
Volume I - Non-Technical Summary of Environmental Impact Assessment Report

Proposed Residential Development

Lands at Rathmullan Road, Drogheda, Co. Meath

Trailford Ltd

September 2019



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1.0 Introduction

This Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) relates to a Planning Application by Trailford Ltd. (referred to as the Applicant throughout) for proposed residential development comprising the demolition of existing farm buildings and the construction of 509 no. dwellings; 152 no. apartments units, 1 no. retail unit, 1 no. café and a crèche on land at Rathmullan Road, Rathmullan, Drogheda, Co. Meath.

Article 5(1)(e) of the EIA Directive requires that an Environmental Impact Assessment Report (EIAR) is accompanied by a NTS of the EIAR and it is transposed into Irish law under article 94(c) of the Planning and Development Regulations 2001, as amended.

This NTS presents a general overview of the proposed residential development and an assessment of all associated potential environmental impacts. The term 'non-technical' indicates that this summary should not include technical terms, detailed data and scientific discussion, that detail is presented in Volume II of the EIAR.

2.0 Environmental Impact Assessment Requirements

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, defines an EIAR as:

'A report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.'

The subject development is not of a type or size that would require mandatory EIA under Annex I. With respect to Annex II, the subject proposal would constitute an "infrastructure project" under Class 10. Given the no. of units proposed and the size of the subject site, EIA is required under Class 10(b)(i) and Class 10(b)(iv). Class 10(b)(i) relates to:

"Construction of more than 500 dwelling units."

Class 10(b)(iv) relates to:

"Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere."

In order to ensure that all potential impacts associated with the development proposal are identified and addressed, this EIAR provides a systematic and integrated evaluation of the direct, indirect and secondary effects of the project on the natural and socio-economic environment.

The aim of the approach is to identify and predict (for a given proposed development) any impacts of consequence; to describe the means and extent by which they can be avoided in the first instance or reduced or ameliorated; to interpret and communicate information about the impacts; and to provide an input into the decision making and planning process.

The aim of the EIAR is to:

- Describe the project using information on the site, design and size of the proposed development;
- Identify and predict any impacts on environmental features likely to be affected, having regard to the specific characteristics of the proposed development;
- Describe the measures envisaged in order to avoid, reduce and, where possible, remedy significant adverse effects;
- Provide the data required to identify and assess the main effects which the proposed development is likely to have on the environment; and
- Provide a Non-Technical Study of the information.

2.1 EIAR Study Team

The EIAR was completed by a project team led by Hughes Planning and Development Consultants, who also prepared a number of the chapters.

The members of the team and their respective inputs are outlined below in Table 1.0 below.

In accordance with EIA Directive 2014/52/EU, we confirm that experts involved in the preparation of the EIAR are fully qualified and competent in their respective field. Each has extensive proven expertise in the relevant field concerned, thus ensuring that the information provided herein is complete and of high quality.

Chapter No.	Chapter Title	Contributor
Chapter 1	Introduction	Hughes Planning and Development Consultants (HPDC)
Chapter 2	Proposed Development and Alternatives Considered Planning and Development Context	HPDC
Chapter 3	Planning and Development Context	HPDC
Chapter 4	Population and Human Health	HPDC
Chapter 5	Biodiversity	Scott Cawley
Chapter 6	Soils, Geology and Hydrogeology	Waterman Moylan
Chapter 7	Water	Waterman Moylan
Chapter 8	Noise and Vibration	AWN Consulting Ltd
Chapter 9	Air Quality and Climate	AWN Consulting Ltd
Chapter 10	Material Assets	AWN Consulting Ltd and Waterman Moylan
Chapter 11	Archaeology, Architectural and Cultural Heritage	Archaeology and Heritage Consultancy Ltd
Chapter 12	Landscape and Visual Amenity	Cunnane Stratton Reynolds
Chapter 13	Interactions Between Environmental Factors	HPDC in conjunction with above consultants
Chapter 14	Principle Mitigation and Monitoring Measures	HPDC in conjunction with above consultants

Table 1.0 EIAR Chapters and Contributors

3.0 Project Description

3.1 Site Location and Context

The subject site consists of a large parcel of land, c. 26.2 ha in size, located within the south western environs of Drogheda, Co. Meath, c. 1.7km from the centre of the town, and is situated adjacent to the Meath-Louth County Border. The site has road frontage along Rathmullan Road on the eastern boundary of the site, with this road continuing along the southern boundary of the site. The site is situated within a distance of between 25 and 70 metres of the M1 motorway on its western boundary, and the northern extent of the site is situated within a distance of between 40 and 50 metres from the southern bank of the River Boyne, with the site elevated c. 10 metres above the riverbank. The site adjoins the buffer zone which protects the monuments of Newgrange, Knowth and Dowth.

The topography of the land is undulating. The site predominantly slopes gently towards the River Boyne, with a steep embankment leading down towards the road which runs alongside the River Boyne. Due to the fall of the land, the site is set above the adjoining M1 Motorway and smaller rural road to the north adjoining the River Boyle.

The subject land is currently used as agricultural land. The site comprises 2 no. large fields and one grazing field, with associated farm buildings used for cattle. There is significant planning along the western boundary which provides an appropriate screen to the M1 Motorway.

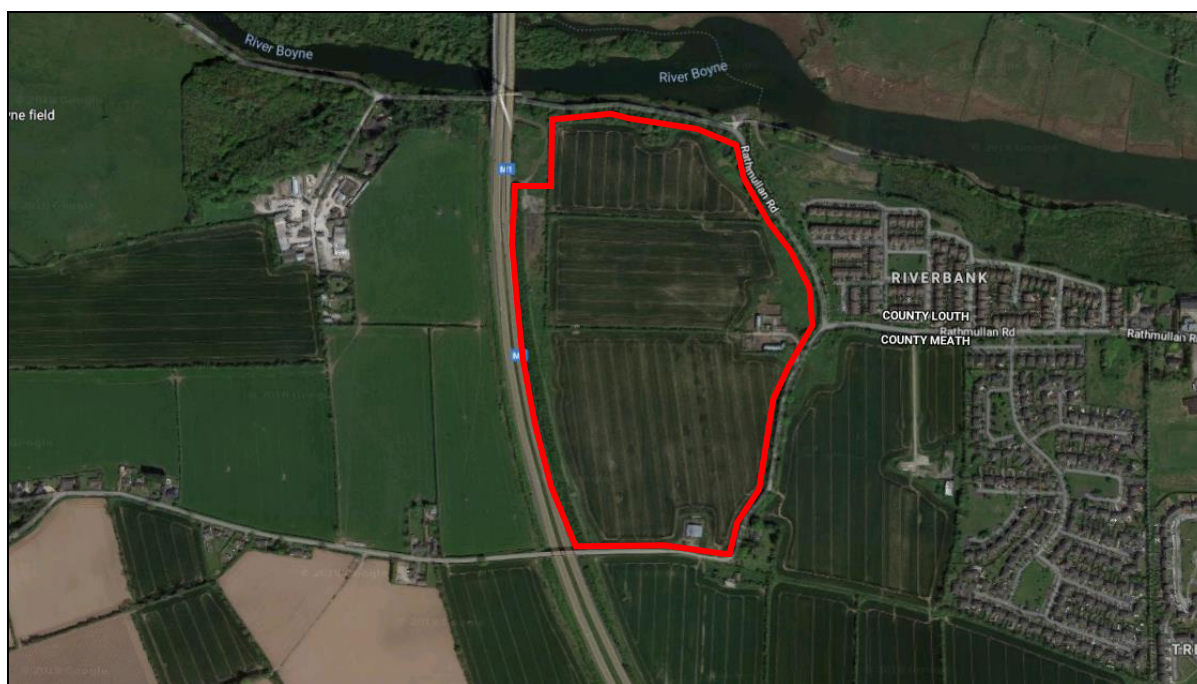


Figure 2.1 Aerial view of subject site (red outline) in the context of the receiving environment

3.2 Proposed Development

The proposed development, as designed by NDBA Architects, involves the demolition of 2 no. existing sets of farm buildings on the subject site and construction of a residential housing scheme comprising 509 no. dwellings, 152 no. apartments/duplex units (providing a total of 661 no. residential dwellings) and neighbourhood centre, comprising of a crèche, a café and a retail unit, on the 26.2Ha site.

More specifically, the proposal includes for the demolition of 2 no. sets of existing farm buildings on the subject site. More specifically, a set of farm buildings adjacent to the site's southern boundary and a set of farm buildings adjacent to the site's eastern boundary.

The development proposal will include the construction of 152 no. apartments (13 no. 1-bed apartments and 139 no. 2 bed apartments) on the application site. Apartments will be provided within 26 no. purpose-built apartment blocks scattered throughout the development.

The development proposal will include the construction of 509 no. two storey family homes on the application site. The scheme caters for growing families and those trading up from apartment living, offering 158 no. 2-bedroom, 269 no. 3-bedroom and 82 no. 4-bedroom dwellings in various configurations.

The proposed development features a neighbourhood centre, comprising a 486sq.m crèche, c. 63sq.m café and 318sq.m retail unit, adjacent to the site's eastern boundary immediately south of the northernmost entry to the proposed development. The building which houses the crèche and café is double storey. The retail unit occupies the lower ground floor level of Apartment Block C, with this 3-storey building sitting lower than the adjacent dwellings due to the topography of the site. The proposed neighbourhood centre will be internally accessible from the development as well as via an external road off Rathmullan Road.

