

Environmental Impact Assessment Report

Non-Technical Summary

**Lands adjacent to The Grange,
Brewery Road/Stillorgan Road,
Stillorgan, Co. Dublin**

On behalf of

**KW PRS ICAV acting for and on behalf
of its sub-fund KW PRS Fund 10**

September 2019



Planning & Development Consultants
63 York Road,
Dun Laoghaire,
Co. Dublin

www.brockmcclure.ie

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1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared in support of a planning application for a “Build to Rent” residential development at lands at ‘The Grange’, Brewery Road, Stillorgan, Blackrock, Co. Dublin.

This document is a summary of the information contained in the EIAR. For detailed information and key mitigation and remedial measures please consult the full EIAR document.

Introduction and Terms of Reference

Brock McClure Planning and Development Consultants, 63 York Road, Dun Laoghaire, Co. Dublin have been commissioned by the applicant, **KW PRS ICAV acting for and on behalf of its sub-fund KW PRS Fund 10, 94 St. Stephen’s Green, Dublin 2, D02 FD40**, to prepare an Environmental Impact Assessment Report (EIAR) in respect of a Strategic Housing Development application for a ‘Build to Rent’ residential development of 287 residential units, a crèche facility, residential amenity space.

The application site comprises ‘The Lodge’, ‘Grange Select Marketing Suite’, ‘Oaktree Business Centre’ and ‘Nos. 2 and 3 The Grange Cottages’. The site is located at Brewery Road, Stillorgan, Blackrock, Co. Dublin and is situated adjacent to the existing ‘The Grange’ residential development.

The central purpose of this EIAR document is to undertake an assessment of the likely and significant impact on the environment of the proposed development in parallel with the project design process. This EIAR is prepared to provide the Competent Authority (CA) undertaking the Environmental Impact Assessment (EIA) review with the information on the likely and significant effects on the environment of the proposed development.

Definition of EIA and EIAR

Directive 2014/52/EU defines ‘*environmental impact assessment*’ as a process, which includes the responsibility of the developer to prepare an Environmental Impact Assessment Report (EIAR), and the responsibility of the competent authority to provide reasoned conclusions following the examination of the EIAR and other relevant information.

Article 1(2)(g) 4 of Directive 2014/52/EU states that “environmental impact assessment” means a process consisting of:

- (i) *the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
- (ii) *the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
- (iii) *the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
- (iv) *the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
- (v) *the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a.*

It is important to set out that the amended Directive (Directive 2014/52/EU) uses the term Environmental Impact Assessment Report (EIAR) rather than Environmental Impact Statement (EIS).

The Guidelines on the Information to be contained in an *Environmental Impact Assessment Report*, Environmental Protection Agency, 2017, provide the following definition of an EIAR:

“A statement of the effects, if any, which proposed development, if carried out, would have on the environment.

A new definition of environmental impact assessment is now contained in Section 170A of the Planning and Development Act, 2000, as amended which reflects to the process as described under Article 1(2)(g) 4 of Directive 2014/52/EU and goes on to say that it includes –

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this Part and regulations made thereunder, that identifies, describes and assesses, in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following:

(I) population and human health;

(II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;

(III) land, soil, water, air and climate;

(IV) material assets, cultural heritage and the landscape;

(V) the interaction between the factors mentioned in clauses (I) to (IV), and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development;

The EIA is prepared by the developer and is submitted to a CA (Competent Authority) as part of a consent process. The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to help determine if consent should be granted. The information in the EIA is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA.

The EIA consists of a systematic analysis and assessment of the potential effects of a proposed project on the receiving environment. The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and these factors must be addressed in the EIA.

The EIA should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign”.

In summary, EIA is a process for anticipating the effects on the environment caused by development.

An EIA is the document produced as a result of that process and provides information which the competent/ consent authorities use in deciding whether or not to grant consent. Where significant and likely environmental effects are identified that are unacceptable; the EIA process aims to quantify and minimise the impact specified development projects have on the environment through appropriate mitigation measures. The preparation of an EIA document requires site-specific considerations and the preparation of baseline assessment against which the likely impacts of a proposed development can be assessed by way of a concise, standardised and systematic methodology.

EIA Legislation

This EIA document has been prepared in accordance with the European Union EIA Directive 85/337/EC as amended by 97/11/EC, 2003/4/EC, 2011/92/EU and Directive 2014/52/EU.

The Planning & Development Act 2000 (as amended) and the Planning & Development Regulations 2001 (as amended) transpose the EIA Directive into Irish land use planning law. We note specifically

that the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 came into operation on the 1st of September 2018 in order to transpose the Directive into Irish planning law and existing planning procedures.

EIA Guidelines

The EIAR has also been prepared in accordance 'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment'(September 2018) and the Environmental Protection Agency (EPA) published draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (August 2017). These guidelines are intended to facilitate compliance with the 2014 Directive and this EIAR has been prepared in accordance with the Guidelines.

In addition to the above guidelines, we note that in preparation of this EIAR, regard has been given to the following documentation:

- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018*
- *Draft Guidelines on the information to be contained in environmental impact assessment reports, EPA, August 2017*
- *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper, Department of Environment, Community and Local Government, 2017.*
- *Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017).*
- *Development Management Guidelines (DoEHLG, 2007).*
- *Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003).*
- *Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).*
- *Guidelines on Information to be Contained in an Environmental Impact Statement (EPA 2002).*
- *Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 2002).*
- *EU Guidance on EIA Screening (DG Environment 2001).*
- *Guidance on EIA Scoping (DG Environment 2001).*
- *EIA Review Checklist (DG Environment 2001).*

The Requirement for an EIAR

Environmental Impact Assessment (EIA) requirements derive from EU Directives. Council Directive 2014/52/EU amended previous directions and is transposed into Irish Law by the Planning and Development Act 2000, as amended and the Planning and Development regulations 2001, as amended. Significant amendments were effected to the 2001 Regulations by the European Union (Planning and Development) (Environmental Impact Assessment) Regulation 2018.

Screening for Environmental Impact Assessment

Screening is the term used to describe the process of determining whether the proposed development required an EIA by reference to mandatory legislation threshold requirements or in the case of sub threshold development, by reference to the type and scale of the proposed development and significance or the environmental sensitivity of the receiving baseline environment.

Annex 1 of the EIA Directive requires as mandatory the preparation of an EIA for all development projects listed therein.

Schedule 5 (Part 1) of the Planning & Development Regulations, 2001 (as amended) transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning & Development Regulations 2001 (as amended) which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2, 10. *Infrastructure Projects* of the Planning & Development Regulations 2001 (as amended) defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

(b) (i) Construction of more than 500 dwelling units.

(ii) *Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.*

(iii) *Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.*

(iv) *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 this paragraph, “business district” means a district within a city or town in which the predominant land use is retail or commercial use.)*

The current development proposal provides for the demolition of The Lodge, Oaktree Business Centre, Grange Select Marketing Suite, No.s 2 & 3 The Grange Cottages and the construction of 287 residential units, a crèche facility and residential amenity space. The proposal therefore falls below the thresholds set out above for mandatory Environmental Impact Assessment. Notwithstanding this, an EIAR has been prepared to accompany the subject strategic housing development application to An Bord Pleanála, having regard to the specific characteristics and features of this site, its size, and the cumulative quantum of development proposed.

We note specifically that the 287 residential units proposed are being delivered in addition to 506 permitted residential units at the existing Grange residential development. Furthermore, it is anticipated that there is potential for a further phase of development at this site and we note specifically the potential for an additional c. 250 units in this regard. Overall, it is considered that the future development of this site has potential for an additional c. 500 units.

Therefore, in consideration of the potential cumulative development for this site, that an EIAR is submitted so that an EIA can be carried out in relation to the proposed development.

We note also the Planning Authority in this case, Dun Laoghaire Rathdown County Council were of the considered view that the preparation of an Environmental Impact Assessment Report was required in this case.

Scoping for the Environmental Impact Assessment

The Draft Guidelines on the information to be contained in environmental impact assessment reports, EPA, August 2017 state that Scoping is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information.

Scoping is defined in the EC guidance (EC, 2017) as:

“determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR”.

In this case, the content of this EIAR was informed by a scoping process carried out by the applicant, the design team and appointed EIAR consultants to identify the core issues likely to be most important during the Environmental Impact Assessment process.

The EIAR prepared for the scheme has endeavoured to be as thorough as possible and therefore all of the issues listed in Schedule 6, Sections 1 and 2 of the Planning & Development Regulations 2001 (as amended) have been addressed in the EIAR.

In this context the following chapters are prepared in assessment of the likely significant effects of the proposed development on the environment:

No.	Proposed Content
1.	Introduction
2.	Site Context
3.	Development Description
4.	Consideration of Alternatives
5.	Population and Human Health
6.	Biodiversity
7.	Land & Soils
8.	Water
10.	Noise and Vibration
9.	Air Quality and Climate
11.	Wind and Microclimate
12.	Landscape and Visual Impact Assessment
13.	Material Assets - Traffic and Transport
14.	Material Assets - Utilities
15.	Material Assets - Waste Management
16.	Archaeological, Architectural and Cultural Heritage
17.	Risks of Major Accidents and Disasters
18.	Interactions
19.	Summary of Mitigation Measures
20.	Competent Persons Table

Table 1.1 - Scoping and Chapters of this EIAR

In addition to the above a series of standalone reports have been prepared to accompany the application and which have helped inform the above chapters of the EIAR where relevant. We refer to the covering letter enclosed herewith for full detail on the relevant enclosures.

The scope of this EIAR has also been informed by the following:

- European Union (Planning and Development)(Environmental Impact Assessment) Regulations 2018.

- Guidelines for Planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment, August 2018.
- Draft Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2017.
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper, Department of the Environment, Community and Local Government, 2017.
- Circular letter PL 1/2017 – Advice on Administrative provisions in advance of Transposition (2017)
- The requirements of Part X of the Planning and Development Act, 2000, as amended, and Part 10 of the Planning and Development Regulations, 2001 (as amended);
- The requirements of the Dun Laoghaire-Rathdown Development Plan 2016-2022;
- Relevant Regional and National Planning Policy Documents;
- Issues raised during meetings with technical staff of Dun Laoghaire-Rathdown Development Plan 2016-2022 and An Bord Pleanala;
- Consultation process with statutory bodies and local stakeholders as referenced in the individual chapters;
- The receiving environment and any vulnerable or sensitive local features and current uses;
- Previous relevant planning history and applications that have been submitted on the subject and adjoining lands;
- The likely and significant impacts of the proposed development on the environment; and
- Available mitigation measures for reducing or eliminating any potentially significant undesirable impacts.

Objectives of this EIAR

The primary purpose of this EIAR is to assist in the EIA process, by identifying likely significant environmental impacts resulting from the proposed development, to describe the means and extent by which they can be reduced or mitigated, to interpret and communicate information about the likely impacts and provide an input into the decision-making planning process.

The fundamental principles to be followed when preparing an EIAR are:

- Anticipating, avoiding and reducing significant effects
- Assessing and mitigating effects
- Maintaining objectivity
- Ensuring clarity and quality
- Providing relevant information to decision makers
- Facilitating better consultation.

The EIA process was iterative and progressed in tandem with the project design process. The EIAR document captures this assessment process and describes its outcomes.

The EIAR documents the consideration of the environmental effects and provides transparent, objective and replicable documentary evidence of the EIA evaluation and decision making processes.

The EIAR document provides information on any identified effects arising as a consequence of the proposed development and which are:

- Environmentally based;

- Likely to occur; and,
- Have significant effects and significant positive effects.

It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction or amelioration; to explain how significant adverse effects will be avoided.

The key purpose of this EIAR document is to enable the competent/consent authorities to reach a decision on the acceptability of the proposed development in the full knowledge of the project's likely significant impacts on the environment, if any. This EIAR document describes the outcomes of the iterative EIA process which was progressed in parallel with the project design process. This forms the first part of the EIA process which will be completed by the competent authority, which in turn will be required to examine, analyse and evaluate the direct and indirect effects of the development on the various factors listed under Section 171A of the Planning and Development Act 2000, as amended.

The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and the environmental impact assessment should identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the prescribed environmental factors which are:

- (a) population and human health;
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- (c) land, soil, water, air and climate
- (d) material assets, cultural heritage and the landscape;
- (e) the interaction between the factors referred to in points (a) to (d).

This EIAR documents the assessment process of the prescribed environmental factors in relation to the proposed SHD residential development at 'The Grange' Brewery Road.

