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1 Introduction

Article 5(1)(e) of the EIA Directive requires the project proponent to include a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) and it is transposed into Irish law under article 94(c) of the Planning and Development Regulations 2001, as amended. The term 'non-technical' indicates that this summary should not include technical terms, detailed data and scientific discussion, that detail is presented in Volume II, the EIAR.

This Non-Technical Summary provides a concise, but comprehensive description of the Project, its existing environment, the effects of the project on the environment, the proposed mitigation measures, and the proposed monitoring arrangements, where relevant. The NTS highlights any significant uncertainties about the project. It explains the development consent process for the Project and the role of the EIA in that process.

It is important to highlight that the assessments that form part of the EIAR were undertaken as an iterative process rather than a one-off, post-design environmental appraisal. Findings from the individual assessments have been fed into the design process, resulting in a project which achieves a 'best fit' within the environment.

The development description is set out in Section 2, briefly summarised that Platinum Land Limited are applying for permission for the demolition of existing buildings and construction of a 495no. Build to Rent residential led development on lands adjacent at Coolock Drive, Coolock, Dublin, Dublin 17. see **Figure 1**.

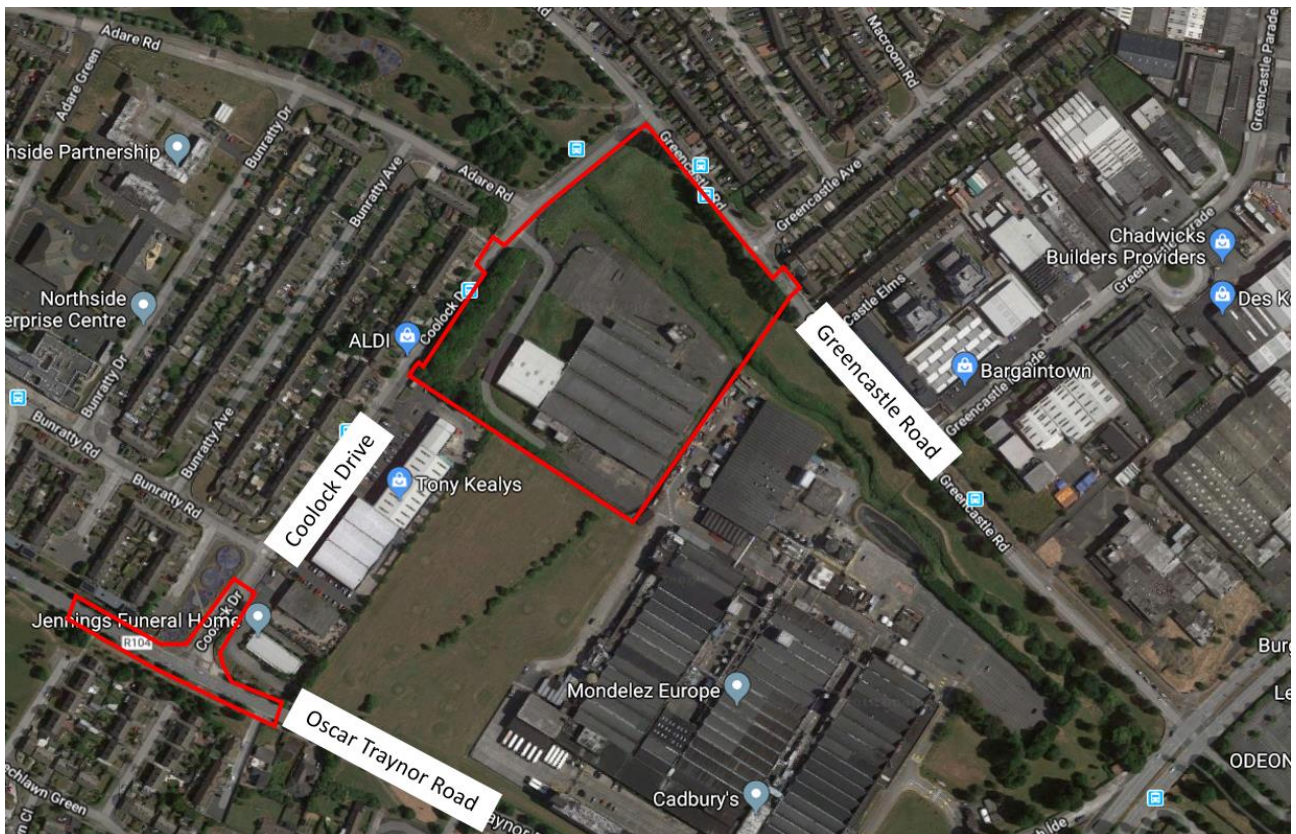


FIGURE 1 SITE LOCATION

It is important to note that this application seeks permission for a 3.86 hectare site. The inclusion of the full site area is to facilitate demolition of all structures on site, as well as including pedestrian and highway improvements at Greencastle Road Coolock Drive and the junction of Oscar Traynor Road / Coolock

Drive. The proposed residential units, ancillary public open space, communal space, residential amenities, café, creche and gym is proposed on the Former Chivers Factory site, on a site area of c. 3.61 hectares.