The development will be served by 1,366 no. car parking spaces, 188 no. bicycle parking spaces and 9.15 hectares of public open space, including landscaped play spaces and pocket parks throughout the development and 6.13 hectares of landscaped open space provided adjacent to the Boyne River and M1 motorway frontages.



Figure 2.2 Site layout plan of proposed development of 661 no. residential dwellings

The proposed development also includes the following:

- Construction of a 4-arm signalised junction and works to Rathmullan Road, including the widening of the existing carriageway to 6 metres and the provision of a 2 metre wide footpath linking the proposed development to the River Boyne Boardwalk;

- Construction of 2 no. priority junctions (one along the site's eastern boundary to provide access to the neighbourhood centre and one along the site's southern boundary to provide a second access to the development), realignment and upgrade works to the un-named local road along the site frontage to the south of the new signalised junction with Rathmullan Road; and
- Construction of a strategic foul water pumping station in the north-eastern corner of the site.

The proposed development will be constructed in 5 no. phases. The diagram included in Figure 2.3 below indicates the phasing of the proposed development. The proposed development will feature 12 no. neighbourhood areas, created through a combination of viewpoints, parks/open space areas, architectural features and the hierarchy of streets, as illustrated in the plan excerpt included in Figure 2.3 below.

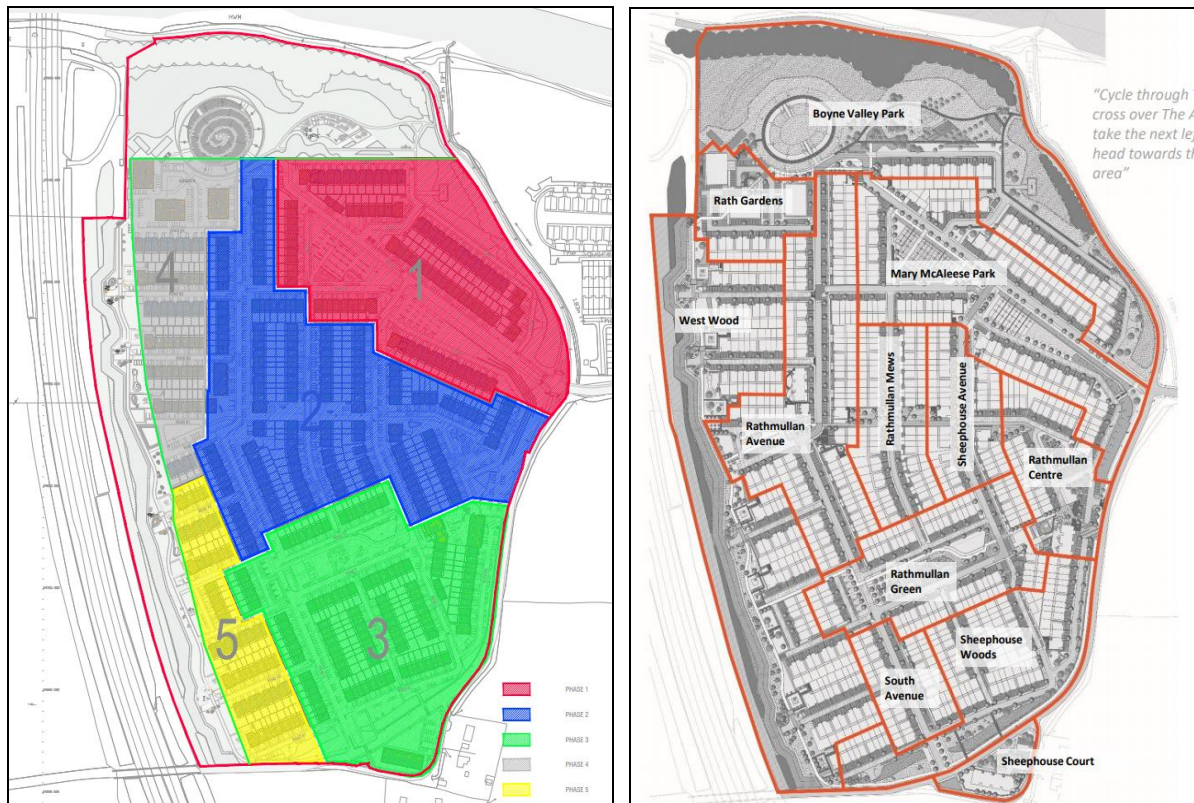


Figure 2.3 Proposed phasing of development (left) and proposed neighbourhood areas (right)

3.3 Alternatives Considered

The Planning and Development Regulations, 2001, as amended, require:

"A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment."

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics.

Given the zoning of the subject site in the Meath County Development Plan 2013-2019, and having regard to the project's objectives, no reasonable alternative locations were considered.

The main alternatives studied during the development of this application comprises alternative design and layout options for a largely residential development at the subject site (please see main report for alternative design and layout options explored). The Architectural Design Statement, prepared by NDBA Architects, Landscape Strategy & Design Report, prepared by Cunnane Stratton Reynolds,

and Planning Report & Statement of Consistency, prepared by Hughes Planning and Development Consultants, which accompany the planning application also provide a detailed planning rationale for the development of the final layout.

Alternative site layouts and siting progressed throughout the design process in order to minimise the impact on the receiving environment at the earliest opportunity. The initial stage involved a constraints analysis of the land within the proposed development site to identify all high-level constraints and aggregate them against the site to allow a suitable layout to be developed. These constraints included the sites topography, the M1 motorway to the west and the Boyne River to the north.

As the design process progressed, the main alternatives studied in respect of the proposal were alternative design layouts (which generally achieved fewer unit numbers and a lower net residential density) and various options for the provision of pedestrian/cyclist connections to the existing boardwalk adjacent to the River Boyne, provision of open space and vehicular access to Rathmullen Road. These were not pursued for reasons relating biodiversity and traffic safety, among others.

The scheme proposed in this application for permission has evolved from its original form and the consideration of alternative designs has resulted in significant environmental improvements in terms of the landscape and visual contribution that the proposed development will contribute to this area of Drogheda.

4.0 Human Beings, Population and Human Health

The Population and Human Health chapter describes the significant effects of the development on the surrounding human environment in the general area of the subject site Rathmullen Road, Rathmullen, Drogheda, Co. Meath. The assessment of the effects of the proposed development will focus on: population levels; impact on employment and economic activity; land use and settlement patterns; housing; community infrastructure and social facilities; health and safety; and risk of major accidents and disasters. In considering the impacts of the proposed development on the above key items, the chapter will assess the impacts of the works both during the construction phase and operation phase.

In order to assess the likely significant impacts of the proposed development on population and human health, an analysis of recent Census data was undertaken. Data relating to the St. Mary's (Part Rural) Electoral District (Electoral Division No. 11047), Co. Meath, the settlement of Drogheda and Small Area 167082008, were examined.

The construction phase of the proposed development is likely to result in a positive net improvement in employment and economic activity particularly in the construction sector and in associated and secondary building services industries.

The construction phase of the project may have some short-term negative impacts on local residents during the construction phase. Such impacts are likely to be associated with construction traffic, possible nuisances associated with construction activity and noise impact. However, such impacts will be short term and in the longer term, the completed scheme will have long-term beneficial impacts for local businesses, residents and the wider community. Further to this, the implementation of the range of remedial and mitigation measures included throughout this EIAR document are likely to have the impact of limiting any likely adverse environmental impacts of the construction and operational phase of the proposed development on population and human health.

Once constructed, the proposed development will result in a generally positive alteration to the existing undeveloped green-field site in terms of the provision of residential units and significant areas of open space to serve the growing need for quality housing in the Drogheda area in accordance with local, regional and national planning policy guidance. The proposed development will bring about an increase in population in the wider area, which has experienced strong population growth during the 2011-2016 intercensal period.

A diverse range of housing types are provided to satisfy different elements of housing demand and to ensure that the development is attractive to a varied cross section of the population. The proposed development will result in the addition of 661 no. units to the supply of housing in the Drogheda area. These will be a mixture of 1, 2, 3 and 4 bedroom residential units. In addition, the development also

complies with its Part V obligations and thus ensures a strong socioeconomic mix. The proposed development also features a creche, café and retail units, located in the proposed neighbourhood centre, which will serve the residents of the development and the wider area.

The proposal also includes large landscaped open spaces opposite the River Boyne and adjacent to the site's western boundary, as well as footpaths and cycle paths throughout the site which link to adjacent road, pedestrian and cycle networks, which will significantly impact the social amenities of the town in a positive manner. It will enable more residents and visitors to gain access to the River and connect to existing green and social infrastructure in the town, improving residents' ability to lead a healthy lifestyle. This will be a significant positive impact of existing and future residents.

The population growth that will occur will contribute to the existing social and community infrastructure. The new residents of the development would likely lead to increased funding and patronage of existing services and facilities and the critical mass generated by the proposal would likely create demand for new facilities and services, which would indirectly benefit the wider area.

Following consideration of the residual effects (post-mitigation), the proposed development will not result in any significant effects on population and human health.

5.0 Biodiversity

This Biodiversity Chapter describes the likely significant effects on biodiversity resulting from the proposed strategic housing development on lands at Rathmullan Road, Drogheda, Co. Meath. Where necessary, mitigation measures are identified to address likely significant effects and the likely residual effects are described.

