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

Proposed Residential Development

Lands at Capdoo & Abbeylands, Clane, Co. Kildare

Westar Investments Ltd.

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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 Westar Investments Ltd. (referred to as the Applicant throughout) for a proposed residential development comprising the construction of 333 dwellings consisting of: 121 no. 2, 3 & 4 bedroom housing units, 144 no. 1, 2 & 3 bedroom apartments, 68 no. 1, 2 & 3 bedroom duplex & maisonette type units, a crèche, communal/community building and a public park adjacent to the River Liffey with 3 no. vehicular/pedestrian accesses (2 no. off the Brooklands Housing Estate Road and 1 no. off Alexandra Walk), and provision of 1 no. pedestrian only access (with associated works to footpaths and verges) off the Brooklands Housing Estate Road and site, landscaping and associated infrastructural works. The subject site is situated on the eastern side of Regional Road R403 in the eastern environs of Clane Town, c. 650m from the Town Centre on lands measuring approximately 10.36 hectares at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. A full and detailed description of the development as per the statutory newspaper notice is contained with Chapter 2, Volume II of the EIAR.

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	Project Description and Alternatives Examined	HPDC
Chapter 3	Planning and Development Context	HPDC
Chapter 4	Population and Health	HPDC
Chapter 5	Biodiversity	Open Field Ecological Services
Chapter 6	Land, Soils, Geology and Hydrogeology	Redkite Environmental
Chapter 7	Water	Redkite Environmental
Chapter 8	Noise and Vibration	Redkite Environmental
Chapter 9	Air Quality and Climate	Redkite Environmental
Chapter 10	Material Assets	Redkite Environmental
Chapter 11	Archaeology, Architectural and Cultural Heritage	Byrne Mullins & Associates
Chapter 12	Landscape and Visual Amenity	Landmark Designs
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 irregularly-shaped parcel of land, 10.36Ha in size, and comprises of four undeveloped agricultural fields situated on the eastern side of Regional Road R403 in the eastern environs of Clane Town, c. 650m from the Town Centre. Vehicular accesses are provided to the site via the Brooklands Housing Estate and the existing Alexandra Walk/The Avenue roundabout.

The site is situated within close proximity to a number of existing residential developments including: 'The Brooklands', 'Abbey Park' and 'Alexander Walk' Housing Estates. These developments provide a mix of detached, semi-detached and terraced dwellings. The subject site is located c. 400m from existing supermarket facilities provided by a Tesco Metro and Lidl on Regional Road R403.

The site benefits from an excellent public transport network. The site is located a 4-minute walk (approximately) from the R403/Maxol bus stop which serves Go Ahead bus route no. 120. This service operates 7 no. days a week from 5:53am to 00:14 am, running, on average, 1 no. bus per half hour. A second bus stop is located 11 minutes (approximately) from the site which serves Transport for Ireland route 139. This is a daily service, which runs one bus an hour between 7:20am to 23:30pm. An additional bus stop located at Cloisters nearby, serves route 846 which is provided by JJ Kavanagh & Sons. The bus services provide regular access to Connolly and Heuston Stations, University College Dublin, Dublin City Centre, Liffey Valley, Naas, Celbridge and more. The 139 bus route will provide direct access to the upcoming Maynooth DART line which will run 9 daily return trips.

Figure 1.0 Aerial view of subject site (red outline) in the context of the immediate area.

3.2 Proposed Development

The proposed development, as designed by C+W O Brien Architects, involves the construction of a residential housing scheme comprising 121 no. houses, 20 no. maisonette units, 144 no. apartments and 48 no. duplex units (providing a total of 333 no. residential dwellings), a creche, communal/community building and a public park, on the 10.36Ha site.

The development proposal will include the construction of 212 no. apartment/duplex and maisonette units on the application site. Apartments will be provided within purpose-built blocks scattered throughout the development. The development proposal will also include the construction of 121 no. houses on the application site. The scheme caters for growing families and those trading up from apartment living, offering 1 bedroom, 2-bedroom, 3-bedroom and 4-bedroom dwellings in various configurations. The scale of the proposed dwellings is consistent with and complimentary to that of other recent residential developments in the vicinity of the application site and in Clane.

The proposed development includes a c.485sq.m crèche contained within the ground floor level of Apartment Block F within close proximity to the site's western boundary and accessible via the new access route provided from Brooklands Residential Estate to the south of the site. The creche will be provided with 18 no. parking spaces, for both staff and crèche drop off, and 11 no. bicycle parking spaces and will accommodate c.76 children

The proposed development also provides a two storey communal/community building comprising 300 sq.m. that will be for use by residents of the scheme. The building is adjoining the proposed apartment Blocks A and B and provides additional communal amenities for the residents.

The proposed development includes a total of 575 car parking spaces which are provided throughout the proposed development. Of these, 256 no. car parking spaces serve the proposed apartments, 242 no. spaces to serve the houses and and 59 no. visitor parking spaces. The development also provides 18 no. parking spaces to serve the crèche facility. The development provides a total of 311 no. bicycle parking spaces, inclusive of 300 no. spaces to serve the proposed apartments/maisonettes/duplex units and 11 no. spaces to serve the creche facility.

The scheme has been designed with an ample areas of public open space with large landscaped areas adjacent to the River Liffey being provided and additional pocket parks, play areas and landscaped areas being provided throughout the development. These public open space areas are located in close proximity to the proposed units and have windows fronting onto them providing passive surveillance and ensuring the safety/security/enjoyment of users of these spaces. The linking of the linear park provided along the eastern interface to the River Liffey walkway, as well as the provision of access through existing residential estates the south, allows for active and passive use by local residents in the surrounding area and ensures cohesion and integration between existing and incoming residents of the area.