1.1 Screening for Environmental Impact Assessment

Environmental Impact Assessment (EIA) requirements derive from EU Directives. Council Directive 2014/52/EU amended Directive 2011/92/EU and is transposed into Irish Law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

Proposed development which falls within one of the categories of development specified in Schedule 5 of the Planning and Development Regulations 2001, as amended, which equals or exceeds, a limit, quantity or threshold prescribed for that class of development must be accompanied by an EIAR.

The subject development does not fall within development classes set out in Part 1 of Schedule 5.

It does however fall within development classes set out in Part 2 of Schedule 5 and the applicable categories are;

10b)

(i) Construction of more than 500 dwellings

The proposed development incorporates 495 No. Build to Rent residential units. Whilst the proposed development does not trigger a requirement for a mandatory EIA because the number of units is 495 units is marginally below the trigger, it was decided to apply the precautionary approach and prepare an EIAR to determine if the proposed development would be likely to have a significant effect on the environment.

(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

The application area is an existing vacant industrial site. It is zoned as Z1 (residential) and Z9 (open space) in the Dublin City Development Plan 2016-2022 and the objective is to support and facilitate the development of such sites for residential development. Accordingly, neither the existing land use nor the zoning satisfy the definition of a business district. In this instance, the threshold would be 10 hectares, and the proposed site area is c. 3.86 hectares,

14) Works of Demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

This application seeks permission for the demolition of existing vacant buildings and associated hardstanding areas. The purpose of the works is to facilitate the development of the site for a project listed in Part 2 of Schedule 5. Again, applying the precautionary principle, it was concluded that the proposed demolition works may be likely to have significant effects on the environment and to definitively discount this, an EIAR would be required.

1.2 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, Platinum Land Ltd engaged McCutcheon Halley Chartered Planning Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters, the consultant firms and lead authors are listed in the **Table 1**. Details of competency, qualifications and experience of the lead author of each discipline is outlined in the individual chapters.

Chapter	Aspect	Consultant	Lead Consultant
1	Introduction	McCutcheon Halley Planning Consultants	Nathan Smith
2	Project Description	McCutcheon Halley Planning Consultants	Nathan Smith
3	Alternatives Considered	McCutcheon Halley Planning Consultants / Plus Architecture	Nathan Smith, Gavin Wheatley
4	Population and Human Health	McCutcheon Halley Planning Consultants	Nathan Smith
5	Landscape & Visual	Mitchell & Associates & 3DDB	Feergus Mcgarvey
6	Material Assets: Traffic	Aecom	Cormac O'Brien
7	Material Assets: Built Services	CORA Engineers / Metec Consulting Engineers	Kevin O'Mahony (Cora) Maurice Ramsay (Metec)
8	Land and Soils	CORA Engineers	Joseph O'Brien
9	Water and Hydrology	CORA Engineers	Kevin O'Mahony
10	Biodiversity	Altemar Environmental Consultants	Bryan Deegan
11	Noise and Vibration	Irwin Carr Consulting	Shane Carr
12	Air Quality and Climate		
13	Cultural Heritage	Moore Group	Declan Moore
14	Interactions of the Foregoing	McCutcheon Halley Planning Consultants	Paula Galvin
15	Summary of Mitigation Measures		

TABLE 1 CHAPTERS OF EIAR & CONTRIBUTORS

1.3 Methodology

In preparing the EIAR the following regulations and guidelines were considered:

- The requirements of applicable EU Directives and implementing Irish Regulations regarding Environmental Impact Assessment;
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – DRAFT (Environmental Protection Agency, August 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

In addition, specialist disciplines have had regard to other relevant guidelines, and where relevant these are noted in individual chapters of the EIAR, see Volume II.

Each chapter of this EIAR assesses the direct, indirect, cumulative and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The identified quality, significance and duration of effects for each aspect is largely based on the terminology set out in the EPAs *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2017) as summarised as follows:

Quality of Effect	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities)
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance)
Significance of Effect	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effect	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant Effect	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effect	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Seconds to minutes
Brief	Less than 1 day
Temporary	Less than 1 year
Short-term	1-7 years
Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years
Extent & Context of Effects	
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Type of Effects	
Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
Do Nothing	The environment as it would be in the future should the subject project not be carried out.
Worst Case	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SO _x and NO _x to produce smog).

TABLE 2 IMPACT RATING TERMINOLOGY

1.4 Consultation

A dedicated website for the proposed development is established and the EIAR is available at <https://thejamfactorycoolock.com/>

Additionally, prior to lodging this application, the required information has been issued for the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal provides a URL link

Extensive pre-planning consultation was held with Dublin City Council in advance of lodging this application. Guidance received is integrated into the design and in turn is assessed in this EIAR.

Where relevant specialists engaged with prescribed bodies and the details of advice received is provided in the individual chapters of this EIAR.

An Opinion was received from Bord Pleanála following the pre-application consultation meeting and it contained details of the prescribed bodies to be notified of the making of this application. We can confirm that each identified body has received a copy of the application including the EIAR.