The Biodiversity Chapter was authored by Laura Higgins (BA (Hons), checked and reviewed by Colm Clarke (ACIEEM, MSc, BA (Hons)) and reviewed and approved by Aebhín Cawley (CEnv, MCIEEM, PDip, BA (Hons)), Director Scott Cawley. All three are experienced ecologists with a range of experiences in ecological survey and assessment.

The assessment takes account of international and national legislation relating to biodiversity, and local authority policies relating to biodiversity. The assessment is based on the results of a desk study and field surveys undertaken in 2018 and 2019. It has also been informed by prior field surveys undertaken by Robertson and Associates in 2006 for previous applications at the same site. The desk study included a search of datasets held by the National Parks and Wildlife Service (NPWS), and National Biodiversity Data Centre (NBDC) as well as examination of information compiled for previous planning applications within lands and adjacent lands. Field surveys were undertaken in August and September 2018 and March 2019, and included habitat and invasive species surveys, and surveys for rare and protected fauna species and birds. Consultations were made to the NPWS, with a response received on 22nd November 2018.

The lands are not within any designated sites, but are directly adjacent to the River Boyne and River Blackwater Special Area of Conservation (SAC) (002299), which is designated for a range of terrestrial and aquatic habitats and species, and are within 100m of the River Boyne and River Blackwater Special Protection Area (SPA) (004232), which has been designated for its population of the wetland bird species Kingfisher *Alcedo atthis*. The subject lands are hydrologically connected to these European sites via the surface water network. They are also connected to additional downstream European sites within the Boyne Estuary, which have been designated for their coastal and marine habitats and wetland bird species. With regards to nationally protected sites, the Boyne River Islands pNHA is within 200m of the lands and has been designated for its example of alluvial woodland habitat. Information for the completion of appropriate assessment screening has been prepared. It has concluded that the possibility of significant effects on European sites from the proposed development, either alone or in-combination with other plans and projects, cannot be excluded. For this reason, a Natura Impact Statement has been prepared for the proposed development.

No notable or protected flora species occur within the subject lands. Several habitats of ecological value were identified within and adjacent to the subject lands, including an area of oak-ash-hazel woodland. The area of oak-ash-hazel woodland on the northern site boundary is considered to be of

county importance, due to its naturalness, its location in the River Boyne Valley, and its relative scarcity at a county level. Other habitats within the proposed development site considered to be key ecological receptors (KERs), and of local importance are hedgerows, treelines and dry meadows and grassy verges.

In terms of protected fauna, the lands are considered to be suitable for a range of bat species, and they contain two locally important small roosts of soprano pipistrelle bat *Pipistrellus pygmaeus* within farm buildings in the south and east of the lands. No signs of badger *Meles meles* or otter *Lutra lutra* were found during surveys of the lands. Several mammal paths were noted within the lands, and based on desk records and site surveys, are likely to be utilised by a range of mammals such as deer, Irish hare *Lepus timidus hibernicus*, fox *Vulpes vulpes* and hedgehog *Erinaceus europaeus*.

Significant effects are predicted to arise at the construction phase of the proposed development from: the demolition of buildings within the lands; the removal of hedgerows; and, the potential generation and mobilisation of silts, sediments and other pollutants to the local surface water network. Disturbance impacts have been considered during construction but are not predicted to be significant. Operational phase impacts are predicted from the operation of artificial lighting to previously unlit habitat and disturbance from increased human traffic within the lands.

In the absence of mitigation, the possibility of significant effects cannot be ruled out with regards to European sites. Potential impacts on European sites are considered to arise from the mobilisation of silt and/or pollutants to the River Boyne during construction and operation of the proposed development. Silt and pollution control measures have been proposed for the lands during construction, which will be overseen by a suitably qualified person. Design measures have been provided for the retention and treatment of operational surface waters prior to their release to the local surface water network. Following the implementation of the aforementioned design and mitigation measures, there will be no significant effects on designated sites. The conclusion for the Natura Impact Statement states that it is the professional opinion of the authors of the report that there will be no adverse effects on the integrity of any European sites.

With regards to habitats, significant impacts are predicted during the construction phase of the proposed development in the absence of mitigation. This would arise from the loss of hedgerow and dry meadows habitats during site clearance works; potential accidental damage to retained woodland and hedgerow habitats through machinery strikes or compaction of soils during construction works; and accidental pollution of watercourses downstream of the lands. Measures have been provided for the protection of retained habitats, including the use of setback distances, protective fencing, and the utilisation of a root protection zone. Compensatory measures have been proposed for the loss of hedgerow and dry meadow habitats, including additional woodland planting, tree planting, and establishment of wildflower areas. Residual impacts have been reduced to levels not deemed significant with regards to retained habitats and dry meadows. Residual impacts remain significant at a local level for hedgerows as there will be the unavoidable net loss of hedgerows, which will reduce the level of habitat connectivity within the lands.

With regards to fauna, significant effects are predicted to arise from loss of suitable habitat of bats and birds, and from mortality of bats and birds arising from the destruction of bat roosts and/or bird nests, respectively, during the construction phase of the proposed development. Operational phase impacts extend to the introduction of artificial lighting to the lands, and the illumination of suitable habitat for roosting bats, which could result in abandonment of this habitat by bats, and loss of connectivity across the lands. Measures have been proposed to address these impacts. In the case of bats, a mitigation strategy and draft application for derogation licence has been forwarded to the NPWS for the removal of roosts from the lands, and compensatory replacement with alternative roosts in the north of the lands. Measures have been proposed for the minimisation of lighting along potential commuting and foraging routes for bats during operation of the proposed development. In the case of birds, measures have been proposed to prevent mortality of birds during construction. Residual impacts have been reduced to levels not considered to be significant in the case of birds. Significant impacts remain in the case of bats, albeit at a local scale, arising from the unavoidable loss of hedgerow habitat within the lands.

Cumulative effects have been considered, with no additional significant residual effects predicted following implementation of mitigation measures.

Monitoring has been proposed to ensure success of mitigation.

6.0 Soils Geology and Hydrogeology

The ground conditions encountered reflect a typical description of the boulder clays deposited during the last glacier movement in the region and are common along the mid-eastern area of Ireland. Locally, peats reflect decay of organic materials over a significant period of time, while some fluvial glacial materials may also be encountered as a result of the water flowing from melting glaciers.

The proposed development spans an area predominately underlain by one geological formation – the Platin Formation being Crinoidal peloidal grainstone-packstone.

The proposed development is located approximately 9.6 km west of the Irish Sea, with the River Boyne located adjacent the northern boundary of the site. It is proposed that surface water drainage from the proposed development will discharge to the existing 1200 mm culvert adjacent Rathmullan Road at the north-east of the site before. This culvert flows into a ditch which then outfalls to the River Boyne.

The site is located above a regionally important aquifer, described as a karstified diffuse aquifer.

The removal of topsoil and the earthworks will expose subsoil to weathering and may result in some minor erosion of the soils during the short construction period, in particular following extreme dry and sunny or prolonged wet weather conditions. The lack of topsoil is likely to give rise to dust from the subsurface during dry periods.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

Cut-off trenches connected to settlement ponds / silt traps will be constructed adjacent the development area to intercept silt arising from surface water runoff across the exposed sub-soil. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

After implementation of the above measures the proposed development will not give rise to any significant long-term adverse impact. Negative impacts during the construction phase will be short term only in duration.

Due to the implementation of the remedial or reductive measures outlined above, the proposed development will not give rise to any significant long-term adverse impact. Negative impacts during the construction phase will be short term only in duration.

7.0 Water

The development lands are located within the catchments of the River Boyne. The area is currently drained by a series of drainage ditches that discharge into the River Boyne to the north.

The proposed development will generate additional surface water runoff from development of the future roads and buildings. Surface water runoff from the roads, parking and service yards will generally contain an element of hydrocarbons and worn tyre rubber as well as other detritus material.

The key governing factor in designing a suitable surface water drainage network is the requirement to limit the rate of discharge to the equivalent Greenfield runoff rate and to improve the quality of the runoff. In this particular case, the development drainage will discharge into a ditch / culvert that flows into the River Boyne. In order to limit the discharge rate from the development, a sustainable urban drainage system will be design, which will include attenuation areas, where the flow of the water will be restricted to that of Greenfield runoff.

A new foul water pumping station will be provided on the subject site to serve the proposed development. The 'Riverbank' housing estate, adjacent to the subject site, is currently served by an existing pumping station. Furthermore, a new residential development has been granted planning under Reg. Ref. LB170675 which requires the construction of a foul water pumping station to serve that development. It is proposed that the new pumping station on the subject site will be a strategic pumping station which will take the waste water from 'Riverbank' housing estate and from this proposed new residential development. This will eliminate the need for separate individual pumping stations. Foul water will be pumped from the new pumping station via a 110 mm rising main and connect to the existing 110 mm diameter rising main on Rathmullan Road to the east of the subject site. Ultimately this foul water discharges to into the existing gravity sewer network on Marley's Lane c 900 m east of the subject site. Foul drainage eventually outfalls to the Drogheda Wastewater Treatment Plant. The existing sewer network has capacity to cater for the development of the subject lands.

Water will be supplied via a connection to the existing water main on the Rathmullan Road to the east of the subject site.