Format and Structure of an EIAR

The formation of an EIAR necessitates the co-ordination and collation of associated, yet diverse specialised areas of assessment. The EIA approach involves the examination of each environmental factor, describing the existing baseline environment, the subject proposal, its likely impacts and direct and indirect significant effects pertaining to the environmental factor and mitigation measures, where appropriate. The topics examined in this EIAR are categories under the environmental factors prescribed under the 2014 EIA Directive as follows:

- Population and Human Health
- Biodiversity
- Land & Soils
- Water
- Noise & Vibration
- Air Quality & Climate
- Material Assets
- Archaeological & Architectural Cultural Heritage
- Landscape & Visual Assessment

The structure used in this EIAR document is the Grouped Format structure and is summarised below:

No.	Chapter	Prepared by
1.	Introduction	Brock McClure
2.	Site Context	Brock McClure
3.	Development Description	Brock McClure
4.	Consideration of Alternatives	Brock McClure
5.	Population and Human Health	Brock McClure
6.	Biodiversity	Scott Cawley
7.	Land & Soils	Waterman Moylan
8.	Water	Waterman Moylan
9.	Noise and Vibration	AWN Consulting
10.	Air Quality and Climate	AWN Consulting
11.	Wind and Microclimate	BFluid
12.	Landscape and Visual Impact Assessment	ARC Architectural Consultants
13.	Material Assets – Traffic and Transport	Waterman Moylan
14.	Material Assets – Utilities	Waterman Moylan
15.	Material Assets – Waste Management	AWN Consulting
16.	Archaeological, Architectural and Cultural Heritage	IAC
17.	Daylight and Sunlight	ARC Architectural Consultants
18.	Risks of Major Accidents and Disasters	Brock McClure
19.	Interactions	Brock McClure
20.	Summary of Mitigation Measures	Brock McClure
21.	Competent Persons Table	Brock McClure

Table 1.2 - Format and Structure of the EIAR

Methodology Employed to Evaluate Each Environmental Topics

An outline of the methodology employed consistently in each chapter of the EIAR to examine each environmental topic is provided below:

Introduction	Provides an overview of EIAR and relevant terms of reference.
Study Methodology	The study methodology outlines the method by which the relevant information has been gathered and compiled.
The Existing Receiving Environment (Baseline Situation)	The receiving environment details the baseline condition for the site and references, the context, character, significance and sensitivity of the baseline receiving environment. Any factors for consideration in the immediate area are set out.
Characteristics of the Proposed Development	The characteristics of the development are set out as they relate to each discipline and should include reference to site location, size, design and appearance of the project, use of natural resources, the production of waste, emissions and nuisances.
Potential Impact of the Proposed Development	This section provides a description of the specific, direct and indirect, impacts that the proposed development may have. This is provided with reference to both the Receiving Environment and Characteristics of the Proposed Development sections while also referring to the (i) magnitude and intensity, (ii) integrity, (iii) duration and (iv) probability of impacts. The assessment addresses whether the impacts are direct, indirect, secondary or cumulative in nature, it also looks at the timescale of such impacts e.g. are they short, medium, long-term, and are they of a temporary, permanent, continuous or intermittent nature, and are they positive or negative impacts. The impact interactions are also addressed.
Potential Cumulative Impact	This section allows for a qualitative assessment of the addition of many minor or significant effects, including the effects of other projects, to create larger more significant effects.
Do Nothing Scenario	In order to provide a qualitative and equitable assessment of the proposed development, this section considers the proposed development in the context of the likely impacts upon the receiving environment should the proposed development not take place
Risks to Human Health	This section will consider of human health effects resulting from the construction and operation of a project and will concern the commissioning, operation and decommissioning of the project. The assessment of impacts on population and human health will refer to assessments of those factors under which human health might occur, as addressed elsewhere in the EIAR e.g under the environmental factors of air, water, soil etc.
Mitigation Measures	Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential impacts of the scheme. This includes avoidance, reduction and remedy measures as set out in Section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified.
Residual / Predicted Impacts of the Proposal	This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, transboundary, short, medium and long- term, permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied.
Monitoring	This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring.
Reinstatement	While not applicable to every aspect of the environment considered within the EIAR, certain measures may need to be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment

Interactions	This section provides a description of impact interactions together with potential indirect, secondary and cumulative impacts
Difficulties Encountered in Compiling	This section provides an indication of any difficulties encountered by the environmental specialist in compiling the required information.
References	This section will include the list of sources used to complete the assessment.

Table 1.3 - Methodology for Evaluation

2 Site Context

The application site extends to c.1.8 ha and is strategically located at the junction of Brewery Road (N31) and the N11 at Stillorgan, Blackrock, Co. Dublin. The site contains the following buildings:

- ‘The Lodge’
- ‘Former Oaktree Business Centre’
- ‘The Grange Select Marketing Suite’ and
- ‘Nos. 2 and 3 The Grange Cottages’

The lands subject of this planning application and EIAR are associated with an existing development known as ‘The Grange’, located along the N11 and Brewery Road (N31) in Stillorgan, Co. Dublin. The Grange is a residential development comprising 506 units and the current development site is located to the north west of the existing development.

The subject site is a prime underutilized suburban site with excellent connectivity to public transport and major areas of employment. The site is located within 2km of Sandyford Business Park, Central Park and South County Business Park and within 1km of Stillorgan Village Centre.

The site is located adjacent to the N11 Quality Bus Corridor. Bus services to the City Centre run every 6 minutes and the journey time to St Stephen’s Green is 31 minutes. The Sandyford LUAS stop on the Green Luas Line is located within a 10 – 15 minute walk of the site, with a journey time to the City Centre of 22 minutes.

Buildings on site comprise the following:

- The Lodge at Brewery Road Access Point (which is proposed for demolition)
- The Grange Select Marketing Suite and associated buildings along the N11 (which is proposed for demolition)
- Former Office Building known as Oak Tree Business Centre (which is proposed for demolition)
- Nos 2 & 3 The Grange Cottages (which are retained as part of this application)

The 3 buildings proposed for demolition in this case have a total floor area of c.1,398 sq m.

The Lodge

The Lodge building is a vacant 2 storey residential unit, constructed under the previous permissions for development of The Grange.

Former Oaktree Business Centre

The Former Oaktree Business Centre is a vacant two storey commercial building, dating from the 1980s. It is at the end of its functional life and is not of any particular architectural merit.

The Grange Marketing Suite

The Grange Marketing Suite is a single storey building constructed for temporary purposes. The building is no longer in use.

Context for Nos. 2 & 3 The Grange Cottages

Whilst the current application site includes Nos. 2 and 3 The Grange Cottages, the current proposal does not propose any substantial works to these units. We note that landscape proposals are delivered to improve the appearance of these units.

The applicant's land ownership extends around No.1 Grange Cottages, which is occupied and in separate ownership. In this regard, the protection of established residential amenity has been a primary consideration for the design team in preparing the subject scheme. The Bord should note the fact that the applicant has engaged directly with the resident of No.1 Grange Cottage since acquisition of the subject lands and has provided regular updates on the progress of a new residential scheme for the lands proximate to The Cottage. The applicant's commitment to managing the overall development, improving Nos. 2 and 3 Grange Cottages in the short term, whilst also carrying out critical landscaping works has been welcomed and the resident of No.1 Grange Cottage is fully aware of the developing SHD scheme.

Evidently, the applicant does not control the entirety of remaining lands to provide consolidated development to the N11 frontage. This current application therefore relates to a Phase 1 development on lands that can deliver critically required residential units. OMP Architects have developed a phased Masterplan approach to provide an indicative future context for consideration by An Bord Pleanala, which is enclosed herewith. There has been a carefully considered design approach to development to ensure that the subject application can be delivered without compromising existing amenity or the future potential for development addressing the N11.

The Masterplan successfully integrates this new phase of development with the existing built fabric of The Grange. The approach has been to set the blocks around a central garden, which complements the existing scheme and delivers significant enhancements to the public realm.

We note specifically that the 287 residential units proposed are being delivered in addition to 506 permitted residential units at the existing Grange residential development. Furthermore, it is anticipated that there is potential for a further phase of development at this site and we note specifically the potential for an additional c. 250 units in this regard. Overall, it is considered that the future development of this site has potential for an additional c. 500 units.

We can confirm that there is 1 recent application of relevance to the site subject of the current residential proposal, which is further detailed below. The outcome of the planning process in 2007 has directly informed the design team on the key issues to be addressed in the current proposal.

Reg. Ref. D07A/1771 & PL06D.228499

On **21 December 2007**, a planning application was lodged for development generally comprising 87 no. residential units, a leisure centre (2,157 sq m) and 139 no. car parking spaces.

The proposal took the form of 2 residential blocks:

- H1 – 5 storey over basement level
- H2 – 9 storey over basement level

The extent of the site layout is set out below.

3 Description of Development

The development will consist of the demolition (total c.1, 398 sq m GFA) of 'The Grange Select Marketing Suite' (1 storey), 'Oaktree Business Centre' (2 storeys) and 'The Lodge' (2 storeys); and the construction of a new residential scheme of 287 residential units; residential tenant amenity space of c.961.5 sq m; a crèche facility of c.658 sq m; and a substation of c.96.5 sq m in the form of 6 new blocks (Blocks H, J, M, N, P and Q) ranging in height from 1 - 11 storeys as follows:

The residential development provides for 287 no. units (19 no. studio units, 125 no. 1 bed units and 143 no. 2 bed units) in Blocks H, J, M and N as follows:

- Block H (7 - 11 storeys from Brewery Road) comprising 99 no. apartments (6 no. studios, 50 no. 1 bed units and 43 no. 2 beds);
- Block J (5 - 10 storeys from Brewery Road) comprising 75 no. apartments (36 no. 1 bed units and 39 no. 2 bed units);
- Block M (4 - 9 storeys from podium) comprising 73 no. apartments (38 no. 1 bed units and 35 no. 2 bed units); and
- Block N (6 - 7 storeys from Brewery Road) comprising 40 no. apartments (13 no. studios, 1 no. 1 bed units and 26 no. 2 bed units).

Each residential unit has associated private open space in the form of a balcony/terrace/roof terrace.

The following residential tenant amenity space, crèche facility and substation proposals are also delivered:

- Blocks H (7 - 11 storeys) also contains a residential tenant amenity space of c.961.5 sq m. This area includes a gym space, male and female changing areas, accessible changing areas, a cinema room, entrance lobby, lounge areas, kitchen/dining areas, games area, management suite, 4 no. meeting rooms, co-working space, security/parcels area, storage areas, tea station, toilets, letter box area and all associated extraneous areas, all of which are areas dedicated to use by future tenants.
- Block P (3 storeys) provides for a crèche facility of c.658 sq m and associated outdoor play area in the form of a roof terrace of c.222.9 sq m.
- Block Q (1 storey at basement level/level 00) provides for an ESB substation of c.96.5 sq m.

A basement area (total c.3,324.8 sq m) is also proposed below Blocks H, J & M at Level 00. A total of 100 car parking spaces (16 at surface level and 84 at basement level), 596 bicycle spaces (518 at basement level and 78 at surface level) and 5 motorcycle spaces (all at basement level) are proposed. Waste Management areas and plant areas are also located at basement level.

Public open space is also proposed in the form of external residential amenity spaces, play areas, courtyards, gardens and trim trails (c.10,465 sq m). Provision is also made for pedestrian connections to the adjoining park to the south west, the N11 Stillorgan Road to the north east and the existing 'The Grange' development to the south east.

Nos. 2 and 3 The Grange Cottages (single storey) are retained within the current proposal and works to these residential dwellings relate solely to landscape proposals. No works are proposed to the structure or layout of these units.

The development shall be accessed via the existing vehicular access point from Brewery Road. It is proposed to reconfigure the alignment of this vehicular access point to facilitate the proposed development and provide for improved access and egress for the overall 'The Grange' development.

The associated site and infrastructural works include provision for water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works; boundary treatment; internal roads and footpaths; and electrical services.

The Nature of any Associated Demolition Works

The properties proposed for demolition include:

- The Gate Lodge at Brewery Road Access Point
- The Grange Select Marketing Suite and associated buildings along N11
- Office Building known as Oak Tree Business Centre and associated buildings

Demolition extends to c. 1,398 sq m and buildings are not protected nor are they considered to be of any architectural merit. Demolition of the said buildings is a significant prerequisite in release of the site for residential development.

The Grange Cottages

We note at this time that Nos. 2 and 3 The Grange cottages will be retained as part of this permission and the only works proposed to these units relate to landscape proposals.

Predicted Impact of the Construction Stage

Density

Residential Density proposed at this site is set out as 287 units on a 1.8 ha site. This equates to 159.4 units per ha and is considered appropriate given the proximity of the site to public transport at the N11 bus corridor and the presence of the Sandyford Green Luas line stop c. 700m to the south west of the site. A density of this nature is supported by national policy which is aiming to deliver increased height and densities at appropriate locations

Height

Heights of 1-11 storeys are proposed and these heights are considered appropriate to the site and surrounding context framed by existing developments at The Grange and Beechwood. The heights proposed are supported by national policy and are reflective of existing heights in the immediate context (The existing Grange Development and Beechwood development on the opposite side of the N11).

Land Use Requirements

The proposed development provides for a “Build to Rent” development with a mix of studios, one bed and two bed units. The proposed development provides for a mix of studio units, 1 bed units and 2 bed units.

The site is identified by the relevant statutory context as being capable of accommodating residential development of the form and quantum currently proposed, by way of the residential zoning governing the site. We are of the opinion that the proposal will not have any significant effect on the surrounding uses and that the proposed development has been well designed internally to ensure that residential amenities within the development are protected.

Access

We refer An Bord Pleanála to the Traffic and Transport Assessment Report prepared by Waterman Moylan, which includes the following comments;

“The subject site will be accessed via the existing access road to The Grange off Brewery Road. It is proposed to re-configure the alignment of this access road as part of the development proposals. The site access from Brewery Road is a 50 kmph zone. A 2.4mx 49m sightline, which follows the requirements of the Department of Transport ‘Design Manual for Urban Roads and Streets’ (DMURS) recommendation for a road of design speed of 50 km/h, is currently provided at the

access road junction onto Brewery Road. No development works will infringe upon this existing sightline provision as shown on Waterman Moylan Drawing 18-049- P110.

The access will be utilised by all modes of transport travelling to/from the proposed development.

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. The proposed development has been designed as a DMURS compliant scheme. A separate Statement of Consistency with DMURS is included under a separate cover. Cycle paths have been designed in accordance with the National Cycle Manual.

Open space and Landscaping

The landscape design approach for The Grange is to treat it as a playful and soft / green landscape completing the existing Grange Development. Lush planting and formal hedge structures give definition to a bold textural planting palette creating a soft but distinct separation between the public internal street and the residential buildings and their private and semi-private spaces. The hard landscape and planting palette will be appropriately coordinated with paving bands to create a designed continuity throughout the development. This paving strategy is also provided to enhance way-finding within the scheme.

Car and Cycle Parking

The development will provide 92 car parking spaces for the proposed 287 apartments. This equates to 0.32 car parking spaces for each apartment. The parking for the Crèche has been reduced on the basis that the Crèche will primarily serve the existing Grange development, and this proposed development. It is anticipated that those employed in the Crèche will be living in the locality and will be encouraged to travel to and from work by sustainable modes of transport. There are 8 No. dedicated spaces provided for the Crèche which will be used for drop-off and collection.

