

Environmental Impact Assessment Report

Burkeway Bearna Strategic Housing Development – Bearna, Co. Galway

Volume 1: Non-Technical Summary and Main
Report



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NON-TECHNICAL SUMMARY

Introduction

This Environmental Impact Assessment Report ('EIAR') has been prepared by McCarthy Keville O'Sullivan Ltd. (MKO) on behalf of Burkeway Homes Limited, which intends to apply to An Bord Pleanála (ABP) pursuant to the provisions of the Planning and Development (Housing) and Residential Tenancies Act 2016 for permission in respect of a strategic housing development [SHD] located in the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, Bearna, Co. Galway.

The site area measures approximately 5.38 hectares and is accessed from the west via an existing residential development at Trusky East, called Cnoc Fraoigh. The general area is rural in character and is surrounded by a number of residential developments, individual houses and agricultural lands.

The applicant for the proposed development, Burkeway Homes Limited is a national house building company set up in 2014 and based in Galway. Burkeway Homes Limited's senior management team has over 30 years of construction experience and has developed major commercial and residential projects in both Dublin and Galway. Burkeway Homes Limited have employed an experienced Design Team to ensure that this development will be delivered to meet all the relevant planning, environmental and sustainability requirements.

Need for the Development

There is currently a significant shortage of housing units available to service the housing market (including the rental market) in Galway City and the surrounding areas. The proposed development will contribute significantly to alleviating the shortage of housing supply in Galway and brings into use lands zoned specifically for that purpose.

In addition, the construction industry, through projects such as the proposed development, makes a significant contribution to economic development in Ireland. Notwithstanding the Covid-19 related crisis (which prevails at the time of submission of this application), there remains strong demand for housing in the Galway MASP area, for which the proposed development will be able to provide. The proposed strategic housing development will provide a significant supply of mixed tenure residential units which will contribute towards the aim of growing the population of the Galway MASP in a sustainable manner in accordance with national, regional and local planning policy.

Purpose and Structure of this EIAR

The purpose of the EIAR is to document the current state of the environment in the vicinity of the proposed development site and to quantify the likely significant effects of the proposed development on the environment. The EIAR submitted by the applicant provides the relevant environmental information to enable the Environmental Impact Assessment (EIA) to be carried out by the competent authority.

The information to be contained in the EIAR is prescribed by statutory regulation and informed by various guidelines. The Environmental Protection Agency (EPA) recently published its 'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, August 2017), which are intended to guide practitioners during the transition to new Regulations transposing the updated Directive. These draft guidelines have also been used in the compiling of this EIAR.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of similar developments and in their relevant area of expertise. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. The chapters of this EIAR are as follows:

- The chapters of this EIAR are as follows:
- Introduction
- Background to the Proposed Development
- Consideration of Reasonable Alternatives by the developer
- Description of the Proposed Development
- Population & Human Health
- Biodiversity,
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Air and Climate
- Noise and Vibration
- Landscape and Visual
- Cultural Heritage
- Material Assets – including Traffic
- Interaction of the Foregoing
- Cumulative Effects
- Schedule of Mitigation

A Natura Impact Statement has also been prepared in line with the requirements of the Habitats Directive, and will be submitted to the Planning Authority as part of the planning application documentation.

Background to the Proposed Development

The Background to the Proposed Development chapter presents information on the planning history, strategic planning context for the proposed development, and consultation.

The application site is situated in the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, Bearna, Co. Galway. The site is accessed via an existing residential development at Trusky East, called Cnoc Fraoigh. The application site measures approximately 5.38 hectares in area.

The application site has previously been the subject of 2 no. Strategic Housing Development Applications. The first application (ABP-300009-17) was refused on grounds of insufficient density. The second application (ABP-302216-18), for a 197 no. unit Strategic Housing Development, which satisfactorily addressed the issue of density, was granted by An Bord Pleanála, however the decision of An Bord Pleanála was quashed by Order of the High Court in Heather Hill Management Company CLG Anor. v An Bord Pleanála (2019 No.20 J.R.),

The proposed development addresses the density issue upon which the first application was refused and also addresses the issues identified in the High Court in Heather Hill Management Company CLG Anor. v An Bord Pleanála.

A scoping document providing details of the application site and the proposed development, was prepared by MKO and circulated on 22nd July and 31st July 2020 to the agencies, NGOs and other relevant parties.

A formal Stage 1 meeting pursuant to Section 247 of the Planning and Development Act 2000 (as amended) was held with the Planning Authority on the 20th August 2019.

A tripartite meeting took place between An Bord Pleanála, Galway County Council and the Design team on the 6th of March 2020 in the offices of Galway County Council.