Surface Water

Potential Impact of the Proposal - Construction Phase

The following potential impacts from the construction of the proposed development may occur:

- There is a risk that once topsoil has been stripped from the site there will be higher runoff rates from the lands with increased amount of silt to existing watercourses in the runoff.
- There is a risk of pollution of groundwater / watercourses / soils by accidental spillage of oils / diesel from temporary storage areas or where maintaining construction equipment.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- There will be some minor disruption to traffic when constructing the outfall pipe across Rathmullan / River Road.
- Cross connection between surface water and foul pipes.

Potential Impact of the Proposal - Operational Phase

The following potential impacts from the construction of the proposed development may occur:

- There is a potential impact from increased surface water flows that could lead to downstream flooding.
- There is a potential impact for the discharge of contaminants from the proposed development and road surfaces to the surrounding drainage ditches, which ultimately drain to the River Boyne. These would include particulates, oil, soluble extracts from the bitumen binder etc. The quality of runoff from the site would be dependent on the time of year, weather, particulate deposition from the atmosphere and any gritting or salting carried out by the Local Authority. The time of year has a major bearing on the quality of storm water run-off - in particular the first rains after a prolonged dry period where accumulated deposits of rubber, particulates, oils, etc. are, washed away.
- Stagnation of the water and siltation within the attenuation areas may occur.

Potential Impact of the Proposal - 'Do Nothing' Scenario

Surface water runoff would continue to be discharged to the receiving ditches / culvert at existing discharge rates.

Ameliorative, Remedial or Reductive Measures - Construction Phase

- The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

- Cut off trenches along the northern boundary of the development boundary will be constructed prior to stripping topsoil. These cut off trenches will have a settlement pond / silt trap at the end of each trench with an overflow. Straw bales will be placed within the cut off trenches at strategic locations and at the outfall of the settlement ponds to the overflow. These measures will be implemented and maintained during the construction phase to prevent surface water runoff from discharging directly into the local water course. An indicative layout for the proposed cut off trenches is set out in Appendix A of this EIAR.
- Settlement ponds / silt traps as outlined above will be provided to prevent silt runoff into the existing ditches / watercourses during the drainage works
- Regular testing of surface water discharges will be undertaken at the outfall from the subject lands. The location will be agreed between the project ecologist and the site foreman at the commencement of works. Trigger levels for halting works and re-examining protection measures will be: pH >9.0 or pH <6.0; and/or suspended solids >25 mg/l. These trigger levels are based on those outlined within 'Guidelines on Protection of Fisheries During Works in and Adjacent to Waters (IFI, 2016)'.
- Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.
- All fuels and chemicals will be bunded, and where applicable, stored within double skinned tanks / containers with the capacity to hold 110% of the volume of chemicals and fuels contents. Bunds will be located on flat ground a minimum distance of 50 m from any watercourse or other water conducting features, including the cut off trenches.
- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- Temporary traffic management will be implemented as appropriate during the construction of the outfalls on Rathmullan / River Road.

Ameliorative, Remedial or Reductive Measures - Operational Phase

- Flow restrictors with attenuation storage will be used to slowdown and store surface water runoff from discharging above green field rates to the ditch / culvert.
- Attenuation systems will be constructed on-line to intercept the first flush during rainfall events after periods of dry weather. Furthermore, the proposed Stormtech attenuation system contains an 'Isolator Row' which provides treatment even in low flow conditions. This row is surrounded with filter fabric that provides for settling and filtration of sediments as the water passes through. This ensures that the majority of the solids are removed within the isolator row which prevents silt build-up in the remainder of the chambers, therefore minimising maintenance requirements and associated costs. The Stormtech systems have a stone base and permeable chambers which encourages water to permeate into the ground.
- Sustainable urban drainage measures such as filter drains, permeable paving, rain water harvesting, swales etc. will be provided.
- A petrol interceptor will be installed to prevent hydro carbons entering the local ditch / culvert.
- The attenuation storage systems will be constructed at a fall to maintain movement of water and thus prevent stagnation. Silt would be collected at a sump and removed periodically.
- Regular maintenance of the drainage network, including petrol interceptor.

Predicted Impact of the Proposal - Construction Phase

Due to the proposed ameliorative remedial and reductive measures outlined above many of the potential impacts will not arise during the construction phase of the proposed development on surface water quality.

There will be increases in traffic flows at the local road network due to deliveries of materials and some minor disruption to traffic during the construction of the outfalls on Rathmullan Road / River Road.

Predicted Impact of the Proposal - Operational Phase

Due to the proposed ameliorative remedial and reductive measures outlined above many of the potential impacts will not arise during the operation phase of the proposed development on surface water quality.

Surface water discharge from the site will be restricted by means of attenuation, therefore, no adverse impact in respect of flooding downstream will arise from the proposed development.

The attenuation system will be position on-line to provide treatment to the 'first flush' and will be constructed with permeable chambers to encourage infiltration. The installation of a petrol interceptor upstream of the outfall will ensure that any remaining hydro-carbons or pollutants within the runoff from trafficked areas are treated.

The installation of trapped gullies in accordance with BS 5911 will minimise the risk of contamination of the surface water system by floating debris.

The installation of a Sustainable Urban Drainage System will improve water quality to the surface water discharged to the local watercourses and the River Boyne.

Predicted Impact of the Proposal - 'Worst Case' Scenario

A worst-case scenario is that for a very intense storm, minor ponding may occur within the site.

Water Supply

Potential Impact of the Proposal - Construction Phase

- There is a risk of contamination of the existing water supply during construction of the development when connection of the trunk watermain to the public water supply is being made.
- There is a risk of damage to watermain fittings due to high pressure in the existing watermain.
- There will be a minor water demand for site offices.
- There will be increases in traffic flows at the local road network due to deliveries of materials.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties
- The proposed development will not give rise to any significant long term adverse impact. Negative impacts during the construction phase will be short term only.

Potential Impact of the Proposal - Operational Phase

During the operational phase, the total water requirement, from the public supply, for the development is estimated at 271,160 m³/day

Potential Impact of the Proposal - 'Do Nothing' Scenario

In this scenario, the existing water demand would continue on the Irish Water network in Drogheda. There would be no additional demand.

Ameliorative, Remedial or Reductive Measures - Construction Phase

- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- A pressure reducing valve will be installed at the connection point.
- All water mains will be cleaned, sterilised and tested to the satisfaction of the Irish Water/Local Authority prior to connection to the public water main.
- All connections to the public water main will be carried out under the supervision of the Irish Water/Local Authority.

Ameliorative, Remedial or Reductive Measures - Operational Phase

It is not envisaged that any other remedial or reductive measures will be necessary upon the completion of the development.

Predicted Impact of the Proposal - Construction Phase

Due to the proposed ameliorative remedial and reductive measures outlined above no significant impact will arise during the construction phase of the proposed development on water quality.

There will be an increase in traffic flows at the local road network due to deliveries of materials.

There will be disruption to local traffic during the connection of the watermains from the proposed development to the existing watermains on Rathmullan Road.

Predicted Impact of the Proposal - Operational Phase

There will be an increased demand for water supply due to the development.

Potential Impact of the Proposal - 'Worst Case' Scenario

A worst case scenario would be that water mains would be contaminated during the construction phase. This would be mitigated against by scouring out the mains, swabbing and chlorinating the mains prior to occupation of any of the units.

Foul Water

Potential Impact of the Proposal - Construction Phase

The following potential impacts from the construction of the proposed development may occur:

- There is a risk of the ingress of ground/surface water to the foul water network.
- There is a risk of damage to existing buried utilities during excavations works resulting in temporary loss of supply to existing properties.
- There is a possibility of a temporary Increase in traffic due to deliveries of materials and other construction related traffic.
- There will be some disruption to traffic during construction works on the public road.
- Cross connection between foul and surface water pipes.

Potential Impact of the Proposal - Operational Phase

- Blockages may occur within the pipe network and the waste water could become septic.
- Foul water could be connected to the surface water drainage network.
- The pumps could fail and wastewater could overflow across the open space and ultimately to the River Boyne.

Potential Impact of the Proposal - 'Do Nothing' Scenario

In this scenario, the existing foul water demand would continue on the Irish Water network in Drogheda. There would be no additional demand.

Ameliorative, Remedial or Reductive Measures - Construction Phase

- All existing services will be located using service records, GPR surveys and slit trenches to ensure that their position accurately identified before excavation works commence.
- Foul water pipes to be laid with sufficient falls to ensure self-cleansing velocity
- Foul and surface water pipes will be carefully laid so as to minimise the potential for cross connections.

Ameliorative, Remedial or Reductive Measures - Operational Phase

The pumping station is being provided with the following emergency equipment and procedures: -

- Standby pump in the event of a pump failure;
- Telemetry system to facilitate Irish Water monitoring of the station;
- High level alarms to warn of increases in level of effluent in the pump sump;
- Storage capacity within the sump and pipe network in excess of 24 hours; and
- Over-pumping facilities on the rising main to facilitate the installation of a temporary external pump to empty the sump directly into the rising main.

The above emergency equipment and procedures provide a very high level of redundancy and backup in the event of a failure in the mechanical systems in the pumping station.

In addition to the above, the drainage network will be inspected annually and maintained.

Predicted Impact of the Proposal - Construction Phase

Due to the proposed ameliorative remedial and reductive measures outlined above no significant impact will arise during the construction phase of the proposed development on foul water network.

