

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) describes the proposed development and its component parts. The proposed development will consist of the following:

- 1) Construction of 212 no. residential units comprising:
 - 34 no. House Type A (four-bed semi-detached unit)
 - 54 no. House Type B (three-bed semi-detached unit)
 - 16 no. House Type C (four-bed detached)
 - 16 no. House Type D (three-bed terraced unit)
 - 24 no. House Type E (four-bed semi-detached unit)
 - 50 no. House Type G (25 no. two-bed ground floor duplexes and 25 no. two-bed plus study first/second floor duplexes)
 - 6 no. House Type H (two-bed duplex apartments)
 - 12 no. house Type J (two-bed terrace)
- 2) Development of a crèche facility (374 sqm) and associated outdoor play areas and car parking.
- 3) Provision of new vehicular and pedestrian site access from the North-South Oranmore Distributor Road (the route of which was permitted under An Bord Pleanála Reference PL 07.237219, which was extended under Pl Ref 15/1334).
- 4) Provision of shared communal and private open space, site landscaping, car parking, site services and all associated site development works.

3.2 Existing Site Description

3.2.1 Site Layout

The site measures approximately 8.7 hectares and is located to the south east of the town core of Oranmore (approximately 590 metres). The site consists of a green field of previous agricultural use, with evidence of previous site clearance and levelling apparent.

The development site is adjoined by lands also in the ownership of the applicant which are part of the Galway Bay Complex Proposed Natural Heritage Area and Special Area of Conservation (000268). To the north of the development site are existing housing developments, Beech Park and Coill Clocha. There are historic castle tower remains (GA 095-084) within the development site which are to be protected via an exclusion zone and will be incorporated within the public open space. Views to the castle mound from the north west are also to be maintained. There are no existing buildings or structures on the development site other than these castle remains. An aerial photograph of the existing site is shown on Figure 2.2 in Chapter 2 of this EIAR.

3.2.2 Site Access

To the west of the application site is the Roykeel Ltd. scheme comprising a proposed hotel and 161 no. dwelling housing development. The scheme was granted planning permission on 1st December 2010 under An Bord Pleanála Ref PL 07.237219 / Galway County Council (GCC) Pl Ref P09/1925. The application was extended by GCC Pl Ref 15/1334 and will expire on 20th December 2020.

Access to the proposed development is to be facilitated via the road infrastructure proposed as part of the adjoining committed development, as already permitted. The proposed road infrastructure of the adjacent development will comprise the construction of a new North-South Link Road, from the existing road network infrastructure of the Coill Clocha Housing in the North, to the Orancourt / Oranhill Housing Estate in the South. In addition, a link road from the N67 Rocklands Roundabout Junction to the East is proposed across the adjacent Roykeel Ltd. site, to the proposed application site, linking with the proposed North-South Link Road as detailed in Figure 3.1.

A network of footpaths throughout the proposed development will provide a high rate of accessibility to the local facilities with the town of Oranmore. The inclusion of these attractive, well designed walking routes will encourage pedestrians to access the local facilities on foot as opposed to taking their personal vehicles.

A legal agreement is in place between the applicant, Arlum Ltd, and the adjoining owner, Roykeel Ltd, for the construction of the access road from the existing roundabout on the N67, the North-South Link Road and the proposed roundabout where the two proposed roads meet. The applicant is the registered owner of the property described in Folio 121724F which has the benefit of a right of way, wayleave and other easements, which allows access and egress to and from the N67 public road. Subject to the provisions of the legal agreement, the applicant Arlum Ltd has an entitlement to construct the roads and services necessary for development of the proposed development.

Galway County Council (Michael Timmons, Director of Planning and Valerie Loughnane, Senior Planner) confirmed in a meeting with the applicant on 25th January 2018 that there is no planning issue which would prevent the adjoining owner, Roykeel Ltd (or Arlum Ltd acting on their behalf) completing the access road under Phase 1 of the existing Pl Ref 15/1334 planning permission. See Appendix 2-2 of this EIAR for a note of the meeting.

Arlum Ltd (acting on behalf of Roykeel Ltd) have commenced conditions compliance with Galway County Council in relation to all roads related conditions included in the grant of permission associated with ABP Ref PL 07.237219 / GCC Pl Ref P09/1925) which was extended by GCC Pl Ref 15/1334. Under Pl Ref 15/1334, the proposed road network infrastructure was conditioned to include the upgrading of the proposals for the inclusion of dedicated Pedestrian and Cycle Facilities. This detail has been incorporated into the designs, with the details agreed with Galway County Council.



Figure 3.1: Proposed Development in context of Road Network Infrastructure Permitted under GCC PR 09/1925; ABP Ref 07.237219 & 15/1334. Image extracted from Figure 2.2 of Traffic and Transportation Statement

3.2.2.1 Access arrangements for pedestrians

The Contractor will segregate all pedestrian and vehicular traffic on site, including at access points/ entrances. It is proposed that the pedestrian access will be via a new footpath on the new access road off the existing roundabout on the N67, with secured access controlled to the site via a biometric turnstile. The on-site segregated pedestrian access way will include signage to direct pedestrians to the site compound and around the site. Pedestrians and cyclists will also have access through the existing road which links the Coill Clocha Estate with Oranmore. There may be different access points for each of the phases, and the above segregation methods should be applied to all routes. Access routes to be finalised upon agreement of the phasing scheme.