Reasonable Alternatives

This chapter of the EIAR contains a description of the reasonable alternatives that were considered in respect of the development of the site, in terms other land-use options, unit numbers, unit types, design, construction methods and site layout.

A number of alternative development options for the site were analysed, including a ‘do nothing’ option. The chapter provides an overview as to the manner in which the proposed development design has evolved and provides evaluation of the comparable potential for environmental effects. The design process was an iterative process, where findings at each stage of the design’s evolution were used to further refine the design, always with the intention of minimising the potential for environmental impacts. In particular, in developing the proposed design, cognisance was taken of the designs proposed in respect of two previous SHD proposals. Accordingly, the applicant for permission has ensured that elements of the site layout which were unfavourably viewed in either or both the previous decision made by An Bord Pleanála to refuse permission (in February 2018, under ref. no. ABP-300009-17) or the decision of the High Court to quash permission granted (under ref. no. ABP-302216-18) are not replicated in the proposed development the subject of this application.

The current proposed development layout is the culmination of an extensive design process. Overall, the proposed development is a better design from an environmental perspective than the alternatives previously considered. The proposed development provides for an appropriate number of residential units at a density that is consistent with the provisions of the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)*. Furthermore, the mix of housing types has been improved over previous iterations of the development. A network of footpaths throughout the proposed development will provide a high rate of accessibility to the landscaped amenity areas including parks, playgrounds and open play areas. 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. Connectivity to Bearná village centre has been improved through the provision of a footpath along the L-1321 which will benefit not only the proposed development but also the existing residents of the area. The development of the linear park will enhance biodiversity and the set back from the Trusky stream reduces the potential for any environmental emissions. For these main reasons, the proposed development is considered the most appropriate alternative from an environmental impact assessment perspective.

Description of the Proposed Development

The site area comprises approximately 5.38 hectares of land located within the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, in Bearná, Co. Galway, approximately 6km to the west of Galway City [I.G. Ref.: M 23388 23615]. The site is bounded by improved agricultural grassland to the north and east and residential housing to the west and south. The general area is rural in character and is surrounded by a number of residential developments, individual houses and agricultural lands. The Cnoc Fraoigh residential estate lies to the west of the site, with agricultural lands to the north and south.

The proposed development will consist of the following:

- 1) Demolition of existing outbuildings
- 2) Construction of 121 no. residential units comprising:
 - 52 no. houses (37 no. three-beds, 15 no. four-beds)
 - 4 no. duplex units in Duplex Block D1 (2 no. two-beds (ground floor units) and 2 no. three beds (2 storey units))
 - 8 no. duplex units in Duplex Block D2 (4 no. two-beds (ground floor units) and 4 no. three beds (2 storey units))

- 6 no. duplex units in Duplex Block D3 (3 no. two-beds (ground floor units) and 3 no. three beds (2 storey units))
 - 14 no. duplex units in Duplex Block D4 (7 no. two-beds (ground floor units) and 7 no. three beds (2 storey units))
 - 4 no. duplex units in Terrace Block T5 (2 no. two-beds (ground floor units) and 2 no. three beds (2 storey units))
 - 14 no. Apartments in Apartment Block A1 (5 no. one-beds, 9 no. two-beds)
 - 13 no. Apartments in Apartment Block A2 (4 no. one-beds, 9 no. two-beds and a Multipurpose Room)
 - 2 no. Apartments in Apartment Block A3 (2 no. two-beds)
 - 4 no. Apartments in Apartment Block A4 (4 no. two-beds)
- 3) Development of a crèche facility (224.80 sqm) associated outdoor play areas and parking
 - 4) Provision of a footpath connectivity link along the L-1321
 - 5) Provision of shared communal and private open space, car and bicycle parking, site landscaping and public lighting, decommissioning of the existing wastewater treatment plant and provision of all services, access from the L-1321 via the Cnoc Fraoigh development and all associated site development works.
 - 6) Provision of a public linear park along the Trusky Stream

The project is currently at planning stage and subject to approval and detailed design. It is estimated that the works would be tendered in late 2019 with commencement in early 2020 and an estimated site programme of 24 months depending on final construction phasing.

The proposed order of construction of key elements is as follows:

- > Site Setup
- > Earthworks, including removal of excess material off site to an authorised outlet
- > Construction of substructure and services
- > Super Structure Frame to buildings in sequence
- > Roof and Façade finishes
- > External hard and soft landscaping
- > Internal fit out
- > Site Landscaping

Access to the proposed development is to be facilitated via an existing residential development at Trusky East called Cnoc Fraoigh, off the L-1321 (Bearna Road). A network of footpaths throughout the proposed development will provide a high rate of accessibility to the landscaped amenity areas including parks, playgrounds and open play areas. 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.