Future Phase 2

The Design Team has considered the indicative layout of any future development that may be feasible should lands become available. As identified on the masterplan detail submitted herewith, there is potential for a Phase 2 development. The current proposal delivers 287 residential units, a creche facility and tenant amenity space together with 100 car parking spaces. It is anticipated that a future Phase 2 development has the potential to deliver on an additional c. 250 residential units, depending on the form and design approach.

Appropriate EIAR Screening will be completed as part of any future and separate application that may be progressed for Phase 2 stage.

The design and layout of the proposed development have been prepared to fully comply with the rigorous design standards and specifications applicable to this form of development. The applicant has drawn

4 Consideration of Alternatives

The alternative locations, layout and designs for this project and proposal are set out below.

Alternative Locations

The site was acquired by the applicant in 2017. The site represented a suitable site for development, being zoned for residential development under the Dun Laoghaire Rathdown County Council Development Plan 2016-2022, with 'residential' being permitted in principle under Objective A, which governs the subject site.

The applicant considered the following elements in selection of the site for development:

- The site offered significant opportunity to deliver significant residential development on an underutilised suburban infill site in close proximity to existing services at Stillorgan village.
- The subject site has excellent connectivity to public transport and major areas of employment.
 - Bus - The overall site is located adjacent to the N11 Bus Priority Route / Quality Bus Corridor. Distances to the nearest bus stops are less than 5mins walk. Travel time to St. Stephen's Green by bus is 25 mins.
 - Luas - The Sandyford LUAS stop is a 14min walk from the proposed development. This stop is on the Green Luas line and journey time to St. Stephen's Green is 26 minutes.
 - Employment Areas - The site is located within 2km of Sandyford Business Park, Central Park and South County Business Park. The site is also within 1km of Stillorgan Village Centre.
- The site is not subject to any statutory nature conservation designation.
- The site is associated with the existing Grange development and offers an opportunity to complete the overall Grange development.
- The site has capacity to absorb development without significantly effecting the existing landscape and visual characteristics of the surrounding area.
- The site is not susceptible to flooding.
- The size of the site at 1.8ha offers a significant opportunity to deliver infill residential development along a key public transport corridor which supports the provisions of the National Planning Framework.
- The site is located along a key public transport corridor (the N11); is proximate to the Green Luas line and a number of employment areas and is therefore opportunely located to deliver on the build to rent accommodation model.

Having considered the above, the application site was considered the preferred site for the current build to rent accommodation proposal.

Alternative Layout & Designs

The design approach for the proposed development is present in the Design Statement prepared by O'Mahony Pike Architects.

The subject proposal has evolved during the design phase of the project in response to input from the appointed EIAR team; advice received at the pre-planning stage of the process with Dun Laoghaire Rathdown County Council; advice received during pre-planning discussions with An Bord Pleanala; and the formal opinion that issued from An Bord Pleanala under Ref. ABP-304147-19.

This process highlighted matters that informed the consideration of alternative layouts and designs including set back distances, open space provision, permeability and connections, height of the proposed blocks etc.

The evolution of the design and various layouts and design considered are summarised below.

Option A

Positives:

- Compact, consistent volumes.
- Repetition and buildability.
- Large distance between existing Jade building and block M.
- Cons:
- Overlooking and overbearing of the existing Grange Cottage.
- Continuous overbearing elevation on Brewery Road.
- No permeability to Brewery Road.
- Restrict possibilities of future extension into lands along the N11.

Negatives:

- Overlooking and overbearing of the existing Grange Cottage.
- Continuous overbearing elevation on Brewery Road.
- No permeability to Brewery Road.
- Restrict possibilities of future extension into lands along the N11.

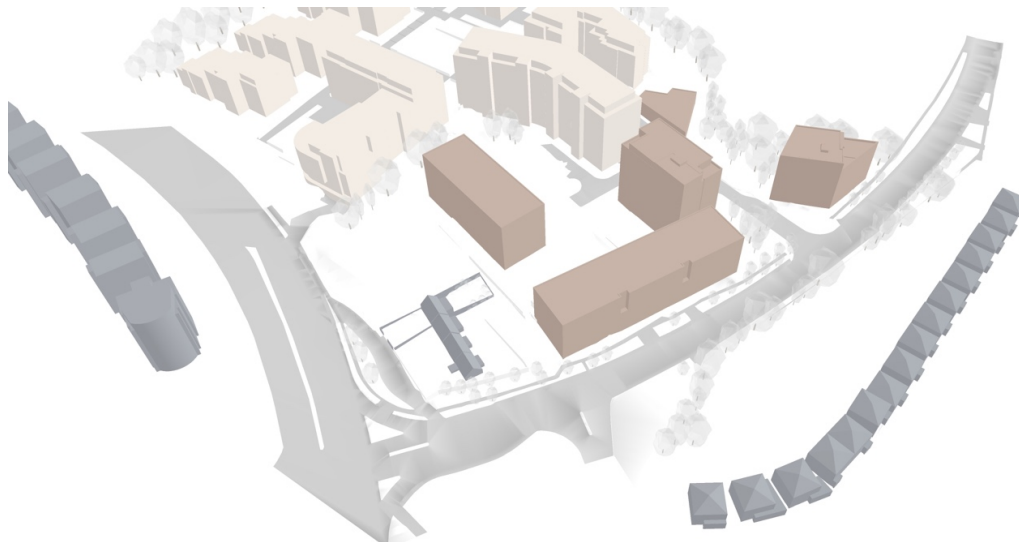


Figure 4.1 - Option A

Option B

Positives:

- Compact, consistent volumes.
- Repetition and buildability.
- Large distance between existing Jade building and block M.
- Allows for a large shared open space should lands along the N11 be developed.

Negatives:

- Less overlooking of the existing Grange Cottage but volume of block M still potentially overbearing.
- Continuous overbearing elevation on Brewery Road.
- No permeability.

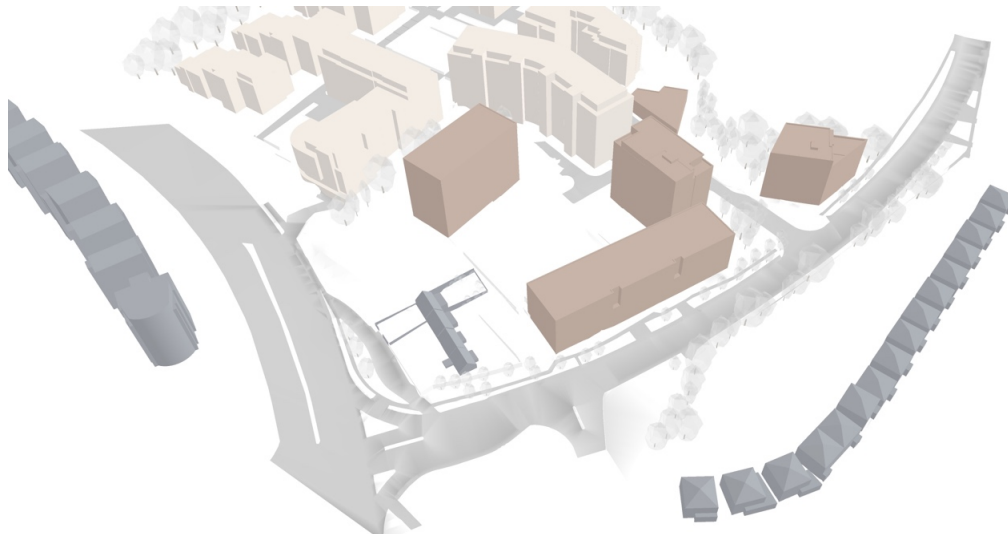


Figure 4.1 - Option B

Option C

Positives:

- Modulation on Brewery Road provides animation and overlooking.
- Blocks M and J are lowered near the Grange Cottage, reducing visual impact and minimising overlooking.
- Better permeability of scheme along Brewery Road.
- Cons:
- Series of courtyards and podium make universal access difficult
- Lift and elevated walk provided near Grange Cottage could have a negative impact on Cottage's amenity.

Negatives:

- Series of courtyards and podium make universal access difficult
- Lift and elevated walk provided near Grange Cottage could have a negative impact on Cottage's amenity.

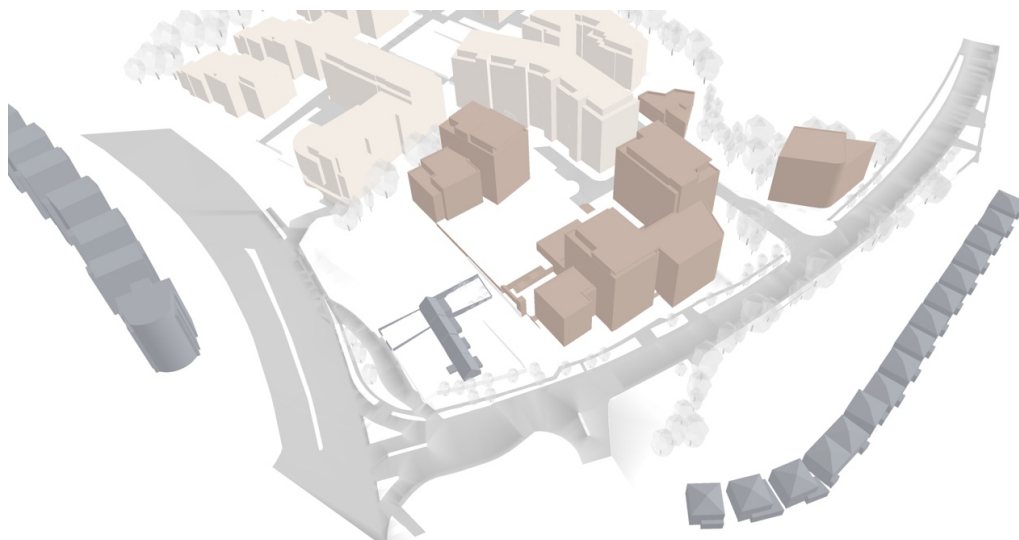


Figure 4.2 - Option C

Current Scheme

Positives:

- Modulation on Brewery Road provides animation and overlooking.
- Blocks M and J are lowered near the Grange Cottage, reducing visual impact and minimising overlooking.
- Simplified lowered podium allows for full universal access.
- Lowered podium protects the Grange Cottage's amenity.
- Good permeability of scheme along Brewery Road. Steps and lifts provided at each entrance point.
- Buildings set back provide wider landscaped area along Brewery Road.
- Extra pedestrian landscaped connection to N11, and consistent levels along pedestrian spine, from N11 to existing park.

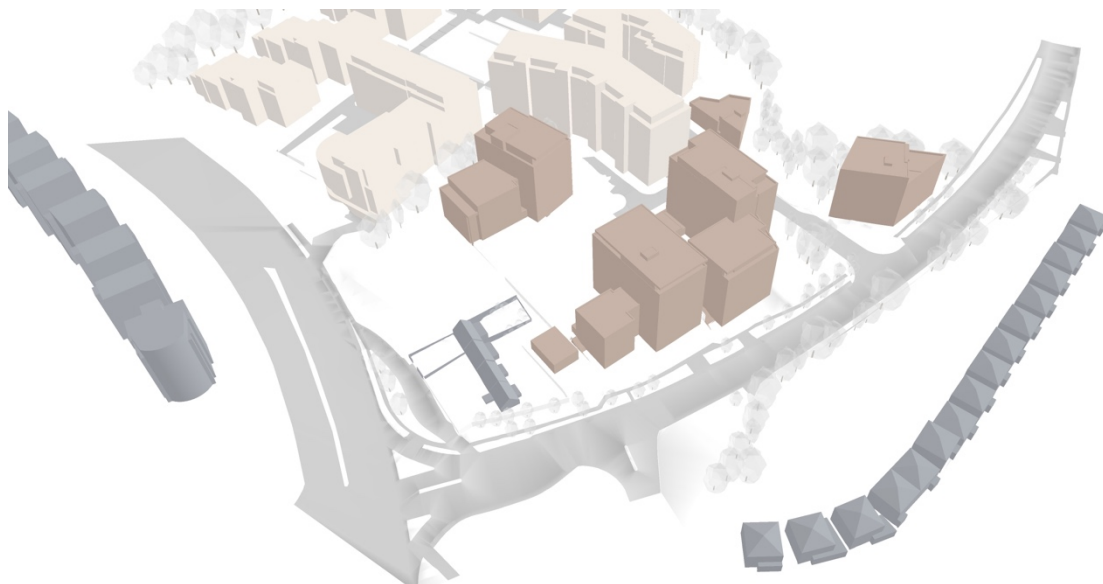


Figure 3.4 - Current Option

Conclusion

The proposed layout was carefully developed, taking into consideration the existing neighbouring properties, the conditions along Brewery Road and the N11, as well as local environmental conditions such as orientation, wind, noise and overshadowing.

The scheme aims to maximize the efficiency and quality of the proposed apartments blocks while minimizing the impact on existing properties, improve the landscaping of Brewery Road and provide a coherent, pleasant and fully accessible permeable public realm that will stitch together the existing Grange Development, Brewery Road, the N11 Stillorgan Road and the existing public open space to the South East. Consideration was also given to potential future development of the lands to the north east, around the cottage not in the ownership of the applicant.

5 Population and Human Health

The assessment of Population & Human Health is contained within Chapter 5 of this EIAR.

The following provides a description of the receiving environment, with a focus on population, land use, housing, employment and local amenity.

The electoral division of Stillorgan - Leopardstown is outlined in blue in the map below, which the site indicated with a yellow star. The total population of the electoral district in 2016 was 2,714. This represents a population increase of 10.6% (289) from the 2011 Census figure. Approximately 64% of the population of Stillorgan-Leopardstown was of working age (19-64) as the time of the 2016 Census, which is slightly higher than the c. 60% recorded for the state and county. The dependency ratio for the area (ie those not in the workforce – aged 0-18 or over 65) is lower than the county and national figures at 36% of the population.