The Contractor will regularly review the Construction and Environmental Management Plan (CMP) to ensure that the pedestrian and vehicular access points are located and maintained appropriately. The most suitable access routes should be picked for each phase to ensure the safety and convenience of its users, and other local residence.

3.2.3 Site Constraints

The castle remains and the surrounding protected exclusion zone provide a focus point to the development, but also, in conjunction with the site geometry around the Special Area of Conservation and Open Space / Recreation & Amenity zoned lands, constrains the developable area of the proposed site with a number of 'pinch points' limiting the site width.

3.3 Proposed Development Construction Operations

The detailed drawings for the proposed development can be seen as Appendix 3-1 to this EIAR. A Construction and Environmental Management Plan (CEMP) can be seen as Appendix 3-2.

3.3.1 Hoarding

The site areas (phases 1 – 4) will be enclosed with a hoarding, details of which are to be agreed with Galway Co. Co. Hoarding panels will be maintained and kept clean for the duration of the project. The Contractor will be responsible for the security of the site. The Contractor will be required to undertake the following:

- Operate a Site Induction Process for all site staff,
- Ensure all site staff will have current 'Safe Pass' cards,
- Install adequate site hoarding to the site boundary,
- Maintain Site Security staff at all times,
- Install access security in the form of turn-styles and gates for staff,
- Separate public pedestrian access from construction vehicular access,
- Ensure restricted access is maintained to the works.

3.3.2 Pedestrian and Cyclist Safety

Until such time as the construction of the first phase is complete, the new access road will not be open to members of the public. However, the general public will have right of way along the roads on the existing N67. When vehicles are entering the site, or leaving the site, these movements should be supervised by road marshals. The construction site gates will be kept closed when not in use and monitored by security. Traffic cones and set-back signage should be put in place to warn and safely direct cyclists around obstructions.

Pedestrians and cyclists will have access through the existing road which links the Coill Clocha Estate with Oranmore.

A network of footpaths throughout the proposed development will provide a high rate of accessibility to the local facilities with the town of Oranmore (See Figure 3.2). The inclusion of these attractive, well designed walking routes will encourage pedestrians to access the local facilities on foot as opposed to taking their personal vehicles. The main pedestrian and cyclist access route to the proposed development from nearby Oranmore village centre will be via the Coill Clocha residential development to the north. Pedestrians shall utilise the existing pedestrian arrangements within the Coill Clocha housing development which will connect to the newly constructed pedestrian pathway along the link road and throughout the proposed development. This will result in a continuous pedestrian route from all locations within the proposed development to Oranmore town centre. A secondary pedestrian and cyclist route is also provided to the south of the link road permitted under PR 15/1334. This allows users to access Oranmore village and the Maree road via the existing Oranhill housing estate.

Pedestrian routes from the proposed development to the Oranmore town centre will be 1.00km in length and will take the average pedestrian 10 min to walk. Amenities in and around the town centre include local primary and secondary schools, shops, restaurant.