Construction methodologies that will be used for the proposed housing development are described in this chapter. Further details are also provided in the Construction and Environmental Management Plan (CEMP) included as Appendix 4-2 of this EIAR. All construction methodologies proposed conform to industry best practice.

Population & Human Health

One of the principle concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the construction and operation of a development.

Information used in this study was sourced from the Census of Ireland 2011 and 2016, which is the most recent census, the Census of Agriculture 2010 and from the CSO website, www.cso.ie. Census information is divided into Republic of Ireland, Co. Galway and Bearna DED. The 2016 census data for the Republic of Ireland was consulted as part of the assessment process, and upon comparison with the relevant 2011 data, was found to be consistent.

Most of the amenities and community facilities, including GAA and other sports clubs, youth clubs and recreational areas, are available in the areas surrounding the site (i.e. Bearna, Knocknacarra and Furbo), as well as in the wider Galway area. The main church located closest to the proposed development site is 1 kilometre to the east along the R336. There are a wide range of services available in the area. Retail and personal services are found throughout Baran village and in Galway City. Galway City Council has a branch library in Westside, approximately 5 kilometres east of the proposed site.

The primary school located closest to the proposed development site is the Baile Bui National School, located on the R336 which runs through Bearna, approximately 300 metres southeast of the proposed development site. The secondary school located closest to the proposed development site is Coláiste na Coiribe, Knocknacarra, which is approximately 2.2 kilometres northeast of the site. The National University of Ireland (NUI) Galway main campus is the nearest third level institute to the proposed site and is located approximately 6 kilometres to the east.

. Key tourist attractions within the wider area of Galway City include NUI Galway, a number of theatres, Sports facilities (Eamon Deacy Park, The Sportsground, Galway Racecourse, Pierce Stadium, etc.). Bearna golf club is located approximately 3km from the proposed development. The proposed development does not directly impact on any of these sites of existing tourism attractions. The nearby Twelve Hotel, Ardilaun Hotel, Rockbarton House Hotel and other tourist accommodations in the wider area will attract a significant number of tourists to stay. In addition, The Wild Atlantic Way, which passes through the village of Bearna, attracts large numbers of domestic and overseas tourists.

Overall the proposed development will have no significant negative impacts on Population and Human Health. There will be a slight positive cumulative operational impact on tourism between the proposed site and other projects in the area, where an increase in residents and tourists within the area will allow for a positive influence on local tourism.

Biodiversity

This chapter assesses the likely significant effects that the proposed development may have on Biodiversity, Flora and Fauna during construction and operation (decommissioning is not anticipated).

A comprehensive desk study was undertaken to inform this Biodiversity chapter. This study includes a thorough review of available information that is relevant to the ecology of the site of the proposed development.

Multidisciplinary walkover surveys were conducted between 2018 and 2020 by Pat Roberts and Sara Fissolo of MKO. A dedicated Otter survey of the Trusky stream was conducted, as was a Badger survey. A bat survey was also conducted within the proposed development site and included a daytime inspection survey, two night time detector surveys and the use of fixed point detectors over the period of one week. A freshwater macroinvertebrate survey was conducted to assess the water quality of the Trusky stream. A drone survey was also conducted.

The assessment of impacts on Biodiversity was guided by the principles that are set out in the European Commission Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EC 2013) and the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

The field studies found that much of the site is highly modified from its natural condition and is characterised by spoil and bare ground. The remaining sections primarily consist of a mosaic of grassland and scrub with and dense bracken which showed signs of grazing and trampling from cattle.

A section of the Trusky Stream is located within the proposed development site boundary. The stream is separated from the main construction footprint by over 10m at its nearest point. However, the construction works also involve the discharge of surface water from the proposed development, to the Trusky Stream. This involves, the installation of two precast headwalls within the banks of the stream at the location of the two surface water outfalls. There will also be some minor landscaping works including the planting of native species and the construction of a boundary fence along the stream banks.

No habitats or plant species that are protected under the Habitats Directive, Flora Protection Order or associated with any nearby European Sites were recorded within or adjacent to the proposed development site.

The bird species recorded during the site visits were typical of the grassland and scrub habitats in the wider area. The site does not provide significant habitat for protected bird species such as those listed on Annex I of the EU Birds Directive or those species that are among the qualifying interests SPAs in the vicinity.