There will be increases in traffic flows at the local road network due to deliveries of materials.

There may be short term disruption to local traffic on connection of the foul sewers from the proposed development to the existing foul sewers.

Predicted Impact of the Proposal - Operational Phase

There will be increased flows in the existing foul water drainage network.

'Worst Case' Scenario

A worst case scenario would be that foul water would be discharged to the surface water network. This would be mitigated against by ensuring no crossing connections during the construction stage. Poor workmanship could result in large quantities of surface water entering the existing foul drainage network and overloading the network.

8.0 Noise and Vibration

AWN Consulting Ltd. have carried out an assessment of the potential noise and vibration impacts associated with the proposed residential development at Rathmullan Road, Drogheda. Co. Meath. The assessment identifies potential noise and vibration impacts on the environment, during both the short-term construction and longer-term operational phases. The assessment was conducted in the context of current relevant standards and guidance and used to specify appropriate limit values and mitigation measures to ensure that the impact is minimised.

The existing noise climate in the vicinity of the proposed development has been surveyed across the site over the course of a typical weekday period. The key noise sources are road traffic noise from the M1 and other local roads.

During the construction phase of the project there is the potential for temporary noise impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable. For the duration of the construction period, construction noise impacts will be short-term, negative, slight to moderate. Vibration impacts during the construction phase will be short-term and negligible.

The predicted 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 long-term impact to nearby residential locations. Noise levels associated with building services plant are expected to be well within the adopted day and night-time noise limits at the nearest noise sensitive properties taking into account the site layout, the nature and type of units proposed and distances to nearest residences. Assuming the operational noise levels do not exceed the adopted design goals, the resultant residual noise impact from this source will be of neutral, imperceptible, long term impact

No significant sources of vibration are expected to arise during the operational phase of the development.

The potential for inward noise impact on the proposed development has been assessed. The assessment has been carried out with reference to the guidance contained in professional Guidance on Planning & Noise (ProPG), BS 8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* (BSI); and the local and national Noise Action Plans relevant to the area. To ensure appropriate external noise levels are achieved across the site a 4m high earth berm is proposed along the western boundary to provide screening to the M1. In addition, to achieve suitable internal noise levels within buildings located closest to the boundary with the M1 minimum sound insulation specifications have been provided for windows and vents.

By their nature noise and vibration impacts are localised to the area immediately adjacent to the development site. Therefore, the potential for cumulative impacts are low. The exception to this is the additional noise generated by increased traffic volumes on the surrounding road network, where the increased traffic flow can occur at locations remote from the development. However, in the context of noise, the potential for impact is low, given that very large increases in traffic volume are required to generate a noticeable noise impact. In summary, the potential for cumulative noise and vibration impacts is low but will be assessed as part of the overall impact assessment.

9.0 Air Quality and Climate

AWN Consulting Limited has been commissioned to conduct an assessment of the likely impact on air quality and climate associated with the proposed the residential development at Rathmullen, Drogheda, Co. Meath.

In terms of the existing air quality environment, baseline data and data available from similar environments indicates that levels of nitrogen dioxide, carbon monoxide, particulate matter less than 10 microns and less than 2.5 microns and benzene are generally well below the National and European Union (EU) ambient air quality standards.

Impacts to air quality and climate can occur during both the construction and operational phases of the proposed development. With regard to the construction stage the greatest potential for air quality impacts is from fugitive dust emissions impacting nearby sensitive receptors. Impacts to climate can occur as a result of vehicle and machinery emissions. In terms of the operational stage air quality and climate impacts will predominantly occur as a result of the change in traffic flows or congestion in the local areas associated with the proposed development.

Any potential dust impacts can be mitigated through the use of best practice and minimisation measures which are outlined in this report. Therefore, dust impacts will be short-term and imperceptible at all nearby sensitive receptors. It is not predicted that significant impacts to climate will occur during the construction stage due to the relatively small scale of the development and the low volume of vehicles and machinery predicted.

The local air quality modelling assessment concluded that levels of traffic-derived air pollutants resulting from the development will not exceed the ambient air quality standards either with or without the proposed development in place. Using the assessment criteria outlined in Transport Infrastructure Ireland's guidance document '*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*' the impact of the development in terms of PM₁₀, PM_{2.5}, CO, NO₂ and benzene is long-term and imperceptible. The proposed development is not predicted to significantly impact climate during the operational stage. Increases in traffic derived levels of NO_x, VOCs and CO₂ have been assessed against Ireland's obligations under the EU Targets and emissions ceilings set out by Directive (EU) 2016/2284 "*On the Reduction of National Emissions of*

Certain Atmospheric Pollutants and Amending Directive 2003/35/EC and Repealing Directive 2001/81/EC". Impacts to climate are deemed imperceptible and long-term with regard to NO_x, VOCs and CO₂ emissions.

It is predicted that the impact of the operational phase traffic will lead to an imperceptible increase in nitrogen oxide concentrations within a section of the Boyne River Islands pNHA, River Boyne and River Blackwater SPA and River Boyne and River Blackwater SAC.

As the National and EU standards for air quality are based on the protection of human health, and concentrations of pollutants for both the construction and operational stages of the proposed development are predicted to be significantly below these standards, the impact to human health is predicted to be imperceptible and not significant in the short and long term.

No significant impacts to either air quality or climate are predicted during the construction or operational phases of the proposed development.

10.0 Material Assets

10.1 Waste Management

AWN Consulting Ltd. carried out an assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by Meath County Council as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

During the demolition and construction phases, typical C&D waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Site levelling, construction of new foundations, the installation of underground services and attenuation tanks will require the excavation of topsoil and subsoil. It is anticipated that all excavated material will be able to be reused onsite. If material is required to be removed offsite it will be taken for offsite reuse, recovery, recycling and/or disposal.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (Appendix 10.1) during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible.

During the operation phase, waste will be generated from the residents as well as the retail, café and crèche tenants. Dedicated communal waste storage areas have been allocated for the residents of apartments blocks in close proximity of their residence, while residents in houses and duplexes will have their own individual waste storage areas. All waste storage areas have been appropriately sized to accommodate the estimated waste arisings. The retail, café and crèche tenants will have a dedicated waste storage area at the rear of clock C. The waste storage areas have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the waste storage areas by permitted waste contractors and removed off-site for reuse, recycling, recovery and/or disposal.

An Operational Waste Management Plan has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture (Appendix 10.2). The Plan complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Provided the mitigation measures outlined in Chapter 10 are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible.

10.2 Traffic and Transport

Introduction

The site is located on Rathmullan Road in Drogheda, Co. Meath. The site is situated approximately 2.5 km west of Drogheda town centre and is bounded to the north by the River Boyne, to the east by existing residential and agricultural areas, to the south by agricultural lands, and to the west by the M1 Dublin to Belfast Motorway.

Proposed Road Network

Access to the subject site will be provided on Rathmullan Road to the east of the subject site by means of a proposed 4 arm signalised junction, and an alternative access on the local access road to the south of the site by means of a proposed priority junction. Internal estate roads are generally 6 m wide with corner radii ranging from 3 to 6 m. Various speed reduction measures have been implemented within the roads layout such as raised crossings, shared surface / home zone areas and on-street parking. Car parking spaces have generally been provided in accordance with the Meath County Council standards.

Footpaths will be provided in accordance with Section 4.3.1 of DMURS which suggests that a minimum 1.8m footpath should be provided on all footways. Crossing points are located at various points within the development such that unimpeded pedestrian movement is facilitated. Cyclists will be kept on-road within the proposed development. Accordingly, the proposed development is consistent with the principles outlined in DMURS.

Further to discussions with Meath County Council, it is also proposed to upgrade a section of the existing Rathmullan Road along the eastern boundary of the subject site by widening the carriageway to 6m and providing a new kerb with gullies for surface water drainage. Pedestrian access links from the proposed development and the existing footpath on Rathmullan Road will also be provided via a new 2m wide footpath which facilitates access to the River Boyne walkway.

It is also proposed to implement minor upgrades to Rathmullan Road along the northern boundary of the site. This includes the widening of the existing carriageway to 6 m. This section of road down to Oldbridge House currently operates with a stop / yield one-way system in place as the River Boyne greenway is intermittently on-road in this area. Furthermore, this road is not intended to operate as a major link and therefore anticipated traffic volumes will be low.

Sustainable Access

A pedestrian link will be provided between the proposed development and the existing walkway along the River Boyne by the inclusion of a new footpath along Rathmullan Road to the north-east. There is an existing continuous footpath along the north side of Rathmullan Road. The proposed development provides a connection to these facilities and hence, provides access to Drogheda Town Centre and local schools and community centres on Rathmullan Road.

The site is within walking / cycling distance of high quality public transport services such as the Drogheda Bus Station and Drogheda Train Station. The Drogheda Bus Station is located 2.5 km to the east of the subject site, which provides a high number of local and national bus routes. The Drogheda Rail Station is located 3.5 km to the east of the subject site, which is located on the Northern Commuter line running between Newry and Dublin Pearse Street. This line extends north to Belfast Central and south to Rosslare Europort.