The site is located in Stillorgan, which is an area that can be characterised as a well-planned and settled mature residential area. The area, which was formerly a village, is now a suburban area of Dublin. Stillorgan is located in Dun Laoghaire Rathdown and contains many housing developments, shops and other facilities, with the old village centre still present.



Figure 5.1 - Zoning

The subject site is primarily zoned ‘A’ - **“To Protect and/or improve residential amenity”**.

A small portion of the site is zoned ‘F’. This has the objective ‘to preserve and provide for open space with ancillary active recreational amenities’.

The subject site is located in the area of Dun Laoghaire Rathdown. The Dun Laoghaire Rathdown development plan 2016-2022 outlines that in relation to housing, its core strategy has been formulated from the available population and household target projections.

The Governments *Rebuilding Ireland - Action Plan for Housing and Homelessness* set a target to construct 25,000 homes annually to 2021. According to the CSO Q3 of New Dwelling Completions Report, 18,072 new dwellings were completed in 2018. This is almost 7,000 dwellings below Rebuilding Ireland’s annual target. Using the Eircode Routing Key, the CSO reports that 369 no. of these completions are recorded in Dublin 18.

Within the electoral division of Stillorgan - Leopardstown, of a total 1,739 people eligible for work, 1,322 (64%) people were recorded as being within employment in Census 2016. The industries that people are engaged in work in are illustrated on the Figure below. Commerce and Trade represents the largest sector, followed by Professional Services. The unemployment rate as of December 2018 stood at 5.5% of the population. The unemployment rate was at 4.6% in July 2019.

In 2016 there were 1,795 commuters who lived in the Electoral Division of Stillorgan-Leopardstown (total resident population of 2,714). There were 1,071 commuters who lived in the Electoral Division of Stillorgan-Leopardstown but worked elsewhere. There were 438 commuters who travelled into this electoral division to work. This resulted in a net flow of -633 commuters.

The Economic and Social Research Institute's (ESRI) Quarterly Economic Commentary Summer 2019 notes that 'notwithstanding the observed slowdown in international macroeconomic conditions, the Irish economy continues to experience robust economic growth in 2019' (ESRI, 2019). The report further states that heightened uncertainty, however, is still very much a feature of present economic conditions due to the ongoing issue of Brexit and the potential nature of the UK's exit from the European Union. Uncertainty from international sources is also highly relevant in terms of investment decisions made domestically.

While this proposal is providing a childcare facility, a childcare facilities audit was carried out in July 2019 as part of this application to determine the capacity of existing childcare operators in the area. We note that 11 no. existing facilities were identified within a 2km radius. The childcare audit demonstrates that there is a limited number of childcare places remaining for future children. The demand generated by the existing development in site in combination with phase 1 and phase 2 equates to 82 childcare places. It was therefore decided to provide a childcare facility that would cater for the generated demand of this proposal and future populations.

Stillorgan has a wide range of health care facilities, childcare facilities and educational facilities. There are also a number of community facilities including parks, playgrounds and libraries. They also facilitate many services for the community including, sports club, hobbies & activity centres and leisure centres.

This section provides a description of the specific, direct and indirect, impacts that the proposed development may have in a 'do nothing scenario', and during both the construction and operational phases of the proposed development.

Impact Assessment

Were the development to not proceed, the present state of the subject site would remain. The subject site has been zoned to fulfil a specific housing need by 2023. As such, a do-nothing scenario would mean that this objective of the Development Plan would not be met, and some 287 no. households would remain uncatered for.

As such, the impact of the development not proceeding on population profile and trends in the area would be negative. Furthermore, the positive nature of the development in terms of its location in a centre of employment, and therefore the associated increase in sustainable commuter trips in the area, would be lost.

There are currently no persons residing on the subject site, which is currently mostly greenfield. The site was previously the subject of a development proposal that has not been completed. In its current situation, the subject site is an eyesore and detracts from the aesthetic and amenity of the area. Where the development does not proceed, this scenario would continue and the site would remain in its current state. As a result, this residentially zoned land would not contribute to the housing unit targets set out in the *Dún Laoghaire - Rathdown County Development Plan 2016-2022*. It would also continue to significantly detract from the amenity of the area. The impact of a do-nothing scenario would therefore be negative in terms of local residential amenity and in terms of meeting targets for household growth.

If the proposed development does not go ahead, it is likely that the subject site would remain vacant in the short to medium term. The subject site is a significant landbank at a strategic location and left undeveloped for any significant period it would likely go into decline. Vacant sites can have adverse effects on the character of an area by means of urban blight and decay. Vacant sites often attract anti-social behavior which can have a negative effect on the local population.

As the subject site as a greenfield the current levels of employment required to maintain the site (security personnel and occasional maintenance) would remain steady and the subsequent impact on employment would be neutral.

If the development did not proceed, there would be no impact on commuting patterns in the area as the proposed development does not provide any additional transport infrastructure services.

At the construction phase of the development there will be a neutral impact on the population trends and profile for the area as no additional persons will be housed on site.

The construction phase of the development is not anticipated to provide any impact on the quantum of or access to housing in the area. The residential amenity of the area will be unavoidably affected during the construction phase due to the works taking place. This impact is not considered to be significant however.

The proposed development complies with the statutory land-use zoning. Development of the subject site is in accordance with the objective to achieve compact growth contained within the National Planning Framework and will realise the efficient use of currently-underutilised brownfield land and higher housing density that is well served by public transport.

In light of national policy, it is likely that the impact of this development would have a significant positive effect that will achieve local and wider county, regional and national objectives.

It is anticipated that at the peak of construction there will be a large workforce employed. These construction workers will likely be recruited from Dublin and the wider metropolitan area. The multiplier effect arising from these additional construction jobs will also lead to an increase in employment in local businesses providing services to construction workers. As a result, the project will have a positive impact on employment numbers in the area during the construction phase.

During the construction phase the site will be accessed via Brewery Road. A Construction Management Plan is required in accordance with *County Development Plan 2016-2022*. This sets out the mitigation measures to avoid or reduce the risk of environmental effects on human beings and human health during the construction phase. The Plan includes a section which covers the Preliminary Traffic Management Plan. Further information on this is outlined in Chapter 13 of this EIAR – *Material Assets, Traffic and Transportation*.

Based on the figures provided for Phase 1 (772 person population), we can estimate that the demand for primary school places would equate to c.93 no. pupils (12% of the total population) and the demand for post primary school places to 42 no. pupils (5.48% of the total population). It is submitted that this demand can be absorbed by the current schools capacity of the area and no further educational provision will be required in the context of this proposal.

A potential risk to human health due to the associated works during construction is the direct contact, ingestion or inhalation of receptors (i.e. construction workers) with any soils which may potentially contain low level hydrocarbon concentrations from site activities (potential minor leaks, oils and paint).

A number of temporary risks to human health may occur during construction phase related to noise, dust, air quality and visual impacts which are addressed in other sections of this EIAR. Traffic impacts are considered to be negligible due to the implementation of mitigation measures identified.

Construction phase noise and vibration emissions will be temporary and transient and will be managed so as to minimise impact to population and human health by complying with all relevant guidance, as such the impact will be short-term and have a slight impact overall.

There are potential implications for the local populations if there are disruption to utility services during the connection of the new services to the proposed development. Disrupt the existing services.

The proposed development will consist of 287 no. residential units/households. Using the local average household size indicators from Census 2016 for this electoral division (2.69), this may result in a projected population of approximately 772 no. persons. Using the average household figures for the state (2.75), this may result in a projected population of approximately 789 no persons. In terms of analysis for EIAR purposes, the larger population figure is used to assess impact. This will result in a sizeable addition to the emerging Stillorgan-Leopardstown district. This is considered significant and positive, particularly in the context of current housing demand, and also taking account of the location's access to places of employment.

The proposed development will result in the addition of 287 no. units to the supply of housing in the Stillorgan-Lepordstown area. These will be a mixture of studios, 1, and 2 residential units.

The addition of these proposed units will contribute to the housing unit target outlined in the *Dún Laoghaire-Rathdown County Development Plan 2016 - 2022*, which states that a net requirement of approximately 30,800 no. new units are required over the lifetime of the plan. This equates to an average requirement of approximately 3,080 no. new residential units per annum 2022.

The proposed development will deliver 287 no. residential units of which 29 no. will be for the purposes of Part V, social housing.

In light of the existing housing crisis, it is considered that a high-density development at this location would result in a likely significant positive impact as it would realise the objective of compact urban growth through the efficient and effective use of zoned and services landbank to provide much needed housing for future populations.

The proposed development will provide housing for a potential number of approximately 772 no. persons, when using average household figures for the surrounding electoral divisions. Given the multitude of large employment centres within close proximity to the site, the existence of significant transport infrastructure providing access to other it is likely that future residents of the scheme would work within close proximity to nearby employment centres. The multiplier effect arising from these additional residents using local services and purchasing goods at local businesses will also lead to an increase in employment in those businesses, which meet this demand.

The Traffic Assessment submitted by Waterman Moylan Consulting Engineers that traffic generated by the proposed development will be relatively low and is not expected to result in a significant impact.

No human health risks associated with long term exposure to contaminants (via. direct contact, ingestion or inhalation) resulting from the proposed development are anticipated

Impacts to air quality and climate are predicted to be imperceptible during the operational phase of the proposed development.

During the operational phase, the development will alter the landscape to some extent. However, the impact of the proposed development on the visual environment is likely to be largely restricted to the local area surrounding the application site, from elevated locations, across open foregrounds or at the ends of streets aligned towards the application site.

Operational phase noise will also be managed to achieve relevant noise limit values and is predicted to meet all such requirements. No operational phase vibration impacts are predicted. Therefore, the operational phase noise impacts will be neutral for the life of the development.

The potential cumulative impacts of the proposed development on population and human health have been considered in conjunction with the ongoing changes in the surrounding area.

The cumulative impact of the proposed development will be a further increase in the population of the wider area. The previously brown field lands will provide for 287 no. new 1 and 2 bed residential units. This will have a moderate impact on the population (human beings) in the area. This impact is likely to be long term and is considered to be positive, having regard to the zoning objective for the subject lands, and their strategic location in close proximity to high quality, high frequency public transport, and the high level of demand for new housing in the area.

With regard to human health, the cumulative impact of the proposed development in conjunction with other nearby developments will provide for the introduction of high quality new neighbourhoods in the area with a high level of accessibility and amenity. The overall cumulative impact of the proposed development will therefore be long term and positive with regard to human health, as residents will benefit from a high quality, visually attractive living environment, with ample opportunity for active and passive recreation and strong links and pedestrian permeability, with a direct and convenient link to high frequency public transport modes.

A bespoke site Construction Management Plan (CMP) will be prepared by the selected contractor prior to work commencing on site. The main purpose of the Contractors' CMP is to provide a mechanism for implementation of the various mitigation measures which are described in this EIAR and contained

within the Construction and Demolition Waste Management Plan that accompanies this application under separate cover.

The proposed development has been designed to avoid negative impacts on population and human health through;

- The inclusion of a childcare facility within the proposed development;
- Landscaping to mitigate against issues arising from microclimate conditions;
- The inclusion of a comprehensive foul and surface water management system;
- Energy efficient measures; and,
- High quality finishes and materials.

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development.

Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission.

Monitoring of compliance with Health & Safety requirements will be undertaken by the Project Supervisor for the Construction Process.

As noted above, there are numerous inter-related environmental topics described in detail throughout this EIAR document which are of relevance to human health. This chapter of the EIAR has been instructed by updated guidance documents reflecting the changes within the 2014 EIA Directive. These documents are the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) and the Draft Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in August 2017. Therefore, in line with the guidance documents referred to, this chapter of the EIAR focuses primarily on the potential likely and significant impact on Population and Human Health in relation to health effects/issues and environmental hazards from the other environmental factors and interactions that potentially may occur.

Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. However, the reader is directed to the relevant environmental topic chapter of this EIAR document for a more detailed assessment.

No significant difficulties were experienced in compiling this chapter of the EIAR document.

6 Biodiversity

The assessment of Biodiversity is contained within Chapter 6 of this EIAR.

The assessment considered the potential direct, indirect and cumulative impacts on biodiversity within the zone of influence of the proposed development. The assessment was undertaken in line with a number of guidance documents including the *Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

A number of surveys were carried out to describe the baseline biodiversity of the site including:

- Multidisciplinary surveys (comprising habitat surveys, mammal surveys and bird surveys)
- Dedicated badger survey;
- Invasive species survey;
- Bat Surveys; and;
- Breeding bird surveys
- The proposed development site comprised the following habitat types, which follow Fossitt 2000 (Guide to Habitats in Ireland):
- Buildings and Artificial Surfaces (BL3);
- Stonewalls & other Stonework (BL1);
- Spoil & Bare Ground (ED2);
- Recolonising Bare Ground (ED3);
- Refuse and Other Waste (ED5);
- Amenity Grassland (GA2);
- Flower Beds and Borders (BC4);
- Scrub (WS1);
- Ornamental/ Non-native Shrub (WS3);
- Hedgerow (WL1); and;
- Treeline (WL2); and;
- Mixed Broadleaved Woodland (WD1).

There are 16 European designated sites located within 15km of the proposed development. The closest European Sites are South Dublin Bay SAC [000210] and South Dublin Bay and River Tolka Estuary SPA [004024], which are both located c. 2.5km to the north-east of the proposed development site.

A source-pathway-receptor linkage exists between the proposed development site and European designated sites located in Dublin Bay via the surface and foul water networks. During construction, contaminated surface waters could potentially be transferred to downstream European Sites via this connection. Despite this viable connection, as concluded in the Appropriate Assessment (AA) Screening report, the possibility of significant effects on any European sites arising from this linkage during construction or during the operation of the proposed development can be excluded, whether in the context of the development on its own or in the context of any in-combination effects from other plans or projects. Mitigation measures were not taken into account in reaching this conclusion.

The proposed development site does not contain suitable habitat to support any QI bird species, associated with any of the SPAs located within 15km of the site. Therefore, there is no potential for likely significant effects on any SPAs with regards *ex-situ* impacts on QI bird species by means of habitat loss.