A comprehensive search for all mammals was undertaken during the ecological walkover surveys. Potential habitat for otter and badger was identified during the walkover surveys and dedicated surveys for these species were undertaken. Otter spraint was recorded within the stream and the stream is likely used to some extent by foraging and commuting otter. No signs of Badger were recorded. No evidence of roosting bats was recorded within the development site and foraging/commuting activity levels were very low during all surveys undertaken. The number of contacts recorded during both static detector and walked transect surveys for all bat species was low and is typical of an open and exposed site with few roosting features and no identified roosts.

The results of the kick sampling suggested an overall better water quality status than what was found in the surveys undertaken for the N6 project. The kick sampling undertaken as part of this study provides a baseline against which any changes can be monitored.

The following habitats, species and designated sites were identified as Key Ecological Receptors; Galway Bay Complex cSAC; Inner Galway Bay SPA; Galway Bay Complex pNHA; The Trusky Stream; otter; Bats; scrub, grassland and wet grassland habitats. The disturbed habitats within the site and the assemblage of common bird and mammal species that may be present were not included as Key Ecological Receptors but were considered in the impact assessment.

The impact assessment followed the precautionary principle in identifying the potential impacts of the proposed development on the Key Ecological Receptors. Where appropriate, mitigation is prescribed to avoid any potential significant impacts on the the identified designated sites, the habitats on the site and species that are present or may use the site from time to time. In particular, consideration has been given to the protection of the Trusky Stream and the associated riparian habitat and the enhancement of biodiversity in the proposed open spaces associated with the proposed development.

The landscaping plan prepared by Radharc Landscape Design for the proposed development will see an overall increase of linear habitats such as treelines and hedgerows, which will consist of native and naturalised species. The landscape plan allows for the planting of a hedgerow consisting of native and naturalised species along the entire eastern boundary of the site, thereby maintaining connectivity between the north and south of the site. The landscape plan also allows for the planting of an area of woodland to the south of the site, as well as to the north-east adjacent to the proposed hedgerow and further treelines and hedgerows along streets throughout the development. Planting throughout the site will incorporate the use of pollinator friendly species to encourage pollinating insect communities and will employ a maintenance regime that minimises herbicide use.

The landscaping plan includes planting of native species along boundary between the site and the Trusky Stream and will retain, enhance and protect the riparian zone associated with the stream.

Following the implementation of all mitigation, no potential for significant negative effects on any of the identified Key Ecological Receptors remains

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on the ecology of the site was conducted and following the detailed assessment undertaken, it is concluded that, the proposed development will not result in any likely significant effects on biodiversity either within the site of the proposed development or outside it. There is therefore no potential for the proposed development to contribute to any likely significant cumulative effects on biodiversity when considered in-combination with other plans and projects.

The proposed development has been specifically designed to avoid any likely significant effects on Biodiversity.

The residual impacts on ecological receptors will not be significant and there is no potential for the proposed development to contribute to any cumulative impacts on biodiversity when considered in-combination with other plans and projects.

In circumstances where the proposed development is constructed and operated in accordance with the design described within this application, there will not be any likely significant effects on biodiversity at any geographic scale.

Land, Soils and Geology

This chapter assesses the likely significant effects that the proposed development may have on Land, Soils and Geology during construction and operation (decommissioning is not anticipated).

A desk study of the proposed development site and the surrounding study area was completed along with a walkover survey and site investigations. The objectives of the site inspection were to determine the topographic layout of the proposed site, to investigate the geological nature of the site including surface and subsurface. In addition to the general walkover, shallow excavations at the site show the soil, subsoil and bedrock profiles and there are numerous rock outcrops present.

The proposed site consists predominantly of agricultural land. Bedrock is close to surface over much of the site, particularly in the centre of the site where rock outcrops are visible and thin soils evident. There are numerous field boundaries, acid grasslands, scrub, dense bracken and soil and stone likely associated with some shallow excavations that occurred in the past. The Galway Granite underlying bedrock is evident at numerous rock outcrops as well as the disturbed ground areas and stockpiles.

The elevation of the site ranges between approximately 14.5m and 24m OD (metres above Ordnance Datum). The overall local topography generally slopes from north to south with an undulating topography. The site is bounded by improved agricultural grassland to the north and east and residential housing to the west and south.

The Proposed Development is underlain by Megacrystic-Porphyritic Granite (Galway Granite) which is described as Monzogranite, mafic, megacrystic. The Megacrystic-Porphyritic Granite Formation is classified by the GSI as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones.

There are no known areas of soil or ground contamination on the site. During the site walkovers, no areas of potential contamination concern were identified. Any material on the site is generally excavated rock material consistent with the local geology. There is some spoil and bare ground which is recolonising which comprises soil and stone.