- National Transport Authority
- Minister for Culture, Heritage and the Gaeltacht
- Heritage Council
- An Taisce – the National Trust for Ireland
- Irish Water
- Dublin City Childcare Committee

2 Project Description

2.1 Proposed Development

The proposed development will consist of the following phases of development:

- a) Phase 1 includes the demolition of all existing buildings, existing boundary fences, removal of existing trees, breaking up and crushing the existing hard standing area, excavation and all associated site works;
- b) Phase 2 includes the development of a basement, measuring c. 11,707 square metres to accommodate 181 car parking, 634 bicycle spaces and 16 motorbike spaces, plant rooms, bin storage, attenuation tanks and circulation;
- c) Phase 3 includes the redevelopment of the site to include:
 - i. 495 no. build to rent residential units (comprising 61 no. studio, 150 no. 1 bedroom, 178 no. 2-bedroom, and 106 no. 3 bedroom apartments), residential support facilities, amenities and services in 4 no. blocks which comprise:
 - (i) Phase 3a – Block A1 – includes 98 build to rent units (comprising 16 no. studio, 33 no. 1 bedroom, 39 no. 2 bedroom, and 10 no. 3 bedroom apartments), resident support facilities including entrance / concierge, resident services and amenities including function room, with heights proposed as 6 no. storeys (19.175m above ground level), 9 no. storeys (27.8m above ground level) and 10 no. storeys (30.745m above ground level);
 - (ii) Phase 3b – Block A1 – includes 98 build to rent units (comprising 16 no. studio, 33 no. 1 bedroom, 39 no. 2 bedroom, and 10 no. 3 bedroom apartments), resident support facilities including entrance / concierge, resident services and amenities including function room, with heights proposed as 6 no. storeys (19.175m above ground level), 9 no. storeys (27.8m above ground level) and 10 no. storeys (30.745m above ground level);
 - (iii) Phase 3c – Block B – includes 173 build to rent units (comprising 18 no. studio, 38 no. 1 bedroom, 54 no. 2-bedroom, and 63 no. 3 bedroom apartments), resident support facilities including entrance / concierge, resident services and amenities including Games Room, Dining Area, Study Hub, with heights proposed as 3 no. storeys (10.4m above ground level), 4 no. storeys (13.175m above ground level), 5 no. storeys (16.1m above ground level), 6 no. storeys (19.175m above ground level) and 7 no. storeys (21.95m above ground level);
 - (iv) Phase 3d – Block C – includes 126 build to rent units (comprising 11 no. studio, 46 no. 1 bedroom, 46 no. 2-bedroom, and 23 no. 3 bedroom apartments), resident support facilities including entrance / concierge, resident services and amenities including Homework Club, Communal Work Area with heights proposed as 3 no. storeys (10.4m above ground level), 4 no. storeys (13.175m above ground level), 5 no. storeys (16.1m above ground level), 6 no. storeys (19.175m above ground level) and 7 no. storeys (21.95m above ground level);
 - ii. Ground floor car parking (215 spaces) and bicycle parking (16 spaces);
 - iii. Service building including 1 no. creche, café and gym; and
 - iv. All associated ancillary development works including drainage, 4 no. electricity substations, access and roads within the site, pavements, new boundary walls, fencing, public open space, communal amenity space, tree planting, vehicle and pedestrian access and all associated site works.
- d) Phase 4 - Highway and pedestrian improvements including:
 - i. Upgrading of the site and signals at the junction of Coolock Drive and Oscar Traynor Road;

- ii. Provision of a signalised pedestrian crossing to the south of the site entrance on Coolock Drive; and
- iii. Provision of a signalised pedestrian crossing at the proposed pedestrian entrance to the park off Greencastle Road.



FIGURE 2 PROPOSED SITE LAYOUT WITH LANDSCAPING

The principle development statistics of the proposal are as shown below:

Development Statistic	Proposed Development
No. of Build to Rent Apartments	<ul style="list-style-type: none"> • 495 no. as follows: <ul style="list-style-type: none"> ○ 61 no. studio ○ 150 no. 1 bed ○ 178no. 2 bed ○ 106 no. 3 bed
Site Area	Red Line: 3.86 ha. Net site area: 3.61 ha.
Gross Demolition Area	8,824 sq.m
Number of Residential Units	495no.
Plot Ratio	1.8
Site Coverage	42%
Building Height	3 – 10 storeys
Aspect	65% dual aspect
Public Open Space	15,660 sq.m

TABLE 3 PRINCIPLE DEVELOPMENT STATISTICS

2.2 Energy Strategy

The design intent is to follow the requirements of the E.P.B.D. (Energy Performance of Buildings Directive), Building Regulations Technical Guidance Document (TGD) Part L and the Dublin City Development Plan 2016-2022 which are the current drivers for sustainable building design in Ireland.

The building services design strategy for the proposed development utilises as many sustainable design options and energy efficient systems that are technically, environmentally and economically viable for the project to achieve a low energy and environmentally friendly development, while also providing suitable dwellings to meet current market demands.

Air source heat pumps will be utilised to provide heating to the apartments, this will reduce greenhouse gas emissions associated with conventional fossil fuel heating systems.

The design intent is to provide ventilation to the apartments via high efficiency Mechanical Ventilation with Heat Recovery (MVHR) units. These units will provide a filtered and balanced supply of fresh air. Additionally, all apartments will have openable windows therefore natural ventilation will also be possible.