Traffic Impact

In order to quantify the volumes of traffic movements at key points on the road network adjacent to the site, a set of classified turning movement traffic counts were commissioned. Accordingly, a

Manual classified traffic survey was carried out on Tuesday 10th April 2018 at 2 signalised junctions and 2 priority junctions in the Drogheda Environs during the peak hours of 07:00 – 10:00 and 16:00 – 19:00. The junctions surveyed were,

- Site 01: Rathmullan Road/Local Road,
- Site 02: Rathmullan Road/Marleys Lane (Signalised),
- Site 03: Rathmullan Road/R132 Dublin Road, and
- Site 04: Donore Road/Marley's Lane (Signalised).

The volume of traffic expected to be generated by the proposed development has been derived using the trip rates from the Traffic and Transport Assessment's TRICS output for the adjacent residential development which has recently been approved by Meath County Council under Planning Register Reference No. LB170675.

The traffic modelling carried out as part of this TTA includes the analysis of 4 No. junctions of the surrounding road network as set out below;

- Junction 01: Rathmullan Road/Local Road/Site Access (Signalised),
- Junction 02: Rathmullan Road/Marleys Lane (Signalised),
- Junction 03: Rathmullan Road/R132 Dublin Road (Priority)
- Junction 04: Donore Road/Marley's Lane (Signalised).

These junctions were assessed for the estimated opening year of 2023 and future design years of 2028 and 2038, with the baseline flows factored in accordance with the recommendations of Table 5.5.1 of the NRA's *Project Appraisal Guidelines Unit 5.5 Link-Based Traffic Growth Forecasting* published in January 2011. The growth factors are:

- 1.011 (Medium Growth) growth factor from 2018 to 2025
- 1.009 (Medium Growth) growth factor from 2026 to 2038

The traffic model also includes for committed traffic from the adjacent approved residential development, (Reg. Ref. No. LB170675).

Junction 1 – Rathmullan Road/Local Road

Junction No. 1 is the proposed four arm signalised junction with arms linking the Rathmullan Road (East), the Rathmullan Road (West) the proposed site access and the local access road to the south of the signalised junction. This signalised junction will be constructed as part of the proposed development as an upgrade to the existing priority junction of Rathmullan Road and a local access road.

The TRANSYT modelling results indicate that the proposed 4-arm signalised junction will operate well within capacity during the 2038 plus development plus committed scenario with the highest Degree of Saturation (DOS) at 56% during the AM peak period.

Junction 2 – Rathmullan Road/Marleys Lane

Junction No. 2 is an existing signal controlled junction. Modelling undertaken on this junction assumes that it has been upgraded to provide a right turn pocket in accordance with the recently approved planning permission (Reg. Ref. No. LB170675) on the site adjacent to the proposed development. The TRANSYT analysis results for the Rathmullan Road/Marleys Lane signalised junction indicate that the junction will operate within capacity during the 2038 plus development scenario with the highest degree of saturation (DOS) at 73% during the AM/PM peak periods, but without capacity during the 2038 plus development plus committed development scenario with the highest degree of saturation at 92% during the PM peak period.

Junction 3 – R132/Rathmullan Road

Junction No. 3 is an existing priority junction onto a dual carriageway. TRANSYT has been utilised due to the complexity of the intersection of the Rathmullan Road minor road movements with the R132 dual carriageway movements.

The junction has been modelled utilising its current configuration of a priority junction, and it has been established that the junction currently is operating over capacity.

A detailed transportation study was undertaken in December 2006 by WSP on behalf of Drogheda Borough Council. The Drogheda Transportation Study (Dec 2006) has highlighted improvements that are required to be carried out on the R132/Rathmullan road junction. These improvements include the provision of signalling the junction, and amending the current island configuration to assist movements through the junction.

This junction has been modelled on the basis of the upgrade proposed. TRANSYT traffic modelling results indicate that the junction operates within capacity during the 2038 plus committed plus development scenario with the highest degree of saturation (DOS) at 87% during the PM peak period.

Junction 4 – Donore Road/Marleys Lane

Junction No 4 is the existing signal controlled junction at Donore Road/Marleys Lane. TRANSYT traffic modelling results indicate that the junction operates within capacity during the 2038 plus committed plus development scenario with the highest degree of saturation (DOS) at 87% during the PM peak period.

The local road network provides suitable infrastructure and transport services for travel by sustainable modes to/from the proposed development. The subject site is located in close proximity to local schools, community centres, shopping centres and public transport options. Pedestrian links between the proposed development and the local community facilities and amenities outlined above will be provided as part of the works.

Operational Phase

The local road network provides suitable infrastructure and transport services for travel by sustainable modes to/from the proposed development. The subject site is located in close proximity to local schools, community centres, shopping centres and public transport options. Pedestrian links between the proposed development and the local community facilities and amenities outlined above will be provided as part of the works.

The analysis of road network surrounding the subject site has shown that the existing and proposed upgraded junctions will operate within acceptable parameters. Therefore, there will be no negative impact on traffic as a result of the proposed development.

11.0 Archaeology, Architectural and Cultural Heritage

A detailed archaeological desk based assessment, geophysical survey and test trenching programme was carried out on the proposed Strategic Housing Development on a 26.2 ha green field site in Rathmullan, Co. Meath. The development comprises the demolition of two sets of existing farm buildings and the construction of a residential development, comprising 661 no. dwellings; one retail unit, one café and a crèche.

Within the boundaries of the site are two known archaeological monuments, one (ME020-072----) proved to be modern in date, the other (ME020-088----), a Bronze Age enclosure, will be preserved *in situ* as part of the proposed overall mitigation strategy. Archaeological testing carried out in 2008 uncovered additional archaeological features scattered across the subject site including cremation pits, ring ditches and other isolated pits and gullies.

There are also two sets of agricultural buildings, the first, located at the south end of the site, dates to the 20th century. The other, along the eastern boundary, dates to at least the early 19th century.

The western boundary of the site is defined by the north-south running M1 motor, immediately to the west of which is the easternmost edge of the Buffer Zone associated with the *Brú na Bóinne* UNESCO World Heritage site. The Core Area of the World Heritage site, however, is located some 2.5km to the west.

The subject site is also within the wider landscape associated with the Battle of the Boyne (ME020-025----), and although the focal point of the battle site is considered to be located at Oldbridge some 1.5 km to the west, important elements of the battle are known to have taken place both on and in the vicinity of the subject site.

The development will impact negatively on any archaeological deposits surviving within the subject site, with the exception of the Bronze Age enclosure which will be preserved *in situ*. A programme of pre-construction archaeological investigation has been proposed in order to mitigate these impacts. These works will include metal detection and the presence on site of a battlefield archaeologist to advise on any possible Battle of the Boyne related artefacts which may come to light. It is also proposed that the old farm complex of buildings on the east boundary of the site be subject to an historic building survey (Level 2) prior to demolition.

Impacts from the construction and operation phases of the development on the Core Area of the *Brú na Bóinne* World heritage site has been deemed to have a 'No Change' grading as per the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*. While impacts on the Buffer Zone are deemed to be 'Negligible' for the construction phase, due to the slight increase noise and also 'Negligible' for the operation phase due to 'very minor changes to key historic landscape elements' and 'virtually unchanged visual effects'. These impacts will be further reduced by the implementation of a landscape design which will increase the density of the existing hedge line on the western side of the subject site, between the subject site and the World Heritage site buffer zone.

A comprehensive final archaeological report will be compiled that will set out the results of the archaeological works in accordance with the terms of the National Monuments Acts and best professional practice. In addition, all finds and site archive will be processed to a standard acceptable for deposition to the State's Cultural Resource Centre in Swords, Co. Dublin.

12.0 Landscape and Visual Amenity

Landscape and Visual

This chapter has been prepared by Cunnane Stratton Reynolds Ltd (CSR), landscape architects and planners to assess the likely landscape and visual effects of the proposed residential development, located on the Rathmullan Road, Drogheda, Co. Meath.

The subject lands are approximately 26.2 hectares in size. The proposed residential development is mostly located on two of three green fields previously used for agriculture. The subject lands include a swathe of mature deciduous woodland along its northern and north-western boundary which will be retained. The landscape context of the subject lands is peri-urban and includes the Boyne River which flows towards Drogheda north of the site, the Riverbank Estate, to the northeast, existing fields that are zoned and have planning permission for housing to the southeast and existing fields that are zoned for employment lands to the south. The M1 motorway is immediately west of the site with the distinctive Boyne Bridge to the northwest. Further west lies the World Heritage Site Buffer Zone which demarks a rich cultural landscape surrounding the World Heritage site itself. Further north the lands rise towards the Drybridge Escarpment and Tullyallen and to the south they rise to Donore and beyond.

Methodology for Landscape and Visual Assessment

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

Guidelines

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the GLVIA).
- Guidelines on the Information to be Contained in Environmental Impact Statements, 2002, published by the Environmental Protection Agency (and the Revised Guidelines on the Information to be Contained in Environmental Impact Statements, Draft 2015).

Key Principles of LVIA

Landscape and visual effects

Landscape and visual effects are two interrelated but separate ideas and assessments.

- Landscape refers to the physical aspects of the land and how this has been shaped by natural and cultural actions. The different combinations and distribution of landscape elements create distinctive areas of character in different places. Assessment of landscape effects is the assessment of effects on the landscape resource in its own right.
- Visual amenity refers to how people experience the places and what they see from particular viewpoints. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

Use of the Terms 'Effect' and 'Impact'

'*Impact*' is defined as the action being taken. In the case of the Rathmullan Road Development, the impact would include works required to alter the existing predominantly agricultural lands to a residential area. This would include the construction and planting of the residential accommodation, along with the creche and retail area, as well as supporting road and utility infrastructure and public open spaces.

