscape and Visual Impact

Construction and Operational Phase

L&V CONST 1: (Protection of Trees and Hedgerows during Construction):

Tree and hedgerow protection measures will be provided for all such features to be retained in accordance with BS: 5837:2012: *Trees in relation to design, demolition and construction. Recommendations*. A specific Arboricultural Method Statement shall be prepared for any works required within the root protection area of any tree or hedgerow to be retained. All such measures shall be drafted, erected and maintained in consultation with a qualified Arborist, who shall also supervise any works for which an Arboricultural Method Statement is required.

L&V CONST 2 (Protection of Open Space during Construction):

Proposed open spaces as indicated on BSM Drawing 6290-302 (and Figures 7.6 & 7.7 of this EIA Report) shall be fenced off prior to commencement of development. Any works required within fenced off areas shall be subject

to a works method statement and to approval of reinstatement proposals. All such measures shall be drafted and maintained in consultation with a qualified Landscape Architect and Arborist, where required.

L&V CONST 3 (Open Space, Play and Landscape Proposals):

Details of landscape materials, play and exercise equipment, lighting, seating, planting species, specification and aftercare for open spaces shall be submitted to and agreed with the Planning Authority prior to the commencement of development.

L&V CONST 4 (Wooded Valley of Carrickmines Stream):

Proposals for works, including access, footpaths, play opportunities, etc. within the wooded valley of Carrickmines Stream shall be discussed and agreed with the Planning Authority prior to the commencement of development. Planting and management proposals for the valley shall involve the project Arborist and the Project Ecologist.

L&V CONST 5 (Planting Plans):

Detailed planting plans for all areas to be taken-in-charge by the Planning Authority shall be submitted to and agreed with the Planning Authority prior to the commencement of development.

L&V OPER 1 (Maintenance):

All landscape areas to be taken-in-charge by the Planning Authority shall be maintained for a minimum period of 18 months prior to handover to the Planning Authority. Any plants which fail within this 18 month period shall be replaced prior to handover.

Monitoring

An Arborist and Landscape Architect will be retained for the duration of the construction works. Monitoring of landscape and tree-related works is an integral aspect of the proposed scheme, and includes monitoring of:

- Tree and hedgerow removal, retention and protection,
- Topsoil stripping and storage,
- Disturbance by site works, services etc.,
- Excavation / alteration of ground levels,
- Landscape build-up; profiling and cultivation,
- Landscape finishing and implementation,
- Proposed planting and grass seeding,
- 18 months aftercare of landscape measures.

All works associated with soil stripping and movement; landscape build-up and finishing and landscape implementation shall be approved and monitored by a qualified Landscape Architect.

All works associated with removal, retention and protection of existing trees and woodlands and with tree surgery works shall be approved and monitored by a qualified Arborist.

15.3.7 Land and Soils

Construction Phase

L&S CONST 1:

- Existing topsoil should be retained on site to be used for the proposed development. Topsoil should be stored in an appropriate manner on site for the duration of the construction works and protected for re-use on completion of the main site works.

- Top-soiling and landscaping works should take place as soon as finished levels are achieved, in order to reduce weathering and erosion and to retain soil properties.
- The construction phase should be monitored, in particular in relation to the following;
 - Protection of topsoil stockpiled for re-use;
 - Adequate protection from contamination of soils for removal;
 - Cleanliness of adjoining road network;
 - Prevention of oil and petrol spillages;
 - Dust control.
- Where feasible, the extent of excavation works and depths for dwellings and roads should be limited through design to minimize disturbance of the original soil and subsoil formations and to retain soil structure. This will also help to reduce the volumes of backfill and material to be removed off-site.
- Reusable excavated gravels, sands or rock should be retained on-site for backfilling or drainage purposes to reduce the total volume of imported material.
- Excavated materials should be visually assessed for signs of contamination. Should material appear to be contaminated, soil samples should be analysed by an appropriate testing laboratory. Contaminated material should be treated in accordance with the Waste Management Regulations, 1998.
- Excess fill, unsuitable material and suitable material will be removed off-site. Removal should be in accordance with the relevant Waste Management Regulations.
- Oil and fuel stored on site should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage.
- Refuelling of construction machinery shall be undertaken in designated areas located away from surface water drainage. Spill kits shall be kept in these areas in the event of spillages.
- Hazardous waste shall be dealt with in accordance with the Waste Management (Hazardous Waste) Regulations, 1998.
- All potentially hazardous materials shall be securely stored on site.