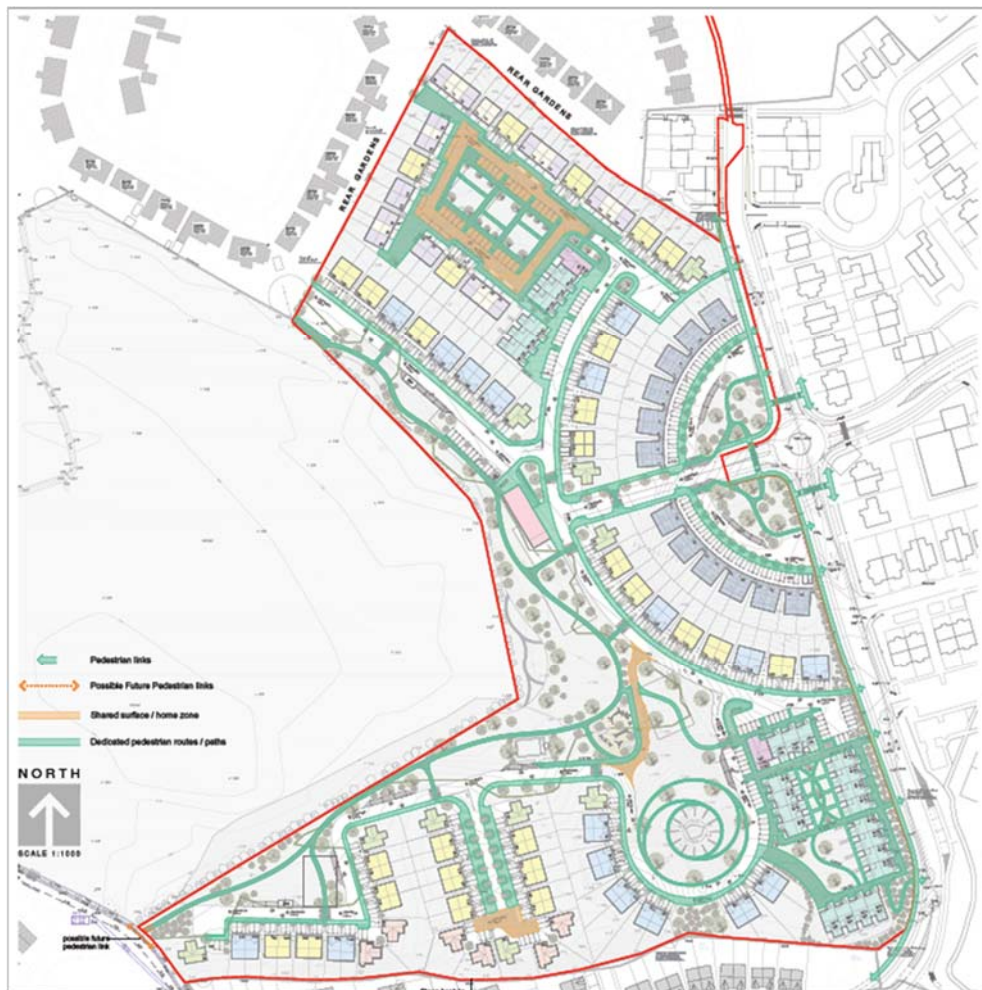


Figure 3.2: Pedestrian Site Access details

3.3.3 Proposed Hours in which Vehicles will Arrive and Depart

In general, the hours in which vehicles will arrive and depart will coincide with the expected site working hours of 8.00am to 7.00pm in the evening from Monday to Friday, and 8:00am to 2:00pm on Saturday. The construction phase of the proposed development is expected to last approximately 3.5 years in total.

3.3.4 Access Arrangements for Vehicles

The access arrangements will be as specified in the statutory publications with reference to the publications “Traffic Management Guidelines” manual and the “Traffic Signs Manual” and as agreed with Galway County Council.

All deliveries and vehicles into site will access the site from the new access road which will be located on the eastern side of the site boundary, just off the N67. As mentioned previously, there may be numerous access routes depending on the phasing but generally as shown on Figure 3.3.

The location of the vehicular entrance and access will be regularly reviewed during the construction to ensure that the pedestrian and vehicular access points are located and maintained appropriately.

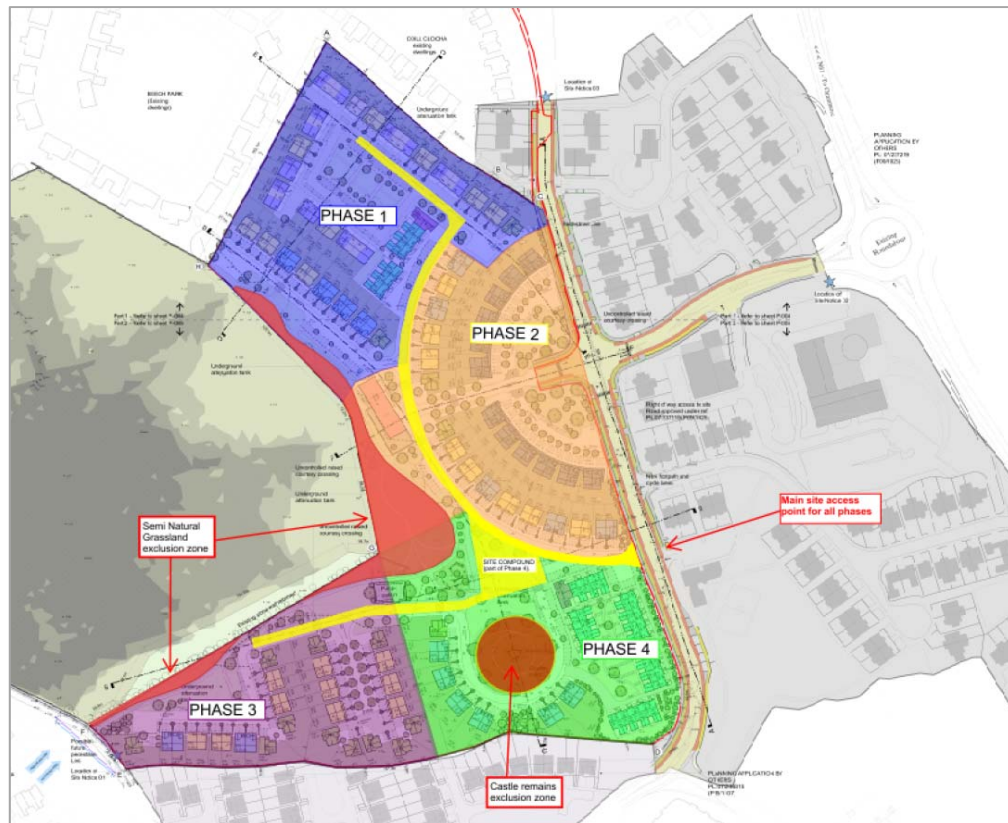


Figure 3.3: Vehicular Site Access details during the construction phase

Access details for pedestrians and cyclists are discussed in Section 3.3.2 above.