Excavation of topsoil, subsoil and bedrock will be required for site levelling and for the installation of drainage and services (wastewater, water supply, electricity, etc.) infrastructure. This will result in a permanent relocation and removal of subsoil and bedrock at most excavation locations. Due to the nature of the site topography and geology it will be possible to reuse cut material as fill which minimises the need to remove all excavated materials. Excess material will be used for reinstatement and landscaping works around the site at the end of the construction phase also.

Storage and handling of hydrocarbons/chemicals will be carried out using best practice methods. Measures to prevent subsoil erosion during excavation and reinstatement will be undertaken to prevent water quality impacts.

No significant impacts on land, soil and geology will occur.

No significant cumulative impacts on land, soil and geology will occur due to the proposed development.

Hydrology and Hydrogeology

This chapter assesses the likely significant effects that the proposed development may have on Hydrology and Hydrogeology during construction and operation (decommissioning is not anticipated).

A desk study of the Proposed Development study area was largely completed prior to the undertaking of field mapping, surface water sampling and walkover assessments. The desk study involved collecting all relevant geological, hydrological, hydrogeological and meteorological data for the area. A detailed site walkover completed in August and September 2020.

The Trusky Stream forms the eastern boundary of the proposed development and the riparian zone along the stream comprises wet grasses, rushes and bracken. All surface water runoff, on the existing site, currently infiltrates to the natural ground or discharges to the Trusky Stream, which in turn discharges to sea at Galway Bay, approximately 690m south from the proposed development. The majority of rainfall discharges via shallow subsurface flow to the Trusky Stream. The thin soils and the low permeability bedrock at the sites mean that there is limited potential for significant infiltration to ground.

The key sensitive receptor from a water and hydrogeology perspective is the Trusky Stream. The potential for impacts on the bedrock aquifer are limited however mitigation measures have been developed to protect the aquifer as well as the surface water receptor.

A Flood Risk Assessment was completed by O'Connor Sutton Cronin Consulting Engineers in September 2020 and is included in the planning application submission. Based on the results of this report, all proposed buildings will be located exclusively within (a) lands zoned 'R' (and not subject to Objective CCF6) and (b) Indicative Flood Zone C (as identified in Variation No.2(a) Galway County Development Plan 2015-2021 Bearna Plan); and outside (c) the predicted flood extent for the 0.1% AEP flood event. The building floor levels have been selected to provide at least 500mm freeboard over the adjacent 1.0%AEP flood water levels, in accordance with GSDSDS recommendations.

The Proposed Development site is underlain by the Megacrystic-Porphyrific Granite (Galway Granite) which is described as Monzogranite, mafic, megacrystic. The Megacrystic-Porphyrific Granite Formation is classified by the GSI as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. Shallow groundwater from this aquifer generally discharges to streams and lakes. Small springs and seeps are likely to occur at the stream heads and along their course (GSI, 2004). The vulnerability rating of the aquifer within the overall site is classified as "Rock at or near surface or Karst" with a small area classified as "extreme". The site walkover surveys confirmed this classification and reflects the thin layer of soils and subsoils present on site.

The primary risk to groundwater at the site would be from cementitious materials, hydrocarbon spillage and leakages. These are common potential impacts on all construction sites (such as road works and industrial sites). All potential contamination sources are to be carefully managed at the site during the construction and operational phases of the development and mitigation measures are proposed to deal with these potential minor impacts.

Surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design to minimise significant negative or adverse impacts on water quality including the adjacent Trusky Stream and avoid impact on downstream designated sites. Preventative measures during construction include fuel and concrete management and a waste management plan which have been incorporated into the Construction and Environmental Management Plan (Refer to Appendix 4-2). A range of surface water control measures will also be used including silt fencing along the Trusky Stream and the maintenance of a set back from that stream during construction.

During the operational phase, the key surface water control measure is that there will be a gravity fed sewer network water drainage system with a Hydro-Brake flow restrictor, silt trap and attenuation tank along with a petrol / oil interceptor prior to outflow to the Trusky Stream. The proposed system will control discharge volume and discharge quality to acceptable levels. It is also proposed to retain and enhance the existing riparian zone which will act as a buffer between the development and that stream.

Overall, the proposal presents no significant impacts to surface water and groundwater quality provided the proposed mitigation measures are implemented.

Air and Climate

Due to the nature of the development, the general character of the surrounding environment and publicly available information on air quality, air quality sampling, was deemed to be unnecessary for the ELAR.

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

Zone A: Dublin City and environs

Zone B: Cork City and environs

Zone C: 16 urban areas with population greater than 15,000

Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The site of the proposed development lies within Zone C, which represents urban areas with a population of greater than 15,000.