Operational

L&S OPERAT 1: The surface water run-off from the development should be collected by an appropriately designed system. This system should ensure that contaminants are removed prior to discharge e.g. via a light liquids separator or by an appropriate treatment train of Sustainable Urban Drainage Systems as outlined in the Greater Dublin Strategic Drainage Study (GSDSDS). Any separators and drainage systems should be maintained and operated by the facilities management company (prior to taking in charge by the Local Authority) in accordance with the manufacturers recommendations.

L&S OPERAT 2: All waste generated by the everyday operation of the development should be securely stored within designated collection areas. These should have positive drainage collection systems to collect potential run off. Operational waste should be removed from site using licensed waste management contractors.

Monitoring

Soil removed during the construction phase is to be monitored to maximise potential for re-use on site. Monitoring of any hazardous material stored on-site will form part of the proposed Construction & Waste Management Plan. A dust management/monitoring programme should be implemented during the construction phase of the development. The quantities of topsoil, subsoil and rock removed off site will be recorded.

15.3.8 Water

Construction Phase

WT CONST 1: Dewatering measures should only be employed where necessary;

WT CONST 2: Basement excavations should be kept to a minimum to reduce impacts to the groundwater. Undercroft/basement car parks are proposed for each of the apartment blocks to the north to minimise the impact of excavations and levels are set to work with existing ground levels as closely as possible.

WT CONST 3: In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate treatment facility prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.

WT CONST 4: Surface water storage systems will include 'soakaway' type systems where possible i.e. permeable paving and swales to enable ground water recharge, thus replenishing the water table.

WT CONST 5: Mitigation measures should be put in place by the contractor in relation to storage of fuels and other materials and general maintenance of the site.

WT CONST 6: Surface water collecting in excavations should be directed to on-site settlement ponds, where silt removal will be facilitated prior to discharge to the further reduce the possibility of contaminants entering the local water system. Periodic testing of the surface water discharge might also be undertaken.

WT CONST 7: If concrete mixing is carried out on site, the mixing plant should be sited in a designated area with an impervious surface.

WT CONST 8: When it is necessary to store diesel or oil fuels on site, they should be stored in appropriate containers in bunded storage areas.

WT CONST 9: Any hazardous construction materials shall be stored appropriately;

WT CONST 010: Existing surface drainage channels within the lands that serve adjacent lands should be retained where possible to prevent causing increased flooding impacts.

WT CONST 11: Ensure finished road levels direct overland flood water for rainfall events exceeding 1%AEP towards open space areas and the Racecourse Stream and ensure runoff is retained within the site.

WT CONST 12: In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with the relevant standards, pressure tested and CCTV surveyed to ascertain any possible defects.

WT CONST 13: 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'

WT CONST 14: Adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. 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 from the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. 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. Inlet to the cascading settling basins will be riprapped to prevent scour and erosion in the vicinity of the inlet.

Operational

WT OPERAT 1: Stormwater storage structures and drainage systems should incorporate infiltration to promote the potential for ground water recharge.

WT OPERAT 2: A properly designed surface water system incorporating SuDS and designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) will minimise the overall impact of the development on the existing environment.

WT OPERAT 3: Surface water discharge rates should be limited to existing Greenfield run-off rates to prevent increased flood risk.

WT OPERAT 4: Ensure that the recommendations and mitigation measures outlined in the Site Specific Flood Risk Assessment (SSFRA) by DBFL, are implemented in full.

WT OPERAT 5: Regular inspection of the hydro-brake, gullies and petrol interceptor will be required to prevent contamination and increased runoff from the site.

WT OPERAT 6: It is envisaged that the development would take place and be occupied over a reasonable time period, and therefore the downstream foul sewerage system (foul sewer network and wastewater treatment facility) would be gradually loaded.

WT OPERAT 7: No remedial works would be required to the existing foul sewerage system after the introduction of development generated flows.

WT OPERAT 8: Water conservation methods such as the use of low flush toilets and grey water reuse should be incorporated into dwellings to reduce water volumes and related treatment and abstraction costs of the development.