3.3.5 Exclusion Zones on Site

There are historic castle tower remains within the development site which are to be protected via a 20m exclusion zone (Figure 3.4). The 20m exclusion zone will be fenced off from the site, and the contractor will not have any storage, plant, or traffic going inside this exclusion zone during the construction period. Suitable fencing will be erected to ensure the remains are protected and preserved during the construction period, and regular checks and inspections will be carried out on this by the contractor and project archaeologist.

The area of land set aside for management as seminatural grassland will form an exclusion zone during the construction phase of the proposal (Figure 3.4). The area will be fenced off during the construction phase of the site and only landscaping works, required for the management of the grassland, be undertaken within this area. There will be no temporary storage of construction materials within this area and no storage of fuels or other potential contaminants. The exclusion of machinery and materials from this area will also avoid compaction of the soils, maintaining a free draining calcareous substrate for seminatural grassland landscaping.

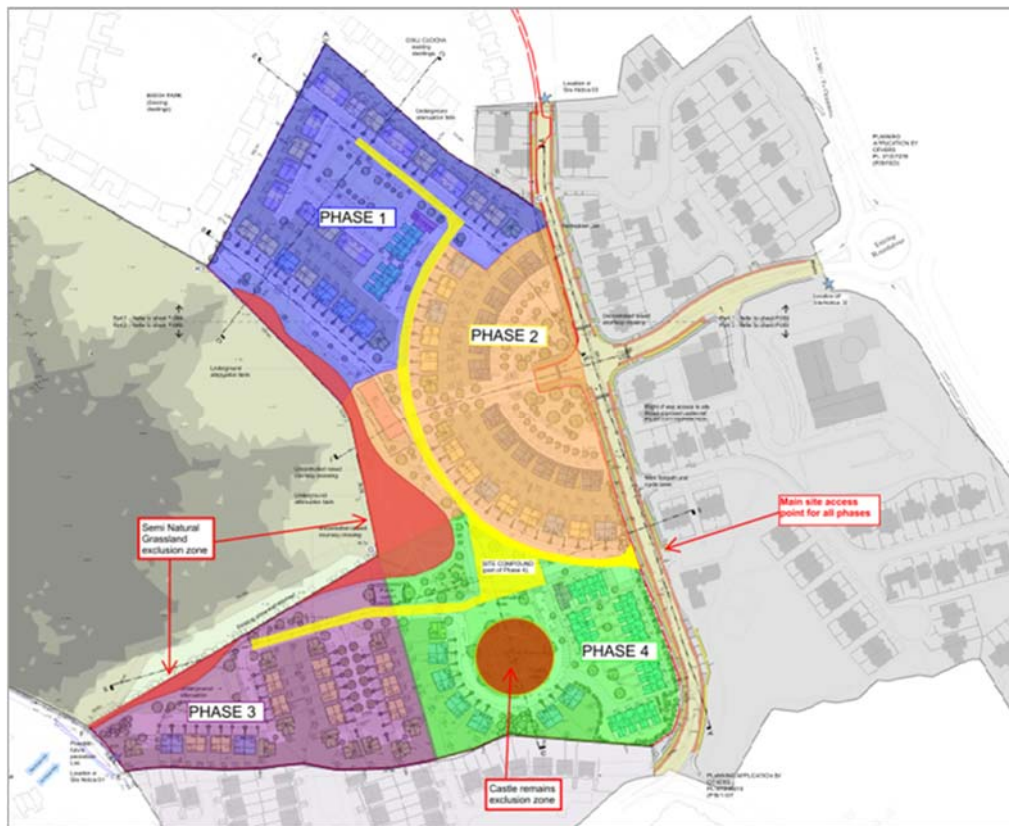


Figure 3.4: Location of exclusion areas marked in red

3.3.6 Size of Vehicles

It is anticipated that there will be numerous types of delivery vehicles used to bring material to and from the site. These include:

- Skip lorries. These will include roll on/roll off skips for major demolition works and standard yard skips for waste.
- Spoil excavation.
- Ready mix concrete lorries.
- Flatbed delivery vehicles for the delivery of various material.

3.3.7 Parking and Loading Arrangements

A “Just in Time” approach will be implemented for the delivery of particular building materials such as concrete formwork and large structural steels. The location of this materials storage facility will be within the site boundary and highlighted within the Construction Management Plan.

Materials will be stored within the boundary of the site. It is proposed to provide on-site car parking spaces for workers during the construction.

3.3.8 Site Compound and Facilities

Site accommodation will be provided including suitable washing and 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. The compound will be constructed using a clean permeable stone finish and will be enclosed with security

fencing. Any wastewater will be removed by vacuum tanker using an authorized waste collector.