2.3 Construction Activities & Phasing

A five-year planning permission is being sought from An Bord Pleanála. This will lead to a construction period of not greater than 3 years, including demolition works. A determination on the application is expected from An Bord Pleanála in Q3 2019.

It is expected that demolition work on site will commence Q3/4 2019 subject to permission and the discharge of any pre-commencement planning conditions. The demolition contract is estimated to be complete within 8 months.

The construction works will commence in Q1 2020 with the projected completion of the buildings by Q2 2022.

2.3.1 Construction Hours

This plan will include the permitted site operation hours which are expected to be 07:00-19:00 on weekdays and 09:00-13:00 on Saturdays with no works on Sundays or bank/public holidays in accordance with the Environmental Noise regulations 2006 and subject to final agreement with DCC.

In exceptional instances where works are required outside of these hours, bespoke agreement will be sought from DCC prior to any works taking place. The appointed contractor will be required to prepare and adhere to a *Site Environmental Policy Plan* and any employed subcontractors will be required to buy into this document. Unscheduled deliveries will not be allowed access.

2.3.2 Pedestrian Access

Pedestrian access will be strictly controlled. Only Safepass accredited personnel will be permitted on site and daily in-out attendance records will be maintained. Safe pedestrian access points will be provided based on the stage of works and layout of the construction site.

2.3.3 Vehicular Access

Construction traffic will access the site via the existing access off Coolock Drive so as to minimise disruption on other routes as illustrated below. The routing will be strictly managed and controlled, and details will be incorporated into the traffic management plan.

2.3.4 On Site Parking

On-site parking provision will be minimised to ensure travel by car is not encouraged while simultaneously being aware of the need to facilitate vehicle travel due to the nature of the work and seeking to avoid any potential overspill parking into the local area. Adequate numbers of cycle parking will be provided for site personnel and personnel will be encouraged to use public transport which is widely available in the surrounding area. A limited number of spaces will be provided for visitors.

2.3.5 Construction Personnel

Based on a construction contract value of €100 million over a 150-week construction period, it is estimated that 30,000-man weeks of onsite labour will be required for the project. Based on industry standard figures it is likely that a peak of 300 construction personnel will be on site on a daily basis.

2.3.6 Construction Vehicle Numbers

Based again on a construction contract value of €100 million over a 150-week construction period, it is estimated that maximum construction vehicle flows will be of the order of 84 no. two way HGV movements and 20 no. two way standard vehicle movements spread across the course of the day, which is considerably less than the traffic expected to be generated by the operational stage of development.

2.3.7 Traffic Management Plan

It is noted that a traffic management plan will be developed for the scheme. All works on the public road will be carried out in accordance with the “Guidelines for Managing Openings in the Public Road” published by the Department of Transport (2017).

2.3.8 Construction Waste

There are two main types of construction waste – Hazardous and Non-hazardous.

Non-hazardous wastes typically generated at construction sites include;

- Timber Waste
- Scrap Metal
- Plastic
- Paper / Cardboard
- Canteen Waste
- Litter

Hazardous Wastes are defined as wastes which can have a harmful effect to the environment and human health.

Non-hazardous wastes typically generated at construction sites include;

- Timber Waste
- Scrap Metal
- Plastic
- Paper / Cardboard
- Canteen Waste
- Litter

The hazardous wastes that may be experienced at a development of this nature are as follows:

- Adhesives and Sealants
- Asbestos
- Aerosols
- Batteries
- Chemicals
- Cleaning Products
- Oil (Contaminated absorbent Material or debris)
- Paints and Thinner
- Fuels, (hydrocarbons such as diesel)

The scheme will result in waste generation from the following activities;

- Demolition of the existing buildings
- Removal of the existing boundaries
- Removal of the existing hard standing areas
- Removal of soil to make way for construction
- Removal of Concrete foundations and similar
- Removal of existing landscaping

Emphasis has been put on the reuse and recycling throughout the design, construction and operational phases and a whole life cycle approach to the selection of materials used in the building with specific regard to the impact on the carbon footprint. Over 90% of the refuse on site and demolition material will be recycled. If materials can be reused on site, they will.

2.4 Mitigation and Monitoring

The appointed contractor will be required to prepare a Construction Management Plan in advance of works commencing on site. This will incorporate all mitigation measures proposed within this EIAR for the protection of the environment and human health. Relevant conditions of planning will also be included within the plan.

Monitoring will be undertaken during the demolition and construction phase in line with the recommendations contained within Volume II of the EIAR.

2.4.1 Air Quality

Appropriate Air Quality and Dust monitoring will be carried out and records will be kept of all such monitoring. Construction and demolition works will be carried out in such a way as to limit the emissions to air of pollutants (particularly dust and fine particles (PM10)), employing Best Practicable Means.

2.4.2 Construction Noise and Vibration

Noise monitoring will be carried out in accordance in accordance with Safety, Health and Welfare at Work (Construction) Regulations 2006 – 2012 Safety, Health and Welfare at Work Act 2005, BS 6187:2011 - Code of Practice for Full & Partial Demolition, BS 5228:2009 Code of Practice for Noise & Vibration Control on Construction & Open Sites.

Vibration monitoring will be carried out in accordance with BS 5228-1, 2009, Code of Practice for Noise & Vibration Control on Construction & Open Sites.