Monitoring

All surface water drainage works will be approved by Dun Laoghaire Rathdown County Council, Sanitary Services Division, and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works). Foul and water works will be carried out in accordance with Irish Water Codes of Practice.

As part of this current planning application, DBFL and the Applicant met with DLRCC in formal Section 247 pre-application meetings and on a number of other occasions to discuss the issues relating to drainage raised by Dun Laoghaire Rathdown County Council. In addition, further liaison and meetings were held with Irish Water in Spring and Summer of 2018. The Engineering Services Report, which accompanies this planning submission addresses relevant issues and confirms that the results and outcomes of those meetings have been incorporated into the engineering design.

Hydrogeology

The design team has engaged with a hydrogeologist and a detailed hydrogeological assessment has been undertaken to inform and supplement the design. The recommendations of the hydrogeologist have been incorporated into the surface water design.

Although no specific monitoring will be required as part of the proposed development it is envisaged that EPA Monitoring will continue in the area through the life of the development.

It is proposed to carry out baseline water quality monitoring of the Racecourse Stream prior to the construction stage to ascertain the current Q value of the watercourse. Monitoring of the watercourse would also be carried out during the construction phase of the works ascertain if there is any negative impact on water quality due to the construction works.

Surface Water

The surface water system will be monitored by way of observation of any flooding events if such occur and the establishment of a proper maintenance programme for all sewers / drains / SuDS elements etc.

Foul Sewerage

No specific monitoring measures are required.

Water Supply

On-going water usage within the proposed development will be monitored by bulk water meters at the connections to the public mains and individual dwelling meters where appropriate. The network will be developed as a district metered area (DMA) subject to the requirements of the local authorities. Water usage will be continually monitored to avoid waste, leakage etc. All watermains will be constructed in accordance with Irish Water's Code of Practice for water infrastructure.

15.3.9 Air Quality & Climate

Construction Phase

AQ CONST 1: Air Quality Mitigation Measures

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.

- A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition and PM₁₀ are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.
- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
- The presence of the Natural Woodland that fronts onto the M50 motorway will act as a natural screen to minimise the propagation of fugitive dust emissions from the site onto the M50.
- Dust netting and site hoarding shall be installed along the western site boundary to minimise fugitive windblown dust emissions falling on the LUAS tram line.
- Dust netting shall also be installed to protect the flora and fauna within the Native Woodland area during the construction phase when ground is being stripped.

Operational

The Operational Phase of the Glencairn development site will not generate air emissions that would have an adverse impact on local ambient air quality or local human health and as such there are no mitigation measures specified for the Operational Phase.

The operational phase mitigation by design measures to minimise the impact of the development on air quality and climate are as follows:

AQ OP1: Air Quality & Climate Mitigation Measures

- Thermally efficient glazing systems on all units
- Mechanical Ventilation and Heat Recovery (MVHR) systems or equivalent installed in all apartments
- Thermal insulation of walls and roof voids of all units
- Natural Gas heating in all units
- Inclusion of electric car charging points to encourage electric vehicle ownership
- Proximity of LUAS to the development to provide public transport to residents
- Enhancement of the existing woodland area on the site to encourage local biodiversity
- Removal of invasive species including Japanese Knotweed from the site prior to development

Monitoring

This section describes the dust monitoring methodologies that shall be implemented at the site during the construction phases to ensure that dust generated by site activities does not cause nuisance or cause detrimental health effects to residential areas and sensitive receptors located in the vicinity of the site boundaries. In addition, the monitoring programme also provides for the assessment of dust along Murphystown Way, the M50 motorway and the LUAS Cherrywood line.

Dust Deposition Monitoring Methodology

Dust deposition levels will be monitored to assess the impact that site construction site activities may have on the local ambient air quality and to demonstrate that the environmental control measures in place at the site are effective in minimising the impact of construction site activities on the local receiving environment including Glencairn House, Murphystown Way, the M50 Motorway, the LUAS Cherrywood line and on existing residential developments bordering the site. The following procedure shall be implemented at the site on commencement of site activities:

The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at strategic locations near the boundaries of the site for a period of 30 +-2 days. Monitoring shall be conducted on a monthly basis

during periods when the highest levels of dust are expected to be generated i.e., during site preparation works and soil stripping activities and on a quarterly basis thereafter. The proposed monitoring locations (D1 – D5) are presented below in Figure 10.3.

