Environmental Impact Assessment Report

Lands at St. Joseph's House, and adjacent properties at Brewery Road, Stillorgan and Leopardstown Road, Dublin 18.

On behalf of

Homeland Silverpines Limited

Homeland

September 2021

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1 INTRODUCTION

This This Environmental Impact Assessment Report (EIAR) has been prepared in support of a planning application for a residential development at lands at St. Joseph's House, Brewery Road, and properties at Leopardstown Road, Dublin 18.

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, Homeland Silverpines Limited, 8 Sandford Road, Dublin 6, to prepare an Environmental Impact Assessment Report (EIAR) in respect of a Strategic Housing Development application for a residential development of 463 residential units, a crèche facility residential tenant amenity space and café.

The subject site comprises 11 main structures including 10 residential dwellings known as 'Annaghkeen', Dalwhinnie', 'Madona House, 'Alhambra', 'Souk El Raab', 'Calador', 'Cloonagh', 'The Crossing', Wellbrook' and 'Woodleigh' and a residential care facility known as St. Joseph's House (A Protected Structure). It is proposed to demolish the 10 residential dwellings and refurbish and change the use of St. Joseph's House to residential use.

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.

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

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

The EIAR 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 EIAR 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 EIAR 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 EIAR.

The EIAR 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".

Requirement for an EIAR EIA Legislation

Directive 2011/92/EU, as amended by Directive 2014/52/EU (the "EIA Directive"), requires Member States to ensure that a competent authority carries out an assessment of the likely significant effects of certain types of project, as listed in the Directive, prior to development consent being given for the project. The Environmental Impact Assessment (EIA) of the proposed development will be undertaken by An Bord Pleanála as the competent authority, in compliance with the provisions of EU and Irish law and guidance.

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001, as amended (Regulations). Schedule 5 (Part 1) of the Regulations transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The EIA Directive prescribes mandatory thresholds in respect to Annex 1 projects.

Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case by-case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

Schedule 5 (Part 2) of the Planning Regulations sets mandatory thresholds for each project class. Sub-section 10(b) (i) to (iv) addresses 'Infrastructure Projects' and requires that the following relevant class of project be subject to EIA:

- Category 10(b)(i) Construction of more than 500 dwelling units.
- Category 10(b)(iv) Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.

In summary, the development consists a residential development of 463 no. units (all apartments), along with ancillary residential amenities, and provision of a childcare facility, residential tenant amenity space and café. The proposed residential units comprise 85 no. studio units, 117 no. 1-bedroom units, 248 no. 2-bedroom units, and 13 no. 3-bedroom units.

The proposed development, in terms of both the number of residential units and the site area, falls below the thresholds set out above for mandatory Environmental Impact Assessment. Notwithstanding this, an EIAR has been prepared to accompany the subject application, having regard to the specific characteristics and features of this site, its size, and the quantum of development proposed. The following components are addressed in the EIAR:

Table 1-1 Format and Structure of the EIAR

No.	Title	Context
1	Introduction	Sets out the purpose, methodology and scope of the document.
2	Site Context	Sets out the site context for the proposed development, sets out the context for the subject site and surrounding area.
3	Description of Development	Sets out the description of the site, design and scale of development, considers all relevant phases from construction through to existence and operation.
4.	Consideration of Alternatives	Evaluation of the reasonable alternatives studied by the developer including alternative locations, designs and processes considered; and a justification for the option chosen taking into account the effects of the project on the environment.
5	Population and Human Health	Describes the demographic and socio-economic profile of the receiving environment and potential impact of the proposed development on population, i.e. human beings, and human health.
6	Biodiversity	Describes the existing ecology on site and in the surrounding catchment and assesses the potential impact of the proposed development and mitigation measures incorporated into the design of the scheme.
7	Land and Soils	Provides an overview of the baseline position, the potential impact of the proposed development on the site's soil and geology and impacts in relation to land take and recommends mitigation measures.

8	Water	Provides an overview of the baseline position, the potential impact of the proposed development on water quality and quantity and recommends mitigation measures.
9	Noise and Vibration	Provides an overview of the baseline noise environment, the potential impact of the proposed development and recommends mitigation measures.
10	Air Quality and Climate	Provides an overview of the baseline air quality and climatic environment, the potential impact of the proposed development, the vulnerability of the project to climate change, and recommends mitigation measures.
11	Wind and Microclimate	This chapter assesses the potential effects of the proposed development on the pedestrian level wind microclimate around the proposed buildings and open spaces, and in the area immediately surrounding the site, and recommends mitigation measures.
12	Landscape and Visual impact Assessment	Provides an overview of the baseline position, the potential impact of the proposed development on the landscape appearance and character and visual environment and recommends mitigation measures.
13	Material Assets – Traffic and Transport	Describes the existing transport services and infrastructural service requirements of the proposed development and the likely impact of the proposed development on these material assets.
14	Material Assets – Utilities	Describes the existing services and infrastructural service requirements of the proposed development and the likely impact of the proposed development on utilities
15	Material Assets – Waste Management	Describes the existing services and infrastructural service requirements of the proposed development and the likely impact of the proposed development on waste management.
16	Archaeological, Architectural and Cultural Heritage	Provides an assessment of the site and considers the potential impact of the proposed development on the local archaeology and cultural heritage; and recommends mitigation measures.
17	Architectural – Built Heritage	Provides an assessment of the site and considers the potential impact of the proposed development on the local Architectural and built Heritage in the area and recommends mitigation measures.
18	Daylight and Sunlight	This chapter assesses the impact of the proposed development on sunlight and daylight access to lands outside the application site and recommends mitigation measures.
19	Risks of Major Accidents and Disasters	This chapter identifies the potential of unplanned but potential events that could occur during construction and operation of the proposed development.
20	Interactions	Describes the potential interactions and interrelationships between the various environmental factors.
21	Summary of Mitigation Measures	Sets out the key mitigation and monitoring measures included in the above chapters of the EIAR Document for ease of reference.
22	Competent Persons Table	Sets out the relevant inputs of the various contributors and competent experts of the Project Team.

2 Site Context

The main development site comprises an area of c. 2.58 ha. There are additional lands (of approx. 0.16 ha) included within the red line boundary for the site, which provide for service connections and access proposals along Leopardstown Road. In total, the application red line site boundary extends to an overall site area of c.2.74 ha.

The site is strategically located between Brewery Road (N31) and Leopardstown Road, Dublin 18. The site comprises 11 main structures including 10 residential dwellings known as 'Annaghkeen', Dalwhinnie', 'Madona House, 'Alhambra', 'Souk El Raab', 'Calador', 'Cloonagh', 'The Crossing', Wellbrook' and 'Woodleigh'**.** Leopardstown Road, Dublin 18 and 'St. Joseph's House (a protected structure), Brewery Road, Stillorgan, Co. Dublin.

The overall site is broadly triangular in shape but omits the lands of the Anne Sullivan Centre, which was a former residential facility to assist adults who are deafblind. The site is located to the south of Leopardstown Park; to the east of residential development at Silverpines; north of residential development known as 'The Chase'. The St Joseph's house site area includes a substantial proportion of open landscape, with the primary buildings being located to the west, with a smaller "bungalow type building" in the centre.

The subject site is located an area zones '*A' which is to 'Protect and / or improve residential amenity'.* 'Residential' is permitted in principle under this zoning objective

The site contains the following buildings:

- St. Joseph's House (A Protected Structure)
- A single storey residential dwelling known as 'Madona House
- A large 2 storey detached residential dwelling known as 'Annaghkeen'
- A large 2 storey detached dwelling known as 'Dalwhinnie'
- A large 2 storey detached dwelling known as 'Alhambra'
- A large single storey dwelling known as 'The Crossing'
- A large 2 storey detached dwelling known as 'Calador'
- A large 2 storey detached dwelling known as 'Wellbrook'
- A large 2 storey detached dwelling known as 'Souk El Raab'
- A large 2 storey detached dwelling known as 'Cloonagh'
- A large 2 storey detached dwelling known as 'Woodleigh'
- Large Mature Trees along the boundaries
- Surface Car Parking

St. Joseph's House (Protected Structure)

St. Joseph's House, (St. Josephs) is no longer is use as a residential care facility for the Adult Deaf and Deaf Blind. The Catholic Institute for Dear People previously occupied the house but their lease from Homeland Silverpines Ltd expired in February 2021.

St. Josephs is a Protected Structure under the current Dun Laoghaire Rathdown Development Plan 2016-2022. It has been the subject of extensions over the years, although planning records are not accurate, and it cannot be pinpointed as to the exact date of extension. Records indicate that extension to the facility generally occurred in the 70s, 80s and 90s.

10 Residential Dwellings

The 10 no. residential dwellings on site at 'Madona House, 'Annaghkeen' 'Dalwhinnie' 'Alhambra', 'Souk El Raab', 'Calador', 'Cloonagh', 'The Crossing' , 'Wellbrook' ,and 'Woodleigh' would be classified as 'Residential' use and these units are proposed for demolition within the current scheme.

Zoning

The subject site is located an area zones '*A' which is to 'Protect and / or improve residential amenity'.* Uses permitted in principle under this zoning include:

> *"Assisted Living Accommodation, Open Space, Public Services, Residential, Residential Institution, Travellers Accommodation."*

Tree Preservation

There is also an objective on the site *"To protect and preserve Trees and Woodlands".* The Tree File Arborists have been retained for the purposes of this proposal and they have confirmed that all tree impacts at the subject site can be appropriately managed and mitigated. In addition to the above, we note that the Landscape Plan prepared by Mitchell & Associates fully considers the Tree Preservation Objective and will provide an enhanced landscaped setting for both the existing and proposed development.

Surrounding Area

Arkle Square ACA (former Shiel's Institution) is located to the south west of the subject site and comprises a series of terraced two-storey, houses facing onto a small square. The building group was originally known as Sheils Institution and included 24 no. Almshouses built in c.1868 by the Charles Sheils Almshouses Charity for Poor and Deserving People to designs of Charles Lanyon. The buildings are finely constructed in granite, brick, sandstone, Portland and slate and might be considered to have an Arts & Crafts style to their forms and detailing. A number of views of them from within the ACA have been identified as having significance.

The proximity of the Arkle Square ACA has been carefully considered from the early design stages of this proposed scheme, and the scheme has been designed so as to mitigate and minimise any negative impacts on the architectural heritage of the site and its context.

The proposal site is within a 500m radius of Sandyford Urban Core with associated shops and services and the Beacon South Quarter Urban Centre further southwest and can be seen in Figure 2.4 below. It is also well served by public transport, specifically, the site is located c. 600m from the Green Line Luas Stop at Sandyford and c. 700m from the Central Park Luas Stop. In addition, there are a number of regular bus services on the R113 Leopardstown Road, N31 Brewery Road and N11 Stillorgan Road. The N11 is a primary arterial route connecting the suburbs of south Dublin with the city center. The closest bus stop on the N11 is approximately 16 minute walk away from the centre of the subject site, and is served by the 46A, 70, 75, 84X and 145 bus routes with services between the city centre at 10 minute intervals at peak periods.

Planning History

A review of the planning history pertaining to the site confirms that there is 1 significant planning application, which was granted permission by An Bord Pleanála in 2017. This permitted application forms part of the current proposed application site. In 2018, planning permission was granted for development on a portion of the current site under consideration. Under this permission, 131 residential units were permitted (126 apartments and 5 Town houses). In addition, a Crèche Facility and a Residential Club House were also permitted under this application following further information provided to the Local Authority and an appeal of the decision to An Bord Pleanála who granted permission with conditions.