2.5 General Safety and Health Considerations

Health & Safety issues will be the primary concern for the appointed Contractors. This will apply in respect of persons working on the site and in respect of passing pedestrians, motorists or other transport carriers. In this regard the highest possible care will be taken in providing a detailed Construction Stage Health and Safety Plan in advance of works commencing on site.

It is intended to operate a Health, Safety & Environmental Management System in line with ISO 18001 & ISO 14001. This Management System translates the company policy into processes to ensure safety, health and environmental responsibilities and performance can be monitored, reported and improved.

A suitably qualified and competent Project Supervisor Design Process (PSDP) has been appointed and a suitably qualified and competent Project Supervisor Construction Stage (PSCS) will be appointed in line with those requirements laid down in the Safety, Health and Welfare at Work Construction Regulations 2013.

3 Alternatives Considered

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

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

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

The Environmental Protection Agency (2017) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft* states;

“The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with ‘an indication of the main reasons for selecting the chosen option’. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or ‘mini-EIA’) of each alternative is not required.” As such, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process.

3.1 Alternative Locations

The site was acquired in 2014. The decision to purchase the site was based on their proven track record of successfully delivering both residential schemes to the market.

The site represented a suitable site for development, being zoned for employment (Z6) and open space (Z9) in the Dublin City Development Plan (2016 – 2022) at the time of purchasing the site.

The variation to the employment land use zoning to residential land use by Dublin City Council in March 2018, means that residential development is listed as a ‘Permitted in Principle’ use in the land use zoning matrix.

Prior to the acquisition, the site’s ability to satisfy environmental criteria was considered by the Applicant and it was found to offer the following attributes;

- The application area offered the opportunity to bring a previously developed brownfield, vacant industrial site within the Dublin Urban Area in close proximity to existing facilities and supporting infrastructure into productive use, thus promoting the principles of compact growth;
- The site’s location within walking distance of public transport corridors and nodes would promote a modal shift from the private car to more sustainable forms of transport. This in turn would assist with achieving overarching environmental objectives such as improved air quality (CO₂, NO₂ and particulate emissions) and a reduction in noise pollution;
- The site is not subject to any statutory nature conservation designation;
- Given the site’s context, its capacity to absorb development without significantly effecting the existing landscape and visual characteristics of the surrounding area is high; and
- The part of the site proposed for residential development is not located within an area identified as susceptible to flooding.

In light of the foregoing, it is considered that the application area is at a high level an appropriate site from an environmental perspective for the proposed Build to Rent residential led development.

3.2 Alternative Designs

The design approach for the proposed development is presented in the **Architectural Design Statement** prepared by the project architects, Plus Architecture.

In summary, the proposed layout is designed to function as a sustainable and successful residential neighbourhood.

The subject proposal has evolved during the design phase in response to input from the appointed EIAR team, advice received from Dublin City Council at pre-planning stage and direction provided by An Bord Pleanála at the pre-application consultation stage of the Strategic Housing Development (SHD) process.

This process highlighted environmental matters that informed the consideration of alternative layouts and designs including open space provision, permeability and connections, height of the proposed blocks, sunlight, daylight and overshadowing and transportation, up to the formalisation of the final scheme which is now being submitted to An Bord Pleanála for approval.

At the outset, the design team undertook a site appraisal to identify the key characteristics and constraints of the site. A meeting was held with Dublin City Council (DCC) on 10th April 2018 to discuss the layout set out in Figure 3.



FIGURE 3 INITIAL DESIGN PROPOSAL

At that meeting a number of matters were raised regarding the conceptual design. Issues highlighted that are relevant to the environmental performance of the scheme are set out in **Table 4**.

Issues with Initial Proposal	Design Response	Environmental Improvements
<p>Too many road connections</p>	<p>A new entrance only road access was introduced from Coolock Drive which will prevent unwanted headlights beaming into the existing houses on the road.</p> <p>This one-way street will allow access to the commercial aspects of the development but will also provide a large amenity space in front of the ground/first floor duplex units.</p>	<p>Population & Human Health The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ achievement of more economical parking designs and an increase in the amenity and quality of apartments ✓ Improved level of amenity for future residents.
<p>On Street Parking too prevalent</p>	<p>There is a reduction in the amount of on-street parking</p>	<p>Population & Human Health The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ Reduction on street provides the benefit of less cars on street, with more undercroft spaces are provided for residential and an underground carpark is proposed for the commercial buildings. ✓ Improved level of amenity for future residents.
<p>Nature and scale of commercial element</p>	<p>A mixture of Regus-style office space, enterprise hub, incubator units, small scale retail, creche, gymnasium and own-door office space is proposed throughout the scheme.</p> <p>This is not a location for a HQ building and as such we must design around multiple tenancies and maximum flexibility.</p>	<p>Population & Human Health The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ The revised commercial development is designed around small and flexible spaces, given the nature of the neighbourhood and the challenges faced to achieve market rents for this type of building.
<p>Future possible site connections</p>	<p>Future connections to the possible development sites to the south and the east are maintained, however the scheme is designed to stand by itself and is not dependant on them.</p>	<p>Population & Human Health The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ if other surrounding lands are brought forward for development, whilst also ensuring the proposal layout meets the necessary guidelines on its own.
<p>Ground level amenity space</p>	<p>Ground level amenity space, in particular in the residential blocks has been prioritised.</p>	<p>Population & Human Health The subsequent design amendments resulted in;</p>

	<p>Every effort has been made to accommodate a significant private outdoor space for the duplex units at street level which b.</p> <p>The duplex units will also have private outdoor space at the first floor podium gardens</p>	<p>✓ A softened the street edge and that creates a neighbourhood atmosphere whereby people will inhabit the spaces adjacent the public realm</p>
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TABLE 4 INITIAL DESIGN AMENDMENTS

Further pre-planning meetings were held with DCC in May 2018 and September 2018 and a meeting was held with An Bord Pleanála in November 2018, matters highlighted introduced the following considerations and subsequent amendments.