'*Effect*' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

Outline methodology

The following key stages were undertaken in order to establish the predicted landscape and visual effects of the development.

Receiving Environment

The following stages informed the assessment.

- A policy review to inform the selection of relevant receptors and to determine values and sensitivities.
- A site visit to determine site visibility and to ascertain the characteristics of the site and its setting.

These stages inform what is referred to as 'the baseline' conditions for the assessment which are used to measure the predicted effects of the development.

Receptors refer to people who or landscapes that have the potential to be affected by the proposal.

Assessment

The assessment of predicted effects on both landscape and visual receptors.

Sensitivity of the Receptor. The sensitivity of each receptor is determined by a combined judgement of the receptor's susceptibility to accommodate change and the value that has been attached to it by society. Five categories are used to classify the sensitivity of the receptor.

Magnitude of Change The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape or the view. Five categories are used to classify magnitude of landscape change.

Significance of Effects. In order to classify the significance of effects (both landscape and visual), the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint. There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

Qualitative assessment. The predicted effects are also classified as beneficial, neutral or adverse.

Longevity Assessment. The predicted effects are categorised according to their longevity, which relates to the project lifecycle as described below.

Project lifecycle. Assessments are undertaken for three stages in the project lifecycle which are:

- During construction. This stage is expected to last up to 5 years and therefore is considered short-term
- At operation. This represents the development as built. At this stage, all planting, although in the ground, will not have matured to create the long-term effect. This stage is expected to last 10-15 years and therefore is considered to be medium-term.
- At maturity. This assessment represents the final expected effect when all vegetation has matured.

The Receiving Environment

Policy Review

In order to carry out the assessment a desk study was undertaken which identified relevant policies and guidelines in the;

- Meath County Development Plan (2013-19),
- Louth County Development Plan (2015-2021) and
- Drogheda Development Plan (2011-17).

Although the site is in County Meath, the county boundary lies almost immediately north-west of the subject lands and so the surrounding landscape, and the location of some views towards the subject lands are found in County Louth. The Policy review covers urban and rural development, landscape character, protected views and prospects, green infrastructure, land use zoning, recreation and open space, public art and cultural and natural assets

Site Visit

A site visit was undertaken in June 2018 to assess the nature and character of the receiving environment and identify the visibility of the subject lands.

Visual Baseline

26 viewpoints from within 2km of the site were identified and visited on site. Viewpoints protected by Policy or otherwise highly valued – such as views from people's homes were prioritised. 13 of the viewpoints were selected for detailed assessment of predicted effects. The selection was based upon the extent of the site visible and the sensitivity or type of viewer. Care was taken to provide a range of views from various elevations, distances, orientations and types of receptor and include locations from or close to local settlements or residences such as Drybridge House (VP.K), The Riverbank Estate (VP.P) and locations from receptors around the site such as from Donore Cemetery (VP.D) and from Mell (VP.X).

Early on in the project, it was determined that:

- The site is not visible from any of the viewpoints assessed within the World Heritage Site boundary.
- Of the four viewpoints offering partial views of the development site from within the World Heritage Site buffer zone, the view from Donore cemetery is the most expansive. The planning inspector's report on the previous submission noted, *“These views do, however occur at a distance of over one kilometre, and given the backdrop of the existing suburbs, the impact of the proposal would be to extend the existing developed area rather than effecting a fundamental change in the character of the landscape. Views from the point have also previously been altered by the construction of the M1 motorway.”*
- The site is visible from close proximity – albeit at speed when travelling south on the M1 motorway and from other localised views to the north (e.g. from Drybridge House).
- The site is visible in close proximity, through well-established boundary vegetation from the adjacent housing areas to the east.
- The site is visible from residences to the north and NE on the opposite side of the valley.

These findings informed recommendations to:

- Avoid long stretches of continuous facades at the edges of the development, particularly on the north, north-eastern, north-western and south / south-western edges.
- Plant high woodland species in the setback areas although plan breaks in the woodland to open up views and create a positive experiential landscape for residents.
- Ensure there is a good network of trees throughout the site and between the development located along the site's perimeter.
- Soften the main entrance to the site with planting.

Landscape Baseline

The landscape resource to be assessed was determined by reviewing local studies of landscape character and by visiting the site. Two areas of landscape were determined for assessment which are:-

- Meath County Council's (MCC) Landscape Character Area (LCA) 7 – Coastal Plain; and
- The subject lands itself.

MCC LCA 7 covers an extensive area stretching from south of Stamullen to the coast and inland to Naul and west of Drogheda. As part of Meath County Council's landscape character assessment, landscape sensitivity and capacity was determined. The **Landscape Sensitivity** of this LCA has been assessed as **High**. The potential capacity of the LCA in relation to the proposal is as follows:

“Medium potential capacity to incorporate multi-house residential developments as they are - part of the existing character. However, particular attention must be paid to design, location, scale and materials so as to avoid adverse cumulative effects” (p.51).

The landscape character of the subject lands is of a greenfield site containing strong urban influences. It is defined by its;

- rolling landform that slopes gradually and then steeply towards the Boyne River;
- existing arable use of the three fields for a single crop;
- gappy internal hedgerows running east-west;
- generally well-vegetated site boundaries comprising the mature woodland to the north and north-west, the younger woodland verge planting along the M1 to the west and the hedgerows to the south and east, which are significantly more established to the east.;
- visual dominance of the elegantly designed Boyne gateway bridge to the NE of the site;
- proximity to the M1 motorway and residential areas to the east;
- limited access to the landscape due to its arable use and private ownership;
- limited landscape features within the site itself; and

- long distance views north towards the M1 retail park and more contextually the rising land towards the northern escarpments, and south towards Donore Hill and Cemetery with limited views to the east and west.

Value and Susceptibility

The values and characteristics of the site are listed below and can be categorised in two ways – values which should be conserved, and those that provide opportunity for enhancement.

The values to be conserved indicate those aspects of the receiving environment which are valued and sensitive and could be negatively impacted on by the proposed development. These include:

- Recognition of this area's cultural significance, ecological features and designated sites (SPA, NHA and SAC) in Policy.
- Mature woodland to the north of the site and established hedgerows and roadside verges around the periphery of the site.
- Retention or enhancement of landscape character. It is important to note that multi-house development is considered a characteristic of Drogheda's hinterland.
- Medium and long-distance views from the surrounding area especially views that are designated as being important or those that are located with the WHS buffer zone but also residential properties and everyday views.
- The aesthetic quality derived from the site currently being vegetated contributes to the scenic qualities of the area from particularly from the north. The northernmost field is visible from the highest number of viewpoints.
- The views from the (currently private and therefore inaccessible) site towards Donore Cemetery, across the Boyne Valley (although some detractors are visible here) and towards the Mary McAleese Bridge.
- Built and cultural heritage of the subject site including the bronze age enclosure and its role and relevance in the Battle of the Boyne.
- The values to be enhanced represents the site's capacity to accommodate change and therefore reflects landscape susceptibility. These include:
 - Objectives for Drogheda as an expanding town and designated Large Growth Town I
 - Zoning of lands for residential development.
 - Objectives to support compact, well-connected, high quality urban development with a strong sense of place.
 - Objectives for development to improve public access to open space and the countryside.
 - Objectives to improve the diversity, quality and recreational value of open space.
 - The degraded nature of some of the site's characteristics including the existing farm buildings, the internal hedgerows and the presence of pylons and overhead wires.
 - The site has been in long standing agricultural use which has therefore limited the accessibility and diversity of the lands.
 - The site is immediately east of the M1 motorway which separates it from the World Heritage Site buffer zone.

The enhancement values reflect change that is occurring in the landscape and its inherent robustness – this includes the location on the edge of the urban area.

The proposal

The proposed layout for the development has a strong urban structure across six neighbourhoods with a clear hierarchy of well-connected routes and spaces. The landscape masterplan produced by Cunnane Stratton Reynolds will provide an attractive setting for the housing development. Existing mature woodland is retained and expanded to the north and west and there is a wide strip of open informal public space around the periphery of the site which will help screen and soften views from the surrounding area. There is a range of public parks and spaces integrated into the development each with its own different character and identity. The parkland qualities of the 'Boyne Valley Parkland' will provide an effective transition between the urban character of the housing area to the woodland and over Boyne. It will also accommodate a new cultural landmark on the site of Bronze Age archaeology.

Summary of the Assessment

Summary of Landscape Effects

The following table summarises the results of the assessment of the effects of the proposed development on the landscape resource.

Landscape area	Project Stage	Magnitude of Change	Significance of Effects	Qualitative Assessment	Longevity Assessment
MCC LCA 7 – Coastal Plain	During Construction	Low	Moderate – Slight	Adverse	Short-term
	At Operation	Low	Moderate - Slight	Neutral	Medium-term
	At Maturity	Negligible	Slight / Not significant	Neutral	Permanent
Subject Lands	During Construction	High	Significant	Adverse	Short-term
	At Operation	High	Significant	Neutral	Medium-term
	At Maturity	High	Significant	Neutral	Permanent

The proposed development is expected to have an adverse effect on the landscape resource during construction, despite the most valuable of the site's features being preserved. Over time, while the characteristics of the landscape will change significantly on the subject lands, the overall landscape effect is expected to be Neutral which is defined as a scheme that complements the scale, landscape, quality and pattern of the landscape and maintains its quality. This reflects the proposed pattern of the development which responds to the existing field patterns, topography and views both in and out of the site and omits existing detractors on the site such as the existing pylons and dilapidated farm buildings. It reflects a final scheme that is more diverse, more accessible, makes more provision for active and passive recreation and better celebrates the cultural history of the area. The scheme improves upon local townscape quality and is in keeping with future planning objectives for the area.