3.3.9 Phasing

It is anticipated that the development will be completed over 4 separate phases (See Figure 3.4), and the access and egress routes will change for the various phases. As some of the houses will be occupied during the later phases, Traffic Management procedures will be implemented to ensure the safety of the users of the access routes, for both the residential access and the construction access. The construction phase of the proposed development is expected to last approximately 3.5 years in total.

3.3.10 Property Management – Operational Stage

A property management company will be engaged at an early stage of the development to ensure that all property management functions are dealt with for the development and that the running and maintenance costs of the common areas of the development are kept within the agreed annual operational budget.

The property management company will enter into a contract directly with the owners management company for the ongoing management of the built development. This contract will be for a minimum of three years and in the form prescribed by the PSRA.

The property management company will also have the following responsibilities for the apartments within the development once constructed:

- Formation of an owners management company. The company will be a company limited by guarantee having no share capital. All future purchasers will be obliged to become members of the owners management company.
- Preparation of annual service charge budget for the development common areas.
- Fair and equitable apportionment of the annual operational charges in line with the MUD act.
- Engagement of independent legal representation on behalf of the owners management company in keeping with the MUD act, including completion of the developer - owner management company agreement and transfer of common areas.
- Transfer of documentation in line with schedule 3 of the MUD act.
- Estate management.
- Third party contractors procurement and management.
- Owners management company reporting.
- Accounting services.
- Corporate services.
- Insurance management.
- After hours services.
- Staff administration.

The property management company has a number of key responsibilities including compiling the service charge budget for the development for agreement with the owners management company. The service charge budget covers such items as cleaning, landscaping, refuse management, utility bills, insurance, maintenance, and security in accordance with the Multi User Development Act 2011.

The service charge budget also includes an allowance for a sinking fund and this allowance is determined following the review of the building investment fund report prepared by / for the owners management company. The building investment fund

report, once adopted by the owners management company, determines an adequate estimated annual cost provision requirement based on the needs of the development over a 30 year cycle period. The building investment fund report will identify those works which are necessary to maintain, repair and enhance the premises over the 30 year life cycle period, as required by the Multi User Development Act 2011.

In line with the requirements of the Multi User Development Act 2011 the members of the owners management company will determine and agree each year at an AGM of the members the contribution to be made to the sinking fund, having regard to the building investment fund report produced.

On purchase a homeowner pack will be provided for the occupants which will include:

- A Homeowner manual which will provide important information for the purchaser on details of their new property / dwelling. It typically includes details of the property such as the MPRN and GPRN, information in relation to connections with utilities and communication providers, contact details for all relevant suppliers, and user instructions for appliances, devices and system in the dwelling.
- A Residents' pack prepared by the owners management company which will typically provide information on contact details for the managing agent, emergency contact information, information on transport links in the area, and a clear set of regulations and rules associated with the development.

3.3.11 Energy Use

The following are an example of the energy saving measures that are planned for the dwellings to assist in reducing costs for the occupants:

- A BER certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. It is proposed to target an A2/A3 rating for the apartments, equating to the following emissions:
 - A2 - 25 to 50 kWh / m² /year with CO₂ emissions c. 10kg CO₂ / m² / year.
 - A3 - 51 to 75 kWh / m² /year with CO₂ emissions c. 10kg CO₂ / m² / year.
- The U-values of the building fabric will be in line with the requirements set out in the regulatory requirements of TGD Part L.
- Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance with TGD Part L.
- The white good package planned for provision in the apartments will be of a very high standard and have a high energy efficiency rating:
 - Oven - A+
 - Fridge / freezer - A+
 - Dishwasher - AAA
 - Washer / dryer – B
- The proposed lighting scheme within the development consists of pole mounted fittings. Each light fitting will be controlled with an individual photoelectric control unit. The operation of the lighting will be on a dawn to dusk profile.

3.4 Site Landscaping

Before completion of the construction phase of each phase of the proposed development, landscaping works will be carried out to improve the visual amenity of

the site. These landscaping works will follow the layout of the landscape plan provided in Drawing 18223-3-100 (Landscape Master Plan) of Appendix 3-3.

There are no landscape designations on the subject site. The site will not impact on any designated views or prospects within the Galway County Development Plan 2015-2022.

3.5 Habitat Management Plan

A habitat management plan has been produced for the site of the proposed development. Full details of the plan are provided in Appendix 3-4. This plan will be implemented through both the construction and operational phases of the development and will form an integral part of the development.

The implementation of a grassland management regime will ensure the long-term viability of the semi-natural calcareous grassland habitat within the landownership boundary. Supplementary planting within existing hedgerows along the west and south of the site and the replacement of the eastern hedge community will ensure that connectivity of linear landscape features will be retained and enhanced. Bird and bat boxes will be provided for additional nesting/roosting habitat on the site. Information signage will be used to help provide a better understanding of the floral diversity in the area and management practices required to maintain the habitat in its optimal quality.