The ambient air quality monitoring carried out closest to the subject site is at Bohermore in Galway City. This monitoring location also lies within Zone C. The air quality in the vicinity of the proposed development site is likely to be quite similar in nature and composition. For the purposes of this assessment, air quality monitoring data from the station at Bohermore in Galway City is used.

The construction of the proposed development will require the use of machinery and plant, thereby giving rise to exhaust emissions. Dust is also common emission from construction sites and there is potential for the generation of dust from during the construction phase of the proposed development. Mitigation measures have been developed and will be employed to minimise the impact of dust and vehicle emissions on air quality and climate. The overall impact on air and climate will be short term, imperceptible and negative.

Noise and Vibration

This chapter assesses the likely significant effects that the proposed development may have on Noise and Vibration during construction and operation (decommissioning is not anticipated).

The proposed development site consists of a 5.38 ha plot, located approximately 400 m northeast of Bearna village (Figure 10-2). The site does not directly adjoin any public roads, and is accessed from local primary road L1321 to its west via Cnoc Fraoigh, a small residential estate of 21 detached dwellings.

The southwest side of the site directly adjoins Cnoc Fraoigh. The northern half of the western boundary adjoins a mixture of gardens and fields. The northern, eastern and southern boundaries adjoin agricultural land. The site is currently under a mixture of rough grazing and disturbed ground. Ground elevation rises gently northwards.

There are no noise receptors on the proposed development site itself. Being on the fringes of Bearna village, the site lies in proximity to a large number of receptors. There are approximately 50 dwellings within 200 m, most of which are located at Cnoc Fraoigh, at an extensive residential cluster further west, or at the residential development to the southeast. No particularly sensitive receptors such as care homes are located in proximity to the site.

A baseline noise survey was carried out at the proposed development site over the period 09.09.20 to 10.09.20. The purpose of the survey was to provide up to date ambient noise data at the site. The survey consisted of a mixture of unattended and attended monitoring. The main noise source audible at the monitoring stations was distant road traffic, with intermittent L1321 traffic. Data suggest that ambient noise levels are relatively consistent across the site.

It is proposed to construct a mixture of detached, semi-detached, terraced, duplex and apartment units across the site, albeit concentrated in the northern half. The number of residential units will total 121. Apartment blocks will extend to three floors, and will be provided with balconies. A creche will be provided at the site centre. The site will be served by a network of onsite roads. Open spaces will be landscaped. Vehicular access to the development will be provided through the adjacent Cnoc Fraoigh estate.

The construction phase of the proposed development is expected to last several years. Noise impacts during the construction phase will be short term and slight negative at the nearest receptors, increasing to moderate negative at adjacent dwellings during certain works. No vibration impacts are expected. Inward noise levels will be satisfactory in the context of WHO and Pro-PG criteria.

No indirect impacts or interactive effects have been identified. There are no large scale developments previously permitted or proposed in the local area. Thus potential cumulative impacts are unlikely to arise.

During the post-completion phase of the development the change noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of neutral, imperceptible and permanent impact at most receptors. Impacts at Cnoc Fraoigh dwellings will be slight to moderate negative due to through traffic.

Landscape and Visual

The Landscape & Visual assessment is based on desk study of the study area, field surveys of the site and surrounds and the use of photographs and photomontages from representative viewpoints of the site. The landscape of the area is described in terms of its existing character, which includes a description of the physical and visual character, landscape values and the landscape's sensitivity to change. The potential impacts in both landscape and visual terms are then assessed, including cumulative impact.

The topographical landform of the LVIA study area and the wider landscape is quite steeply graded from the north (+24.0m AOD) to the southeast (+14.5m AOD), with levels along the western boundary typically +22.5m AOD to +15.1m AOD. The Trusky stream is immediately east of the site's boundary, which is similarly steeply graded, from north to south. The elevated landscape north of the site boundary allows for distant views of the North Clare Coast and Galway Bay. Due to the elevated position north of the proposed site boundary and screening by mature vegetation throughout much of the surrounding landscape, the proposed site will not be visible from the surrounding local roads within much of the LVIA study area.

The current land-use on site comprises of rough grazing agriculture. The site is bounded by improved agricultural grassland to the north and east and residential housing to the west and south. Other natural elements including the Trusky Stream is located along the eastern site boundary. Stone walls, approximately 1 metre in height, form field boundaries and are evident along much of the site boundary and in the study area. The land-use surrounding the site can best be described as built infrastructure comprising of a mix of commercial and residential buildings.