No rare or protected species were recorded within the proposed development or environs. However, the highly invasive species, Japanese Knotweed, was recorded on site and this infestation is regarded to be sizeable.

Key sources of potential significant impacts arising from the proposed development have been identified as a result of surface water run-off, vegetation removal, increased artificial lighting and accidental spread of invasive species.

Before implementation of mitigation measures, the proposed development could result in a range of significant impacts, which include:

- Accidental spread of invasive species as a result of construction and ground preparation works;
- Impacts to bats as a result of increased artificial lighting, vegetation and tree removal;
- Impacts to breeding birds via vegetation removal.
- Mitigation measures for impacts include:
- Implementation of pollution prevention measures and adherence to best practice guidelines during construction;
- Implementation of measures to avoid indirect impacts on bats which could be roosting in suitable trees or dense ivy;
- Implementation of specific measures regarding tree felling on site;
- Erection of bat boxes to enhance bat habitat on site post-development;
- Erection of bird boxes to compensate for the removal of suitable nesting habitat;
- Restrictions regarding lighting during construction;
- Implementation of measures to protect trees and treelines which are to be retained;
- Seasonal restrictions regarding vegetation removal and impacts on breeding birds;
- Adherence to the Invasive Species Management Plan which has been prepared for the proposed development site.

Following implementation of mitigation measures, the proposed development will not result on significant residual impacts on any species of flora or fauna, or on any habitats of such species.

7 Lands and Soils

Waterman Moylan Consulting Engineers has been commissioned to assess the likely impact of the proposed development on the soils and geology of the subject site during the construction and operation phases.

In determining the impact of the proposed development on the prevailing geological conditions, key sources of information were consulted, including the Map of the Bedrock Geology of Ireland. The ground is generally made up of a thin layer of topsoil over approximately 1.4m of made ground above a shallow layer of drift geology made up of a brown slightly sandy gravelly clay. Beneath this the site is underlain by a coarse granite.

An extensive site investigation (SI) was carried out within the proposed development site. The purpose of the site investigation was to investigate subsurface conditions.

Laboratory testing was undertaken on selected soil samples and results indicated organic and arsenic content are above the inert limits as well as Asbestos was found in some of the boreholes. A waste classification report is recommended to be carried out to determine the most appropriate disposal options for any soil to be taken off site.

The existing ground will be stripped and excavated as part of the proposed development. As a result, the exposed subsoil and bedrock will be exposed to weathering and the lack of subsoil may give rise to dust after particularly dry periods. Rock excavation will be required for the basement construction which could give rise to increased noise levels.

On completion of the construction phase and following replacement of topsoil and a planting programme, no further impacts on the soil environment are envisaged except for the possibility of contamination of soil from foul water effluent or oil/chemical spills.

Mitigation measures such as wheel wash and road cleaning to prevent the build-up of soils from the development site on the existing blacktop roads will be implemented. Dampening down with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works. Noise attenuation will be used on rock breakers to reduce noise levels.

Due to the proposed mitigation measures during the construction phase, the impact on land and soils is considered not significant

8 Water

Waterman Moylan Consulting Engineers has been commissioned to assess the likely impact of the proposed development on the surrounding hydrological (surface water) and hydrogeological (groundwater) environment both during the construction and operation phases.

In terms of surface water, the site currently drains at an unrestricted rate to a network of surface water sewers on Brewery Road. Furthermore, a review of the Environmental Protection Agency website database classifies the groundwater risk on the subject lands as “Not at Risk”.

The Flood Risk Assessment identifies a risk from fluvial flooding and groundwater flooding. The Flood Risk Assessment provides mitigation measures for these flooding risks which include waterproofing of the basement carpark, among others.

The potential impacts of the proposed development from both a hydrology and hydrogeology perspective at construction and operational stages are outlined in this report. Main impacts during the construction stage arise from excavation activities and its risk of pollution of groundwater and/or watercourses. During operational stage, the greatest impact arises from the increase of impermeable area and the potential risk of higher rates of surface water runoff leading to increased downstream flooding.

In order to minimise the potential impact of the construction and operational phase on the surrounding water environments of the development, mitigation measures will be applied. At the construction stage, a Construction Management Plan (CMP) would be prepared by the appointed contractor. In terms of the operational phase SUDS systems have been designed.

Due to the proposed mitigation measures on both construction and operational phase, the impact on the surface and ground water is considered not significant.

9 Noise and Vibration

The existing noise climate has been surveyed during both daytime and night-time periods and has been found to be typical of an urban area. Prevailing noise levels are primarily due to local road traffic movements.

The potential noise & vibration impact on the nearest noise sensitive locations were assessed for the short-term construction phase and the longer-term impact of the operational phase once the scheme is in operation.

Subject to good working practice during the construction phase and not exceeding any limits proposed within the EIS, it is anticipated that noise and vibration will not cause any significant impact or noise and vibration nuisance and, consequently, will not impact significantly on human health.

During the operational phase, the key potential noise sources including increased in road traffic and mechanical plant noise emissions have been assessed and commented upon. The assessment has indicated that subject to the implementation of the mitigation measures proposed within the EIS, none of these will increase the existing noise climate sufficiently so as to be likely to cause a disturbance. Noise levels during the operation of the proposed scheme is predicted to nominally remain unchanged when compared to the existing scenario and are all within the recommended noise criteria outlined for day and night-time periods.

In line with current best practice a detailed inward noise impact assessment on the proposed residential units within the development has also been completed. Based on the recommended Dun Laoghaire Rathdown County Council guidance, i.e. Professional Guidance on Planning & Noise (ProPG), the assessment outlines measures that have be incorporated into the design, including glazing sound insulation requirements, provision and location of amenity areas etc. that assist in the provision of an appropriate level of amenity in terms of noise.

10 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 development at The Grange, Brewery Road, Stillorgan, Dublin.

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 redevelopment works and the low volume of vehicles and machinery predicted.

The proposed development will not increase operational traffic levels by a magnitude requiring a detailed assessment. As such, it can be determined that the impact to air quality and climate during the operational phase will be long term and imperceptible.

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 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.

11 Wind and Microclimate

A Wind and Micro-climate study have been carried out to identify the possible wind patterns around the proposed development considering mean and peaks wind conditions typically occurring in Dublin. The criteria of Lawson's Wind Comfort and Distress have been adopted to define if a specific area of the development could be comfortable and safe to pedestrians for its designated activity (i.e. standing/walking/strolling).

A total of 18 different wind scenarios have been studied, considering variation of the wind magnitude and directions in line with their frequency of occurrence based on 30 years of historical weather data. In particular, an exceedance of occurrence of 5% of the time was considered in line with the Comfort and Distress criteria. Through the wind assessment it has been possible to highlight, at design stage, areas of concern in terms of downwash/funneling/downdraft/ and to identify critical flow accelerations that could potentially occur. The results of the wind analysis have been discussed with the design team to configure the optimal layout for the Grange Development for the objective of achieving a high-quality environment for the scope of use intended of each areas/building (i.e. comfortable and pleasant for potential pedestrian) and without compromising the wind impact on the surrounding areas and on the existing buildings.

The wind modelling study has been performed through a Computational Fluid Dynamics (CFD) analysis, this numerical methodology simulates the movement of wind within the prescribed area. The simulations have been carried out using the concept of Large Eddy Simulation (LES) and Reynolds Average Navier Stokes (RANS). The assessment has been carried out considering the impact of wind on the following configurations:

- The "Existing Receiving Environment": in this case the assessment has considered the impact of the local wind on the existing area / buildings prior to construction of the proposed development. For this assessment a statistical analysis of 30 years of historical weather wind data has been carried out to find the most critical wind speeds and directions and the frequency of occurrence of the same, furthermore, B-Fluid's weather station was placed on site to record 1 month of wind data for comparison with the historical ones.
- The "Potential Impact of the Proposed Development": in this case the assessment has considered the impact of wind on the existing area including the proposed Grange Development. For this scenario, the analysis has been used to identify the critical areas of the proposed development that required the implementation of mitigation measures.
- The "Potential Cumulative Impact": in this case the assessment has considered the impact of wind on the proposed Grange Development and the existing environment area. For this scenario, the Grange Development has been simulated inclusive of the mitigation measures implemented.
- The prevailing wind directions for the site were identified in the West, West South-West and South with magnitude of approximately 6m/s. In all these directions the development area has been mitigated with the use of tree landscaping.
- The wind micro-climate study carried out on the mitigated layout including the landscaping, has shown that the development has been designed to be a high-quality environment for the scope of use intended of each areas/building (i.e. comfortable and pleasant for potential pedestrian), and from a quantitative point of view, it does not introduce any major or critical impact on the surrounding areas and on the existing buildings. Furthermore, the presence of the existing and urban environment has had a beneficial effect in mitigating the impact of incoming south-west wind, where some funnelling effects was noticed initially. In particular, the following conclusion were made at the end of the CFD wind analysis:
- The proposed Grange Development, implemented with landscaping, will produce a high quality environment that is attractive and comfortable for pedestrians of all categories.
- The surrounding environment, development and mitigation trees properly shields all paths/walkways around and within the development. Pedestrian footpaths are always successfully shielded and comfortable.

- The development Courtyard is generally suitable for long term sitting, short term sitting, standing, walking and strolling activities.
- Shielding conditions in the South-West, South-East, North-East and North-West areas are always acceptable.
- Balconies within the development are comfortable for pedestrian sitting, standing, walking and strolling.
- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings.
- Pedestrian comfort assessment, performed according to the Lawson criteria, have identified the areas that are suitable for different pedestrian activities in order to guarantee pedestrian comfort and maps have been provided within the EIAR Chapter 11. In terms of distress, no critical conditions were found for “Frail persons or cyclists” in the surrounding of the development. No critical conditions have been found for members of the “General Public”.

12 Landscape and Visual Impact Assessment

ARC Architectural Consultants Ltd has been commissioned by the Applicant, KW PRS ICAV acting for an on behalf of its sub-fund KW PRS Fund 10, to carry out an analysis of the visual impacts of the proposed development on lands adjacent to 'The Grange', Brewery Road, Stillorgan, Co. Dublin.

A survey of the potential visibility of the proposed development was carried out having regard to the contents of the *Dun Laoghaire-Rathdown Development Plan 2016-2022* and *Stillorgan Local Area Plan 2018-2024* (including in particular the location of key views and prospects, protected structures and conservation areas). A survey of the potential visibility of the proposed development was carried out by ARC on several dates in August and September 2018. Before visiting the surrounding area, ARC carried out mapping analysis to identify locations surrounding the application site, which would be representative of the extent of visibility of the proposed development, including locations from which views of the proposed development were likely. Photomontages were prepared by ModelWorks Media from these view locations and these photomontages are submitted with this application. ARC had regard to those photomontages in the preparation of this Visual Impact Assessment.

While a prominent site surrounded by development sensitive to visual change (i.e. buildings in residential use), the capacity of the application site to absorb the impacts of buildings higher than that of the surrounding low density residential estates is considerable given the character of the lands at The Grange and, indeed, the opposing site at Beechwood Court, as a cluster of taller and higher density buildings. The impact of the proposed development on the visual environment is likely to be largely restricted to the local area surrounding the application site, from elevated locations, across open foregrounds or at the ends of streets aligned towards the application site. Where streets or urban spaces are aligned towards the site, and where the buildings at the end of these alignments are relatively modest in height, there is a potential for taller elements of the development to be visible above lower intervening buildings. This potential increases with the length of the alignment, but reduces with distance from the site. It follows, that for tall structures¹ to be openly visible in a built up area, they must be seen across an open foreground or at the end of a long vista or alignment. Where visible, the potential impact of the proposed development is likely to be consistent with emerging trends for development on the application site and along the N11 National Primary Route, particularly given that the site already accommodates a ten storey structure.

No ameliorative, remedial or reductive measures are now proposed and so the predicted visual impact on the proposed development and cumulative development at operational and construction stages will be as set out under the potential impact and cumulative impact.

¹ Taller structures meaning structures taller than the prevailing height of the surrounding built environment, which in the case of the wider Stillorgan area is two storeys.

13 Material Assets - Traffic and Transport

Waterman Moylan Consulting Engineers has been commissioned to assess the likely impact of the proposed development in terms of vehicular, pedestrian and cycle access during the construction and operational phases of the proposed development.

As part of the Traffic and Transport assessment, three junctions in the vicinity of the site have been analysed in order to calculate the expected volume of traffic and assess the impact that traffic will have on the operation capacity of the junctions.

The site is located directly adjacent to the junction of N11 Stillorgan Road with N31 Brewery Road. There are cycle lanes along both sides of N11 and controlled pedestrian crossing at southern, western and eastern approaches of the junction. The site is well served by bus routes and cycle lanes. Further details can be found in the Traffic and Transport Assessment.

The subject site will be accessed via the existing access road to The Grange off Brewery Road. It is proposed to re-configure the alignment of this access road to improve the junction layout and forward visibility.

The potential impacts of the proposed development from a transport perspective at construction and operational stages are outlined in this report. Main impacts during the construction stage include noise and dust from heavy good vehicles serving the site and from general earthwork activities. There is also potential for traffic congestion, due to increased heavy good vehicles on the road network. In order to assess the potential impact of the proposed development at an operational stage, a detailed traffic and transport assessment has been prepared and is included with this application. From the traffic assessment it is determined that the traffic impact at the operational stage will be minimal.

In order to minimise the potential impact of the construction and operational phase on the surrounding road network of the development, mitigation measures will be applied. A Construction Stage Mobility Management Plan shall be implemented by the appointed contractor. Moreover, adequate signposting will be located on site to ensure safety of all road users and construction workers and a dedicated construction site access/egress system will be implemented. During the operational phase, a Mobility Management Plan will be prepared for the development to reduce traffic impact and to promote more sustainable modes of transport.