3 Description of Development

Homeland Silverpines Limited, intends to apply to An Bord Pleanala for permission for a residential development as part of a Strategic Housing Development on lands at St. Joseph's House, Brewery Road, and properties at Leopardstown Road, Dublin 18. The proposed development will consist of a new residential development as follows:

- The demolition of 10 properties and associated structures at:
    - 'Madona House' (single storey), 'Woodleigh' (2 storeys), 'Cloonagh' (2 storeys), 'Souk El Raab (2 storeys), 'Welbrook' (2 storeys), 'Calador' (2 storeys), 'Alhambra' (2 storeys), 'Dalwhinnie' (2 storeys), 'Annaghkeen' (2 storeys) and 'The Crossing' (single storey) (combined demolition approx. 2,291.3 sq m GFA).
- The current proposal provides for a residential development consisting of
    - 463 residential units (apartment) units, in the form of 6 no. residential blocks (Blocks A-F) as follows:
        - 85 no. studio apartments,
        - 117 no. 1 bed apartments,
        - 248 no. 2 bed apartments,
        - 13 no. 3 bed apartments
- Residential Amenity Areas of approx. 636 sq m proposed in Block D comprise a residential club house/multipurpose room, library/reading room, lounge area, concierge area, office area, post room, fitness club, all at ground floor level of Block D. A terrace lounge area is proposed at fifth floor level of Block D. 2 no. roof garden areas are also proposed at fifth floor level of Blocks C and D (approx. 400 sq m and 408 sq m respectively).
- Open Space (approx. 9,885 sq m)
- Creche facility (approx. 282 sq m)
- 259 no. Car Parking Spaces (232 no. at basement level and 27 no. at surface level)
- 968 no. Bicycle Parking Spaces (816 at basement level and 152 at surface level)
- 10 no. Motorcycle Spaces (all at basement level)
- Vehicular Access
- Basement Areas
- Substations and Switch Rooms
- All associated site development works.

Part V

There are 45 no. units in Block F proposed for Part V requirements. There are detailed costings, proposals (included in Section 9 of the Design Statement from OMP) and correspondence on this matter enclosed herewith.

Demolition

Overall, the applicant is proposing to demolish 10 residential dwellings known as 'Annaghkeen', Dalwhinnie', 'Madona House, 'Alhambra', 'Souk El Raab', 'Calador', 'Cloonagh', 'The Crossing', Wellbrook' and 'Woodleigh' as part of this application, none of which are protected structures. The 10 dwellings combined consist of a floor area of c. 2,291.3 sq m and are not considered to be of any particular architectural merit. The inclusion of the lands concerned form an opportunity to deliver on a sustainable approach to appropriate residential density at this site ensuring that a

larger site area is achieved and a new streetscape with upgraded public realm is delivered on Leopardstown Road.

In addition, the extent of works proposed to St. Joseph' House (Protected Structure) will include the demolition of a single storey office, conservatory, glazed link and associated outbuildings, and the demolition of the external store, external enclosed escape stairs with associated canopies, toilet extension and 3no. outbuilding to the west of St Joseph's house. (total demolition approx. 173.4 sq m GFA). The removal of external steel gates, all external steel escape stairs, canopies, and existing disabled access ramps. Also removal of existing concrete steps to the west side of the structure and form new ones. Relocation of external granite steps and the provision of a new raised entrance terrace, steps and ramp areas. Replacement of existing rooflights, the addition of roof lights, part new roof / new zinc roof and external wall and roof to the east of the structure. The provision of new door and window openings and modifications to internal layout including the removal of walls and partitions and the addition of new dividing walls.

Density

Residential Density proposed at this site is set out as 463 units on a 2.58 ha site (net). This equates to 179 units per ha and is considered a modest approach to the site and its context located proximate to the Green Luas Line. We note specifically that the provisions of the Development Plan require a minimum of 50 units per ha at locations that are within 1km of a Luas Rail line. The site is situated approximately 600m from the Sandyford Luas Stop and 650m from the Central Park green line Luas stops and as such, the site is well placed to maximise on densities and additional height, an approach which is now the subject of the national policy mandate. 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 2-10 storeys are proposed and these heights are considered appropriate to the site and surrounding context.

Table 3-1 Proposed Building Heights

Block	Height
Block A	4 storeys + Penthouse
Block B	4-7 storeys
Block C	5-7 storeys
Block D	8-10 storeys
Block E	2 storeys
Block F	3-6 storeys

Land Use Requirements

The proposed development provides for a residential development with a mix of studios, one bed, two bed and 3 bed units. A total of 463 residential units are proposed in 6 Blocks (Blocks A - F). Residential Mix consists of 463 residential units as follows:

- 85 no. studio apartment units,
- 117 no. 1 bed apartment units,
- 248 no. 2 bed apartment units;
- 13 no. 3 bed apartment 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

Proposals for vehicular access comprise 1 no. existing vehicular access point via Silver Pines (an existing all movement junction onto Brewery Road) and 1 no. new vehicular access point at the general location of 'Annaghkeen' at Leopardstown Road (a new Left in Left Out junction arrangement). The new access point along Leopardstown Road will replace existing access points at 'Woodleigh', 'Cloonagh', 'Souk El Raab', 'Welbrook', 'Calador', 'Alhambra', 'Dalwhinnie', 'Annaghkeen' and 'The Crossing'. New pedestrian and cyclist linkages are proposed through the site which provide permeability to Leopardstown Road and the adjoining Greenway. Proposals also provide for the relocation of an existing bus shelter along Leopardstown Road.

Open space and Landscaping

The current proposal delivers on 9,885 sqm of open space which is equivalent to 40.8% of the overall development, in the form of:

- Public Open Space (approx. 6,680 sq m) including a public plaza/court area, a play area, and woodland trail; and
- Communal Open Space (approx. 3,205 sq m) including courtyard, play areas and roof terraces at fifth floor level of Block D.
- Visual Amenity Open Space (approx. 1,000 sq m)

The current proposal has successfully delivered on the minimum 10% requirement of the Dun Laoghaire Rathdown Development Plan 2016-2022 and the communal standards of the Apartment Guidelines.

Car Parking

The current proposal provides for the for 259 no, car parking spaces to cater for the residential element of the proposed development (ratio of 0.56 spaces per unit) which is acknowledged that it does not meet the standard set out in the Dun Laoghaire Rathdown Development Plan 2016-2022. With regard to the 2020 Apartment Guidelines, the subject site location is classified as an 'Intermediate Urban Location' and a reduced number of car parking may be acceptable providing the development is located within walking distance to public transport close to public transport.

We can confirm that the proposed development is located in close proximity to the following public transport services:

- Less that 10-minute walk from the Green Luas Line Sandyford and Central Park Stops. Services at 4 minute intervals during peak hour periods.
- Less than 10-minute walk from a number of Dublin Bus Routes in Leopardstown Road and Brewery Road.

Bicycle Parking

A total of 968 cycle spaces are proposed for the current development. This level of cycle parking provision is fully compliant with both the requirements as set out in the Dun Laoghaire Rathdown County Development Plan 2016-2022 and the Sustainable Urban Housing: Design Standards for New Apartment Guidelines 2020.

Construction Phase

The construction works associated with the development will be undertaken in 3 no. phases. There will also be demolition and excavation phases associated with removing demolition material, excavating the basement, along with reprofiling spoil onsite. The construction and demolition programme is intended to commence in the second half of 2022, with a 40-month programme.

4 Consideration of Alternatives

Chapter 4 of the EIAR sets out why the final layout was selected and provides summary details of alternative layouts considered throughout the design and consultation process. This serves to indicate the main reasons for choosing the layout as proposed.

The requirement to consider alternatives within an EIAR is set out in Annex IV (2) of the amended EIA Directive (2014/52/EU) which states;

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

The Schedule 6, para. 2 (b) of the Planning and Development Regulations 2001 as amended implement this requirement by requiring the following information –

(b) a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects to be presented in the EIAR.

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 Pleanála; and the formal opinion that issued from An Bord Pleanála under Ref. ABP-307355-20.

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. 5 no alternative schemes were considered before confirming the final Masterplan. The evolution of the design and various layouts and design considered are summarised below.

<u>Option A</u>

The first design approach to the site consisted of the following key elements and strategy:

- Requirement to provide 10% open space on the lands in accordance with the zoning objective
- Retention of mature tree Planning objective on the site 'to protect and preserve Trees and Woodlands'
- Definition of the public open space informed by the existing trees on site and the aim to create permeability through the site to the green way beyond
- An assembly of apartment buildings of predominately 5 storeys in height at the centre of the development forming a communal courtyard. In addition, a 10 storey mid-rise block was provided to add legibility and act as a focal point upon arrival.
- Provision of a 3 storey housing element to the North Western edge interfacing with existing residential development and stepping down to 4 storey apartment blocks onto Leopardstown road.
- The existing historic building reinstated as object building in landscape.
- Access and Traffic strategy consisted of retention and re-use of the existing entrance off Silver pines with a new access of Leopardstown Road.

Option B

Alternative Option B consisted of the following key elements and strategy:

- Rearranged Blocks D & F to consolidating the Open space, allowing a more generous offering.
- Stronger masterplan with Block D echoing the form of Block C along Leopardstown road, creating more meaningful streetscape.
- The sense of arrival was strengthened with Block D creating a street leading & providing views to St. Josephs house on entry from Leopardstown Road.
- Key first principle was to provide a stronger focus on the access connecting Leopardstown road with the forecourt space to the front of St Joseph's house and the greenway to the North. This access is annotated by the green arrow in the diagram.

Option C

Alternative Option C consisted of the following key elements and strategy:

- Realignment of Blocks D & F to guide the route through the site forming a better connection from Leopardstown road through the Open space & public route through to the Greenway beyond.
- Scaling down of the rear wing of Block F to address the neighbouring properties.
- More considered articulation and massing of the apartment blocks forming the edge to the Leopardstown Road, giving more variety to the street frontage.
- Creating a sense of arrival from new access off Leopardstown road with widened tree lined avenue terminating at a small plaza on axis with views to St. Josephs house.
- Repeated tree groves created in front of the three blocks fronting onto Leopardstown road enhancing the streetscape and allowing for retention of existing trees in addition to planting new trees to strengthen the landscape edge to the public realm.

Option D

Alternative Option D became the base line masterplan and consisted of the following key elements and strategy:

- Reconfigured Block F to further highlight the link route through the site with higher corner onto Leopardstown road to address the junction with Tudor lawns.
- Further articulation of block D to ensure legibility of the scheme and creates an anchor to the small plaza and addresses the communal courtyard between Blocks A & B.
- The public open space and woodland walk along the North edge provide pedestrian and cycle pathway connecting a variety of landscape character spaces and acting as a walking and exercise trail.
- St. Josephs house was retained to form a 'set piece' at the entrance off Silver pines. A new access from Leopardstown road provides focused views to St. Josephs house giving a sense of formality upon arrival. This composition ensures that St. Josephs House becomes the focal point and form the strong backdrop to the end of the tree lined avenue as you arrive from the new access road.
- Opportunities were sought to try and ensure that this highly accessible site is suitably densified and the land resource is best served regarding future proofing for a sustainable development. As such, apartment numbers increased from circa 410 to 490 units including the proposed conversion and re-use of St. Josephs house for residential living.