There is a commitment to the implementation of the measures that are set out in the Habitat Management Plan including both the establishment and maintenance of the grasslands. A commitment is also made to monitor the development of the grasslands on an ongoing basis following construction. These measures are an integral part of the planning permission and as such, confer protection on the habitat where currently none exists. The habitat is currently deteriorating in both area and quality due to lack of management. The plan also commits to the planting, management and monitoring of all hedgerow planting and the erection of bird and bat boxes.

3.6 Construction Methodologies

This section describes the construction methodologies that will be used for the proposed housing development. Further details are also provided in the Construction and Environmental Management Plan (CEMP) included as Appendix 3-2 of this EIAR.

3.6.1 Soil Stripping & Temporary Stockpiling

Soil stripping and temporary stockpiling of soils and subsoils will be required around the site as the proposed development progresses. Where these works occur, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.

- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- A silt filtration system will be used as appropriate to prevent contamination of any watercourse.

3.6.2 Temporary Site Compound

One temporary construction compound is proposed for the construction phase of the proposed development, located inside the development site entrance. The proposed temporary compound area incorporates temporary site offices, staff facilities and car-parking areas.

A dedicated waste management area will be located within the compound, with waste to be sorted and collected from site by permitted collectors. Potable drinking water will be supplied via water coolers located within the staff facilities, which will be restocked on a regular basis as required during the construction phase. A supply contract will be set up with a water cooler supply company with water supplies delivered to site as required for the duration of the construction period.

Temporary port-a-loo toilets located within portacabins will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. Power will be supplied by a diesel generator, located within the compound. The construction compound will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site.

3.6.3 Site Roads

The construction methodology for the proposed access road is outlined as follows:

- Excavation will take place until a competent stratum is reached.
- The competent stratum will be overlain with up to 500mm of granular fill.
- A layer of geogrid/geotextile may be required at the surface of the competent stratum.
- A final hard surface layer will be placed over the excavated road to provide a road profile to accommodate construction traffic.
- Prior to completion of the construction works on site, the finished road surface will be applied.

3.6.4 Excavation and Services Installation

Services will be required to each property in the proposed development. Where these are located, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- A traffic management plan will be produced if required for connection works to the existing service network.
- A road opening licence will be obtained where required for connection to existing services.

- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stock piled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

3.6.4.1 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

3.6.5 House/Building Construction

The buildings will be constructed by the following methodology:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- The area of each building will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby storage area for later use in landscaping. Any excess material will be sent to an authorised recovery facility.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the area down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it;
- The block work walls will be built up from the foundation (including a DPC) and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Any concrete slabs will be lifted into position using an adequately sized mobile crane;

- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- Windows, electrics, plumbing and all other building components and services will be installed in as timely a manner as is possible.
- Each building will be inspected and certified by an engineer at the appropriate stages of construction.

3.6.6 Construction Site Management Incorporated into Project Design

The following measures pertaining to water quality and invasive species have been incorporated into the design phase of the project to avoid effects on sensitive ecological receptors.

3.6.6.1 Prevention Pollution Control Measures

The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides guidance. This will ensure that surface water arising during the course of construction activities will contain minimum sediment. The following methods and best practice measures will ensure that sediment release and potential for pollution during the construction phase is minimised and reduced to insignificant:

Drainage

The proposed development site does not contain any mapped watercourses and no watercourses were identified within the site during site visits. The Millpot Stream, located to the west of the proposed site, flows west away from the development to Oranmore Bay in excess of 295m downstream. However, the following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering the wider environments including downstream watercourses.

- There will be no release of suspended solids to any watercourse as a direct or indirect result of the proposed works. There is no surface watercourse on the site of the proposed development.
- No watercourse will be interfered with as part of the proposed works. No temporary instream crossings or temporary culverting will take place. Instream works will not take place.
- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.
- Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present. These will be embedded into the local soils to ensure all site water is captured and filtered;
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground or disperse by diffuse flow into local drainage ditches;
- Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing

Hydrocarbons

The use of hydrocarbons during the construction process can result in the potential for pollution and accidental spillage to enter natural watercourses downstream of the site via surface runoff and groundwater. The following measures have been built into the construction design phase of the project.

- On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction;
- The plant used should be regularly inspected for leaks and fitness for purpose; and,
- Spill kits will be available to deal with accidental spillages.

The following guidelines and documents will inform the detailed planning of the works phase: -

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA) in particular;
- C532 Control of water pollution from construction sites: guidance for consultants and contractors (Masters-Williams et al, 2001); and
- SP156 Control of water pollution from construction sites - guide to good practice (Murnane et al, 2002).
- Requirements for the protection of fisheries habitat during construction and development works at river sites developed by the ERFB. <http://www.fisheriesireland.ie/Research/recent-publications.html>.