As part of the assessment, photomontages were prepared from 9 viewpoints so as to represent a variety of views within 1 kilometres of the site. The choice of viewpoint locations is influenced by both the views available and the type of viewer. These include viewpoint locations from or close to local residents as well as locations on regional and local roads at varying distances from the site. Care was taken to provide a range of views from various elevations, distances, and orientations.

The landscape masterplan, prepared by Radharc, has been well designed and will provide an attractive setting for the housing development. The landscape plan also outlines that the proposed development will encourage the use of native, naturalised and indigenous species throughout much of the landscaped areas. Landscape mitigation measures arising from the proposed development outlined in the landscape plan, will create a positive natural aesthetic quality to the area.

Landscape Effects

The landscape effects of the proposed development are described in relation to both effects on the wider landscape character and effects on the landscape of the site. The landscape of the proposed site is regarded as modified by man in terms of the rough grazed agricultural land and the presence on-site of local electrical infrastructure. Mature trees, hedges, scrub and other natural elements of the site are mainly limited to the eastern site boundary along the Trusky Stream.

On the grounds of the aforementioned points and taking the landscape policies, landscape character assessment and zoning designations of the GCDP and Bearna Plan into account, the local landscape value and sensitivity are both considered **Medium to High**.

The introduction of the 121 No. dwelling units into the existing landscape represents new man-made elements but will not affect the overall character of the landscape as the existing residential elements in the surrounding area are in keeping with the style and scale of the proposed development. Distance and screening by landform and vegetation will lessen the significance of any landscape effects. The residual effects of the proposed development on the wider landscape character are considered Slight and Neutral.

Overall, the predicted likely effects on landscape attributed to the proposed development are considered to be **Permanent** and **Slight**. Any landscape effects likely to arise will be localised and the nature of the development is in keeping with the surrounding landscape near Barna Village Centre.

Visual Effects

Views towards the proposed site are very localised and can only be seen from a very limited area outside the site as illustrated in the photomontages at Viewpoints 1 to 9. Visual receptor sensitivity was found to be Low at Viewpoint 06, Low-Medium at Viewpoint 03 and Medium at Viewpoints 01, 02, 04, 05, 07, 08 and 09. From the perspectives of Viewpoints 04 and 05, the horizontal and vertical extent of change and overall magnitude of change occurring as a result of the proposed development is medium, therefore visual effects were deemed to be Medium for those viewpoints. There will be almost no perceptible changes in the view from Viewpoints 02, 03, 06, 07, 08 and 09 as a result of the proposed development, therefore visual effects were deemed to be Low.

There were no viewpoints deemed as having a High magnitude of change as a result of the proposed development. Viewpoints 04 and 05 will have Medium effects in the change in character to the existing landscape as a result of the proposed development. However, the proposed infrastructure development will not give rise to any significant visual effects as the proposed development is in keeping with Objective UD1 and Objectives 'R'/'OS' in the Bearna Plan.

Existing buildings and vegetation will screen the majority of the proposed development from many locations in the immediate surroundings of the site as shown in Viewpoints 02, 03, 06, 07, 08 and 09. The spatial extent of the proposed development within the views was found to be Low from Viewpoints 01, 04 and 05 and negligible from the remaining six viewpoints.

The overall likely effects attributed to the proposed development will be Long-term, **Slight – Moderate** visual effects. The proposed development will not alter the character of the environment and is in keeping with its zoning status and the emerging trends of the developments in the vicinity.

Archaeological & Cultural Heritage

No protected structures are located within or in close proximity to the study area.

There are five protected structures located within 2km of the study area; Barna House, Barna (RPS No. 744) 1500m east of the Proposed Development, Lynch Monument, Knockaunacarragh (RPS No. 747) 1000m east, Thatched House, Ahalugger (RPS No. 748) 430m south, Barna Pier (RPS No. 886) 500m south and Father Griffin Monument, Cloghscoltia (RPS No. 4018) 1250m north.

No recorded monuments are located on the proposed development site. For the purpose of assessing effects on the setting of recorded monuments in the vicinity of the Proposed Development, all RMP sites within 2km of the study area are included here. A 2km buffer is an appropriate study area in terms of identifying impacts on recorded monuments in the wider landscape. The density of monuments in the area is low with just thirteen monuments located within 2km of the Proposed Development

The Proposed Development will require the removal of all cultural heritage sites located within the development site. Cultural heritage items identified during fieldwork include five vernacular structures and a series of field walls, all dating from the late eighteenth and nineteenth centuries

Based on the assessment the proposed development will have no significant effect on architectural heritage, as no protected structures are located within or in the immediate vicinity of the proposed development site. To mitigate these impact all cultural heritage items which are to be removed to facilitate the Proposed Development will be recorded by means of photographs, written descriptions and scale drawings if necessary prior to removal. Groundworks at all locations shall be monitored and any sub-surface traces of the cultural heritage items shall be recorded by means of photographs, written

descriptions and scale drawings if necessary. The residual effect on cultural heritage items within the project site will be permanent, moderate, and negative.