Summary of Visual Effects

The following table summarises the results of the assessment of the effects of the proposed development on the visual resource. Adverse effects have been shaded in grey.

Viewpoint details	Project Stage	Magnitude of Change	Significance of Effects	Qualitative Assessment	Longevity Assessment
A – from Sheephouse Road 30m SW Medium sensitivity	During Construction	Low	Slight	Adverse	Short-term
	At Operation	Low	Slight	Neutral	Medium-term
	At Maturity	Low	Slight	Neutral	Permanent
B – from Sheephouse Road 335m SW Medium sensitivity	During Construction	Low	Slight	Adverse	Short-term
	At Operation	Low	Slight	Neutral	Medium-term
	At Maturity	Low	Slight	Neutral	Permanent
D – from Donore Cemetery 800m SW High sensitivity	During Construction	Low	Moderate-Slight	Adverse	Short-term
	At Operation	Low	Moderate-Slight	Neutral	Medium-term
	At Maturity	Low	Moderate-Slight	Neutral	Permanent
E - from Battle of the Boyne	During Construction	Low	Moderate-Slight	Adverse	Short-term
	At Operation	Low	Moderate-	Neutral	Medium-term

<i>viewpoint, Oldbridge 835m SW</i> <i>High sensitivity</i>			Slight		
	At Maturity	Negligible	Slight-Not Significant	Neutral	Permanent
<i>I - from Oldbridge House 1890m NW</i> <i>High sensitivity</i>	During Construction	Negligible	Slight-Not Significant	Neutral	Short-term
	At Operation	Negligible	Slight-Not Significant	Neutral	Medium-term
	At Maturity	Negligible	Slight-Not Significant	Neutral	Permanent
<i>K - from Drybridge House 730m NW</i> <i>High sensitivity</i>	During Construction	Low	Moderate-Slight	Adverse	Short-term
	At Operation	Low	Moderate-Slight	Adverse	Medium-term
	At Maturity	Low	Moderate-Slight	Neutral	Permanent
<i>L - south From the Rathmullan Rd / Boyne River walkway 15m N</i> <i>High sensitivity</i>	During Construction	Medium	Significant	Adverse	Short-term
	At Operation	Low	Moderate-Slight	Adverse	Medium-term
	At Maturity	Low	Slight	Neutral	Permanent
<i>M - from road bridge on Hill of Rath Road 1917m N</i> <i>Low sensitivity</i>	During Construction	Medium	Slight	Adverse	Short-term
	At Operation	Medium	Slight	Neutral	Medium-term
	At Maturity	Low	Not significant	Neutral	Permanent
<i>N - south from the M1 motorway 515m N</i> <i>Medium sensitivity</i>	During Construction	Low	Slight	Adverse	Short-term
	At Operation	Low	Slight	Neutral	Medium-term
	At Maturity	Low	Slight	Neutral	Permanent
<i>P1 - from The Square (south) 119m E</i> <i>Medium sensitivity</i>	During Construction	Medium	Moderate	Adverse	Short-term
	At Operation	Medium	Moderate	Neutral	Medium-term
	At Maturity	Medium	Moderate	Neutral	Permanent
<i>P2 - from The Square (south) 35m NE</i> <i>High sensitivity</i>	During Construction	Medium	Significant	Adverse	Short-term
	At Operation	Medium	Significant	Adverse	Medium-term
	At Maturity	Medium	Significant	Neutral	Permanent
<i>R - from Rathmullan Road 95m E</i> <i>Medium sensitivity</i>	During Construction	Low	Slight	Adverse	Short-term
	At Operation	Low	Slight	Neutral	Medium-term
	At Maturity	Medium	Slight	Neutral	Permanent

W - from <i>Tullybrook</i> 550m NE High sensitivity	During Construction	Medium	Significant	Adverse	Short-term
	At Operation	Medium	Significant	Adverse	Medium-term
	At Maturity	Medium	Significant	Neutral	Permanent
X - from <i>N51 at Mell</i> 1227m N High sensitivity	During Construction	Low	Moderate-Slight	Adverse	Short-term
	At Operation	Low	Moderate-Slight	Neutral	Medium-term
	At Maturity	Low	Moderate-Slight	Neutral	Permanent

The proposed development is expected to have an overall Neutral effect on local visual amenity by the time the proposed development has matured (at approximately 15 years post-construction). All effects during the operational phase are judged as being permanent (lasting over 60 years).

At operation, the proposed development is expected to have a Neutral impact on 10 out of 14 of the visual receptors analysed. The proposed development is expected to have an Adverse effect on close proximity views from Drybridge House (VP.K), the River Boyne walkway (VP.L), The Square (south) (VP.P2) and Tullybrook (VP.W). This is due to the partial change in the view from green fields to urban development, which has more of an impact from these particular receptors given the generally rural setting of the development from these viewpoints. All effects during the operational phase are judged as being medium-term (7-15 years).

The proposed development is expected to have an Adverse effect on 13 out of the 14 receptors during construction. The effect on the view from a Battle of the Boyne viewpoint at Oldridge (VP. E) has been regarded as Neutral because views of the construction work will be unlikely. All effects during the construction phase are judged as being short-term (0-5 years).

No significant long-term effects have been identified.

Proposed mitigation

During construction there will be a change to the landscape and there will be negative visual impacts for residents and visitors to the areas adjacent to the site associated with construction activity.

The scheme design incorporates significant consideration and mitigation in respect of potential impacts. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.

Adverse impacts both during construction and at operation could be mitigated through undertaking the following site works early on in the construction process in order to soften and screen views as early on as possible.

- Constructing and planting up the bund along the western edge of the site;
- Construction the proposed mounding and planting the woodlands and trees in the Boyne Valley parkland; and
- Where feasible and sensible, planting larger sized specimen trees (c 18-20 girth) around the perimeter of the site.

Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.

Landscape works are proposed to reduce and offset any impacts generated due to the proposed development, where possible. The planting of substantial numbers of new trees and other planting in the open spaces the site boundaries and internal roads, both native and ornamental varieties, will enhance the overall appearance of the new development and compensate for the removal of hedgerows and trees where needed for the construction works and increase the overall landscape capacity of the site to accommodate development.

Conclusion

The predicted landscape effects on both Meath County Council's Landscape Character Area 7 ("Coastal Plain") and the subject lands themselves have been assessed as 'Neutral' both at Operation and Maturity.

Visual effects on the 13 no. views identified for assessment led to the following conclusions:

- The development will not be visible from inside the World Heritage Site Boundary.
- Five viewpoints assessed were located within the World Heritage Site Buffer Zone. All of these five viewpoints are expected to receive a predicted Neutral effect at maturity.
- No significant adverse effects are predicted when the proposal is at maturity.

The proposed development is in keeping with its zoning status and the emerging trends of development proposed in the vicinity.

13.0 Interactions Between Environmental Factors

This section describes interactions between impacts on various environmental factors. A summary matrix showing interdependencies between these environmental factors is presented below for the proposed development.

Interactions	Chapter 4.0 – Population & Human Health	Chapter 5.0 – Biodiversity	Chapter 6.0 - Soils, Geology and Hydrogeology	Chapter 7.0 - Water	Chapter 8.0 - Noise and Vibration	Chapter - 9.0 Air Quality and Climate	Chapter - 10.0 Material Assets	Chapter 11.0 Archaeology, Architectural and Cultural Heritage	Chapter 12.0 - Landscape and Visual Amenity
Chapter 4.0 – Population & Human Health		✓		✓	✓	✓	✓		
Chapter 5.0 – Biodiversity			✓	✓	✓	✓	✓		✓
Chapter 6.0 - Soils, Geology and Hydrogeology				✓		✓	✓		
Chapter 7.0 - Water							✓		
Chapter 8.0 - Noise and Vibration							✓		
Chapter - 9.0 Air Quality and Climate							✓		
Chapter - 10.0 Material Assets									
Chapter 11.0 Archaeology, Architectural and Cultural Heritage									✓
Chapter 12.0 - Landscape and Visual Amenity									

Table 13.1 Summary matrix showing interdependencies between various environmental factors

All potential interactions have been addressed as required throughout the EIAR. During each stage of the assessment contributors have liaised with each other (where relevant) to ensure that all such potential interactions have been addressed. The various interactions between environmental topics considered within the EIAR are further discussed in Chapter 13.0 included in Volume 2 of the EIAR.

14.0 Mitigation and Monitoring Measures

A summary of mitigation and monitoring measures has been prepared, for ease of reference and clarity, and to facilitate enforcement of all environmental mitigation and monitoring measures specified within Chapters 4.0 to 12.0 of the EIAR.

All mitigation and monitoring commitments detailed within the EIAR have been included in a separate compendium and are presented in Chapter 14.0 included in Volume 2 of the EIAR.

Further to those outlined in the EIAR, a Construction Management Plan (CMP) will be agreed with the Planning Authority, prior to the commencement of construction activities on the site, and will incorporate provision for the primary construction mitigation measures.