The selection of sampling point locations will be completed after consideration of the requirements of *Method VDI 2119* with respect to the location of the samplers relative to obstructions, height above ground and sample collection and analysis procedures. The optimum locations will be determined by a suitably qualified air quality expert to ensure that the dust gauge locations are positioned in order to best determine potential dust deposition in the vicinity of the site boundaries and existing on-site buildings.

After each (30 \pm 2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m²-day in accordance with the relevant standards.

Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained by the Site Manager. Monitoring reports shall be made available to the Local Authority as requested.

A dust deposition limit value of 350 mg/m²-day (measured as per German Standard Method VDI 2119 – Measurement of Particulate Precipitations – Determination of Dust Precipitation with Collecting Pots Made of Glass (Bergerhoff Method) or Plastic. is commonly specified by Local Authorities and by the EPA to ensure that no nuisance effects will result from specified activities and it is to this Best Practice standard method that this programme of dust monitoring and control has been prepared.

The *German Federal Government Technical Instructions on Air Quality Control - TA Luft* specifies an emission value for the protection against significant nuisances or significant disadvantages due to dustfall. This limit value is 350 mg/m²-day and it is to this limit value that all measured dust deposition levels shall be assessed. This limit value is commonly specified by Local Authorities at construction sites.

15.3.10 Noise & Vibration

Construction Phase

N&V CONST 1

- An independent acoustic consultant shall be engaged by the contractor prior to the commencement of site activities to ensure that all noise mitigation measures as specified in this Section of the EIS Report are implemented and to prepare a site specific *Construction Phase Noise Management Plan*. The Plan shall include all relevant noise and vibration control measures as specified in this document. The Plan shall be submitted to Dun Laoghaire Rathdown Council for approval.
- The nominated contractor shall appoint a designated person to manage all environmental complaints including noise and vibration.
- A noise complaint procedure shall be implemented in which the details of any noise related complaint are logged, investigated and where required, measures are taken to ameliorate the source of the noise complaint.
- Appropriate signage shall be erected on all access roads in the vicinity of the site to inform HGV drivers that engines shall not be left idling for prolonged periods and that the use of horns shall be banned at all times.
- HGV's queuing on any local or public road shall not be permitted and it shall be the responsibility of site management to ensure this policy is enforced.
- The hours of operation for the site shall be limited to the following hours:
 - 08:00hrs – 19:00hrs Monday to Friday
 - 08:00hrs – 16:00hrs Saturday

- Closed on Sundays and Bank/Public Holidays
- All onsite generator units (if required) used to supply electricity to the site shall be super silenced or enclosed and located away from any receptor.

N&V CONST 2

- A strictly enforced noise management programme shall be implemented at the site from the outset of construction activities.
- The Developer shall appoint an acoustic consultant independent of the Contractor to conduct routine noise audit surveys which shall be conducted at the baseline noise monitoring locations throughout the construction phase of the development to assess compliance with the construction noise limit criteria detailed in this document and to assess the effectiveness and implementation of the specific Construction Phase noise mitigation measures detailed in this document.
- The principal of controlling noise at source shall be implemented at the site. Best practice mitigation techniques as specified in *BS 5228:2009+A1 2014 – Noise and Vibration Control on Construction and Open Sites* shall be implemented during the construction phase and are detailed in this Section.
 - All plant where possible shall be low noise rated.
 - High noise activities such as pneumatic hammering / rock breaking shall not occur before 08:00hrs and not after 17:00hrs Mondays to Fridays.
 - Where necessary the use of enclosures and noise screens shall be used to control noise from plant.
 - Plant shall be located away from the closest noise sensitive receptors where practicable.
 - All site vehicles shall either be turned off when not in use or throttled down when idle.
 - Site plant and vehicles shall be maintained to ensure they are not excessively noisy.
 - Vibration sources such as compressors, pumps or generators shall be isolated and placed on anti-vibration pads to minimise ground vibrations and vibrational noise.
 - Site offices / cabins shall be grouped together in a manner that forms an additional noise barrier relative to the closest receptors to the site boundaries.
 - Appropriately sized pneumatic breaking equipment shall be used to reduce the vibrational and noise impact of rock breaking and pile cap breaking activities.