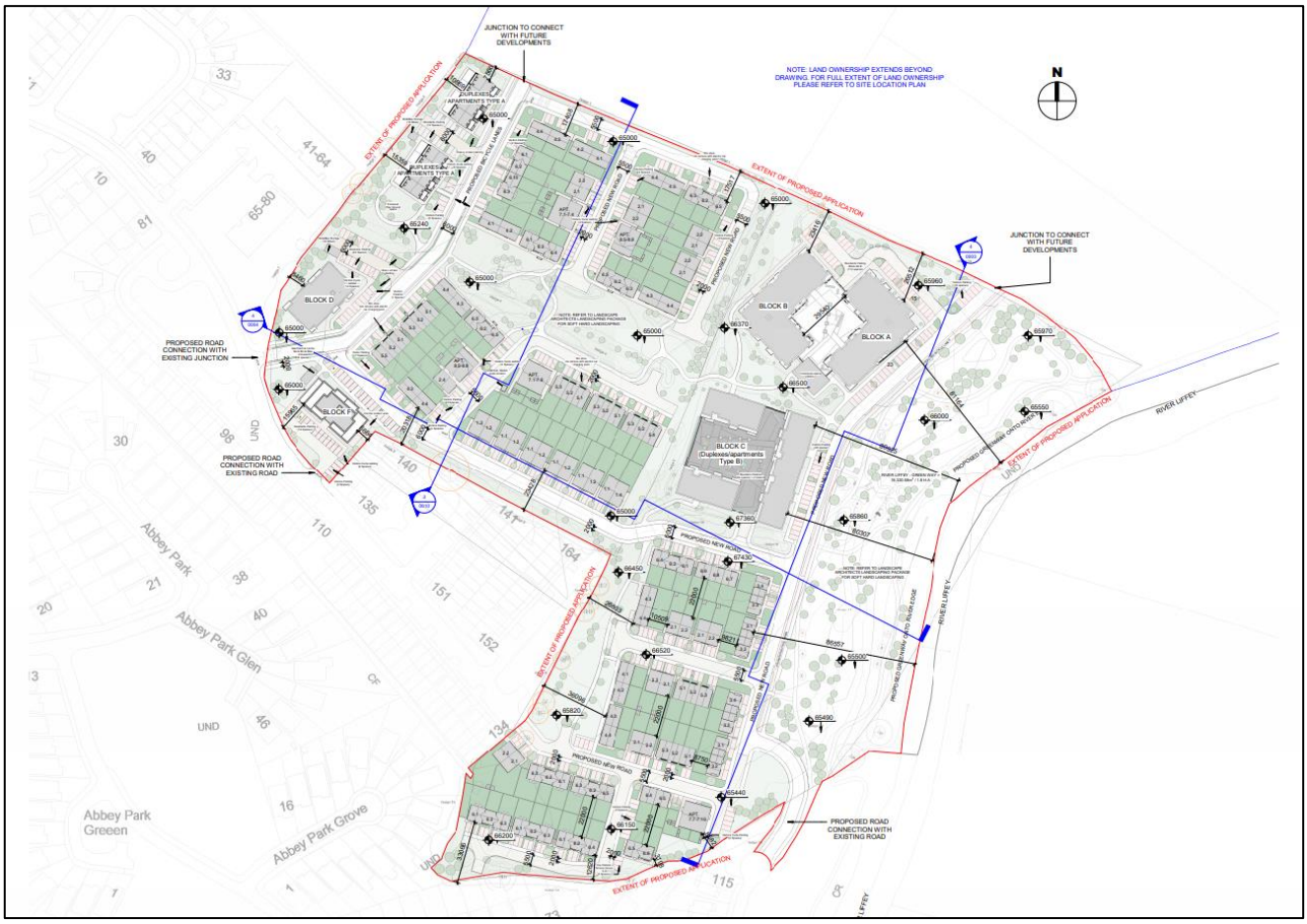

Figure 2.0 Site layout plan of proposed development of 333 no. residential dwellings

The proposed development also includes the provision of 3 no. vehicular/pedestrian accesses, 2 no. off the Brooklands Housing Estate Road and 1 no. off Alexandra Walk, and provision of 1 no. pedestrian only access off the Brooklands Housing Estate Road.

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 Clane Local Area Plan 2017-2023, 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 Appendix 2.1 for alternative design and layout options explored). The Architectural Design Statement, prepared by C+W O'Brien Architects, Green Infrastructure Strategy/Landscape Design Rationale, prepared by Landmark Designs Limited, 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 and the River Liffey to the east.

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 location of duplex units/apartment blocks within the scheme, pedestrian/cyclist/vehicular connections and provision of open space and. These were not pursued for reasons relating biodiversity, residential amenity 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 Clane.

4.0 Population and Health

The Population and Health chapter was prepared by Hughes Planning and Development Consultants and seeks to identify, describe and assess any potential/likely significant effects of the development on the surrounding human environment in the general area of the subject site at Capdoo & Abbeylands, Clane, Co. Kildare. 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 Clane (Electoral Division No. 06062), Co. Kildare and the State, 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 Clane 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 333 no. units to the supply of housing in the Clane area. These will be a mixture of 1, 2, 3 and 4 bedroom residential units including houses, apartments, duplexes and maisonettes. 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, located adjacent to the developments primary entrance, which will serve the residents of the development and the wider area

The proposal also includes large landscaped open spaces adjacent to the River Liffey 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

A review of the biodiversity of the site was carried out by OPENFIELD Ecological Services and this included a study of existing information from the area and a site survey. Site surveys were carried out in August 2018, March 2019, June 2020 and November 2020. August and June are within the optimal season for surveying habitats while March and June are optimal for surveying badgers and breeding birds. March and November are within the optimal period for surveying Badgers and wintering birds. A dedicated bat survey was carried out by Brian Keeley of Wildlife Surveys Ireland, in August 2018 and June 2020, well within the optimal period for such surveys.