3.6.7 Landscaping works

Prior to completion of works on the development site, the landscaping works will be carried out. The proposed landscaping plan is shown as Drawing 18223-3-100 (Landscape Master Plan) in Appendix 3-3. The finishes include areas of amenity grassland, footpaths and tree planting. This work will be carried out before the completion of each phase in order to ensure that the development will be aesthetically pleasing place for residents to live. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. Solid barriers will be erected around the site boundary for the duration of the construction works.

3.6.8 Invasive Species

The introduction and/or spread of invasive species such as Japanese Knotweed and Himalayan Knotweed for example, could result in the establishment of the species and this may have knock on effects on the surrounding environs.

Appropriate control measures will be incorporated into the design and construction phase of the development to ensure that the relevant measures (outlined in the following section below) will be implemented.

3.6.8.1 Control Measures for the Management of Invasive Species

Invasive species, such as Japanese Knotweed, Himalayan Knotweed, Himalayan Balsam, *Gunnera*, and Giant Hogweed pose a serious threat to biodiversity and the health of native vegetation types. Construction machinery can act as a vector for the spread of these plants. Machinery that has worked at an infected site is likely to cause the spread of such species by transferring their tiny seeds or plant fragments, in soil trapped in their tyre tread for instance. Equally, they can cause the spread of species within a site. The duration of the impact could be short-term or permanent depending on whether or not an eradication effort is made but once established, eradication is time-consuming and expensive. Himalayan Knotweed, for example, propagates vegetatively, forming a new plant from even very small plant fragments. Thus, there is a high risk of causing the spread of this species to other parts of the site. The UK Environment Agency's *'Japanese Knotweed Code of Practice'* provides guidance on managing Japanese Knotweed and Himalayan Knotweed on development sites. A number of control measures have been drawn up and included in the design and construction phase of the proposed works to avoid the introduction and spread of invasive plant species. The following project design elements have been devised to avoid such effects. The following measures address potential effects associated with the construction phase of the development:

- All earthworks machinery will be thoroughly pressure-washed prior to arrival on site and prior to their further use elsewhere.
- Care will be taken not to disturb or cause the movement of invasive species fragments, either intentionally or accidentally.
- There are not believed to be any existing stands of invasive species on site, but should any be found, they will be clearly demarcated by temporary fencing and tracking within them will be strictly avoided. A minimum buffer of seven metres will be applied to avoid disturbance of lateral rhizomes.
- If any excavations must be carried out in areas of Japanese Knotweed, the excavated material will not be moved from the location. The machinery must be thoroughly pressure-washed in a designated area at least 25 metres from any watercourse before moving on to an area that is not yet infected.
- All contractors and staff will be briefed about the presence, identification and significance of Japanese Knotweed before commencement of works.
- Good construction site hygiene will be employed to prevent the spread of these species with vehicles thoroughly washed prior to leaving any site with the potential to have supported invasive species. All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species such as Japanese Knotweed and Rhododendron. All washing must be undertaken in areas with no potential to result in the spread of invasive species.
- When working at locations in proximity to natural watercourses, a suitable barrier will be erected between the watercourse and the stand of invasive species. This will assist in preventing the spread of any invasive species into the watercourse during their removal. There are no watercourses on the proposed development site, but cognizance will be had of any watercourses on neighbouring sites.

- Any material that is imported onto any site will be verified by a suitably qualified ecologist to be free from any invasive species listed on the 'Third Schedule' of Regulations 49 & 50 of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). This will be carried out by searching for rhizomes and plant material.
- Any soils or subsoils contaminated with invasive species will sent for disposal to an authorized waste facility.

The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – *The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* (NRA 2010) and the Environment Agency (2013) – *The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites* (Version 3, amended in 2013).

3.7 Other Site Details

3.7.1 Waste Management

The treatment of waste is to be employed by the contractor or a specialist waste management contractor as a trade package. This contractor is responsible for:

- Ensuring the site is kept clean and safe
- The collection of waste from a central point
- Segregation of waste on site.

The waste management contractor should ensure that all access routes, fire escapes and staircases are swept and kept clear of debris on a regular basis to maintain high standards of health and safety on the project. No fires will be permitted on site.

The Contractor will prepare a Construction Waste Management Plan in accordance with the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (Department of Environment, Heritage and Local Government, 2006) and ensure that all material is disposed of at an appropriately licensed land fill site. The Contractor will also outline detailed proposals within the Construction Management Plan to accommodate construction traffic.

In order to ensure appropriate segregation of waste on site, a material storage zone will 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 and deliveries into the site and to designated compound or construction areas, as appropriate.

3.7.2 Dust

Dust prevention measures will be included for control of any site airborne particulate pollution. The Contractor will put in place and monitor dust levels in the vicinity using a Bergerhoff gauge instrument. The minimum criteria to be maintained will be the limit for Environmental Protection Agency (EPA) specification for licensed facilities in Ireland, which is 350mg/m²/day. The Contractor will continuously monitor dust over the variation of weather and material disposal to ensure the limits are not breached throughout the project. Dust suppression systems should be implemented if required based on the continuously monitored dust levels.