Option E – Final Masterplan - Current Scheme

Following the ABP Tripartite stage meeting, further minor enhancements to the masterplan were incorporated in response to ABP and DCC opinion as follows:

- The 8 storey 'visual marker' at the corner of Block F is reduced in height to 6 storeys so as to reduce its visual impact. The height is in line with scaling down to the edges of the site and sits comfortably onto Leopardstown road.
- Block F secondary courtyard element was reconfigured to scale down more sensitively to the surrounding properties providing 3 storey band to this edge of the site.
- Further refinement of Block B secondary element to provide better separation between opposing facades and in doing so added to the communal open space between these blocks.
- Further enhancement of dual aspect provision to provide in excess of 50% ratio resulted in adjustments to the layouts. These changes improved the overall residential quality
- Set back added to PH level of Block D and separation of this PH level from the 10 storey element providing additional Dual aspect units and also private terraces to those units in addition to lightening the overall massing of the Block from street level views

Through Design team coordination, a number of enhancements in the overall scheme design were developed in the preparation of the final scheme.

Conclusion

The proposed layout was carefully developed, taking into consideration the existing neighboring properties, the conditions along Leopardstown Road, 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 the main Leopardstown Road and provide a coherent, pleasant and fully accessible permeable public realm.

5 Population and Human Health

Chapter 5 of the EIAR focuses primarily on the potential likely and significant impact on Population, which includes Human Beings and Human Health in relation to health effects/issues and environmental hazards arising from the other environmental factors. The following key factors are considered, population trends, population profile, land use, housing, employment, commuter factors, economy, social service provision, and childcare audit.

The subject site is located within the District Electoral Division (DED) of Stillorgan-Leopardstown. The total population of the Stillorgan – Leopardstown electoral district in 2016 was 2,714. This represents a population increase of 10.6% (289) from the 2011 Census figure. The subject site is thus within an area undergoing significant change and this is consistent with its location adjacent to the town center and with a range of public transport options available. Stillorgan 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.

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. 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 (i.e., 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 subject site is primarily zoned 'A' - ***"To Protect and/or improve residential amenity",*** which includes 'Assisted Living Accommodation, Open Space, Public Services, Residential, Residential Institution, Traveler's Accommodation' as used permitted in principle

The proposed development will generate economic activity in the locality during the construction period. It is anticipated that permanent crèche staff positions, permanent apartment building management jobs and other associated jobs will be generated, with spin-off economic activity created for local retail and service providers together with wider benefits in the aggregate extraction (quarry) sector, building supply services, professional and technical professions etc. These beneficial impacts on economic activity will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the phased construction period.

The construction phase of the project may have some short-term negative impacts on local businesses/residents during the construction phase. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction activity. Such impacts will be short term and in the longer term, the completed scheme will have long-term beneficial impacts for local businesses, residents and the wider community. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts.

While this proposal is providing a childcare facility, a childcare facilities audit was carried out in April 2021 as part of this application to determine the capacity of existing childcare operators in the area. We note that 28 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 equates to 115 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 number of community facilities including parks, playgrounds and libraries. They also facilitate many services for the community including sports club, hobbies & activity centers and leisure centers.

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

Where the development not to proceed, it is likely that the permitted development of 131 no. residential units (D17A/0337) would be implemented with the permission expiring in 2024. This would change the townscape character of the Tipperstown triangle of lands in keeping with the evolution of the wider Sandyford/Leopardstown urban district. The seven large detached houses on large plots fronting Leopardstown Road would remain in use as individual dwellings. This would (a) not fully realise the potential of the subject sites for sustainable residential use, and (b) not change the character (for the better) or improve the quality of the Leopardstown Road streetscape to the extent that the proposed development would. As such, the impact of the development not proceeding on population profile and trends in the area would be negative as the permitted development does not make use of the full potential of the site boundary

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 with the National Planning Framework and will realise the efficient use of currently-underutilised land and higher housing density that is well served by public transport.

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

The construction phase will provide employment for a large workforce at various stages during the life of the 40 month project. 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 Leopardstown Road. An Outline Construction Management Plan is required in accordance with *County Development Plan 2016-2022.* 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.*

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 463 no. residential units/households. Using the local average household size indicators from Census 2016 for this electoral division (2.51), this may result in a projected population of approximately 1,162 no. persons. Using the average household figures for the state (2.75), this may result in a projected population of approximately 1,273 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 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 is required over the lifetime of the plan. This equates to an average requirement of approximately 3,080 no. new residential units per annum 2022.

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.

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 ILTP indicated 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 proposed development for 463 no. new 1, 2 and 3 bed residential units, 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 ands, 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 a 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.

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 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.

6 Biodiversity

The Biodiversity of the site and the ecological consequences of the proposed development was assessed by Wildlife Surveys Ireland Ltd. This involved a process commencing with a consideration of the existing flora and fauna, the proposed development, potential impacts and mitigation or avoidance of impacts based on the findings of the ecological surveys and available background data.

Methodology

Desktop studies were undertaken for all flora and fauna within the site and availed of data from the National Biodiversity Data Centre, Birdwatch Ireland and Bat Conservation Ireland. Spatial boundary data on the Natura 2000 network and nationally protected sites (NHAs and pNHAs) was extracted from the NPWS website (www.npws.ie) on the 20th April 2021.

General botanical and habitat surveys were conducted on several dates throughout the summer of 2019 including 10th and 11th July, 8th, 16th and 17th August (which is within the optimum period for undertaking botanical and habitat surveys, as well as suitable for a general habitat survey. A survey was undertaken on 15th April 2021 to provide current data for the site. The number and timing of these surveys was appropriate according to Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. (CIEEM, 2018)

Habitats were assessed and evaluated according to their occurrence as protected habitats under Annex I of the EU Habitats Directive (92/43/EEC) and for their capacity to support rare, threatened and endangered species. Botanical species were assessed in accordance with their occurrence on the Flora Protection Order (1999) and The Irish Red Data Book (Curtis & McGough, 1988).

The site was examined on a number of dates in 2019 (10th and 11th July, 8th, 16th and 17th August) and in 2021 (11th and 18th April and 10th to 11th June) to provide information on the potential for ground mammals. All treelines and garden boundaries and patios were examined for mammal evidence. For badgers, the evidence sought includes paw prints, dung pits, latrines and the burrows dug by badgers for their underground homes; setts.

The site was examined by means of a dedicated bat survey in two periods of mid to late summer 2019; 10th July and 16th August and again on two separate dates in April 2021 (11th to 12th April and 18th to 19th April) and one further date in June 2021 (10th June). These dates cover two separate phases in the life cycle of bats. The survey in June 2021 provides further update to the summer surveys of 2019. All buildings and trees were examined.

June, July and August are within a period when the young are born and maternity roosts are established. The young may be on the wing in July and August with some annual variation in their development. During these surveys, the site was walked by two surveyors (see below for June 2021) equipped with an Echometer 3 ultrasonic monitor which allows the recording and pinpointing of bat signals within the area. A static monitor (a Songmeter 2 Bat+) was placed within the site to the rear of the site in July and in line with the row of houses in August (a house named Souk el Raab). Surveying commenced immediately prior to sunset. All survey periods were highly suited to bat activity in 2019. The bat surveys were undertaken with reference to the following bat survey guidelines: Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016, 3rd edition) and Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

All trees were assessed for their potential as roosts in June 2021 and visually inspected from ground level for any obvious features suitable as roost entry / exit points. All buildings were examined internally and externally for the presence of bats. This included an external search for bat droppings, staining, obvious access points (such as slipped slates, broken fascia, lead flashing gaps around chimneys). All attics were examined internally for evidence of bats including actual living bats, bat corpses, bat droppings and staining. Residents were questioned regarding any encounters with bats over their period of occupancy including seeing bats feeding or discovering bats within buildings.

The second phase of survey at the proposed development site was undertaken in April 2021- in a period when bats have exited hibernation but may enter into torpor regularly even during the night as temperatures range between suitable and unsuitable for foraging. In April 2021, the first survey date concentrated on a number of houses within the proposed development. The survey included internal inspection of all buildings proposed for demolition as part of the application on April 11th 2021. The remaining buildings (i.e. the buildings previously approved for demolition) in addition to St. Joseph's which will be renovated were all examined for the presence of bats or evidence of previous usage on April 18th 2021. The following buildings for demolition were inspected: Dalwhinnie, Madona House, Annaghkeen House, Woodleigh, Cloonagh, Souk el Raab, Wellbrook, Calador, Alhambra and The Crossing.

Data on the bird fauna of the site was gathered during the visits to the site in July and August 2019 and during three further visits 11th to 12th April and 18th to 19th April 2021 and 10th to 11th June 2021 (refer to Table 6.1 below). Bird surveying involved aural identification and visual identification of the birds encountered within the nesting period and towards the end of this period to determine the breeding species of this area. This was based on casual visual observations, birdsong, young birds (nestlings or fledglings) and if obvious, nests. Nests were not exposed to ensure that birds were not placed at risk. The entire site was walked covering all treelines, garden walls and shrubbery.

The habitats noted include the following: Flower beds and borders, Buildings and artificial surfaces, Spoil and bare ground, Recolonising bare ground, Amenity grassland (improved), Dry meadows and grassy verges, Treelines, Ornamental/non-native shrub and (native) Scrub.

No rare or protected habitats were noted within the site. None of the recorded species of plant are listed in the Flora Protection Order (1999) or The Irish Red Data Book. No Annex II species or bird species of high conservation concern were noted within the site.

A number of protected mammal species were noted within the site. Bats were noted feeding throughout the site at low density while common pipistrelle bats (Pipistrellus pipistrellus) were noted to roost within houses (Alhambra and Dalwhinnie) that would be demolished as part of this proposal (under the supervision of a bat specialist as approved by a derogation issued by NPWS - DER BAT 2020 – 25). A single bat was seen to enter and remain in Dalwhinnie. Neither these nor any other buildings examined showed evidence of large numbers of bats and usage by bats is very low and attributable to individual bats rather than a breeding roost.

The bat species roosting within the buildings were common pipistrelle in two buildings and Leisler's bat in one building (St. Joseph's House). Other species noted to feed but not roost here include soprano pipistrelle and a single brown long-eared bat signal over the two periods of survey (2019 and 2021). No bats emerged from or returned to trees within the site. A Derogation Licence (DER/BAT 2021 – 42) was issued by NPWS in connection with the Renovation and Demolition works located at St. Joseph's House, Brewery Road.

Bird species present included common and widespread species Great tit, Blue tit, Coal tit, Chaffinch, Goldfinch, Bullfinch, Goldcrest, , Willow warbler, Blackcap, Barn swallow, House martin, Robin, Wren, Jackdaw, Magpie, Rook, Dunnock, Blackbird, Song thrush, Mistle thrush, Starling, Wood pigeon, Collared dove, Herring gull and Black headed gull and swift were noted flying over the site and were not nesting on any of the buildings during this assessment. There was a sighting of a long-eared owl in Pine trees in the grounds of St. Joseph's House in June 2021.

Potential and Cumulative impacts for the flora and fauna

Construction Phase

- *Loss of habitats:* This is likely to be a medium-term slightly negative reversible effect.
- *Introduction of alien invasive plant species:* This impact is negative with long-lasting duration with the intensity dependent upon the invasive species concerned.

- *Tree planting:* This impact is positive with long-lasting duration.
- *Increased lighting:* This would be a short-term moderate negative reversible impact.
- *Injury or death of bats during building demolition*: This is a medium-term negative, non-reversible *impact.*
- *Injury or death of nesting birds or their eggs / young during tree felling / scrub clearance*: This would be a medium-term negative non-reversible impact'
- *Injury or death of bats during tree felling:* This is a medium-term negative, non-reversible impact.

Operational Phase

- *Disruption to mammal movement:* This is likely to be a long-term to permanent slight negative reversible impact.
- *Loss of roost sites*: This is a medium to long-term reversible impact with potential to be a long-term impact in terms of vegetation loss.
- *Loss of nest sites*:_ may be a slight long-term negative reversible impact for the species noted within the site.
- *Creation of nesting opportunities for gull species from the provision of flat roofs* This would be a long-term slight positive impact for these species.
- *Loss of feeding and cover:* long-term slight negative reversible impact on the species within the site.
- *Increased lighting*: a moderate negative reversible impact where lighting is not properly controlled.
- *Bird collisions with buildings;* This impact is long term, negative and reversible and not a significant recorded phenomenon in Ireland.