It was found that the site is not within or adjacent to any area that is designated for nature conservation at a national or international level. There are no plants recorded from the site that are listed as rare or of conservation value. There are no habitats that are examples of those listed on Annex I of the Habitats Directive. There are no alien invasive plant species as listed on Schedule 3 of SI No. 477 of 2011. The site can be described as agricultural fields with traditional hedgerow and treeline boundaries. Many of the hedgerows, as well as the treelines, were assessed as of 'higher significance' using methodology from the Heritage Council. The site is close to the River Liffey, which is of significant fisheries value. Overall the habitats on the site have been evaluated as 'low local value' although the treelines and hedgerows are of 'high local value'. The site contains suitable roost locations for bats in mature trees however no roosts were found. Five species were recorded using the area for foraging and/or commuting. There was no evidence of Badgers using the site.

It is estimated that 205m of 'higher significance' hedgerow and treeline are to be removed (12% of the total). 88% of the hedgerow and treeline boundaries are to be retained. Good site management

practices will ensure that pollution to water courses does not occur during the construction phase. Surface water will be attenuated so that there will be no change to the quality or quantity of the discharge. Additional landscaping will compensate for the loss of habitat that will occur and this will include new amenity areas within the development as well as wildlife-friendly planting to augment existing woodland habitat along the River Liffey. Lighting was reviewed with the bat ecologist to ensure that negative effects are minimised. With the suggested mitigation in place, the ecological impacts by this proposed development will be neutral or, at worst, minor negative. There are no impacts that could affect any area designated for nature conservation.

6.0 Soils Geology and Hydrogeology

An assessment of the impact on land, soils, geology and hydrogeology potentially arising as a result of the construction and operational stages of the proposed Development has been prepared through desk-based study and site survey. IGSL prepared an Infiltration Test Report in April 2019. Details from this report on subsoil conditions and groundwater have been used to inform the assessment on land, soils, geology and hydrogeology. In addition to site specific data, the Geological Survey Ireland (GSI), Environmental Protection Agency (EPA) and Irish Water (IW) websites were consulted for information on bedrock, soil and aquifer types, boreholes in the area and location of nearby groundwater dependent public water supplies.

Receiving Environment

The site is mainly underlain by bedrock consisting the Dinantian Rickardstown Formation (Rk) and is described as cherty, often dolmitised limestone. The bedrock is more than 100m thick; the full extent is not known. The Naas Groundwater Body (GWB), associated with the underlying bedrock is described as locally important – karstified. The groundwater vulnerability map for the area indicates that the groundwater vulnerability beneath the majority of the site is High (H) which assumes a depth to bedrock of >3m below ground level. There are no sand or gravel aquifers underlying the site.

Web-based data suggests that the underlying subsoils are likely to be highly permeable, however, site specific data indicates that the sub-soils present are mainly brown sandy clays with occasional gravels. Sandy silt and/or silty gravel was encountered in the test pits closest to the River Liffey. Infiltration tests were designed in accordance with BRE Digest 365 ‘Soakaway Design’. The results of infiltration testing indicate that the soils in large parts of the site are relatively impermeable.

Groundwater was encountered at 1.8 and 1.75m below ground level (bgl) during the site survey. Groundwater flow direction on site is expected to follow the local topography towards the River Liffey.

According to the GSI web-mapping there are no recorded details for wells present on the proposed Development Site.

The nearest groundwater/drinking water protection area is 7.23km to the southwest at Robertstown.

Assessment

A number of potential impacts can occur on soils and hydrogeology during both the construction and long-term operational development phases of the proposed Development as follows:

Construction Phase

- Stripping of top-soil resulting in the exposure of underlying sub-soils to weather and construction traffic that may result in sub-soil erosion leading to dust emissions and indirect impact on air quality and generation of sediment laden run-off leading to potential indirect impacts on water quality and effects on aquatic ecological receptors;
- Compaction of soils by construction traffic;
- Direct contamination of soils and groundwater through the ingress of oils, chemicals and construction materials such as concrete;

- Dewatering of excavations where groundwater is encountered. Dewatering can cause soil erosion or contamination of water courses with silt and/or oils or chemicals where pumped water has been contaminated.

Operational Phase

- Contamination of soils and groundwater due to the entry of deleterious materials from permeable surfaces;
- Contamination of groundwater arising as a result of incorrect disposal of domestic sewage;
- Reduction of recharge to the underlying bedrock aquifer as a result of increased impermeable surfaces.

The potential impacts listed above will be fully mitigated through the following measures and/or factors:

Construction Phase

- The site development and construction work for the entire site will be sub-divided into four phases. Excavations works will therefore only take place on a phased basis. Haul roads will be stoned at the outset of works and construction traffic will be routed onto paved roads outside the site. This will significantly mitigate against excessive soil erosion and compaction and dust generation.
- Cut and fill will be balanced. No topsoil or subsoil will be removed off-site. All storage of topsoil and sub-soil will be strictly controlled and minimised due to the phased nature of development.
- Disturbed sub-soils will be stabilised as soon as practicable by backfilling.
- Soils and groundwater will be protected against contamination by construction chemicals and fuels through the use of secure bunded hardstand areas and procedures for use and refuelling on site.
- As with any civil engineering project of this nature it is vital to ensure that prior to works commencing on site, adequate mitigation measures are put in place to prevent potential impacts as listed above and environmental impacts in general. All such mitigation measures (including those listed above) will be detailed within a Construction Environmental Management Plan (CEMP) produced by the Construction Works Contractor (CWC) covering the action required to complete the project in a safe secure manner with respect to the environment.