Issues with Revised Proposals	Design Response	Environmental Improvements
<p>Excessive height onto parkland</p>	<p>Overall height of these blocks reduced by 2 storeys to mitigate impact of massing on to linear park.</p> <p>The development height strategy is related to the density strategy, where buildings of lower density - three/four storeys - are deemed an appropriate response to the fringe connection.</p>	<p>Landscape & Visual The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ A move away from the established character, providing taller buildings that avoid undue impact upon adjacent existing residential amenity are planned. ✓ taller buildings providing architectural emphasis and expression on key routes and views through the site. ✓ The setback distances across the river and linear park allow the opportunity to rise to the proposed height of 10 storeys (approx. 31m) in this location. ✓ This is a reduction of two storeys from the original pre-application submission made in November 2018. ✓ The park elevation of the scheme has been further developed to provide a much enhanced visual and material appearance and to achieve the active frontage we are striving for.
<p>Location and definition of communal residential amenity spaces to be clarified and improved -</p>	<p>As part of the Build-to-rent model a certain amount of shared and communal spaces are provided to allow for the potential for residents to access larger spaces outside of their normal home environment. These social spaces include:</p> <ul style="list-style-type: none"> • community group rooms • function rooms • games rooms • education areas • homework clubs • café • gym • creche 	<p>Population & Human Health The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ Many of these rooms will be located at the lower floors of the buildings to provide active frontage and to make them as visible within the scheme as possible. ✓ All of these rooms would be accessible to all residents of the developments and not just the residents of the particular block where it is housed.

Issues with Revised Proposals	Design Response	Environmental Improvements
<p>Separation distance from eastern boundary</p>	<ul style="list-style-type: none"> • shared work hubs • breakout dining spaces <p>Overall distance of setback from eastern boundary increased from 5.6m to 11m. As part of the design development we have undertaken following the feedback from An Bord Pleanala, the issue of site boundaries and setbacks was looked at again.</p> <p>The setbacks that had shown been at the pre-application stage were considered too tight to allow a fully realised site boundary condition and to allow for future development potential on the neighbouring site.</p> <p>Accordingly the setback has increased from the previous 5.8m to that proposed, which is 11.0m.</p>	<p>Landscape & Visual</p> <p>The subsequent design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ A landscaped interface up to the site boundary which will allow any future development to the East without compromise.

TABLE 5 SUBSEQUENT DESIGN AMENDMENTS

The proposed scheme (**Figure 4**) subject to this application for permission has evolved from its original form and the consideration of alternative designs has resulted in significant environmental improvements in terms of the landscape and visual contribution that the proposed development will contribute to this area of Coolock.

The comprehensive landscape plan that is integrated with the surface water management system will contribute to improved biodiversity and mitigates against the effects of climate change. Human health will benefit from the prioritisation of pedestrian and cyclist facilities that link to the wider area and this will in turn promote a modal shift and reduce the need to travel by car.

The integration of the scheme with the heating system ‘air source heat pumps’ is a unique attribute and will contribute to reducing greenhouse gas emissions associated with conventional fossil fuel heating systems.



FIGURE 4 PROPOSED DESIGN

3.3 Alternative Processes

This is not considered relevant to this EIAR having regard to the nature of the proposed development which contains over 100 residential units and as such, it is mandatory that the planning application is submitted to An Bord Pleanála as a Strategic Housing Development under the Planning and Development (Housing) and Residential Tenancies Act 2016.

4 Assessment of Environmental Impacts

The EIA process essentially identifies, describes and assesses in an appropriate manner, the direct and indirect significant effects of a project on a series of specified environmental factors;

- Biodiversity, with particular attention to protected species and habitats
- Land, soil, water, air and climate
- Material assets, cultural heritage and the landscape
- Interaction between the above factors

4.1 Population & Human Health

The assessment of Population & Human Health is contained within Chapter 4 of Volume II.

4.1.1 Existing Environment

The subject site lies within the Dublin City Council administrative area, in the Coolock area.

The Governments *Rebuilding Ireland - Action Plan for Housing and Homelessness* set a target to construct 25,000 homes annually to 2021. According to the Central Statistics Office Quarter-3 New Dwelling Completions Report, 12,582 new dwellings have been completed in 2018. This is almost 50% below Rebuilding Ireland's annual target, just 52 no. of these completions are recorded in Dublin 17.