Due to the proposed mitigation measures outlined above, the predicted impact of the proposed development will be temporary and minimised during the construction stage. In terms of the operational stage, there will be a slight increase in the use of the road network by private vehicles and pedestrians/cyclists. However, the Traffic and Transport Assessment demonstrates that the existing network can accommodate these additional trips. In addition, upon implementation of the Mobility and Management Plan the impact of the proposed development will be minimal.

14 Material Assets - Utilities

Waterman Moylan Consulting Engineers has been commissioned to assess the likely impact of the proposed development on the material assets serving the subject lands relating to surface water drainage, water supply, foul sewerage, electricity, gas and telecommunications.

The existing site drains surface water, unrestricted, to the surface water sewer on Brewery Road. There are no underground public surface water pipes within the subject site. It is proposed, as part of the development to restrict the surface water run off from site to greenfield rates via 2 no. Hydrobrakes on site.

The proposed development can drain all foul drainage on site to the existing on-site private drainage system, which eventually drains to the public foul sewer, or directly to the public foul sewer in Brewery Road by gravity. The foul flows from site will increase as part of the proposed development however Irish Water have confirmed that the existing sewer in Brewery Road has capacity to accommodate the increase in foul flows.

There is an existing watermain on Brewery Road to the north of the subject site however a Pre-Connection Enquiry form was submitted to Irish Water on 09th of September 2018 which outlined our proposals for the provision of water supply and the response stated that a new connection from the 200mm MOPVC main on Stillorgan Road approximately 140m from the site will be needed to serve the development. Water demand will increase as a result of the proposed development. However, there is sufficient capacity available in the public water supply network to cater for the increased demand.

Gas Networks Ireland maps show that there are existing gas pipes on Stillorgan Road and Brewery Road. A new gas connection will be made at the eastern boundary of the site on Brewery Road. The exact extent and location of these connections will be agreed with Gas Networks Ireland during the design stage of the project.

The ESB Networks maps show that the site is currently connected to the ESB network on Brewery Road. All works on the ESB supply infrastructure will be carried out in accordance with ESB relevant guidelines.

Eir maps indicate that there are existing Eir services on Stillorgan Road and Brewery Road. A new connection will be made to the existing Eir network at the eastern boundary of the site at Brewery Road. The exact extent and location of these connections will be agreed with Eir during the design stage of the project. All works on the Eir supply infrastructure will be carried out in accordance with Eir's relevant guidelines. All Eir infrastructure will be below ground with the exception of a Fibre Cabinet if required by Eir.

There is a risk to all services during the construction phase of the project. Appropriate mitigation measures such as bunding of fuel and chemical stores to prevent spillages entering the drainage network, scanning for all services during excavation to prevent strike of services and providing silt control measures to prevent run off from entering the drainage network must be implemented during the construction stage.

During the operational stage, appropriate storage of surface water with flow control devices will limit the discharge of surface water from site, reducing the risk of downstream flooding. In addition, there will be an increased demand on other services which can be accommodated by the service provider.

Due to the proposed mitigation measures on both construction and operational phase, the impact of the proposed development on the utilities is considered not significant.

15 Material Assets - Waste Management

AWN Consulting Ltd. carried out an assessment of the potential impacts associated with resource and waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by Dun Laoghaire-Rathdown 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. Soils and stones will require excavation to facilitate site preparation, construction of the under-croft basement, building foundations and access roads and the installation of underground services. The project engineers, have estimated that c. 19,700m³ of excavated material will be generated from the excavations. It is anticipated that this surplus soil material will require removal from site for offsite reuse, recovery, recycling and/or disposal. While excavated concrete will be crushed and reused onsite where appropriate.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (Appendix 15.1) during the demolition and construction phases, which includes mitigation measures, will ensure that the effect on the environment will be short-term, neutral and not-significant.

During the operational phase, waste will be generated from the residents and tenants. A dedicated waste storage area has been selected, for residents, in a location that will maximise efficiency in terms of storage and collection of waste. Waste will be collected directly from the waste storage area or the allocated waste collection point by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal at permitted/licenced facilities. The creche tenant will have their own dedicated waste storage area and there will be conveyed to the allocated waste collection point for collection/emptying.

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, glass and mixed non-recyclable waste as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil, bicycles furniture (Appendix 15.2). 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 15 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.

16 Archaeological, Architectural and Cultural Heritage

This assessment has been prepared on behalf of Kennedy Wilson Europe to assess the impact, if any, on the archaeological, architectural, and cultural heritage resource of a proposed redevelopment at the Grange, Brewery Road, Stillorgan, Blackrock, Co. Dublin (ITM 720402/727199). The assessment was carried out by Ross Waters and Faith Bailey of Irish Archaeological Consultancy Ltd.

The proposed development area is situated in the townland of Galloping Green South within the parish of Kill and barony of Rathdown. The site is bounded to the northeast by the N11; the townland boundary between Galloping Green North and Galloping Green South and to the northwest by the N31; the townland boundary between Galloping Green South and Waltersland.

There are four recorded monuments within a 500m radius of the proposed development. These consist of a church, graveyard, graveslab and ecclesiastical enclosure (RMP DU023-011001-4), c. 340m to the north. The RPS lists five structures within the study area, the nearest comprising of Brookvale House (RPS 1428) c. 95m to the north. There are no ACAs or NIAH Buildings within the study area however the NIAH Garden Survey includes four demesnes within a 500m radius, with the virtually unrecognisable Grange (NIAH Garden DU-50-O-205271) occupying the proposed development area. There are an additional 11 demesne landscapes visible on the OS maps that are not included on the survey.

Ground works associated with earlier phases of development within the site were subject to archaeological monitoring. Nothing of archaeological significance was identified and as such, no potential impacts upon the archaeological resource will occur as a result of the proposed development going ahead and no mitigation measures are deemed to be necessary.

There are no protected structures or NIAH buildings located within the proposed development area. The remains of three derelict cottages in the northern corner of the site, which will be impacted upon by the proposed development area. Given their local heritage significance, this is considered to represent a direct moderate negative impact.

All vegetation will be removed from the three Grange Cottage to be demolished and a written and photographic record made of the structures prior to their demolition. This will be carried out by a suitably qualified heritage specialist.

The remains of a number of demesne walls are located within the proposed development area, formerly associated with The Grange demesne. These may be impacted upon by the proposed development. Given their local heritage significance, this is considered to represent a direct moderate negative impact.

All vegetation will be removed from any sections of the surviving demesne walls to be demolished and a written and photographic record made of the structures prior to their demolition. This will be carried out by a suitably qualified heritage specialist.

17 Daylight and Sunlight

ARC Architectural Consultants Ltd has been commissioned by the Applicant to carry out an analysis of the impact of the proposed development on lands adjacent to 'The Grange', Brewery Road, Stillorgan, Co. Dublin on daylight and sunlight access in the surrounding area.

A three dimensional digital model of the proposed development and, of existing buildings in the area was constructed by ARC Consultants based on drawings and three dimensional models supplied by the Design Team; on drawings and information available from the Dun Laoghaire-Rathdown Council online planning register; and with reference to on-site, satellite and aerial photography. Using the digital model, shadows were cast by ARC at several times of the day at the equinox and presented on shadow study diagrams submitted with this Environmental Impact Assessment Report. ARC also analysed the three digital models of the proposed development and of the existing buildings surrounding the development site using proprietary sunlight and daylight analysis software in order to quantify the likely impact of the proposed development on windows with a reasonable expectation of sunlight and on existing amenity areas and to establish the likely impact on daylight access within chosen sample rooms in buildings in close proximity to the development site.

ARC's analysis indicates that any changes in daylight access occurring as a result of the construction of the proposed development have the potential to be most noticeable within those buildings closest to the proposed development (e.g. existing buildings at Grange Cottages and within the existing development at The Grange). However, ARC's analysis further indicated that the potential for noticeable impacts on daylight access at Grange Cottages and within The Grange was restricted to a small proportion of rooms and that, after the construction of the proposed development, affected rooms would retain the potential continue to achieve a level of daylight access in excess of the levels recommended by relevant guidance on daylight access in buildings. Under a worst case scenario, the potential impact of the proposed development on daylight access within Grange Cottages and The Grange is likely to be consistent with emerging trends for development in the area. Given this, ARC's analysis indicates that the potential impact of the proposed development on daylight access within Grange Cottages and within the existing development was likely to range from none to "imperceptible" to "moderate". ARC's analysis further indicates that the construction of the proposed development is unlikely to result in a noticeable change in daylight access to neighbouring existing buildings at Lawnswood Park and the potential impact is, therefore, likely to range from none to "imperceptible" to "slight". Given that the potential for development to result in impacts on daylight access diminishes with distance, it is the finding of ARC's analysis the proposed development does not have the potential to result in any undue adverse impact on daylight access within buildings in the wider area surrounding the application site.

To the west and northwest, shadows cast by the proposed development have the potential to extend to the rear of a small number of properties at Lawnswood Park for a short time during the morning of the spring, summer and autumn months and during the mornings and early afternoons of the winter months. The potential impact of shadows cast by the proposed development on lands at Lawnswood Park is likely to range from none to "imperceptible" to "moderate" depending on the time of year and on the location of the house relative to the proposed development. Shadows cast by the proposed development have the potential to extend to the rear of Grange Cottages to the north during the evenings throughout the year and have the potential to result in a "slight" to "moderate" impact on sunlight access to the existing houses. However, it should be noted that ARC's analysis indicates that shadows cast by the proposed development do not have the potential to interfere with the capacity of rear-facing windows or rear gardens at Lawnswood Park or Grange Cottages to achieve the recommendations of by relevant guidance on sunlight access to buildings and open spaces.

The potential for the construction of the proposed development to result in material impacts on sunlight access within the existing development at The Grange is relatively low due to the location of the proposed new blocks relative to existing buildings (i.e. the majority of the units now proposed are located to the north of existing residential buildings at The Grange). During the late evening of the autumn, winter and spring months, shadows cast by the proposed Block P have the potential to extend to part of the lower levels of southern facade of the existing Block G. Similarly, during the late evening of the summer months, when the shadows are long, shadows cast by the proposed Blocks N and P are likely to extend to the lower levels of the existing Block G. Shadows cast by the proposed Block M have the potential to extend to parts of the commercial Block F1 during the late evenings

throughout the year. Having regard to the similarity in scale, character and pattern of development of the scheme now proposed to the existing development at The Grange and having regard to statutory planning policy with regard to building height and densification of the urban area, the impact of shadows cast by the proposed development on sunlight access is considered to be consistent with emerging trends for development or “moderate” under a worst case scenario. The construction of the proposed development is unlikely to result in any material change in sunlight access to the existing central garden or any of the other existing principal communal open spaces.

To the north, shadows cast by the proposed development have the potential to result in “imperceptible” to “slight” additional overshadowing of Beechwood Court during the late evenings of the spring and autumn months. During the winter months of November, December and January, shadows cast by the proposal will extend as far as St Brigid’s Church Road (i.e. to Brookvale) and to the northern side of the N11 National Primary Route (i.e. to Beechwood Court and to Farmleigh Avenue) during the afternoons. However, the shadow environment at this time of year is so dense that the potential impact of this additional overshadowing is likely to be “imperceptible”.

The construction of the proposed development has no potential to result in material impacts on sunlight access to the public park to the south, within the meaning of the BRE Guide.

18 Risks of Major Accidents and Disasters

This chapter will identify the types of major accidents / natural disasters that the project is vulnerable to; whether major accidents or natural disasters and the responses to these give rise to significant adverse environmental impacts; the nature of these impacts and the measures needed to prevent or mitigate the likely adverse impact of such events on the environment.

The proposed development has been designed and will be constructed in line with best practice. Major accidents and / or natural disasters are therefore very unlikely. The identification, control and management of risk is an integral part of the design. The following section sets out a risk analysis, which addresses the identification, likelihood and consequence of major accidents and / or natural disasters.

Ranking	Classification	Likelihood
1.	Extremely Unlikely	May occur in exceptional circumstances. Once every 500 or more years.
2.	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence' and/very few incidents in associated organisations, facilities or communities; and/or little opportunity, reason or means to occur; May occur once every 100-500 years.
3.	Unlikely	May occur at some time; and / or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity; reason or means to occur; may occur once per 10-100 years.
4.	Likely	Likely to occur or may occur; regular recorded incidents and strong anecdotal evidence are available; will probably occur once per 1-10 years.
5.	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence are available; Will probably occur more than once a year.

Table 18.1 - Classification of Likelihood (Extracted from DoELG – A framework for major emergency management guidance document 1: A guide to Risk Assessment in Major Emergency Management 2010)

The site is not an area prone to natural disasters. Risks were reviewed through the identification of plausible risks in consultation with relevant specialists. The risks below are considered the most relevant potential risks.

Category	Risk Factor Type	Likelihood
Weather	Storms/Snow	5
Hydrological	Risk from Flooding	1
Geological	Made ground	3
Road	Traffic Accident	3
Industrial Accident	Seveso Site	1
Explosion	Natural Gas	1
Fire	Construction and Operation	3
Building Collapse	Structural Failure	1
Hazardous Substance Escape	Construction	3
Pollution	Construction	3

Table 18.2 - Identification of Key Risks and Categorisation

The likely significant effects are set out below.

Do Nothing Scenario

The potential risk would be low due to vacant nature of the buildings on site.

Construction Phase

The proposal will involve the management of invasive species on site; the excavation of a basement level; traffic management; use of equipment and machinery on site; and scaffolding.

Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution.

In the event of storms or snow, construction activity shall be halted and site secured in accordance with any site risk assessments prepared for adverse weather conditions.

Construction activity will involve a number of potential risks as set out in the construction management plan enclosed herewith from Waterman Moylan Consulting Engineers. A review of the document confirms the potential for Noise and Vibration Sources from mechanical plant; Hazardous Spillages; and Contamination from Dust and Dirt.

Operational Phase

The proposal provides for a build to rent development consisting of 287 units, a residential tenant amenity space and creche facility.