Operational Phase

- The surface water system for the proposed Development has been designed to comply with the requirements of the Greater Dublin Strategic Drainage Study (GDSUDS) policies and guidelines and the requirements of Kildare County Council. Permeable paving proposed will filter run-off thus ensuring that there is no significant impact on the underlying groundwater quality.
- The foul drainage system has been designed in accordance with the Building Regulations and specifically in accordance with the principals and methods set out in the Irish Water Code of Practice IS EN752 (2017), IS EN12056 Part 2 (2000) and the recommendations of the GDSUDS.
- All new foul drainage lines will be pressure tested and be subject to a CCTV survey in order to identify any possible defects prior to being made operational.
- The overall site development area comprises approx. 34% public open space with private gardens also provided. The amount of impermeable surface has been minimised to mimic the existing drainage regime. The development is therefore unlikely to significantly impact on groundwater recharge to the underlying aquifer which covers a total area of 42km^2.

The current land is in agricultural use. In the context of land-take, this is insignificant as 4.44 million hectares of land in Ireland is suitable for agricultural use.

There will be no blasting associated with the site development phase, therefore no potential impacts on geology are anticipated.

Groundwater will not be used as a potable water resource, therefore no potential impacts on groundwater as a material asset are expected.

Groundwater is not considered a potential flood mechanism on site.

Overall, there are no significant impacts anticipated on land, soils, geology or groundwater as a result of the proposed Development provided the inherent mitigation factors and proposed mitigation measures detailed above are applied.

7.0 Water

An assessment of the potential impacts on surface water (hydrology) and water related material assets (water supply and foul sewerage infrastructure) arising as a result of the construction and operational stages of the proposed Development, has been prepared through desk-based studies and site visits. A Site Specific Flood Risk Assessment (SSFRA) and Infrastructure Design Report have been prepared for the site and proposed Development. These were reviewed and informed the assessment of potential impacts on water in terms of water quality and hydrological changes and potential related effects including flooding.

Receiving Environment

Water Features and Quality

The existing site is greenfield and is bounded to the north and northwest by agricultural lands and to the east by the River Liffey. Drainage ditches associated with the northern boundary hedgerows discharge to the River Liffey. Other water features in the vicinity of the proposed Development Site include a drainage channel discharging from the vicinity of Alexandra Walk/Abbey Park Orchard to the south via the proposed Development Site to the River Liffey. A second drainage channel lies to the northeast of the site boundary. This also eventually discharges to the River Liffey via the Gollymochy River.

The proposed Development Site is located in Hydrometric or Water Framework Directive (WFD) Catchment 09 – Liffey and Dublin Bay and in sub-catchment 09_14 or Liffey_SC_070. The overall area of Catchment 09 is 1,624.42km^2.

The WFD status of the River Liffey (IE_EA_09L011600; Liffey_130) adjacent to the proposed Development Site has improved from Moderate in 2007 – 2009 to Good in 2010 – 2015 and continued as Good for the period 2013-2018. Classification is based on a number of parameters including bio and chemical status. The River Liffey is considered to be “not at risk” of achieving good status under the WFD. The river, adjacent to the proposed Development Site, is not within any WFD Areas for Action Plans designated under the second round River Basin Management Plan (RBMP) 2018 – 2021. The river in proximity to the proposed Development Site is classed as nutrient sensitive and is within a nutrient sensitive area (downstream of Osberstown Wastewater Treatment Plant (WWTP) to Leixlip Reservoir) under the Urban Waste-Water Treatment (UWWT) Regulations, 2001 – 2010. Irish Water has recently completed upgrades to the Osberstown WWTP in compliance with regulatory requirements under the UWWT Regulations.

Water quality can be determined based on chemical and/or ecological parameters. Based on a desk-based study of ecological monitoring undertaken by public bodies, the river Liffey water quality is good in the vicinity of the proposed Development Site.

Flooding

The SSFA for the proposed Development Site has identified that parts of the site close to the River Liffey are within Flood Zone A and B designations. The area extends at a maximum up to 30m from the riverbank into the site. The entirety of area where development is proposed falls within Flood Zone C.

In the context of the '*Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* the SSFRA has determined that the majority of the area of the proposed Development Site is not at significant risk of direct fluvial, pluvial or groundwater flooding and therefore falls within Flood Zone 'C'.

Water Supply

Clane is served by the North-East Kildare Regional Water Supply Scheme with water supplied from the water treatment plant at Ballymore Eustace. In August 2018, IW completed an upgrade of the plant to increase capacity by improving sludge treatment capacity. An existing 150mm diameter public uPVC watermain passes the proposed Development Site on the Brooklands entrance.

Foul Sewerage

The proposed Development Site falls within the catchment of the Upper Liffey Valley Sewerage Scheme (ULVSS) covering Sallins, Clane, Naas, Prosperous, Johnstown, Kill, Newbridge, Kilcullen, Athgarvan, Carragh and the Curragh. The scheme was conceived for a number of reasons including:

- Increased capacity to facilitate growth and economic development whilst protecting the environment;
- Reduced number of emergency overflows to the River Liffey;
- Reduced risk of flooding in Naas, and,
- Cleaner treated wastewater meeting all regulatory requirements.

To date, IW has upgraded Osberstown Wastewater Treatment Plant (WWTP). At present IW are in the process of upgrading the sewer network. IW has a project underway to relieve capacity constraints in Clane. The commissioning phase of Contract 2B is scheduled for Q3, 2021 (may be subject to change). The proposed Development Site has no foul loading at present. The surrounding developments are served by existing foul systems including two pumping stations located at Abbey Park and Alexandra Walk. The Abbey Park pumping station is in the control of the applicant while the Alexandra Walk pumping station is controlled by IW. Foul water from the proposed development will flow to Abbeypark pump station. No connection to Alexandra Walk pump station is proposed.