To facilitate the delivery of residential development on this site, the Council formally varied the zoning of c. 2.53 hectares of the site under Variation (No.5) of the Dublin City Development Plan 2016 – 2022:

- From Zoning Objective Z6 – To provide for the creation and protection of enterprise and facilitate opportunities for employment creation.
- To Zoning Objective Z1 – To protect, provide and improve residential amenities.

The variation area is shown outlined in red in **Figure 5**.

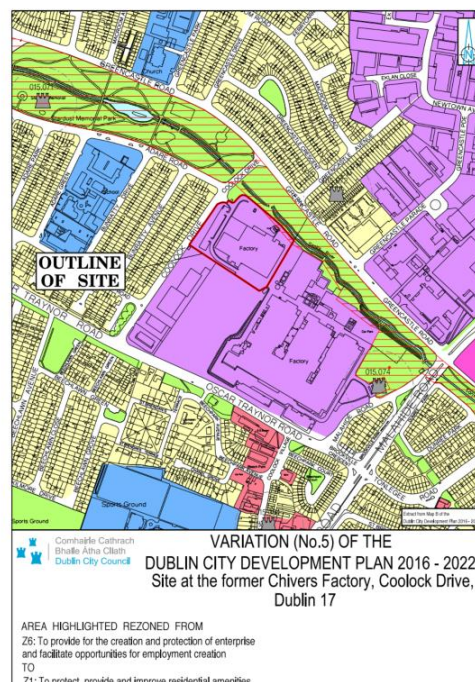


FIGURE 5 LAND USE ZONING

The Council agreed with the proposed variation that it was appropriate to change the zoning of the subject lands from Z6 (Employment / Enterprise) to Z1 (Sustainable Residential Neighbourhoods). The full reasons for the variation of this part of the site is shown in the Planning and Statement of Consistency.

The remaining c.1.08 hectares comprises Z9 (Amenity / Open Space Lands / Green Network), with the Conservation Area boundary (shown by the red hatching) overlaying the Z9 lands, and a small proportion of the Z1 zoned lands.

The study area is well served by a range of community facilities as demonstrated in the accompanying **Social Infrastructure Audit** that accompanies this planning application.

4.1.2 Impact Assessment

4.1.2.1 Do Nothing Scenario

If the proposed development is not realised, it is anticipated that the subject site would remain vacant in the short to medium term. The application area is a significant site in a sustainable location and left unoccupied for any significant period it would likely go into decline. In terms of this subject matter, Population and Human Health, vacant sites can have adverse effects on the character of an area resulting in urban blight and decay. Anti-social behaviour is often associated with vacant sites and this would have a negative effect on the local population.

4.1.2.2 Construction Phase Impact

The proposed development complies with the statutory land use zoning and will realise the efficient use of currently-underutilised brownfield land with higher housing density that is well served by public transport. The impact is likely and will have a permanent significant positive effect that will achieve local and wider county, regional and national objectives.

Construction sites pose potential risks to the health and safety of the public. However, access by the public would be considered trespassing on private property.

A Survey of the site proposed for demolition was undertaken, with the full reports can be found in **Appendix 8 to the EIAR**. The appointed contractor will develop and implement an action plan prior to the construction phase to include appropriate precautions for construction personnel.

It is expected that during peak activities, approximately 300 people will be working directly on the construction site. The staff will comprise of managerial, technical, skilled and unskilled workers. As far as practicable local labour will be employed. It is unlikely that the proposed development will increase the population of the area as a result of the construction phase.

In addition to direct employment, there will be substantial off-site employment and economic activity associated with the supply of construction materials and provision of services such as professional firms supplying financial, architectural, engineering, legal and a range of other professional services to the project.

Revenue generated during the construction phase will have an associated benefit for the local area with respect to expenditure on local goods and services.

The impact of the construction phase will at least extend to the county in terms of the requirement for labour, goods and services. The effect will be significantly positive in the short-term.

Construction works, and emergence of the new structures will be seen in the context of existing views of surrounding public roads and industrial buildings. Many of these are significant developments, which will have the effect of backgrounding and contextualising the proposed works. Works to the public road will

require a road opening licence and temporary closures may be required. The impact of these works is neutral, not significant and temporary.

The construction phase impacts upon in terms of noise, air quality, visual and traffic are assessed in the sections below. No significant residual effects are predicted in each case.

4.1.2.3 Operational Phase Impact

Given the existing housing crisis, it is anticipated that a high-density mixed-use development at this location would result in a likely significant positive impact with a permanent duration as it would realise the objectives of urban consolidation through the efficient use of a zoned and serviced landbank to provide inter alia much needed housing together with high-quality amenities for future occupants.

The proposed design provides for the segregation of pedestrians and traffic and incorporates the principles of universal access so that the development will be readily accessible to all, regardless of age, ability or disability.

The integration of energy efficient measures into the design will provide for healthier living standards for future occupants and less dependence on fossil fuels for energy generation with a resultant improved air quality and thus the impact is likely to be locally significantly positive and of permanent duration.

Adequate and appropriate exposure to light is critical for health and well-being. This application is accompanied by a '**Daylight, Sunlight and Overshadowing**' report and it concludes that the daylight and sunlight received by the neighbouring properties will not be compromised as a result of the proposed development. The report demonstrated that the design of the dwellings within the proposed development has been such that very good levels of daylight and sunlight will be achieved. Similarly the gardens and open spaces have been design so that the recommended sunlight levels are exceeded.