N&V CONST 3: In order to protect the amenities enjoyed by nearby residents, premises and employees a full Construction and Environmental Management Plan (including traffic management) should be put in place prior to the commencement of development. This will need to have regard to the mitigation measures set out in Section 11.8.3 of the EIAR Report.

Operational

N&V OPER 1 External Noise Mitigation

External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path and therefore, mitigation by design has focussed on this building element to ensure that their insulation is adequate. All external windows shall be triple glazed acoustically rated window and frames or equivalent double glazing reaching the same level to prevent breakthrough of external noise. In addition, Mechanical Ventilation & Heat Recovery (MVHR) systems or an equivalent system may be incorporated into the design of the apartment units thus there will be no requirement for passive air vents.

Acoustic Design requirements for residential buildings

Windows

In order to ensure a sufficient level of sound insulation is provided for all dwellings within the development, the following lists the minimum sound insulation performance of windows and window frame sets in terms of the weighted sound reduction index (R_w):

40dB R_w for Living rooms & Bedrooms
37dB R_w for Kitchen – Dining Rooms.

The acoustic performance specifications detailed are the minimum requirements which shall apply to the overall glazing system when installed on site. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc. All exterior wall and door frames should be sealed tight to the exterior wall construction.

Ventilation Systems

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations. The apartment units shall include mechanical ventilation and heat recovery systems (MVHR) or an equivalent system which will negate the requirement for passive wall vents in bedrooms and living spaces which would otherwise allow the transfer of external noise into the building through the air gaps in the passive vents. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice. This design feature of the residential units will ensure that the building structure is acoustically insulated from the external environment.

A range of heating systems shall be considered for the residential houses including air source heat pumps and gas heating. All residential houses shall be fitted with acoustic wall vents with a minimum 50dB(A) $D_{n,e,w} (C;Ctr)$ sound reduction performance to mitigate the ingress of external noise.

Wall Constructions

The wall construction typically provides the highest level of sound insulation performance to a residential building. The minimum sound insulation performance of the chosen wall construction will be 55dB R_w .

It is noted that rated walls systems can decrease by 5-7dB when installed in-situ. It is recommended that wall systems with a R_w value of at least 60dB are utilised.

Roof Construction

The insulated roof constructions proposed across the site will provide an adequate level of sound insulation to the properties within the development site. A minimum sound insulation value of 40dB R_w should be used for roof spaces. This can nominally be achieved using tiled pitched roof with 100mm acoustic insulation and plasterboard ceiling.

At the earliest stage during the construction phase, residential test units shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with *Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound*. Table 11.12 above provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units and to assess compliance with external noise intrusion criteria as defined in *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings*.

As set out in Section 11.5.1 the operational phase of the development is unlikely to have an adverse noise impact on the receiving environment or on existing residential developments adjacent to the site during the operational phase of the scheme. Therefore, no mitigation measures additional to those set out above are proposed.

Monitoring

This section describes the noise and vibration monitoring methodologies that shall be implemented at the site to ensure that construction site activities do not cause excessive nuisance or cause cosmetic or structural damage to properties in the vicinity of the site.

Proposed Noise Monitoring Programme During Site Construction

On commencement of the site construction activities, routine (quarterly) noise monitoring shall be conducted in the vicinity of the site to assess the impact that site activities may have on local external noise levels and on ambient noise levels on local receptors.

It is proposed to conduct routine noise monitoring surveys to establish the noise impacts of site activities at the closest receptors to the site (baseline monitoring locations) and to ensure that mitigation and control measures are implemented if elevated noise levels are recorded.

All noise monitoring data will be compiled into a technical monitoring report which will include a full assessment of the potential noise impacts arising from site construction activities. Noise Monitoring reports shall be maintained by the Construction Site manager and shall be available to the Local Authority as required.

The environmental noise measurements will be completed in accordance with the requirements of *ISO 1996: Acoustics – description and measurement of environmental noise*. The measurement parameters to be recorded include wind speed, temperature, L_{Aeq} , L_{A90} , L_{A10} and L_{Amax} . and 1/3 octave band frequency analysis.

Noise Monitoring Locations

The monitoring locations selected for the noise monitoring survey will be at residential noise sensitive receptors adjacent to the site boundaries and as identified in the baseline noise assessment.