7.1 Assessment

Construction Phase

Potential impacts on water courses during the construction phase include:

- Direct contamination through the ingress of oils, chemicals and construction materials such as concrete;
- Indirect contamination arising through seepage of chemicals and oils from construction materials and polluted water into the ground and eventually discharging into water courses through groundwater;
- Sediment run-off from construction site activities such as stockpiling, excavations and dewatering.

Potential impacts on existing water and foul infrastructure include disruption to services or potential damage to pipework.

However, the above potential impacts are expected to be insignificant due to the following mitigation measures and/or factors:

- Many of the mitigation measures outlined in Section 6 above are similarly being proposed for the protection of surface waters during site development and construction. Due to the sensitivity of receiving waters, additional mitigation measures, will also be implemented under the CEMP to manage potential impacts to hydrology during construction stages, and include measures such as the use of silt traps and sedimentation lagoons, refuelling away from drains, protection of drainage ditches by cordoning off, strictly controlled management of concrete pours in accordance with advice in documents such as CIRIA Environmental Good Practice on Site Guide, 4th Edition (C741).

With regard to infrastructure:

- The local authority/IW will be contacted and all measures required for introducing new watermain and foul main connections will be adhered to thus avoiding impact on the current water supply and foul sewerage system.
- Testing of the system meter & telemetry system will be completed as required.

Operational Phase

Potential impacts arising during the operational phase include:

- Downstream flooding arising as a result of increased built surfaces and pluvial flooding affecting future residents;
- Fluvial or river flooding affecting future residents;
- Residual pluvial flooding from the proposed storm water drainage system affecting future residents;
- Direct and indirect contamination of water courses arising as a result of contaminated surface water run-off from parking areas etc.
- Impact on beneficial use of the River Liffey as a water source downstream of the proposed Development.

Potential impacts on existing water and foul infrastructure include additional pressure on existing water supply and wastewater treatment capacity.

However, the above potential impacts are expected addressed and therefore insignificant due to the following mitigation measures and/or factors:

- Surface water management is designed to comply with the GDSUDS policies and guidelines and the requirements of Kildare County Council. In this regard, permeable paving and attenuation will be provided as part of the proposed Development to mimic the existing regime.
- The attenuation tanks proposed to store surface water run-off and release it in a controlled manner are sized to provide for the 100year pluvial storm event and include for climate change considerations.
- Oil interceptors will be installed at the entrance to the attenuation tanks to prevent downstream hydrocarbon contamination of watercourses.
- The SSFRA concluded that the majority of the site is classified as Flood Zone C where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% of 1 in 1000 year for both river and watercourse and coastal flooding). The proposed units are all within Flood Zone C.
- The SSFRA report recommends Proposed finished ground levels (road levels, etc) to be constructed to a minimum level of 0.15m above the maximum predicted 0.1% Annual Exceedance Probability (AEP) fluvial flood level upstream of the site. Finished ground levels will be constructed above 65.68m.
- The SSFRA report recommends Proposed finished floor levels to be constructed to a minimum level of 0.30m above the maximum predicted 0.1% AEP fluvial flood level upstream of the site. Finished floor levels will be constructed above 65.68m.
- The surface water network, attenuation storage and site levels are designed to accommodate a 100-year storm event and include climate change provision with regard to potential pluvial flooding.
- The storm water drainage and management system to serve the proposed Development is not predicted to present a residual pluvial flood risk to the proposed Development and is considered to comply with GDSDS Level of Service – Site Flooding Criteria.
- Floor levels of houses are set above the 100-year flood levels by a minimum of 0.5m for protection. For storms in excess of 100 years, the development has been designed to provide overland flood routes along the various development roads towards the surface water drainage outfall.

With regard to infrastructure:

- Water conservation measures such as dual flush water cisterns and low flow taps will be included in the built design. Measures to conserve water equally serve to reduce foul sewage generation and unnecessary use of treatment capacity.
- The SUDS features proposed for the development include for down pipes from roof surfaces to rainwater harvesting tanks for use in dwellings as grey water.
- The development will be phased and will not be fully complete until post completion of the ULVSS. Accordingly, there will be no additional pressure on the existing network.
- All onsite sewers will be tested and surveyed prior to connection to the public.

8.0 Noise and Vibration

An assessment of the impact on the ambient sound environment and related effects on receptors, (namely human beings) potentially arising as a result of the construction and operational stages of the proposed Development has been prepared through desk-based study and site survey. Potential for vibration impacts on nearby dwellings and occupants during construction has also been conducted.

A site visit was undertaken in July 2019 to characterise the receiving ambient sound environment. Attended monitoring was conducted at 3 boundary points in close proximity to existing Noise Sensitive Locations (NSLs). Monitoring was conducted over day, evening and night-time periods in accordance with the requirements of The EPA Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities, (NG4), revised January 2016. Unattended continuous monitoring was also conducted at one location over a longer period to evaluate the potential noise exposure for future residents in line with The UK ProPG: Planning & Noise, New Residential Development, 2017.

Receiving Environment

The proposed Development Site and immediate surrounding existing residential development on the outskirts of Clane are considered to be quiet suburban/rural areas. Typical neighbourhood sounds predominate during the day and evening. The main continuous sources of noise in the area are nearby roads in the distance. Average and background noise levels ranged from $L_{Aeq,15mins}$ 49 - 33 dB and $L_{A90,15mins}$ 40 - 27 dB respectively decreasing from day into night.

Based on the survey completed, the proposed Development Site is determined to be negligible in terms of noise risk for new residential development.