Mitigation proposed for these potential impacts include the following:

- *Bio-security:* All equipment shall be checked and washed before introduction to the site. All soil and plants introduced to the site shall be confirmed as being free from Alien invasive species.
- *Derogation for buildings known to be bat roosts: Derogations have been issued and may require renewal.*
- *Examination of all buildings for bat potential prior to removal,*
- *Examination of all mature trees for bat potential prior to felling,*
- *Tree felling outside of the bird nesting period,*
- *Planting of native species*,
- *Staged removal of vegetation* to provide cover for birds and other species
- *Introduction and incorporation of bat and bird boxes*. Five 2F and four 1MF swift and bat boxes shall be incorporated into the gables facing the tree protection zones within the proposed apartment blocks and 10 bird boxes of various designs shall be incorporated into the site.
- *Lighting design will be in accordance with guidelines proposed for bat conservation.*
- *Visual signs on glass surfaces.*

During the Construction Stage, It is predicted that there will be a short-term loss of roosting sites and feeding for bats. There will be a loss of roosting, nesting and feeding sites for birds. Construction traffic and security lighting may interfere with normal behaviour of birds and mammals using this site.

During the Operational Stage, it is predicted that there will be a medium-term slight loss of roosting and feeding sites for both bats and birds. Increased lighting will interfere with nocturnal mammals, especially bats, but the proper installation of lighting will minimise the negative effects.

Monitoring of this project will involve the implementation of the derogations approved for the demolition and alteration of buildings within the site with bat roosts by a licensed bat specialist, the examination of all other trees and buildings by a bat specialist prior to removal, the checking of bat and bird boxes and their re-positioning if deemed necessary.

7 Land and Soils

Chapter 7 has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers and Mr. Paul Stephenson, BE, MIEI, CEng, Chartered Engineer of Barrett Mahony Consulting Engineers.

This section of the EIAR assesses the impacts that the proposed development at Leopardstown Road, Dublin 18, may have on the Land and Soils (including land take) on the surrounding area during the construction and operational phases. This report also addresses earthworks proposed on site including any cut and fill works required.

Methodology

This section was prepared in accordance with the Guidelines on the Information to be Contained in Environmental Impact Statements (EPA 2015 (draft)) and Advice Notes for Preparing Environmental Impact Statements (EPA 2015 (draft)). A detailed geotechnical and contamination site investigation of the site has been carried out by Site Investigations Ltd.

Guidelines

The following documents were reviewed in the preparation of this chapter:

- Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environment Impact Statements (Institute of Geologists of Ireland (IGI) 2013);
- Draft Guidelines on the Information to be contained in Environmental Impact Assessments Reports (EPA 2017)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017
- Revised Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2015a);
- Advice Notes for Preparing Environmental Impact Statements (EPA 2015b);

In order to identify the current ground conditions and to establish any potential impacts for the proposed development it is necessary to undertake a desk top review of the existing geological conditions for the subject lands.

Consultation

To establish same information from the following list of statutory bodies were consulted:

- Dún Laoghaire-Rathdown County Council.
- Geological Survey of Ireland.
- Ordnance Survey of Ireland.
- Environmental Protection Agency.
- Office of Public Works.

Desktop Study

The following sources of information were reviewed to evaluate the soils, geological & hydrogeological aspects of the site:

- Current & historical Ordnance Survey Maps (1829 – 1842,1837 – 1842 & 1888, 1913),
- Aerial photography (1995 & 2000).

8 Water

Chapter 8 of the EIAR considers & assesses the potential impacts on Water & Hydrology with regard to the proposed scheme. Measures to mitigate any likely significant adverse impacts of the proposed scheme are reviewed and analysed.

This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers.

Methodology

The methodology followed for this section is in accordance with the EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft) 2017, Advice Notes for Preparing Environmental Impact Statements (Draft) 2015 and 2018 DHPLG Guidelines on Environmental Impact Assessment for Planning Authorities and An Bord Pleanála. The following section outlines the legislation and guidelines considered, and the adopted methodology for preparing this chapter.

The following documents were reviewed in the preparation of this chapter.

- Historical Flood Data, obtained from the national hazard Mapping Website, (www.opw.ie);
- CIRIA C753 – The SuDs Manual.
- Revised Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2015a);
- Advice Notes for Preparing Environmental Impact Statements (EPA 2015b);
- Draft Guidelines on the Information to be contained in Environmental Impact Assessments Reports (EPA 2017);
- Department of Housing, Planning & Local Government (2018). Guidelines for Planning Authorities & Bord Pleanála on Carrying Out environmental Impact Assessments;
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017
- Greater Dublin Strategic Drainage Study, (DCC 2005);
- Regional Code of Practice for Drainage Works, (DCC 2005);
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities, Former Dept of Environment, Heritage & Local government, (Government of Ireland 2009);
- Dún Laoghaire-Rathdown County Council Development Plan.
- Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters (IFI, 2016)

A Civil Engineering Infrastructure Report and Flood Risk Assessment has been completed by Barrett Mahony Consulting Engineering (BMCE) and accompanies the planning application under separate cover. The findings and outcomes from the report have informed this assessment.

In order to identify the current conditions and to establish any potential impacts for the proposed development it is necessary to undertake a desk top review of the existing water features and site topography conditions for the subject lands. The existing conditions have been interpreted from a desk top study.

To establish same information from the following list of statutory bodies were consulted.

- Dún Laoghaire-Rathdown County Council.
- Geological Survey of Ireland.
- Ordnance Survey of Ireland.
- Environmental Protection Agency.
- Office of Public Works.

Desktop Study

The following sources of information were reviewed to evaluate the Water & Hydrology aspects of the site.

- Current & historical Ordnance Survey Maps (1829 – 1842,1837 – 1842 & 1888, 1913);
- Aerial photography (1995 & 2000).
- Office of public Works, Historical Flood Mapping.
- Office of Public Works, Flood Risk Management Plans.
- Dún Laoghaire-Rathdown County Council, Development Plan, 2017 – 2023.

Potential Impact of the Proposed Development

Construction Stage

During the construction phase there will be a number of personnel based on site who will require canteen and toilet facilities. Waste from these facilities will be removed by suction tanker to a licensed facility. At no time during construction will foul sewerage be allowed to discharge to the surface water network.

Construction of the proposed development will require the removal of a large part of the topsoil and earthworks to facilitate the construction of the dwellings, basement areas, infrastructure service provision, road construction, surface water storage systems etc. Given the extent of disturbance, there is potential for weathering and erosion of the surface soils from precipitation and run-off.

Surface water runoff from the construction phase may also contain increased silt levels or result in pollution from the construction processes. The discharge of these contaminants, such as concrete and cement, which are alkaline and corrosive, have the potential to cause pollution. Accidental oil or fuel spillages or leaks from construction activities also have the potential to find their way into groundwater through percolation. Both increased silt and contaminant levels have the risk of reducing groundwater quality.

Excavation of soil and sub-soil layers will reduce the ability of the lands to recharge groundwater. The majority of rainwater falling on the site during construction will percolate directly into the ground. The permanent works proposal is for 33% the surface water on the site to be infiltrated into the ground, with the remainder of the surface water falling on the site discharged into the surface water sewer network. During the construction process, the contractor will imitate this proposal in the form of a temporary SuDS measures and by connecting into the local network. The temporary SuDS measures will aid in separating the rainwater falling on the site from any potential pollutant contaminants.

Potential impacts that may arise during the construction phase are noted below:

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities. This may wash out onto the Leopardstown Road at the southern end of the site.
- Discharge of rainwater pumped from excavations.
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance contaminating the surrounding surface water and hydrogeological environments.
- Concrete runoff, particularly discharge of wash water from concrete trucks.
- Discharge of vehicle wheel wash water.
- Infiltration of groundwater into excavations.

Accidental pollution of water from plant, machinery or temporary storage areas is possible, due to the nature of construction. This likely, but brief impact would be imperceptible in nature as any potential pollution would be indirect as it would percolate through the soil, prior to reaching the local groundwater. Excavation works are required, to strip the site's topsoil and for the installation of proposed drainage infrastructure.

The majority of rainwater falling on the site during construction will percolate directly into the ground. Given the permeable nature of the ground on site and the low level of the groundwater table, there is unlikely to be any significant ponding of rainwater in excavations.

The temporary effects of these works are anticipated to be imperceptible neutral effects. Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall storm water quality. Refer also to the Construction & Environmental Management Plan, submitted with the planning application, which indicates the proposed measures required to avoid same.

Operational Stage

Once the development is completed the operational impacts on the water & hydrology aspects of the site would be minimal. The biggest risk item is cross contamination of surface water from the operational phase of the development from accidental oil spillages, refer to the mitigation section below for proposed remedial issues.

During the operational phase of the development the following potential risks to surface water have been identified:

- Increased impermeable surface area will reduce local groundwater recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).
- Foul waste and surface water discharging to ground through leakage in the drainage systems.
- Contamination risks arising from development use / leaking pipes / contaminated surface water runoff.

Potential Cumulative Impacts

Surface Water

The site proposals to treat surface water will aim to replicate greenfield flow rates via a suite of SuDS measures and therefore it is not likely to give rise to any significant effects cumulatively or, in combination with, other developments in the area.

Foul Water Drainage

As there are no new proposed developments in the area, and limited land available to be developed, there is likely to be little additional cumulative effects on the Foul Water Network in the surrounding area, other than this proposed development. Any sizeable developments would require upgrades to the sewer network.

Watermain

As there are no new proposed developments in the area, and limited land available to be developed, there is likely to be little additional cumulative effects on the Water Supply Network in the surrounding area, other than this proposed development.

Mitigation Measures

Construction Stage

- Any excess surface water on site to be discharged to the ground via soakaways or discharged to the network system.

- Designated impermeable cement washout areas must be provided.
- Any *in-situ* concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.
- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
- All surface water infrastructure is to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements.
- Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning.
- All new drains are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase. All new water mains to be tested and sterilised in accordance with Irish Water requirements.
- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall surface water quality.
- The construction of the development will be carried out in accordance with the Construction and Environmental Management Plan in order to prevent accidental onsite oil spillages and the regular maintenance of onsite plant to eliminate potential risks. A Construction & Environmental Management Plan (CEMP) is submitted with this planning application.
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.
- The CEMP, incorporating the measures in the EIAR, will be developed, and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and filter sediment laden runoff prior to, as approved, discharge to a temporary soakaway or the surface water sewer system network.
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- The extent of sub-soil and topsoil stripping to be minimised to reduce the rate and volume of the run-off during construction until the topsoil and vegetation are replaced.
- Concrete batching will take place off site or in a designated area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds/soakaways.
- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.
- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.
- Hazardous construction materials shall be stored appropriately to prevent contamination of watercourses or groundwater.
- Spill kits should be kept in designated areas for re-fuelling of construction machinery.
- Dewatering measures should only be employed where necessary.

Operational Stage

Sustainable Urban Drainage Systems (SuDS) will be incorporated fully into the development, in order to improve the quality of the surface water discharging from site and reduce the runoff volume and rate. The surface water drainage design, for this development, was designed in accordance with the Local Authority requirements. All SuDS measures will be provided in accordance with the Greater Dublin Strategic Drainage Study Regional Drainage Policy Volume 2 - New Development (GDSDS-RDP Volume 2). Specific design requirements for SuDS systems are established by the Construction Industry Research and Information Association's publication CIRIA C753 – The SuDS Manual.