Vibration Monitoring Locations

The monitoring points chosen for locating the geophone of the vibration measuring instrument will be chosen according to the guidelines in British Standard *BS 7385: Evaluation and measurement for vibration in buildings, Part 1 1990 Guide for measurement of vibrations and evaluation of their effects on buildings and Part 2 1993 Guide to damage levels arising from groundborne vibration*.

Proposed Vibration Monitoring Programme During Site Construction

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, it is proposed that structural vibration monitoring may be implemented during the course of the construction phase if and as required. It is proposed that vibration monitoring will be conducted at adjacent properties opposite the site boundaries as required using calibrated vibration monitors and geophones and that audible and visual alarm units may be installed to ensure that if vibration levels approach or exceed specified warning and limit values, site personnel will be alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the vibrational impacts of protected structures.

It is proposed that continuous live vibration monitoring systems with text and email alert capability shall be installed at the following locations for the duration of the construction phase and for a period of 1 month following the full operation of the development.

- LUAS Cherrywood Line
- Glencairn House
- Murphystown Castle structure
- Orby Avenue estate

Vibration Monitoring reports shall be maintained by the Construction Site manager and shall be available to the Local Authority as required.

If construction works are considered to have the potential to impact the infrastructure of the LUAS Cherrywood line, a programme of vibration monitoring and track surveys shall be conducted in accordance with TII Zone of Influence protocols.

Vibration Monitoring Locations

The monitoring points chosen for locating the geophone of the vibration measuring instrument will be chosen according to the guidelines in British Standard *BS 7385: Evaluation and measurement for vibration in buildings, Part 1 1990 Guide for measurement of vibrations and evaluation of their effects on buildings* and *Part 2 1993 Guide to damage levels arising from groundborne vibration*.

15.3.11 Wind

A series of design stage mitigation measures have been incorporated into the scheme design to address potential noise impacts, see Section 11.8 of Chapter 11.

Pre-Construction / Design Phase

Design stage mitigation measures which have been incorporated into the scheme in order to improve the wind conditions at the Glencairn site include the following:

- The provision of suitable landscaping between the Luas line and the westernmost block;
- Suitable landscape treatments and careful configuration of the courtyards between the westernmost blocks;
- The provision of landscaping or wind screening along the boundary near the southernmost block;
- Re-alignment or curtailment of pedestrian walkway at the eastern corner of the southernmost blocks;
- The inclusion of additional landscaping near the Lime Avenue to act as an effective wind break on the approach to the easternmost block;
- Where high wind speeds at the corners of a building are unavoidable, the provision of substantial planting or windbreaks is provided for to reduce their impact. In addition, consideration has been given to redirecting walkways, where appropriate;
- Use landscape techniques to maintain ground roughness in any open parts of the site, and to provide local wind shelter for buildings and open spaces; earth mounding, trees, bushes, fences and open or porous walls can all contribute. Mature trees with open space around their trunks may need extra, low-level planting to avoid channelling wind at ground level. The mature clumps of trees around the edge of the site will also be beneficial at sheltering the development from the wind;
- While winter gardens and recessed balconies are most effective at sheltering occupants from the wind, the provision of 1.8m high pervious wind screens or shielding on balcony sides will provide shelter against the wind and, in particular, where balconies are situated near building corners.

Construction Phase

N/A.

Operational Phase

Not applicable.

Monitoring

The building heights are relatively low level ranging from 2 storeys to 5 storeys across the Glencairn residential development site. It is anticipated that the development will be constructed using conventional methods. It is recommended that the local weather conditions should be reviewed routinely, particularly for construction works carried out at a height. It is not considered necessary to undertake any formal wind speed and direction monitoring on site during the construction or operational phases.

15.3.12 Material Assets

Construction Phase

MA CONST 1: The proposed development should comply with the provisions of the Construction and Operational Waste Management Plan with respect to construction waste.

MA CONST 2: A Construction and Environmental Management Plan, including traffic management, should be implemented by the contractor for the construction stage to protect local amenities and the integrity and operation of the local road network during the construction phase.

MA CONST 3: Provision of utilities should be carried out in accordance with the recommendations of the relevant statutory bodies (ESB, Gas Networks Ireland, Irish Water, EIR, DLRCC etc.)

MA CONST 4: Water Metering should be included in each unit to record consumption.

Operational Phase

Not applicable.

Monitoring

Monitoring measures will be in accordance with provisions outlined elsewhere in this EIAR document.