No existing vibration sources were noted during the site surveys.

8.1 Assessment

Construction Phase

The site development and construction phases can potentially give rise to temporarily elevated noise levels at the nearest NSLs when works occur in close proximity to the NSLs. However, the effect on NSLs is not expected to be significant over the duration of the full works due to the following mitigation measures and/or factors:

- The site development and construction stage will be phased. Accordingly, the potential for large numbers of noise sources on site at any given time will be reduced.
- As works progress, distance attenuation will reduce noise levels at NSLs and the new built structures will also screen existing NSLs.
- The use of preformed built elements is a significant mitigating factor to reduce the duration of the construction phase and in turn the duration of the construction-related noise impacts.
- A CEMP including for noise and vibration will be developed prior to the commencement of site development works. The Plan will, at a minimum set out to achieve the threshold values/criteria listed in Table E.1 of BS5228: Part 1:2009+A1:2014 - Noise Control on Construction and Open Sites and will take account of mitigation measures set out in Section 8 of the standard which

identifies measures such as substitution, modification, use of enclosures and siting of equipment in order to minimise impact.
- General measures to be contained in the Plan include for the use of acoustic screening of NSLs, appointment of a Site Representative to deal with noise matters, a complaints investigation procedure and noise monitoring requirements.

As a precautionary measure, vibration monitoring is also proposed during the construction phase at the nearest sensitive receptors when sources likely to cause vibration such as piling will be in use. In this regard, test monitoring will be conducted with the equipment on at low levels before increasing incrementally to operational levels. Works will be ceased and mitigation measures implemented during the construction phase where monitoring detects vibration levels associated with the construction phase of the facility above the relevant guidance values for buildings and human beings.

The movement of HGVs through the Brooklands residential development will result in brief elevated noise levels above existing background levels. However, pass-bys are very brief in nature and intense phases such as import of fill be short in duration, therefore, the overall effect on NSLs is not expected to be significant.

Operational Phase

In the long term, the noise arising from the proposed Development will be from typical neighbourhood activities and levels are expected to be similar to the existing noise levels recorded during the baseline survey. Accordingly, the long-term impact is expected to be neutral on the existing ambient sound environment.

There are no anticipated vibration sources associated with the long term completed Development.

Additional traffic at two access junctions and routes (Brooklands Spine Road and Alexandra Walk) into the proposed Development was reviewed with regard to potential increases in traffic noise impact at existing NSLs. The effects, including the cumulative effect with other proposed developments in the area are expected to range from neutral to imperceptible and are therefore insignificant.

9.0 Air Quality and Climate

An assessment of the impact on ambient air quality and related effects on receptors, (namely human beings, health and ecological receptors) potentially arising as a result of the construction and operational stages of the proposed Development has been prepared through desk-based study and qualitative appraisal. Potential for climate impacts in terms of carbon emissions relating to climate change has also been conducted.

Receiving Environment

Air quality is defined in terms of Air Quality Standards for various air pollutants including Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Particulate Matter as PM_{10} and $PM_{2.5}$, Carbon Monoxide (CO), Benzene and selected metals. For ambient air quality and monitoring in Ireland, four zones A, B, C and D are defined in the Air Quality Standards Regulations, 2011. The zones represent the following areas:

- Zone A - Dublin Conurbation;
- Zone B – Cork Conurbation;
- Zone C – 24 cities and large towns (e.g. Galway, Limerick Naas, Newbridge), and,
- Zone D – Rural Ireland i.e. the State excluding Zones A, B and C.

The proposed Development Site falls within Zone D. Data from Zone D monitoring sites across the country indicate that the existing ambient air quality is good for all health-related pollutants in Zone D. All concentrations are well within the EU limits for all parameters of interest.

9.1 Assessment

Construction Phase

The potential impacts on air quality and related effects during the site development and construction phases are mainly related to:

- Dust deposition on high sensitivity receptors such as adjacent residential areas in Brooklands;
- Effects on human health arising from PM_{10} and $PM_{2.5}$ particles in suspended matter (dust);
- Dust deposition and smothering of vegetation.

The potential dust risks associated with the site development and construction phases have been assessed in accordance with the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction, Version 1.1 2014.

A summary table combining the sensitivities of receptors with the dust magnitude for each stage is presented below giving the overall dust risk:

Source	Dust Deposition	Human Health	Ecology
Earthworks	Medium risk	Low risk	Medium risk
Construction	Medium risk	Low risk	Medium risk
Trackout	Negligible	Negligible	Negligible

The assessment indicates that most significant potential impacts and effects are those associated with excavation and construction works. A number of mitigation measures will be implemented as detailed as follows, commensurate with the level of risk identified above:

A CEMP including for dust management will be developed prior to the commencement of site development works. The principal objective of the Plan will be to ensure that dust emissions do not cause significant dust soiling on nearby residential receptors. Key features are summarised as follows:

- A designated Site Agent will be assigned overall responsibility for Dust Management;
- The design of the site development and construction programme will consider dust impact management and choose design approaches to minimise dust emissions;
- An effective training programme for site personnel will be implemented for the duration of the site development works and construction stages;
- A strategy for ensuring effective communication with the local community will be developed and implemented;
- A programme of dust minimisation and control measures will be implemented and regularly reviewed;
- A monitoring programme will be implemented.

The design of the site development and construction programme and the location and layout of the construction compound and the storage of materials will be carefully planned to ensure that air quality impacts are minimised.

The predicted impact on ambient air quality and effects on human beings in terms of nuisance dust deposition, health and on ecological receptors are expected to be temporary to short term insignificant provided the dust generation avoidance, prevention and minimisation measures outlined above are implemented.