To mitigate any potential impacts to sub-surface archaeological impacts, archaeological monitoring of all topsoil removal should be undertaken by a suitably qualified archaeologist. The monitoring of topsoil stripping within the site in advance of the proposed development may uncover features of archaeological significance, which in turn may be the subject of preservation by record (excavation). These excavations may add to our knowledge of the archaeological heritage of the site. The potential impacts of the proposed development on archaeological heritage are rated as long term, slight. Based on the assessment above there will be no significant effects on archaeological heritage.

Material Assets

Traffic and Transport

The local road network in vicinity of the proposed development site is generally made up of single carriageway roads and streets. Junctions are predominantly priority controlled with the exception a traffic signal junction on the R336 Bearna Road which provides access on route to the proposed development site. There are good public transport options available to potential Galway City commuters with multiple services available during morning and evening peak periods. Galway City is also accessible via bicycle with an expected journey time of approximately 25mins.

An analysis of the likely effects of the proposed development on traffic and transport was conducted by Atkins. Traffic surveys were undertaken during May 2018. Three Junction Turning Counts (JTC) were undertaken as well as one Automatic Traffic Count (ATC). The JTC counts were 12-hour, classified, counts conducted between 07h00 and 19h00 on a normal weekday. The ATC count was carried out over a 7-day period at a single location. The ATC count commenced on the same day as the JTC counts for a period of 7 days.

The traffic impact assessment indicates that in terms of base year traffic, all key junctions assessed operate well within capacity. The assessment of all future scenarios also demonstrates that with the introduction of traffic generation associated with the proposed development on the adjacent local road network, all junctions are expected to operate within capacity with no adverse impacts in terms of traffic queuing, delay or capacity.

The proposed development will result in a long term not significant negative effect during assessment years. In this context it is concluded that in terms of traffic, the proposed developed is both sustainable and appropriate for the area.

Other Material Assets

There are a number of services located in the area surrounding the site including electricity, gas, water, sewage and telecommunications networks. Best practices will be implemented to ensure that there are no significant impacts on these, and to ensure safety of the site workers. Site specific Waste Management Plans will be in operation through the construction and operational phases. There will be no significant impacts on material assets as a result of the proposed development

Interaction of the Foregoing

The preceding Chapters 5 to 13 of this EIAR identify the potential environmental impacts that may occur as a result of the proposed development in terms of Population and Human Health, Biodiversity, Flora and Fauna, Land, Geology and Soils, Hydrology and Hydrogeology, Air and Climate, Noise and Vibration, Landscape and Visual, Archaeological and Cultural Heritage and Material Assets. All of the potential significant effects of the proposed development and the measures proposed to mitigate them

have been outlined in the preceding sections of this report. However, for any development with the potential for significant environmental effects there is also the potential for interaction amongst these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect.

A matrix is presented in Table 14.1 to identify interactions between the various aspects of the environment already discussed in this EIAR. The matrix highlights the occurrence of potential positive or negative effects of the proposed development. The matrix is symmetric, with each environmental component addressed in the previous sections of this EIAR being placed on both axes of a matrix, and therefore, each potential interaction is identified twice.

Interactions have been identified between effects on Population and Human Health and effects on Noise and Vibration, Air and Climate, Hydrology and Hydrogeology. Interactions have been identified between effects on Biodiversity, Flora and Fauna with effects on Soils and Geology, Hydrology and Hydrogeology, Noise and Vibration. Interactions have been identified between effects on Soils and Geology with effects on Hydrology and Hydrogeology. Interactions have been identified between effects on Air and Climate with effects on Material Assets.

Where any potential interactive effects have been identified, appropriate mitigation is included in the relevant sections (Sections 5-13) of the EIAR.

In general, there are no significant negative effects associated with the proposed development or potential interactions. The development has been designed to ensure it is in keeping with its surrounds, has limited potential for environmental emissions and will have a generally positive effect for the local community and Galway City.

Cumulative Impacts

This chapter identifies the other projects that were considered in the analysis of cumulative effects and summarises the results of the detailed analysis set out in chapters 5 to 13. Where appropriate, the application documents, EIAR, and NIS reports for the other projects were reviewed to assist in the analysis of cumulative impacts. It was determined that the proposed development will not result in any significant cumulative effects in combination with other projects.