Following best practice, the potential for the storm water to become polluted via oil spills will be reduced as far as is practical (e.g., using a Klargester Bypass Interceptor for basement drainage) or similar approved to take run off from carparking areas and passing through same prior to disposal to the on-site surface water system.

Irish Water will maintain the foul & potable water systems while Dún Laoghaire-Rathdown County Council will maintain the storm water network.

As such this type of development would not increase the risk to surface water or downstream flooding. All surface water discharges to soakaways in close approximation of the existing greenfield runoff/drainage regime. All surface waters are to pass through an oil separator prior to out falling into the proposed new storm sewer.

The following measures will be employed:

- Surface water runoff from the development will be collected by an appropriately designed system with contaminants removed prior to discharge via SuDS measures and a petrol interceptor.
- Foul water will be drained to a fully separate system.
- A regular maintenance and inspection programme of the flow control devices, soakaway storage facilities, gullies and petrol interceptor will be implemented during the Operational Phase to ensure the proper working of the development's networks and discharges.
- Operational refuse will be removed from site using licenced waste management contractors.

9 Noise and Vibration

AWN Consulting Ltd. has been commissioned to conduct an assessment of the likely noise and vibration impacts associated with the proposed residential development at St. Joseph's House, Brewery Road, and properties at Leopardstown Road, Dublin 18.

The existing noise climate in the vicinity of the proposed development has been surveyed. Prevailing noise levels are primarily due to local road traffic.

The noise impact assessment has focused on the potential outward impacts associated with the construction and operational phases of the proposed development on its surrounding environment, as well as the inward impact of noise on the proposed residential dwellings.

During the main construction phase involving site clearance, rock breaking and building construction works, the assessment has determined that there is the potential for some temporary significant noise impacts when works are undertaken within close proximity of the receptor locations. However, these occurrences will only be temporary and the vast majority of the construction works will take place at distances from the receptors where no significant impacts are predicted and the construction criteria will be complied with. A schedule of noise mitigation measures including, noise limits and screening will all be employed to ensure any noise and vibration impacts during this phase will be reduced as far as is reasonably practicable. For the duration of the construction period, construction noise impacts will be short-term, negative and moderate to significant. Vibration impacts during the construction phase will be short-term, negative and not significant.

The predicted change noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of neutral, imperceptible and permanent impact to nearby residential locations.

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

The potential for inward noise impact on the proposed development has been assessed. The assessment has been carried out with reference to the guidance contained in Professional Guidance on Planning & Noise (ProPG), BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BSI); and the local and national Noise Action Plans relevant to the area. To achieve suitable internal noise levels within buildings located closest to the boundary with the Leopardstown Road sound insulation specifications have been provided for windows and vents. For the inward noise impact on the development itself the impacts with mitigation in place are predicted to be permanent, neutral and not significant. External noise levels within the vast majority of public open spaces and private gardens across the development site are generally within the recommended range of noise levels from ProPG.

10 Air Quality and Climate

AWN Consulting Ltd. has been commissioned to conduct an assessment of the likely impact on air quality and climate associated with the proposed development 'St. Josephs House' (a protected structure) Brewery Road and properties at and Leopardstown Rd. Dublin 18.

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

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA state that Ireland is predicted to have total GHG emissions of 59.9 Mt CO_2eq in 2019. This is 6.98 Mt CO_2eq higher than Ireland's annual target for emissions in 2019. Emissions are predicted to continue to exceed the targets in future years.

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 in the local areas associated with the proposed development.

There are a number of sensitive receptors in close proximity to the site, direct north, east and west of the site boundary. In addition, a Children's Hospice is located to the direct south of the site. Provided the dust mitigation measures outlined in Appendix 10.3 of Chapter 10 are implemented, dust emissions are predicted to be short-term, negative and imperceptible and will not cause a nuisance at nearby sensitive receptors.

The best practice dust mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be short-term, localised, negative and imperceptible with respect to human health.

Potential impacts to air quality and climate during the operational phase of the proposed development are as a result of increased traffic volumes on the local road network. The changes in traffic flows were assessed against the UK Design Manual for Roads and Bridges (DMRB) screening criteria for an air quality and climate assessment. The operational phase air quality and climate modelling assessments determined that there is no potential for significant impacts as a result of traffic related to the proposed development. It can therefore be determined that the impact to air quality and climate as a result of increased traffic volumes during the operational phase of the proposed development is localised, negative, imperceptible and long-term. In addition, the proposed development has been designed to reduce the impact to climate where possible.

As the National and EU standards for air quality are based on the protection of human health, and concentrations of pollutants in the operational stage of the proposed development are predicted to be significantly below these standards, the impact to human health is predicted to be imperceptible, negative 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

Wind and Micro-climate assessment have been carried out to identify the possible wind patterns around the proposed Berwick Pines Development considering mean and peak 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).

Results of the wind analysis have been discussed with the design team so as to configure the optimal layout for proposed Berwick Pines 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.

Methodology

The wind modelling study has been performed through an Advanced 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).

A total of 18 different wind scenarios have been studied considering variation of wind magnitude and directions in line with their frequency of occurrence based on 30 years of historical weather data. An exceedance of occurrence of 5% of the duration 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/funnelling/downdraft/ and to identify critical flow accelerations that could potentially occur.

The assessment has been carried out considering the impact of wind on the following configurations:

- The "Existing Receiving Environment (Baseline)": 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.
- The "Potential Impact": in this case the assessment has considered impacts of wind on the existing environment area, the proposed Development, and its immediate vicinity, with the aim to identify potential impacts on future nearby buildings. For this scenario, Berwick Pines Development will introduce no negative wind effect on adjacent or nearby developments within its vicinity. Wind modelling of future phases around this development will need to be performed for all future phase developments.

Potential and Cumulative Impacts

The Potential and Cumulative Impacts of the Proposed Development have considered the impact of wind on the existing area including the proposed Berwick Pines Development. For these scenarios, the analysis has been used to identify the critical areas of the proposed development that requires implementation of mitigation measures.

CFD modelled results of the development scheme showed that:

- The proposed Berwick Pines Development has been designed in order to produce a high-quality environment that is attractive and comfortable for pedestrians of all categories. To achieve this objective, throughout the design process, the impact of wind has been considered and analysed, in the areas where critical patterns were found, the appropriate mitigation measures were introduced.
- As a result of the final proposed and mitigated design, wind flow speeds at ground floor are shown to be within tenable conditions. Some higher velocity indicating minor

funnelling effects are found near the South-West side of the development. However, as it is shown in the Lawson map indicate that the area can be utilised for the intended use.

- Due to re-circulation effects between Block D and F, this area is suitable for short-term sitting instead of long-term sitting. These conditions are not occurring at a frequency that would compromise the pedestrian comfort, according to the Lawson Criteria.
- Regarding the balconies, higher velocities can be found for some directions, only on some of the balconies. However, these velocities are below the threshold values defined by the acceptance criteria and therefore are not critical for safety.
- Tree planting all around the development has been utilised, with particular attention to the corners of the Blocks has positively mitigated any critical wind effects. Thus, it can be concluded that at ground floor good shielding is achieved everywhere.
- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings. Moreover, in terms of distress, no critical conditions were found for "Frail persons or cyclists" and for members of the "General Public" in the surrounding of the development.
- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings.
- During Berwick Pines Development construction phase the predicted impacts are classified as negligible.

Mitigation Measures

The proposed mitigation measures for the ground floor of this development is landscaping using tree plantings, which creates a reduction in the wind vorticity, making it possible to reduce incoming velocities and to mitigate some funnelling and recirculation effects, thus with the objective of limiting the wind impacts on the buildings, public spaces or pedestrian paths.

These proposed mitigation measures are needed to be implemented within the development, particularly on the main roads around the development, in the roads in-betweens the different blocks, with particular attention to the corner of the buildings, as fully reported in the related EIAR chapter.

Residual Impacts

The impacts of implementing mitigation measures such as tree planting will result in further shielding of public spaces and pedestrian footpath.

12 Landscape and Visual Impact Assessment

Receiving Environment

The site is a brownfield land parcel currently occupied by St Joseph's House (formerly the 'Stillorgan Convalescent Home'), a protected structure, and 10 no. detached dwellings on large plots. The site contains a large number of mature trees, including a group of mature Austrian pine trees surrounding St Joseph's House, which are a key feature of the landscape. The site has 270m frontage to Leopardstown Road along its south boundary and a similar frontage to a greenway running along a former railway line to the north east. To the southeast across Leopardstown Road is the Laura Lynn children's hospice and foundation headquarters. The west boundary is shared with the Anne Sullivan Centre and two residential estates, Silver Pines and The Chase (incorporating Arkle Square), which together with the site form the Tipperstown area, bounded by Leopardstown Road, Brewery Road and the former railway line. Another key feature of the Tipperstown landscape is Sheil's Almshouses, built in the late 19th century, now protected structures and the central feature of the Arkle Square Architectural Conservation Area.

Planning permission was previously granted (Reg. Ref. D17A/0337) for a large part of the subject site (excluding the seven houses fronting Leopardstown Road). The permitted development comprises (a) the refurbishment and re-use of St Joseph's House for apartments, a creche and residents' clubhouse; (b) three blocks of apartments of up to five storeys, arranged to the southeast of St Joseph's; (c) a terrace of 5 no. houses; (d) various open spaces between the buildings, and the retention of many of the existing trees that characterise the site.

This permission reflects the trend of change in the area. Tipperstown falls into the Sandyford/ Leopardstown urban district, which is undergoing a fundamental change in character. The 20th century zonal land use pattern of low density residential suburbs and industrial estates is being replaced by mixed use, mixed density development of contemporary urban character (in building typology, scale and architecture). This plan-led change has been facilitated in part by the Luas green line, and there are two Luas stops within 500m of the site. The site occupies a prominent position in the evolving urban district, fronting the main thoroughfare Leopardstown Road near a key junction around which the South County Business Park and the Central Park high density quarter have taken shape.

Townscape Effects

Based on the analysis of the receiving environment and relevant policy, the sensitivity of the townscape can be classified 'medium' (definition: *Areas where the landscape/ townscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape/ townscape character is such that there is some capacity for change. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape/ townscape character or facilitate appropriate, necessary change*).

The classification of medium sensitivity is based on the following key townscape characteristics:

- The site falls into the evolving urban district of Sandyford and Leopardstown, an area which is clearly distinct in character from the surrounding suburban townscape, with well-defined edges, i.e. the former railway line to the north (now part Luas line, part greenway), the M50 to the south, Leopardstown Racecourse to the east and Drummartin Link Road to the west.
- The receiving environment is in a process of plan-led transformation, spurred by the road and public transport infrastructure serving the area. The 20th century zonal land use pattern of low density residential suburbs and industrial estates is being replaced by mixed use, mixed density development of urban character (in building typology, scale and architecture). However, in Tipperstown, low density estates remain the predominant housing typology.

- The County Development Plan states:
    - that a key strand of the settlement strategy is: *"continued promotion of sustainable development through positively encouraging consolidation and densification of the existing urban/suburban built form – and thereby maximizing efficiencies from already established physical and social infrastructure"*, and
    - *"As a general principle, and on the grounds of sustainability, the objective is to optimise the density of development in response to type of site, location and accessibility to public transport"*. This policy accords with the national policy of compact growth.

Being located close to a core (Leopardstown junction) of the evolving urban district, with frontage to a major thoroughfare and a greenway, within walking distance of two Luas stations and directly served by a quality bus route, and with direct access to existing pubic open space, the site is a prime candidate for densification of the suburban built form.