Operational Phase

During the operational phase, the potential for impact on air quality and indirect effects on climate change arising from GHG emissions from the proposed Development in general can arise from the combustion of fuel by vehicles and from heating resulting in the emissions of particulate matter and gases such as NOx , CO_2 and CO. However, in the long term, the proposed Development is anticipated to have an imperceptible impact on ambient air quality for the following reasons:

The residential units will be designed to be as energy efficient as possible. In this regard, the applicant proposes to target A2/A3 BER for the units. Specifications are not yet finalised but to achieve the above high energy efficiency and low carbon emission performances the following will be included:

- Highly insulated building fabric.
- High performance low u value windows and doors.
- Energy efficient light fittings and white goods.
- Mechanical heat recovery ventilation.
- On roof PV Solar panels.
- Air to water heat pumps and / or condensing A rated boilers.
- Electric car charging points.

Natural gas will be used as a heating fuel in the long term. Natural gas contains little to no sulphur or potential for particulate emissions. Nitrogen oxide emissions from boilers run on natural gas are significantly lower than those associated with other fossil fuels.

A Mobility Management Plan will be implemented to encourage alternative modes of transport to reduce reliance on cars.

GHGs and long-range transboundary pollutant emissions will be insignificant particularly when considered in the national context where actions in other sectors such as agriculture have been identified as required to reduce Ireland's emissions. The inherent design measures comply with the envisaged measures required to tackle the climate challenge as outlined in the Climate Action Plan, 2019.

The potential impact of traffic related emissions on ambient air quality, arising as a direct result of the proposed Development and cumulatively with other proposed developments in the area and expected medium forecast growth for traffic, is likely to be insignificant, taking account of the likely changes in AADT and the existing background concentrations of pollutants. It is expected that the existing ambient air quality status will be maintained and will be unaffected.

10.0 Material Assets

Road Infrastructure and Traffic

A Traffic Impact Assessment (TIA) was undertaken to examine the traffic implications of the proposed Development in terms of how it can integrate with existing traffic in the area. The objectives of the assessment were to determine and quantify the extent of additional trips generated by the proposed Development, and the impact of such trips on the operational performance of the local road network and junctions.

The TIA was conducted in accordance with recognised standard methodologies including Transport Infrastructure Ireland and the UK Institute of Highways and Transportation guidance documents.

In this regard, traffic counts were undertaken over a 12-hour period at key junctions to evaluate existing traffic patterns. The main routes in the vicinity of the proposed Development Site are the R403 from Clane to Celbridge linked to the R407 to Sallins by the Clane Inner Relief Road. The proposed Development will be accessed via the existing R403/Brooklands/Capdoo Park cross-roads and the R403/Alexandra Walk/The Avenue roundabout.

Junctions performance under selected scenarios were assessed using PICADY, ARCADY and TRANSYT software. The assessment also evaluated the cumulative effects on potentially affected junctions as a result of development of a second proposed residential development (Ardstone) to the west of the proposed Development Site with an associated proposed relief road. As the relief road will affect existing traffic patterns in the Clane Area, an origin / destination survey was also carried out over a 3-day period.

The main conclusions of the TIA are summarised as follows:

- The existing R403 / Brooklands / Capdoo Park crossroads currently operates within capacity with minimal delays and queues during the AM and PM peak hours.
- The existing R403 / Brooklands / Capdoo Park crossroads will operate within capacity with small queues and delays when the proposed Development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.

- Sensitivity testing of the proposed Development and with the Ardstone residential development and associated relief road open indicates that the existing R403 / Brooklands / Capdoo Park crossroads will operate at its ultimate capacity with queues and delays during the AM and PM peak periods..
- The existing R403 / Alexandra Walk / The Avenue roundabout currently operates within capacity with minimal delays and queues during the AM and PM peak hours.
- The existing R403 / Alexandra Walk / The Avenue roundabout will continue to operate within capacity with small queues and delays when the proposed Development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.
- Upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours with the proposed Development operational in 2022, 2027 and 2037.
- Sensitivity testing of the proposed Development and the Ardstone residential development with the relief road open indicates that upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours in 2037.
- The proposed Development provides adequate car parking spaces when assessed in accordance with the Kildare County Development Plan and the Design Standards for New Apartments – Guidelines for Planning Authorities 2018.
- Facilities for pedestrians and cyclists are included in the internal layout.
- Sightlines at the proposed accesses onto Brooklands Road are in compliance with the Design Manual for Urban Roads & Streets.

During the construction phase, a Construction Traffic Management Plan (CTMP) will be implemented. The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed Development upon both the public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment.

Energy Networks and Telecommunications

Gas, electricity and telecommunications infrastructure currently extend to the site boundaries through adjoining premises. An existing overhead ESB line runs along the northern boundary of the site from the R403 to the west to development to the east across the River Liffey. This line serves the applicant's residence to the northwest.

Power supply for the proposed Development will be taken from the existing ESB Network. Existing overhead power lines within the site (MV 10kV / 20 kV) will be relocated in advance of commencement of site works.

Gas supply for the proposed Development (if required as part of the energy strategy) will be taken from the existing Gas Networks Ireland network located to the west of the site.

The existing Eir network located to the west of the site will be extended to service the proposed Development.

Potential impacts that may arise during the construction phase include:

- Damage to existing underground and overground infrastructure.
- Relocation or diversions to existing overhead ESB lines may lead to loss of connectivity to and / or interruption of supply from the electrical grid.
- Potential loss of connection to the Gas Networks Ireland and Telecommunications infrastructure while carrying out works to provide service connections.