The main risk associated with operational stage is fire. The proposed uses are considered normal hazard fire risks. The uses do not include any hazards, which would be regarded as presenting an increased fire risk. The risk for fire will be that all fire safety measures shall comply with the requirements of Part B (Fire) Of the Second Schedule of the Building Regulations 1997-2017.

The cleaning of windows in the buildings will be undertaken by a specialist contractor and risks of accidents will be minimised as a result.

There is a potential risk associated with the provision of the roof garden for the crèche facility with a risk for falls. The treatment of this garden has been designed to ensure that all users of the space are safely secured. Appropriate boundary treatment is proposed in this regard.

There are no exceptional risks associated with technology.

The Flood Risk Assessment enclosed herewith sets out the following flood risk analysis for operational stage:

Source	Pathway	Receptor	Likelihood	Consequence	Risks	Mitigation Measure	Residual Risk
Tidal	Irish Sea Coastal Zone	Proposed Development	Low	High. Flooding of buildings in basements	Very Low	None	Very Low
Fluvial	Carysfort Maretimo	Proposed	Low	Moderate. water ingress into the building and basements	Very Low	None	Very Low
Pluvial	Private and Public Drainage Network	Development	High	High. Flooding of the buildings and basements	High risk of damage to the building and basements	Appropriate drainage design, over land flood routing and setting of appropriate floor levels	Low
Ground Water	Ground Water Present in the ground seeping through basement walls and floors	Proposed	High	Moderate. Ground water Ingress into Basement	Low	Adequately Waterproofing of basement structure if found necessary.	Low
Human/Mechanical Error	Drainage Network	Development	High	Moderate. Water ingress Into the Building and basements.	Moderate Risk of Damage to the building	Maintenance Strategy	Low

Table 18.3 - Flood Risk Analysis

As the flood risk from all sources can be mitigated, reducing the flood risk to low or very low, the proposed development is considered acceptable in terms of flood risk. The following risk register has been prepared to identify the main risks identified within the construction and operational phases of the development.

Risk No.	Risk Event	Possible Cause
Construction Stage		
1.	Accidents during construction	Traffic Working at Height Fire Ground Water Pollution
2.	Adverse Weather	Snow/Storms/Poor Weather System
Operational Stage		
3.	Fire Following Occupation	Inappropriate Use of Electrical Appliances
4.	Falls	Falling from Roof Gardens Window Cleaning
5.	Flooding	Tidal Fluvial Pluvial Ground Water Human/Mechanical Error

Table 18.4 - Main Risks

19 Interactions

Consideration of impact interactions has been addressed during the preparation of the environmental assessment in each of the individual impact chapters. A summary table of the various interactions is set out below.

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Interaction	Population & Human Health		Biodiversity		Lands and Soils		Water		Noise & Vibration		Air & Climate		Wind & Microclimate		Landscape & Visual Impact Assessment		Material Assets - Traffic and Transport		Material Assets – Utilities		Material Assets – Waste Management		Archaeology, Architecture & Cultural Heritage	
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Population & Human Health	✓	✓	✗	✗	✓	✗	✓	✗	✓	✗	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✗	✗
Biodiversity			✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Lands & Soils					✓	✓	✓	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗
Water							✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗
Noise & Vibration									✓	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗
Air & Climate											✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗
Wind & Microclimate													✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓
Landscape & Visual Impact Assessment															✓	✓	✓	✗	✗	✗	✗	✗	✗	✓
Material Assets - Traffic and Transport																	✓	✓	✓	✗	✓	✓	✗	✗
Material Assets – Utilities																				✓	✓	✗	✗	✗
Material Assets – Waste Management																					✓	✓	✗	✗
Archaeology, Architecture & Cultural Heritage																							✓	✓
<p>✓ - Interaction</p> <p>✗ - No Interaction</p>																								

Population and Human Health

Construction Stage

A bespoke and detailed Construction Management Plan (CMP) has been prepared by Waterman Moylan Engineering Consultants. The main purpose of a CMP is to provide a mechanism for implementation of the various mitigation measures which are described in chapter 20 of the EIAR. The purpose of this report is to summarise the possible impacts and measures to be implemented and to guide the Contractor who will be required to develop and implement the CMP on site.

All personnel will be required to understand and implement the requirements of the CMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.

Project supervisors for the construction phase will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013, and a Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phases.

Adherence to the construction phase mitigation measures presented in this EIAR will ensure that the construction of the proposed development will have an imperceptible and neutral impact in terms of health and safety.

Operational Stage

The proposed development has been designed to avoid negative impacts on population and human health through;

1. The inclusion of a childcare facility within the proposed development;
2. Landscaping to mitigate against issues arising from microclimate conditions;
3. The inclusion of a comprehensive foul and surface water management system;
4. Energy efficient measures; and,
5. High quality finishes and materials.

Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated in to the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development.

1. Monitoring will be undertaken by the Building Regulations certification process and by the requirements of specific conditions of a planning permission.
2. Monitoring of compliance with Health & Safety requirements will be undertaken by the Project Supervisor for the Construction Process.

Biodiversity

Construction Stage

Mitigation Measures to Prevent Water Pollution

The following measures are considered to be best practice with regards to construction and are considered appropriate in the context of general protection of biodiversity in local watercourses

such as the Brewery Stream. They are not required for the protection of downstream designated sites.

Although the risk of any significant impact on water quality in any receiving waterbodies is considered to be extremely low, best practice will be implemented at all times in relation to all construction activities to avoid any accidental pollution events. This will include the following actions:

1. Hydrocarbons or any hazardous chemicals will be stored in specified bunded areas. Refuelling of plant machinery will also be carried out in bunded areas, to minimise the risk of any potential pollutants being discharged from the site.
2. Pollution control measures will be implemented to control any runoff from the site and prevent any runoff potentially contaminated with sediments or hazardous chemicals entering the drainage network.
3. Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the existing drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.
4. Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent any pollution to watercourses.
5. A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency response procedure and use of the equipment.

Mitigation Measures for Bats

The following mitigation measures are proposed to ensure compliance with legislation within the Wildlife Acts 1976-2012, which protects bats and their roosts, during construction:

1. Prior to felling, trees which have been deemed suitable to support roosting bats (see PBRs on Figure 6.4) will be examined at height for the presence of bats and features which could support roosting bats. If bats are encountered, then they will be removed by hand by a suitably qualified bat ecologist under licence from NPWS and placed in a bat box for release at dusk. Trees containing potential roost features should be felled in a manner, such that features which could support roosting bats can remain intact and later be mounted onto other suitably sized trees along the perimeter to create a more natural environment for roosting bats.
2. Any trees to be felled on site should be rigged and felled in a way that is sensitive to the potential presence of bats. Trees should be section-felled, and the felled parts left in situ on the ground for a period of 24 hours. This should allow any bats present to escape or bats extracted by a licensed bat worker and placed in bat boxes to be erected on site. In addition, any trees which are to have works on their limbs carried out should be checked for the presence of bats by a suitably qualified bat ecologist prior to any works commencing.
3. If vegetation such as Ivy is to be removed from the cottages along the N11, the vegetation should be inspected by a suitably qualified bat ecologist with the aid of an endoscope, prior to removal, to check for the presence of roosting bats. If roosting bats are encountered, then works will cease and a derogation licence will need to be obtained from NPWS before vegetation removal can proceed.
4. During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site should be sensitive to the presence of bats in the area. Lighting of the site during construction will be designed in accordance with the following guidance:
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011)

- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).
- No floodlighting of the buildings on site will be permitted during construction.

Mitigation Measures for Breeding Birds

The following mitigation measures are proposed to comply with legislation protecting birds and their nests:

1. In order to avoid disturbance or harm to breeding birds, their nests, eggs and/or their unflown young, all works involving the removal of vegetation including, but not limited to, trees or hedgerows, will be undertaken outside of the nesting season (1st March to 31st August inclusive).

Or where this seasonal restriction cannot be observed then:

2. A breeding bird survey will be undertaken during the appropriate survey season (between early March and late June) by an ecologist with experience undertaking breeding bird surveys in order to assess whether birds are nesting within suitable habitat affected by or immediately adjacent to the subject lands. Should nesting birds be encountered during surveys, the removal of trees or hedgerows may be required to be delayed until after the nesting season (1st March to 31st August inclusive).

Mitigation Measures for Habitats (Treelines)

In order to minimise the risk of accidental damage to treelines and individual trees, during construction, the following measures will be implemented:

1. All treelines and individual trees marked for retention as identified in the landscaping proposals will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees and structures.
2. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (NRA, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees).
3. Where fencing is not feasible due to insufficient space, protection for the tree/treeline will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals).
4. Weekly checks of the fences will take place by the Project Ecologist and/or Contractor.
5. Soil will not be placed within the Root Protection Area of trees or within 5m of any retained treelines.

Mitigation Measures for Habitats (Invasive Species)

It is imperative that appropriate eradication of Japanese Knotweed on site follows guidance from the NRA and Invasive Species Ireland (ISI). Invasive species which may be impacted by the works should not be spread further afield. Under Article 49 of the Birds and Natural Habitats Regulations (2011) it is illegal to “*plant, disperse, allow or cause to disperse, spread or otherwise cause to grow*” any plant listed in the Third Schedule. Any person who does so will be guilty of an offence.

The mitigation strategy in relation to Japanese Knotweed is based on current published best practice guidelines, with the objectives of permanently removing all invasive plant species from the working

area and preventing the spread of any established populations present with the boundary of the proposed development (a legal requirement for Japanese knotweed) –

- *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* (National Roads Authority, 2010);
- *Managing Japanese Knotweed on Development Sites: The Knotweed Code of Practice* (Environment Agency, 2006);
- *Best Practice Management Guidelines, Japanese knotweed Fallopia japonica* (Kelly et al., 2008).

Removal of Japanese Knotweed plants will be required prior to any other element of site clearance. Mapping of new growth in late spring 2020 may be required as identification in winter months can be problematic.

Operational Phase

Mitigation Measures for Bats

The following mitigation measures are proposed with regards the operation of the proposed development:

1. The proposed development will include 5 no. Schwegler 1FF bat boxes to be erected on suitable retained trees in suitable locations across the site. The location and aspect of these bat boxes will be determined, in consultation with the project ecologist.

Mitigation Measures for Breeding Birds

The following mitigation measure is proposed to provide additional nesting opportunities to local populations of breeding birds, to compensate for the removal of substantial amounts of vegetation from the proposed development site:

1. 6 no. bird boxes, of different shapes, will be erected on retained trees, in suitable locations, to compensate for the removal of nesting habitat as part of the proposed development.

Mitigation Measures for Habitats (Invasive Species)

The proposed planting mixes have been reviewed by a competent ecologist to ensure that no species listed on the above references are included in the planting proposals. No mitigation measures are required for the operation of the proposed development

Operational Stage

Not applicable.

Monitoring

The following monitoring is proposed for the proposed development site, post construction:

1. Monitoring of use of the prescribed bird boxes will take place in autumn, to check for nesting activity, for 3 years post-completion of the development, to determine if they need to be relocated within the site; and;
2. Monitoring of use of proposed bat boxes will be undertaken annually for 5 years, by a suitably qualified and experienced bat ecologist, to check for roosting activity. Monitoring will take place twice a year- once in April/ May and once in September/ October. Results of the monitoring surveys will be provided to the competent authority.

Land and Soils

Construction Stage

1. The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, if required, to prevent the build-up of soils from the development site on the existing blacktop roads
2. 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.
3. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.
4. Noise attenuation will be used on rock breakers to reduce noise levels.
5. 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 induration

Operational Stage

1. Within the development, landscape areas will be top soiled and planted in accordance with the proposed landscaping plan. Following completion of these reinstatement works, no significant adverse impacts on the soils and geology of the subject lands are envisaged.
2. A comprehensive drainage network will be constructed to ensure that the lands drain effectively following their reshaping / re-profiling. The drainage system shall incorporate sustainable urban drainage methods to clean flows prior to discharge.

Monitoring

Monitoring during the construction phase will be undertaken particularly in relation to the following:

1. Adequate protection of the topsoil stockpiled for reuse.
2. Monitoring of surface water discharged to existing sewers.
3. Monitoring cleanliness of the adjoining road network.
4. Monitoring measures for prevention of oil and petrol spillages.
5. Dampening down measures close to the boundaries of the site in dry weather

No operational stage/ post development monitoring will be required.

Water

Construction Stage

A Construction Management Plan has been prepared for this application and is included under a separate cover. It is considered that the Construction Management Plan (CMP) will be updated by the appointed contractor. In order to minimise the potential impact of the construction phase of the proposed development on the surrounding surface water and groundwater environs, the following construction stage mitigation measures are to be included in the plan and be implemented in full.

1. 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.
2. To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site
3. Site stripping will be minimised as far as practicable.
4. Settlement ponds / silt traps will be provided to prevent silt runoff into the existing sewers/watercourses during the drainage works.
5. Regular testing of surface water discharges will be undertaken at the outfall from the subject lands. The location for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman at the commencement of works.
6. 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.
7. 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 suitable distance from any watercourse or other water conducting features, including the cut off trenches.
8. Foul and surface water pipes will be carefully laid so as to minimise the potential for cross connections which results in contamination of receiving watercourses.
9. Site personal inductions are to be conducted such that all site personnel are made aware of the procedures the best practice in relation to the management of surface water runoff and ground water protection.
10. Where possible, precast concrete units are to be used to avoid on-site “wet”mix concrete usage. In situ concrete pours are to be managed in accordance with best practice to avoid overflows.
11. Concrete truck and wheel wash down facilities are to be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds / silt traps.
12. Top soil for landscaping will be located in such a manner as to reduce the risk of washing away into local drainage or water courses.