- The existing permission for mixed density development on a part of the subject site has initiated a change in character in Tipperstown, introducing higher density building typologies to the townscape. The addition of the seven neighbouring properties along Leopardstown Road allows not only for the expansion of the development. It also requires a change in the response of the development to its townscape context, particularly to Leopardstown Road.
- The site has 270m frontage to Leopardstown Road, a 3-4 lane urban thoroughfare where it passes the site. The character of the street would benefit from a strengthening of built form and enclosure as it approaches/departs the Leopardstown junction – for a better balance between built form and infrastructure, more appropriate to its status in the hierarchy of streets in the urban structure.
- Currently, where it passes the site there is a deliberate disconnection between the road and the roadside properties, with the houses defended from the road by high walls and vegetation (therefore hidden from the road). This quality of interface weakens the townscape character, allowing the road infrastructure to dominate.
- There are no highly susceptible visual receptors to the south east and south of the site across Leopardstown Road. In an established urban area this constitutes an opportunity for change.
- There are sensitive townscape receptors to the west and south west of the site, including the Arkle Square ACA, the surrounding modern residential streets (The Chase, Ballymoss Parade, Minstrel Square and Sir Ivor Mall), the Silver Pines estate and the Anne Sullivan Centre, in addition to St Joseph's itself. Despite their location close to the core of the evolving Sandyford and Leopardstown district, these areas feel somewhat removed from the surrounding urban area, and enjoy a high level of landscape and visual amenity deriving from the historic architecture and numerous mature trees.

The magnitude of townscape change which would result from the proposed development can be classified 'medium' (definition: *Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape*).

Planning permission has been granted for residential development, up to five storeys, on part of the planning application site. The proposed development, which is on a larger site, occupying a larger portion of the Tipperstown area including the land along Leopardstown Road, includes buildings of up to 10 storeys. The development would respond to the expanded site's relationship with Leopardstown Road, establishing a strong built frontage to the road, changing its character. The expansion of the site to the south west, and the increase in building height, would also affect the character of - and views from - the residential neighbourhood to the south west (incorporating Arkle Square) and to a lesser extent the Leopardstown estate to the north of the greenway.

Measuring the magnitude of change against the townscape sensitivity, the significance of the townscape effects is predicted to be 'moderate' (definition: *An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends*), and the effects can be classified 'positive'.

National planning policy and the County Development Plan encourage compact growth and densification through infill development and increased building height. Implementation of the policy will inevitably result in changes to townscape character and the composition of views: Where an area is characterised by low density, low rise development, densification will unavoidably introduce new, taller buildings into views from both the public realm and private properties. The proposed development is a manifestation of this policy, and a considered response to the site context. While it would change the area's character, the change would be in keeping with the policy-driven transformation of the receiving environment and would be of appreciably high design and material quality. If significant negative visual effects on the adjacent residential neighbourhood (particularly the Arkle Square ACA) can be minimised – as they have been (refer to Section 12.6) - the townscape effects would be appropriate and positive.

The above assessment is supported by the proposed development's compliance with - or contribution to the realisation of - key policies of the County Development Plan and national policy – specifically the *Urban Development and Building Height Guidelines for Planning Authorities*. An analysis of the proposal against these policies is included in Table 12.6 of the Landscape and Visual Impact chapter.

Visual Effect

During construction the site and immediate environs would be disturbed by construction activities and haulage, and the incremental growth of the buildings on site. In the earlier stages, until the buildings reach substantial height above ground, the effects would be largely limited to the immediate environs (adjoining properties and streets). As the buildings begin to grow above ground level the visual effects would become more widespread.

The magnitude of change would range from high in the immediate environs to negligible or none further from the site. Therefore the significance of the effects would also vary – although they would typically be negative during construction. Such temporary negative visual effects are unavoidable and not unusual in the urban context where change is continuous.

Townscape Effects - Operation Stage

18 no. viewpoints were selected to assess the proposed development's potential visibility and visual effects. The viewpoints represent the key townscape areas and groups of visual receptors in the receiving environment, and the photomontages collectively provide visualisations from a range of angles and distances from the site.

Viewpoints 15H, 16H, 17H and 18H were selected by the conservation consultant specifically to address the effects on St Joseph's House and the views identified as Key Views in the *Arkle Square ACA Character Appraisal and Policy Framework*.

The findings of the visual effects assessment were as follows:

No	Viewpoint Location	Sensitivity	Magnitude of Change	Significance & Quality of Effects		
				Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
1	Leopardstown Road north east of site	Medium	Low	Slight negative	Slight positive	Slight positive
2	Leopardstown Road near north east corner of site	Medium	High	Moderate negative	Significant positive	Significant positive
3	Leopardstown Road at site entrance	Low	Medium	Moderate negative	Slight positive	Slight positive
4	Leopardstown Road opposite site	Medium	High	Moderate negative	Significant positive	Significant Positive
5	Leopardstown Road south west of site	Medium	High	Moderate negative	Significant positive	Significant positive
6	Burton Hall Road junction with Leopardstown Road	Low	Low	Not significar neutral	Not significant neutral	Not significant neutral
7	Brewery Road opposite entrance to Silver Pines	Medium	None	No effect	No effect	No effect
8	Brewery Road north west o site	Medium	None	No effect	No effect	No effect
9	Leopardstown Park open space/playing field	Medium	Medium	Slight negativ	Moderate positive	Moderate positive
10	Leopardstown Lawn at Leopardstown Drive junction	High	Medium	Slight negativ	Moderate neutral	Moderate neutral
11	Silver Pines estate road	High	Negligible-Low	Not significar neutral	Not significant neutral	Not significant neutral
12	The Chase/Sheils Houses estate road	Medium	Low	Slight negative	Slight neutral	Slight neutral
13	Sir Ivor Mall adjacent to Arkle Square	High	Medium	Moderate negative	Moderate-Significant neutral	Moderate-Significant neutral
14	Site entrance via Silver Pines – View of St Joseph's	High	Medium	Moderate negative	Significant positive	Significant positive
15H	St Joseph's House	High	Medium	Moderate n egative	Significant positive	Significant positive
16H	Arkle Square ACA View 1	High	None	No effect	No effect	No effect
17H	Arkle Square ACA View 2	High	None	No effect	No effect	No effect
18H	Arkle Square ACA View 3	High	None	No effect	No effect	No effect

Of the 18 no. viewpoints assessed, it was found that visual amenity would be improved at eight locations. These include (a) the views along Leopardstown Road approaching and passing by the site from both directions, and (b) the view from the Leopardstown Park open space to the north of the site across the greenway. Positive visual effects are also predicted for the close-up views of St Joseph's House, in which the improvements to the building and its setting would be appreciable.

Importantly, it was found that none of the Key Views identified in the *Arkle Square ACA Character Appraisal and Policy Framework* would be affected by the development. Neither would any views *of* the ACA from the wider public realm be affected.

Viewpoints 11, 12 and 13 assess the effects on the existing residential neighbourhood to the north west and west of the site. Due to mitigation measures taken in the design process (specifically with regard to proposed Block F) the visual effects on these areas would be neutral. No negative effects were identified.

Mitigation Measures

Apart from (a) the measures incorporated in the proposed design (see below), (b) the measures for tree protection (as recommended in the Arboricultural Report prepared The Tree File Ltd), and (c) standard best practice construction site management (e.g. erection and maintenance of site hoarding, orderly storage of materials and vehicles, etc.), no additional mitigation measures are proposed. The key mitigation measures built into the proposal include:

- **The retention, refurbishment and reuse of St Joseph's House as an integral part of the development**. The condition of the building and its immediate surroundings would be improved, with the dual intention of (a) conserving the building as a cultural/ architectural asset, and (b) lending maturity, identity/ character, landscape and visual amenity to the new neighbourhood.
- **The retention of the key groups of trees on the site**. The retention of the trees would (a) conserve a key landscape feature/ characteristic of the site, (b) retain some of the site's biodiversity value, (c) function as a landscape/ visual buffer for the new buildings (as shown by the photomontages for Viewpoints 1, 2, 9, 10, 11), and (d) provide landscape and visual amenity for the new neighbourhood.
- **The considered arrangement of built form and height along Leopardstown Road, along with the steps in height, folded elevations, variations in façade design and materials and the high degree of articulation**. The photomontages for Viewpoints 1-5 show that while the proposed development would change the character of the wide urban thoroughfare by enclosing the street on one side, the collective street elevation of Blocks C, D and F would form an attractive, visually interesting composition.
- **The landscape treatment of the Leopardstown Road streetscape**. The proposed Blocks C, D and F are sufficiently set back from the street edge that a substantial green frontage to the street can be established, incorporating low ornamental shrub planting, a line of street trees, some retained trees and privacy hedging for the ground floor apartments. This design solution allows the buildings to address the street in a way that will generate urban character while also softening the street-building interface and enhancing visual amenity.
- **The reduction in scale of Block F**. The greatest potential for negative visual impacts (and other impacts on existing residential amenities) is in the south west corner of the site where two terraces of houses back onto the site boundary (Sir Ivor Mall and Minstrel Court). A previous assessment, carried out for the design iteration submitted at Stage 2 in the SHD process, identified the potential for a negative visual effect on the houses of Sir Ivor Mall, which would have resulted from the 3-8 storey Block F which was proposed at that time. Block F has been redesigned and scaled down to 3-6 storeys to mitigate this impact. The assessment of Viewpoint 13 found that the effects can now be classified neutral.

Potential Cumulative Impacts

The assessment has taken account of the ongoing shift in character in the Sandyford/Leopardstown urban district, including (a) One South County and other developments in South County Business Park, (b) the development of the Central Park quarter, and (c) the permissions and ongoing redevelopment of sites in Stillorgan in that area's transformation into a high density, mixed use quarter.

Another significant future development is the former FAAC site some 250m to the west of the subject site beyond the Leopardstown junction, where a development of three buildings of up to 6 storeys is permitted (Reg. Ref. D17/1060).

Along with the site, all of these developments fall into the Sandyford/Leopardstown area and at a macro level their cumulative effect will establish an extensive, diverse, high density mixed use urban district. The proposed development would take place comfortably in this context and contribute positively to the evolving character.

At the local level (in the site's immediate environs), there are no known proposed or permitted developments with which the proposed development would interact causing townscape or visual effects of greater significance that those identified in this chapter.

13 Material Assets – Traffic and Transport

Chapter 13 of the EIAR has been prepared by ILTP Consulting (ILTP) and assesses any likely and significant impacts associated with traffic due to the proposed development. Mitigation measures are proposed where negative effects are identified.

Methodology

ILTP coordinated traffic count surveys undertaken in May 2019 in order to collate the full set of traffic data considered necessary to support the planning application for the proposed development.

ILTP conducted an assessment of available information on projected traffic trends, including the Transport Strategy for the Greater Dublin Area, the current Dun Laoghaire Rathdown Development Plan 2016 – 2022 and Smarter Travel a Sustainable Transport Future.

ILTP estimated the level of traffic that would be generated by the proposed development and added these figures to the base flows. A Picady analysis was also undertaken to assess the capacity of the previously permitted access onto Leopardstown Road. Picady and LinSig Traffic Signal Junction modelling software was also utilised to assess the capacity of the adjacent junctions with the proposed development in place.

From these results a conclusion could be drawn as to the impact that the development will have on the overall traffic flows. Once details were available ILTP then assessed what impact the development had on the road network.

A study of public transport provisions in the area was also carried out to determine the likely usage of public transport services by residents, staff and customers to the new development.

As part of the Traffic & Transport Assessment (TTA) undertaken, ILTP prepared a Mobility Management Plan for the proposed development, with the specific objectives of reducing in overall terms both the number of trips generated by the development and ensuring that greater numbers use the extensive public transport services in the immediate area.