However, the above potential impacts are expected to be insignificant due to the following mitigation measures and/or factors:

- The site-specific CEMP developed and implemented during the construction phase will ensure that the potential impacts on existing networks do not occur during the construction phase.
- Relocation of existing overhead ESB lines will be fully coordinated with ESB Networks to ensure interruption to the existing power network is minimised (e.g. agreeing power outage to facilitate relocation of cables). Ducting and / or poles along the proposed relocated route will be constructed and ready for rerouting of cables in advance of decommissioning of existing overhead power lines.
- Similarly, connections to the existing gas and telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

No potential impacts are expected during the operational phase as there is adequate supply to service the proposed Development demand.

11.0 Archaeology, Architectural and Cultural Heritage

The subject site was the subject of a Cultural Heritage study and assessment undertaken by Martin Byrne, Byrne Mullins & Associates, Archaeological & Historical Heritage Consultants. Cultural Heritage is defined by UNESCO as “the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations”. (www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage).

In terms of the present project, Cultural Heritage is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area. In general, there are no significant historical events associated with the subject lands. The subject development lands form parts of the townlands of Abbeyland and Capdoo in the civil parish and barony of Clane and include a number of field boundaries which act as townland boundaries. These will largely be retained by the proposed development, although some truncation will be required to provide for access across the site. Where these short sections of the townland boundaries will be removed, it is suggested that appropriate markers be erected/established at such locations.

There are no previously identified archaeological monuments located within, or in the immediate environs of, the subject development lands. A programme of archaeological testing, involving the excavation of a total of thirty trenches of varying lengths and orientations, was undertaken and no subsurface remains of interest/potential were uncovered; similarly no artefacts of interest were recovered. Consequently, it is considered that the proposed development lands are of very low archaeological potential and no further archaeological interventions are required. In terms of architectural heritage, there are no protected structures, or NIAH-listed structures, located within, or in the immediate environs of, the proposed development lands. It is considered that no impacts to any structures of architectural heritage interest/potential will occur as a result of the development of the subject lands and no mitigation measures are required.

12.0 Landscape and Visual Amenity

This report identifies and outlines the potential landscape and visual impacts of the overall proposed residential development of 333 dwellings and associated road infrastructure at Capdoo and Abbeyland, Clane, Co. Kildare. This report should be read in conjunction with the Photomontages and the Landscape Design Rationale.

The site of the proposed development is located to the north eastern edge of Clane village in the townlands of Capdoo and Abbeyland. The site occupies an area of 10.36 ha, is bounded to the east by the River Liffey, to the south by existing residential developments, namely Alexandra Walk, Abbey Park Orchard and Brooklands. Brooklands also extends to part of the south western boundary of the site, while the remaining northern boundaries are bounded by agricultural lands.

The site comprises four fields, one of which comprises a linear section running parallel to the Liffey, all originally in pasture but now currently unused. A pedestrian track exists in that portion of the field running parallel along the Liffey which is used by walkers and enters the site from the existing public open space at Alexandra Walk on the southern boundary.

The general topography of the site is generally flat. The highest point is located east of the centre of site at +67.00 O.D. It falls gently and gradually to the south to +66.00 O.D, to the west to +65.00 O.D and to the north to +66.00 O.D.

The site of the proposed development is located within the 'River Valley' Character Area, a linear corridor that follows the River Liffey corridor. This area has a landscape sensitivity that is described 'Special' in the CDP with low capacity to accommodate uses without significant adverse effects on the appearance or character of the landscape.

In terms of the sensitivity factors described within the Landscape Character Assessment there is one Scenic Viewpoint, RL 5 – Alexandra Bridge, Abbeyland (Table 14.6 CDP 2017-2023) which identifies the view from the Bridge to the Liffey.

There are no views to be protected in the immediate vicinity of the site.

Overall the impact on the landscape is Moderate/Major in accordance with Table 1.2 Significance of Landscape and Visual effects, i.e. there will be alteration to elements / features of the existing conditions, it does affect an area recognised regional landscape quality and there will be alterations to the character, scale or pattern of the landscape.

This recognizes that whilst the change in character from agricultural to urban is substantial, it reflects land use policy for the site and has been applied in accordance with best practice in terms of urban design, open space development and Green Infrastructure policy.

The actual visibility of the proposed development is significantly reduced due to the flat nature of the land within and surrounding the application site, the high degree of enclosure provided by mature boundary tree lined hedgerows and existing residential developments.

A total of 5 viewpoints are selected which are representative views experienced from various receptors within 900m of the immediate vicinity looking towards the proposed development. The selected views are from publicly accessible areas.

Potential views of the proposed development were found to be limited as it is well screened from the surrounding areas in general. While there may be locations in the immediate vicinity that will be visible the proposed mitigation landscape planting will help to visually integrate and partially screen proposed buildings.

The transient views of road users are more limited to occasional glimpse through breaks in roadside hedgerows. The introduction of the new elements will be not be uncharacteristic when set within the attributes of the receiving view. Such views will be slightly modified but on a localised level.

The potential visual effects upon receptors considered from the 5 selected viewpoints range from No Change to Slight visual effects. Some of these receptor's initial views and visual effects will be reduced as the mitigation planting matures and integrates the proposed development. Across much of the wider study zone, the proposed development's lack of visibility will result in the majority of receptors experiencing No Change to their existing views throughout the proposed developments life span.

Measures to mitigate landscape and visual impacts have been included in the design including protection and retention of trees and hedgerows as described in this report and indicated on the landscape masterplan, perimeter screen planting and streetscape and open space planting.

The proposed development is complementary to local character and visual amenity and represents appropriate change and consolidation of the urban area at this location.

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 & Health	Chapter 5.0 – Biodiversity	Chapter 6.0 – Land, 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 & Health		✓	✓	✓	✓	✓	✓		
Chapter 5.0 – Biodiversity			✓	✓	✓	✓			
Chapter 6.0 – Land, 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 1.0 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.