Dust control should be achieved by:

- Dampening down the dust at the source
- Sheeting will be used as required for stockpiled materials
- Use of barriers such as debris netting on scaffolding around the building to block dust escaping where the building is within 10m of the site boundary where residential properties exist.
- Site road ways will be maintained in a stoned hard core condition not allowing soil to accumulate which when dry can create dust.
- Wheel wash equipment will be set up at the site exit gate for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways.
- Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne.
- Plant and equipment that have the potential to create volumes of dust will be located away from sensitive receptors where possible.
- Deploy Road Sweeper as required on External Roads.
- Deployment of dust monitors across the site if required

3.7.3 Noise

The Contractor will be required to monitor base noise levels at the site location before commencement of the project. Noise monitoring will be required throughout all phases of the project. Variation of noise levels from those experienced as part of everyday life in an area can result in extreme disruption. The Contractor will implement measures to eliminate where possible and reduce noise levels where not. Noise levels will be kept below those levels specified in the National Roads Authority – “Guidelines for the Treatment of Noise and Vibration in National Roads Schemes” or such further limits as imposed by Galway County Council. The proposed development will comply with BS 5228 “Noise Control on Construction and open sites Part 1: Code of practice for basic information and procedures for noise control.”

Construction equipment for use outdoors will comply with the European Communities Regulations– Noise Emission by Equipment for Use Outdoors – SI 241 - 2006.

Noise emissions arising from construction phase operations at the proposed development site will not exceed the identified 65 dB $L_{Aeq\ 1\ h}$ criterion at receptors, with a single exception: use of tracked excavators over approximately 15 t in size in immediate proximity to the boundaries adjoining Beech Park and Coill Clocha is likely to give rise to levels which marginally exceed the criterion. This will be avoided through use of excavators which do not exceed 15 t approximately, depending on plant power output and condition.

No other specific mitigation measures are warranted. Several general measures are proposed as follows:

- Construction operations will in general be confined to the period Monday-Friday 0800-1900 h, and Saturday 08:00-14:00 h.
- Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced.
- Where it is proposed to operate plant during the period 0700-0800 h, standard ‘beeper’ reversing alarms will be replaced with flat spectrum alarms.
- Erection of solid barriers (hoarding) to site boundary

3.7.4 Road Cleaning and Wheel Washing

The Contractor will make provision for the cleaning by road sweeper etc. of all access routes to and from the site during the course of the works as required. It is intended that cleaning will be undertaken on a daily basis during the excavation works and as required thereafter. A wheel wash facility will be provided on site to clean site traffic leaving the site. Waste water generated at this washing facility will be suitably treated on site and all settled silts disposed offsite to licensed landfill. All road sweeping vehicles will be emptied off site at a suitably licensed facility as per our construction stage environmental waste management document.

3.7.5 Water Supply

Water will be supplied on site by water tankers for general use. Potable water will be provided in the form of bottled water for staff use.

3.7.6 Wastewater Management

Portable toilets will be provided for the working on the construction site. Wastewater arising on-site from these toilets is stored in a sealed tank located within the portable toilets, and these will be emptied periodically (as required) by permitted waste contractors and transported to municipal wastewater treatment plants for treatment.

Any sewage or greywater generated during the operational phase of the proposed development will be directed to the local municipal wastewater treatment plants for treatment via the sewage collection network.

3.7.7 Aggregates

The aggregates required for the construction of the proposed development will be sourced, as much as is possible and practicable, from quarries and suppliers located as near as possible to the proposed development. This will reduce the potential for any negative impacts associated with the haulage of the materials to the site of the proposed development. Existing soils and subsoils located on the site will be used where possible to reduce the amount of such materials required for import onto the site.

3.7.8 Construction Traffic/Plant

The following mitigation measures will be implemented in relation to construction traffic and plant/machinery:

- All vehicles to switch off engines when not in use – no idling vehicles
- Effective vehicle cleaning and wheel washing on leaving site and damping down of haul routes
- No site runoff of water or mud.
- On-road vehicles to comply to set emission standards.
- All non-road mobile machinery (NRMM) to be fitted with appropriate exhaust system and be regularly serviced.
- Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site

3.8 Operational Phase

The proposed development will require periodic maintenance throughout the operational phase. The operation of a residential development is not a recognized source of environmental emissions or nuisance and so there will be no adverse effects associated with its operation.

It is proposed that the development will drain via gravity to 5 no. soakaways proposed on site. Water draining to soakaways will pass through silt traps and hydrocarbon interceptors prior to reaching each soakaway. No surface water from roofs or paved surfaces will be discharge from the site, other than via the soakaways to ground. The proposed on-site foul sewers will discharge by gravity to a pumping station to the west of the site, and the foul waste will discharge from this pumping station via pumped rising main to the adjacent public (Irish Water) foul sewer network.

3.9 Decommissioning Phase

It is not intended that the proposed buildings will be removed, as permanent planning permission is being sought for this development. The proposed development will form an integral part of the local housing needs. Therefore, it is intended that the proposed development will be retained as permanent, and will not be decommissioned.