ILTP also assessed the construction stage traffic impacts of the proposed development on the wider road network.

In terms of projecting future year traffic scenarios beyond the 2019 Base Year, the assumed Opening Year of the proposed development was taken to be 2023, with the Design Year taken as 2037.

Potential and Cumulative Impacts

Construction of the Proposed Development will have slight short-term negative impacts on the adjoining road network with construction traffic on Leopardstown Road (R113) in the vicinity of the proposed access and on the assigned dedicated haul route

Additional construction personnel car / light vehicle movements which will have an insignificant short-term adverse effect on the local road network during the construction works.

The likely effect of the Proposed Development at operational stage will be additional traffic which may have a slight long-term adverse effect on the adjoining road network.

Mitigation Measures

A detailed Construction Traffic Management Plan (CTMP) will be prepared and submitted to the planning authority prior to commencement of construction of the development.

Typical construction working hours on site are expected to be as follows:

- Mondays to Fridays – 7.00am to 7.00pm
- Saturday – 8.00am to 2.00pm
- Sundays and Public Holidays – No activity on site

Construction traffic will access the site from Leopardstown Road with no construction traffic allowed to use the Silverpines Residential Estate. Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is estimated to be a maximum of 10 movements per hour.

As part of the Mobility Management Plan for the proposed development it is recommended that a Mobility Manager be appointed by the Management Company. The Mobility Manager will also be involved in monitoring of the modes of travel to and from the proposed development. This ideally will be done on an annual basis. Monitoring of travel patterns will facilitate the provision of sustainable transport modes and ensure that modal targets are met.

A Stage 2 Road Safety Audit will be undertaken at the detailed design stage to ensure that the final design is in accordance with the RSA Guidelines prior to the commencement of construction. A Stage 3 post construction and pre-opening of the proposed development in accordance with RSA guidelines to address any potential road safety issues related to the completed scheme.

Residual Impacts

The implementation of mitigation measures during the construction and operational phases will ensure that the Proposed Development will not give rise to any likely significant long-term traffic impacts.

14 Material Assets – Utilities

Chapter 8 of the EIAR considers & assesses the potential impacts on local utilities in regard, to the proposed scheme. Measures to mitigate any likely significant adverse impacts of the proposed scheme are reviewed and analysed. This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers.

Study Methodology

The following section outlines the legislation and guidelines considered, and the adopted methodology for preparing this chapter.

Guidelines

The methodology followed for this section is in accordance with the EPA *"Revised Guidelines on the Information to be contained in Environmental Impact Statements, Draft September 2015"* and "Advice Notes for Preparing Environmental Impact Statements Draft September 2015".

The following legislation, standards and guidelines were consulted to inform the assessment:

- Guidelines on the information to be contained in Environmental Impact Statements, 2002, EPA;
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements), 2003, EPA;
- EPA: Draft Revised Guidelines on The Information to be Contained in Environmental Impact Assessment Reports, August 2017;
- EPA: Advice Notes for Preparing Environmental Impact Statements, Draft, September 2015;
- Irish Waters Code of Practice for Water Infrastructure;
- Irish Waters Code of Practice for Wastewater Infrastructure;
- Greater Dublin Strategic Drainage Study, (DCC 2005);
- Regional Code of Practice for Drainage Works, (DCC 2005);
- The Planning System & Flood Risk Management – Guidelines for Planning Authorities, Dept. of Environment, Heritage & Local Government. (Government of Ireland 2009).
- The ESB Network Utility Existing Services maps.
- The Telecommunications exiting network maps.

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS);
- IS EN752, "Drain and Sewer Systems Outside Buildings";
- Irish Water's Pre-Connection Enquiry Application (water demand and foul water loading);

Potential Impact of the Proposed Development

Construction Phase

Power and water would be required during construction activities and servicing of the temporary site compound. The development site would be connected to the local electricity grid network system and mains water supply. Given the scale and transient nature of construction works, the

power and water demand on the local electricity and mains water systems would not be considered significant and would not be anticipated to impact upon local power or water supply.

Telecommunications requirements during the construction phase would be provided using mobile phones / broadband. There would be no anticipated impacts to the local telecommunications system.

Foul water from staff welfare facilities generated during the construction phase would be collected on site in designated waste holding containers / port-a-loo units and emptied on a regular basis by a licenced waste contractor.

The construction works contractor would liaise with the relevant utilities provider prior to works commencing, with ongoing consultation throughout the proposed development. Where new services are required, the construction works contractor would apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

Operational Phase

Surface Water

During the operational phase of the works, the surface water drainage has been designed to maintain the groundwater flows from the site at the greenfield run-off rates.

Foul Water

The impact of the operational phase of the proposed development on the foul drainage network would be the increased flows to the foul network. Irish Water have confirmed in the Confirmation of Feasibility Letter response to the Pre-Connection Enquiry to them and in their Design Acceptance Letter that the network has capacity for the proposed development.

Watermain

The impact of the operational phase of the proposed development on the water supply network would be the increased demand on the local system. Irish Water have confirmed in the Confirmation of Feasibility Letter response to the Pre-Connection Enquiry to them and in their Design Acceptance Letter that the network has capacity for the proposed development.

Potential Cumulative Impacts

Surface Water

The site proposals to treat surface water will aim to replicate greenfield flow rates via a suite of SuDS measures and therefore it is not likely to give rise to any significant effects cumulatively or, in combination with, other developments in the area.

Foul Water Drainage

As there are no new proposed developments in the area, and limited land available to be developed, there is likely to be little additional cumulative effects on the Foul Water Network in the surrounding area, other than this proposed development. Any sizeable developments would require upgrades to the sewer network.

Watermain

As there are no new proposed developments in the area, and limited land available to be developed, there is likely to be little additional cumulative effects on the Water Supply Network in the surrounding area, other than this proposed development.

Mitigation Measures

Construction Phase

The construction works contractor shall liaise with the relevant utilities provider prior to works commencing, with on-going consultation throughout the proposed development. Where new services are required, the construction works contractor shall apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider. Please refer to section 8.10.1 of the water chapter for further mitigation measures.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services or diversions to existing services are proposed, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

Mitigation measures proposed in relation to the drainage and water infrastructure comprise the following:

Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate treatment facility prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e., highly vulnerable groundwater areas

In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with Irish Water standards, pressure tested, and CCTV surveyed to ascertain any possible defects.

The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established

The construction compound's potable water supply shall be protected from contamination by any construction activities or materials.

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

Connections to the existing gas and telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Road sweeping and/or wheel wash facilities will be provided as required.

Operational Phase

Please refer to Chapter 8 of the EIAR – 'Water', for mitigation measures associated with the surface water drainage. All new drainage lines (foul and surface water) will be pressure tested and will be subject to a CCTV survey to identify any possible defects prior to being made operational.

Sustainable Urban Drainage Systems (SuDS) will be incorporated fully into the development, in order to improve the quality of the surface water discharging from site and reduce the runoff volume and rate. The surface water drainage design, for this development, was designed in accordance with the Local Authority requirements. All SuDS measures will be provided in accordance with the Greater Dublin Strategic Drainage Study Regional Drainage Policy Volume 2 - New Development (GDSDS-RDP Volume 2). Specific design requirements for SuDS systems are established by the Construction Industry Research and Information Association's publication CIRIA C753 – The SuDS Manual

Following best practice, the potential for the storm water to become polluted via oil spills will be reduced as far as is practical (e.g., using a Klargester Bypass Interceptor for basement drainage) or similar approved to take run off from carparking areas and passing through same prior to disposal to the on-site surface water system.

Water conservation methods such as the use of low flush toilets and low flow taps should be incorporated into dwellings to reduce water volumes and related treatment and abstraction costs of the development.

Similarly, water conservation methods would reduce the demand on the public water supply network and the loading on the foul sewer network.

15 Material Assets – Waste Management

Awn Consulting Ltd. carried out an assessment of the potential impacts associated with waste management during the construction and operational phases of the proposed development. The receiving environment is largely defined by 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 construction phase, 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. Excavation of the basement and construction of new foundations along with the installation of underground services will require the excavation of soil, stones, clay, made ground and rock (c.34,632m^3). It is currently envisaged that there will be limited chances for reuse of material onsite. While there we be some material retained and reused onsite for landscaping, the majority of excavated material, will need to be removed offsite. Excavated material which is to be taken offsite will be taken for offsite reuse, recovery, recycling and/or disposal.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan (Appendix 15.1) during the construction phase will ensure that the effect on the environment will be **short-term, neutral** and **imperceptible**.

During the operation phase, waste will be generated from the residents as well as the commercial tenants. Dedicated communal waste storage areas have been allocated throughout the development for residents. The residential waste storage areas have been appropriately sized to accommodate the estimated waste arisings in both apartments and shared residential areas. The commercial tenants will allocate space within their own unit for the storage of waste receptacles. The waste storage areas have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan has been prepared which provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture (Appendix 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

Rubicon Heritage Services Ltd. has prepared this chapter of the EIAR which details the archaeological and cultural heritage issues that need to be addressed in respect of the proposed development at lands at St. Josephs House, (a protected structure), Brewery Road and properties at Leopardstown Road, Dublin 18.

This study aims to assess the baseline archaeology and cultural heritage environment, to evaluate the likely significant impacts that the proposed development will have on this environment and to provide mitigation measures, in accordance with the policies of the Department of Housing, Local Government and Heritage (DHLGH), Dún Laoghaire-Rathdown (DLR) County Council, the National Monuments Acts 1930-2004 and best practise guidelines, to ameliorate these impacts.

The proposed development will involve the demolition of the 10 residential dwellings on the site, the refurbishment and change of use of St. Joseph's House to residential use as permitted under Reg. Ref. D17A/0337 (ABP PL06D.249248), the construction of 463 residential units, a residential tenant amenity space, a creche facility, 262 no. car parking spaces, 843 no. bicycle parking spaces, 8 no. motorcycle parking spaces, a public open space, vehicular access, basement areas, 2 no. ESB sub stations, 1 no. ESB kiosk and 2 no. switch rooms and all associated site development works.

Six cultural heritage sites (CH001–CH006) were identified within the study area as follows: one Protected Structure, St Joseph's House (CH001; PS 1548), which will undergo refurbishment and change of use. Two townland boundaries (CH002)—between Galloping Green South & Tipperstown and (CH003)—between Tipperstown & Carmanhall, one undesignated cultural heritage feature which does not comprise extant remains, the Children's Sunshine House (CH004), formerly located on the plots currently occupied by Alhambra and Dalwhinne House and two Architectural Conservation Areas. These are Arkle Square (CH005) and Foxrock (CH006), which are situated to the west and east of the proposed development site.

Direct impacts could occur to two of these sites (CH002) and (Ch004) during the sub surface groundworks associated with the demolition and construction phases. The demolition phase could encounter surviving sub-surface masonry remains associated with the foundations of the Children's Sunshine Home (CH004). Such features would be directly impacted by demolition groundworks. Although it is likely that construction of the existing buildings at the site would have largely removed any remains of the earlier activity, there is a potential that some vestigial remains could survive.

The construction phase will require removal of topsoil followed by bulk excavation associated with the proposed basement. As such there is a possibility of directly impacting the original townland boundary (CH002) between Tipperstown and Galloping Green South as depicted on the historic mapping, in addition to surviving sub-surface masonry remains associated with the foundation of the Children's Sunshine Home (CH004).