Operational Stage

1. The implementation of the following operation stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the development lands.
2. The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.
3. Surface water outflow will be restricted to the equivalent greenfield runoff rate.
4. Flow restrictors with attenuation storage will be used to slowdown and store surface water runoff from discharging above green field rates to the sewer.
5. Attenuation systems will be constructed on-line to intercept the first flush during rainfall events after periods of dry weather.
6. Sustainable urban drainage measures such as green roofs, permeable paving and filter strips/swales will be provided to improve water quality

Monitoring

Construction Stage

Implementation of the Construction Management Plan is required to protect the hydrology and ground water elements of the subject lands during construction stage. Maintenance of the mitigation measures and monitoring of the management processed is required to ensure best practice. The monitoring measures to be implemented include:

1. Monitoring of the management and storage of dangerous chemicals and fuel.
2. Monitoring and maintenance of the wheel wash facilities.
3. Regular maintenance and monitoring of the sediment control measures.

Operational Stage

1. Monitoring and maintenance of the SUDS features, road gullies, attenuation and flow control devices are imperative during the operation phase of the development.

Noise & Vibration

Construction Phase

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- noise control at source;
- screening, and;
- liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.

1. Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

2. Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures should be considered:

- a. Site compounds should be located away from noise sensitive boundaries within the site constraints. The use lifting bulky items, dropping and loading of materials within these areas should be restricted to normal working hours.

- b. For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant should be switched off when not in use and not left idling.
- c. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- d. For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensure any leaks in the air lines are sealed. Erect localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- e. For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- f. For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- g. For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- h. All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

3. Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation.

4. Liaison with the Public

A designated noise liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, prior to particularly noisy construction activity, e.g. piling, the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

5. Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

Operational Stage

During the operational phase of the development, noise mitigation measures with respect to the outward impact of the development are not deemed necessary.

1. Additional Traffic on Adjacent Roads

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

2. Building Services Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria included in Section 10.5 (i.e. 35dB L_{Aeq,15min} at noise sensitive locations within the proposed development itself). is achieved within the

development it is expected that there will be no negative impact at sensitive receivers off site, and therefore no further mitigation required.

Monitoring

Construction Phase

1. The contractor will be required to ensure construction activities operate within the noise limits set out within this assessment. The contractor will be required to undertake regular noise monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded.
2. Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

Operational Phase

Noise or vibration monitoring is not required once the development is operational.

Air Quality and Climate

Construction Stage

A dust minimisation plan will be formulated for the construction phase of the project, as construction activities are likely to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within 200m of the construction area. A detailed dust minimisation plan associated with a high level risk of dust impacts is outlined in Appendix 10.2. This plan draws on best practice mitigation measures from Ireland, the UK and the USA in order to ensure the highest level of mitigation possible.

In summary some of the measures which will be implemented will include:

1. Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
2. Furthermore, any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
3. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
4. Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
5. Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
6. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
7. During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
8. In order to reduce the impact to visitors of the park during works, hoarding or screens shall be erected around works areas to reduce visual impact. This will also have an added benefit of preventing larger particles of dust from travelling off-site and impacting receptors.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Operational Phase

Impacts to air quality and climate are predicted to be imperceptible for the operational phase therefore, no mitigation is required.

Monitoring

Construction Phase

Due to the close proximity of the site to a number of high sensitivity receptors, monitoring of construction dust deposition at these nearby sensitive receptors during the construction phase of the proposed development is recommended. This is to ensure the proposed mitigation measures are working satisfactorily. Monitoring can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m²*day) during the monitoring period between 28 - 32 days.

Operational Phase

There are no predicted impacts to air quality or climate during the operational phase therefore, no monitoring is proposed.

Wind and Microclimate

Construction Phase

The effects on wind microclimate at the Site during the construction phase have been assessed using professional judgement.

As construction of the Proposed Development progresses the wind conditions at the Site would gradually adjust to those of the completed development, and mitigation measures would need to be implemented before completion and operation.

Operational Phase

The mitigation measures utilized used for this development project is landscaping using trees, which creating a reduced vorticity, makes it possible to reduce the velocities, thus the wind impact on the building. Small particles randomly distributed within an area are normally used in numerical modelling to model trees. These introduce a pressure drop in the model and therefore causes the wind to reduce its speed when passing through the trees, as expected in reality.

Monitoring

There is not particular requirement to monitor the wind impact during construction phase as the designated amenity areas will not be in use during this phase of the project.

The development has been designed to conform with the Lawson Criteria for Comfort and Distress in accordance with the Wind Beaufort Scale.

Landscape and Visual Impact Assessment

Construction Phase

The subject application does not propose any relevant mitigation measures at construction stage.

Operational Phase

The subject application proposes the development of lands on and immediately adjoining a substantial and strategically located infill site, which was the subject of major re-development in order to accommodate medium and high-density residential development in recent years. In these circumstances, during the construction or operational phases scope for mitigation measures, scope for mitigation measures, which would preserve a sustainable level of density, is limited.

Monitoring

Construction Stage

Monitoring of avoidance, remedial and mitigation measures is not relevant to the assessment of visual impacts on the built environment in the case of the subject application.

Operational Stage

Monitoring of avoidance, remedial and mitigation measures is not relevant to the assessment of visual impacts on the built environment in the case of the subject application.

Material Assets - Traffic and Transport

Construction Stage

1. Adequate signposting will be located on site to ensure safety of all road users and construction workers.
2. Due to the proximity of the proposed site along well serviced bus routes and being well served by cycle lanes, it is intended to limit construction staff parking and to encourage the use of public transport. A limited number of car parking spaces may be provided for senior construction managers within the development site. Suitable locations in the surrounding area may be identified where staff can park and link to public transportation.
3. The main contractor as part of their site set up arrangements, shall appoint a Coordinator responsible for the implementation of a Construction Stage Mobility Management Plan and shall carry out the following tasks as part of their role:
 - a. Provide an extensive information service for public transport options and routes at a public location(s) within the development for construction workers
 - b. Update the public transport information adjacent to the development on on-going basis; and
 - c. Advise company staff of tax incentives for public transport and bicycles.
4. For those wishing to cycle to and from the development, dedicated cycle parking will be provided for the duration of the works within the site. Shower facilities and lockers will also be provided.
5. A dedicated “construction site” access/egress system will be implemented during the construction phases.
6. Hoarding will be set up around the perimeter to prevent pedestrian access.

7. Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of constructions activities onsite.
8. A material storage zone will also be provided in the Construction Compound area. This storage zone will include material recycling areas and facilities.
9. A detailed Construction and Traffic Management Plan will be prepared by the contractor and agreed with the Local Authority prior to commencing works on site.

Operational Phase

1. To reduce traffic impact and to promote more sustainable modes of transport a Mobility Management Plan will be prepared for the development
2. A management company will be appointed by the developer to manage the development. A senior member of staff from the management company who supports the philosophy of the Plan will be appointed as the Co-ordinator. There Co-ordinator will be responsible for:
 - a. Implementation and maintenance of the Plan;
 - b. Monitoring progress of the Plan
 - c. Liaison with public transport operators and officers of the Planning and Highway Authorities;
 - d. Production of information reports for the Developer, the occupier(s) and the Planning and Highway Authorities; and
 - e. Ongoing assessment of the objectives of the Plan.
3. Up to date local bus timetables will be maintained within the tenant amenity area and other fixed points within the buildings on the site. Residents will be advised of their location. In addition, internet access to travel information will be provided. The developer will provide all new residents with a travel pack showing alternative modes of travel to the development. Where possible, the developer will advise visitors to the site of alternative modes of travel to that of the car.
4. Secure parking facilities will be provided within the basement level -1 for residents and at surface level for visitors and Creche users. Local cycle route information will be provided in the tenant amenity area and at other fixed points within the development and residents will be advised of their location. Details of cycle parking provided is included in the Traffic and Transport assessment provided with the planning submission.
5. 5 No go Car spaces will be initially provided and details of how to join the scheme will be provided to all residents when they move into their apartment. Information will also be displayed within the resident amenity area and updated when required.
6. The Co-ordinator will be responsible for the management of inappropriate parking within the development. This parking management will ensure that spaces are reserved for those who have rented the space and will be accessible only to those users.

Monitoring

Construction Stage

Traffic management and deliveries will be carefully monitored during the construction stage as part of the Construction Management Plan. The appointed contractor will monitor their mobility management plan to ensure that is operating effectively. Local residents will be kept fully informed of construction activities through mail shots, email and site notices.

Operational Stage

During the operational stage the Mobility Management Plan will be monitored by the Co-ordinator. The travel survey will establish the initial modal split of travel by residents.

The Co-ordinator, in consultation with the Developer, the Occupiers, and the Local Authority or its agents, will agree annual targets, following completion and analysis of the travel survey, for increasing the percentage of non-car modes.

The Co-ordinator will:

1. Meet with officers of the Local Authorities or its agents within a period of 6 months following occupation of the building(s) and thereafter every 12 months to assess and review progress of the Plan and agree objectives for the next 12 months, and
2. Prepare and submit to senior management of the Developer, the Occupier(s) and the Local Authorities or its agents, an annual Monitoring Report.

Material Assets - Utilities

Construction Stage

Surface Water

1. 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.
2. Regular testing of surface water discharges will be undertaken at the outfall from the subject site.
3. Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The system is cleaned and starts working again.
4. 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.
5. 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.
6. Temporary traffic management will be implemented as appropriate during the construction of the connections to Brewery.
7. Surface Water pipes will be carefully laid so as to minimise the potential for cross connections.

Foul Water

1. 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.
2. Foul water pipes to be laid with sufficient falls to ensure self-cleansing velocity
3. Foul pipes will be carefully laid so as to minimise the potential for cross connections.

Water Supply

1. 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.
2. 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.
3. All connections to the public water main will be carried out under the supervision of the Irish Water/Local Authority.

ESB Network

1. Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required otherwise, relocation or diversion works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.

Gas

1. Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required, otherwise relocation or diversion works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.
2. Connections to the existing gas networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Telecommunications - Eir

1. Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required, otherwise relocation or diversion works will be planned with the service provider to incur minimal impact, with users notified in advance of any works.
2. Connections to the existing telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Operational Phase

Surface Water

1. Flow restrictors with attenuation storage will be used to slowdown and store surface water runoff from discharging above green field rates to the sewer.
2. Attenuation systems will be constructed on-line to intercept the first flush during rainfall events after periods of dry weather.
3. Sustainable urban drainage measures such as permeable paving and swales will be provided.
4. A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system.
5. 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.
6. Regular maintenance of the drainage network, including petrol interceptor.
7. The drainage network will be inspected annually and maintained.

Foul Water

1. The foul network will be inspected annually and maintained.

Water Supply

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

ESB Network

1. On completion of the construction phase no further mitigation measures are proposed in relation to the electrical infrastructure.

Gas

1. On completion of the construction phase no further mitigation measures are proposed in relation to the gas infrastructure.

Telecommunications - Eir

1. On completion of the construction phase no further mitigation measures are proposed in relation to the telecommunications infrastructure.

Monitoring

The proposed monitoring of the various built services during the operation stage will include:

1. Surface water drainage and SUDS features will be monitored and maintained by the Developer.
2. The water usage within the proposed development will be monitored via the bulk water meters. Records will be maintained by Irish Water to ensure any excess usage is identified and investigated as necessary.
3. Irish Water will monitor the operation of the foul drainage network including the receiving environment.
4. The construction and waste management plans will be adhered to.
5. The provision of utility services including electricity, gas and broadband will be monitored by the relevant utility provider.

Material Assets - Waste Management

Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the requirements of the guidance document issued by the DoEHLG and is included as Appendix 15.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the proposed development. Prior to commencement, the contractor(s) will be required to refine/update the C&D WMP or submit an addendum to C&D WMP to DLRCC to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

Project Engineers have estimated that c. 19,700 tonnes of soil and stones will be generated from the excavations required to facilitate basement completion and construction of new foundations, the installation of underground services. It is anticipated that all of this material will require removal from the site for offsite reuse, recovery, recycling and/or disposal. The contractor(s) will endeavour to ensure that material is reused or recovered off-site insofar as is reasonably practicable or disposed of at authorised facility.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen with an aim to 'design out waste';

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Tarmac;
 - Plasterboard;
 - Metals;
 - Glass; and
 - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible;
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (*Waste Directive*) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the *Waste Management Act 1996, as amended*, associated Regulations and the *Litter Pollution Act 1997, the EMR Waste Management Plan (2015-2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 15.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and the DLR Refuse and Recycling Storage Guidelines.

In addition, the following mitigation measures will be implemented:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;

- Mixed Non-Recyclable Waste;
 - Glass;
 - Waste electrical and electronic equipment (WEEE);
 - Batteries (non-hazardous and hazardous);
 - Cooking oil;
 - Light bulbs;
 - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
 - Furniture (and from time to time other bulky waste); and
 - Abandoned bicycles.
- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
 - All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available;
 - All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities; and

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 - 2021)* and the *DLR Refuse and Recycling Storage Guidelines*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Monitoring

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the building management company and the nominated waste contractor(s).

Archaeological, Architectural and Cultural Heritage

Construction Stage

1. Archaeology

No mitigation measures are deemed necessary in relation to the archaeological resource.

2. Architecture

All vegetation will be removed from the three Grange Cottage to be demolished and a written and photographic record made of the structures prior to their demolition. This will be carried out by a suitably qualified heritage specialist.

3. Cultural Heritage

All vegetation will be removed from any sections of the surviving demesne walls to be demolished and a written and photographic record made of the structures prior to their demolition. This will be carried out by a suitably qualified heritage specialist.

Operational Stage

1. Archaeology
No mitigation required.
2. Architecture
No mitigation required.
3. Cultural Heritage
No mitigation required.

Monitoring

The mitigation measures recommended above would also function as a monitoring system to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures.

Daylight & Sunlight

Construction/Operational Phases

The subject application proposes the development of lands on and immediately adjoining a substantial and strategically located infill site, which was the subject of major re-development in order to accommodate medium and high density residential development in recent years. In these circumstances, during the construction or operational phases scope for mitigation measures, which would preserve a sustainable level of density, is limited.

Monitoring

Monitoring of avoidance, remedial and mitigation measures is not relevant to the assessment of impacts on sunlight access in the case of the subject application.