The following mitigation measures are proposed:

1. A programme of archaeological monitoring of the ground reduction associated with the proposed development will be carried out. This should be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930-2004.
2. If archaeological material is encountered, then it will be investigated and fully recorded. However, if significant archaeological material is encountered then the National Monuments Service (DoHLGH) will be notified. Resolution of any such significant material will be determined in consultation with the National Monuments Service (DoHLGH).
3. A written report will be prepared detailing the results of all archaeological work undertaken.

When these mitigation measures are taken into consideration the magnitude of the impact decreases from Major to Minor, and the residual impact significance reduces from Slight to Negligible.

There should be no direct or indirect impacts on archaeological or cultural heritage sites at operational phase. No mitigation measures are required at operational stage.

Note: These mitigation measures are subject to approval by DLR County Council and the National Monuments Service, Department of Housing, Local Government and Heritage.

17 Architectural and Built Heritage

The assessment of Cultural Heritage – Built Environment is contained within Chapter 17 of Volume II of this EIAR.

Existing Environment

The subject site is located between Brewery Road and Leopardstown Road, Co. Dublin. St. Joseph's House, in the northern section of the site, is included on the Record of Protected Structure, Reg. Ref. 1548. None of the buildings on the subject site have been included in the National Inventory of Architectural Heritage survey of the area. The subject site also comprises ten detached houses along the Leopardstown Road: 'Sir Ivor Mall', 'Woodleigh', 'Cloonagh', 'Souk EL Raab', 'Calador', 'Alhambra', 'Dalwhinnie', 'Madona House', 'Annaghkeen', and 'The Crossing'.

Architectural heritage within the wider context of the surroundings of the site includes the Arkle Square Architectural Conservation Area (2014), to the south of the subject site, and Protected Structures, including the former Railway Station (RPS Reg. Ref. 1533), and the various structures associated with the Vartry waterworks complex (RPS Reg. Ref. 1524).

The residential development of the northern section of the subject site with 131 No. units has been previously granted, Reg. Ref. D17A/0334,PL06D. 249248. This permitted scheme included works to the Protected Structure St. Joseph's and will be incorporated into the subject scheme.

Impact Assessment

Do Nothing

The subject site is zoned for residential development, and in the absence of the subject proposal it is likely that another comparable scheme for the site would be developed.

Demolition Phase

The demolition of the ten modern houses along the Leopardstown Road is not considered to constitute the loss of any architectural heritage.

Construction Phase

The alterations to the interiors of St. Joseph's House (a Protected Structure) will impact modern fabric only and will not detract from the architectural character or significance of the structure.

Operational Phase

The proposed development will have a visual impact on the surrounding area. The new structures will not be visible from within the neighboring Arkle Square ACA.

Cumulative Impact

There are no known projects of relevance in the immediate context of the subject site.

Mitigation

Visual impact assessment has informed the design of the proposed new development so as to minimize potential visual impact of the development on St. Joseph's House (A Protected Structure), Arkle Square ACA, and the Protected Structures in the wider context.

Residual Impact Assessment

Following the implementation of the mitigation measures, the proposed development will have a positive impact on the historic architectural character of the site.

Monitoring

The proposed works to Protected Structure are to be carried out under the supervision of a Conservation Architect. The excavation and construction of the new pumping station, residential blocks and other works are to be carried out under the supervision of a structural engineer to ensure no damage is caused to the building.

18 Daylight and Sunlight

MICROCLIMATE - DAYLIGHT

ARC Architectural Consultants Ltd. has been commissioned by the Applicant to carry out an analysis of the impact of the proposed development on lands St Joseph's House, Brewery Road and properties at Leopardstown Road, Dublin 18 on daylight access in the surrounding area. The application site on the northern side of Leopardstown Road accommodates the large detached, one to two storey complex at St Joseph's House (a protected structure), which was previously in use as a residential community for Deaf and DeafBlind adults. The application site also accommodates a number of one, one to two and two storey, detached dwellings along Leopardstown Road.

A three dimensional digital model of the proposed development an 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 online planning register; and with reference to on-site, satellite and aerial photography. ARC 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 daylight access within chosen sample rooms in buildings in close proximity to the development site.

ARC's analysis indicates a potential for the proposed development to result in "imperceptible" to "slight" to "moderate" changes in daylight access within existing buildings facing towards the application site in neighbouring residential estates at The Chase (including Sir Ivor Mall and Minstrel Court), Silver Pines (including the Anne Sullivan Centre), Leopardstown Lawns and Leopardstown Avenue. Under a worst case scenario, it is predicted that the impact of the proposed development on daylight access within existing buildings on lands to the west, north and east will be consistent with emerging trends for development in the area, particularly having regard to the scale of development previously permitted on the site and in the wider Sandyford Area.

Due to the extent of intervening distance, the construction of the proposed development has the potential to result in little or no change in daylight access within residences to the south of Leopardstown Road or to the Children's Sunshine Home. However, the potential impact of the proposed development on existing buildings at the LauraLynn House Children's Hospice is likely to range from none to "imperceptible" to "significant". The proposed development has the potential to result in a "significant" change in daylight access to north-facing rooms within the LauraLynn House Children's Hospice opposing the proposed Block C, the hospice use of this complex is assumed to be particularly sensitive to impacts on daylight access.

Given that the potential for development to result in impacts on daylight access diminishes with distance, it is the finding of ARC's analysis that the proposed development will have no undue adverse impact on daylight access within buildings in the wider area surrounding the application site.

MICROCLIMATE - 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 St Joseph's House, Brewery Road and properties at Leopardstown Road, Dublin 18 on sunlight access in the surrounding area. The application site on the northern side of Leopardstown Road accommodates the large detached, one to two storey complex at St Joseph's House (a protected structure). The application site also accommodates a number of one, one to two and two storey, detached dwellings along Leopardstown Road.

A three dimensional digital model of the proposed development 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 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 within chosen sample rooms in buildings and on existing amenity areas in close proximity to the development site.

During the mornings and early afternoons of the spring, summer and autumn months, shadows cast by the proposed development will extend west and north to The Chase (including Sir Ivor Mall and Minstrel Court) and to Silver Pines (including the Anne Sullivan Centre) resulting in an "imperceptible" to "moderate" impact in sunlight access to a small number of rooms facing towards the application site and rear gardens bounding the application site, with the rear gardens of Nos. 24 and 25 Silver Pines likely to experience "moderate" to "significant" additional overshadowing for a considerable part of the day during the spring and autumn months.

To the north and east, the proposed development is likely to result in "slight" to "moderate" overshadowing of sections of the adjoining greenway route at various times throughout the day over the course of the year. Notwithstanding shadows cast by the proposed development, the section of greenway route between Brewery Road and Leopardstown Road is likely to remain capable of achieving the level of sunlight recommended by the BRE Guide for amenity spaces to appear adequately sunlit throughout the year.

ARC's analysis shows that the construction of the proposed development will result in some additional overshadowing of lands to the east of the site during the afternoons and evenings throughout the year. The impact of additional overshadowing will range from "imperceptible" to "moderate" overshadowing of closest rear gardens and houses at Leopardstown Lawn and Leopardstown Avenue during the afternoons and evenings throughout the year.

While the potential of new development to result in material additional overshadowing of lands to the south is low, it is noted that the proposed development is likely to result in additional overshadowing of north-facing windows at the LauraLynn House Children's Hospice facing towards Leopardstown Road during the late evenings of the summer months. As a hospice is a use, which could be considered particularly sensitive to changes in the sunlight environment, the impact of the proposed development on sunlight access to the LauraLynn Children's Hospice is assessed as none to "moderate" to "significant" under a worst case scenario.

For a time around mid-winter, shadows cast by the proposal are predicted to extend as far as the public park at Leopardstown Park, although this additional overshadowing is not predicted to interfere with the capacity of the public park to achieve the amount of sunlight recommended by the BRE Guide for amenity space. As the shadow environment at this time of year is dense, the impact of this additional overshadowing on Leopardstown Park is predicted to range from "imperceptible" to "slight".

19 Risks of Major Accidents and Disasters

Chapter 19 of the EIAR 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 set outs a risk analysis, which addressed the identification, likelihood and consequence of major accidents and / or natural disasters.

Table 19-1 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

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/or very few incidents in associated organisations, facilities communicates; 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 or may occur; regular recorded incidents and strong anecdotal evidence and 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 will probably occur more than once a year.

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	Factor Type	Likelihood
Weather	Storms/Snow	3
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

The likely significant effects are set out below.

Do Nothing Scenario

Where the development does not proceed, it is likely that the permitted development of 139 no. residential units (D17A/0337) would be implemented with the permission expiring in 2024. This would change the townscape character of the Tipperstown triangle of lands in keeping with the evolution of the wider Sandyford/Leopardstown urban district. The seven large-detached houses on large plots fronting Leopardstown Road would remain in use as individual dwellings.

This would (a) not fully realise the potential of the subject sites for sustainable residential use, and (b) not the change the character (for the better) or improve the quality of the Leopardstown Road streetscape to the extent that the proposed development would.

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 appropriate 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 the 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 AWN Consulting. 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 463 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:

Table 19-2 Flood Risk Analysis

Source	Pathway	Receptor	Likelihood	Consequence	Risk	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 Development	Low	Moderate. water ingress into the building and basements	Very Low	None	Very Low
Pluvial	Private and Public Drainage Network	Proposed 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 Development	High	Moderate. Ground water Ingress into Basement	Low	Adequately Waterproofing of basement structure if found necessary.	Low
Human /Mechanical Error	Drainage Network	Proposed Development	High	Moderate. Water ingress Into the Building and basements.	Moderate Risk of Damage to the building	Maintenance Strategy	Low

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 on terms of flood risk.

Table 19-3 Main Risks

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

20 Interactions Risks of Major Accidents and Disasters

Consideration of impact interactions has been addressed during the preparation of the environmental assessment in each of the individual impact chapters. A detailed analysis of how each environmental factor is impacted holistically is addressed herein.

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			x	x	✓	x	✓	✓	✓	x	✓	x	x	x	✓	✓	✓	✓	✓	x	✓	✓	x	x
Biodiversity					x	x	✓	✓	x	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	x
Lands & Soils							✓	✓	✓	x	✓	x	x	x	x	x	x	x	✓	x	✓	x	x	x
Water									x	x	x	x	x	x	x	x	x	x	✓	✓	x	x	x	x
Noise & Vibration											x	x	x	x	x	x	✓	✓	x	x	x	x	x	x
Air & Climate													x	x	x	x	✓	x	x	x	x	x	x	x
Wind & Microclimate															✓	x	x	x	x	x	x	x	x	✓
Landscape & Visual Impact Assessment																	✓	x	x	x	x	x	x	✓
Material Assets - Traffic and Transport																			✓	x	✓	✓	x	x
Material Assets – Utilities																					x	x	x	x
Material Assets – Waste Management																							x	x
Archaeology, Architecture & Cultural Heritage																								

✓ - Interaction

✖ - No Interaction

21 Summary of Mitigation Measures

Chapter 21 of the EIAR provides a summary of the construction and operational phase mitigation measures proposed for each discipline throughout the EIAR document.

These are reflective of those measures identified in the Construction Environmental Management Plan (CEMP) which sets out construction phase mitigation measures for the proposed development. It will be a requirement that all personnel will understand and implement the final agreed CEMP.

A Construction and Demolition Waste Management Plan (CWMP) has also been prepared. Some disciplines have proposed monitoring following their assessment of impacts and implementation of proposed mitigation measures. Monitoring will take place after consent is granted in order to demonstrate that the project in practice conforms to the predictions made during the EIA process.

Monitoring provides assurance that proposed systems are operating as intended. This allows adjustments of operations to be made to ensure continued compliance with consent conditions such as emission limit values, conditions of operation, performance criteria/ indicators and detection of unexpected mitigation failures.