The design has been reviewed by a Fire Consultant and has been assessed as meeting all requirements to ensure the protection of future occupants in the event of a fire.

Insufficient physical activity has been identified by the World Health Organisation as the fourth leading risk factor for global mortality. The proposed scheme prioritises both pedestrian and cyclists and thus promotes active movements for future occupants. The health benefits of active transport (walking and cycling combined with public transport) can prevent many of these deaths from physical inactivity.

A Microclimate **Wind Assessment** accompanies this application under separate cover. The assessment demonstrates that:

- Pedestrian comfort is achieved in all areas of the site in summer;
- In winter, the site is subject to higher and more frequent winds from the southwest which means pedestrian areas in-between Block B and Block C, in-between Block A1 and Block A2, and areas at the west corner of the service building have higher than desirable wind speeds;
- A limited number of areas of the site were identified as being uncomfortable for pedestrians in the **worst-case** winter season. These were identified to be south of the pedestrian spaces in-between Block B and Block C, and the southern corner of Block C;
- No areas of the site exceed the Lawson distress threshold for able-bodied pedestrians;
- There are areas that receive less frequent winds that exceed the 15m/s distress threshold for vulnerable pedestrians:
 - South of the pedestrian areas in-between Block B and Block C;
 - The pedestrian areas in-between Block A1 and Block A2;
 - West corner of the service building; and
 - Small areas at the southernmost corner of the site.

- The distress threshold wind speed of 15m/s for vulnerable pedestrians was found to occur for no more than 5 hours annually in the worst case area i.e. South area in-between Block B and Block C.

However, with the introduction of the proposed landscape masterplan, it is expected all pedestrian spaces outlined above to be safe for their purpose of use.

Overall, the operational phase of the proposed development, in terms of human health is anticipated to be likely and significantly positive locally with a permanent duration.

It is envisaged that the proposed development will accommodate a projected full-time residential population of approximately 1,767 persons. This population will generate additional spending within the area which will likely have a permanent moderate positive impact on economic activity in the surrounding area, including Northside Shopping Centre to the north west of the site. This increase in population will also support the ongoing provision of an efficient public transport system.

The proposed layout provides for excellent public amenity and recreational facilities, including a supporting residential amenities and facilities, communal open space, public open space, gym, café and creche. The provision of amenity facilities within the development will be of benefit to future residents and existing residents in the local environs.

The proposed development is anticipated to generate c. 76 children (based on the 2001 guidelines and 2018 apartment guideline methodology) and a creche is proposed within the scheme for 80 children.

The proposed development will result in a demand for school places at both primary and post-primary level. Using Census data, it is anticipated that the scheme will generate a requirement for 153 no. primary school places and 108 no. post-primary places when fully occupied.

4.1.2.4 Cumulative Impact

The most likely cumulative impact of the proposed development is the demand it will place on local infrastructure and services. As is demonstrated in the preceding section, there is adequate capacity available within the identified local schools to cater for the projected impact.

The Social Infrastructure Audit is included with this application under separate cover, demonstrate that the proposed development of a mixed-use scheme at this location will not give rise to likely significant effects on existing infrastructure and amenities.

4.1.3 Mitigation

4.1.3.1 Construction Phase

A Construction and Environmental Management Plan (CEMP) will be prepared by the selected contractor prior to work commencing on site. The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation measures which are described in this EIAR and contained within the Construction Environmental Waste Management Plan that accompanies this application under separate cover.

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

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

4.1.3.2 Operational Phase

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

- The inclusion of a childcare facility within the proposed development;
- Incorporating extensive communal and open space within the layout, including local play areas and extensive provision for walking and cycling throughout the development;
- Landscaping to mitigate against issues arising from microclimate conditions;
- The inclusion of a comprehensive foul and surface water management system;
- Energy efficient measures; and,
- High quality finishes and materials.

No significant risks to Human Health have been identified within this discipline in relation to the operational phase of the development. Accordingly, no further mitigation measures are required.

4.1.4 Residual Impact Assessment

It is anticipated that the proposed development will realise significant positive overall economic and social benefits for the local community and the wider Coolock area.

Strict adherence to the mitigation measures recommended in this EIAR will ensure that there will be no negative residual impacts or effects on Population and Human Health from the construction and operation of the proposed scheme. Indeed, the delivery of much needed housing and student accommodation will realise a likely significant positive effect for the local area.

4.1.5 Monitoring

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

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.

4.2 Landscape & Visual Character

The assessment of Landscape & Visual Character is contained within Chapter 5 of Volume II.

In the context of re-zoning from industrial to residential, the proposed development revitalises a derelict site. The density and height of the scheme, when seen in the context of the urban consolidation of local environs and in the context emerging baseline for sustainable housing at national policy level is nevertheless a challenge for a low rise suburban landscape character. However, the visual impact images range widely in the area, and demonstrate a surprising lack of visibility except when close by. The close effects are mitigated by the architectural planning, form, proportion and finishes.

This landscape impact is further considered in the landscape context as a positive contribution of public open space, connectivity of the Santry river corridor and permeability across the site with its associated amenities.

The overall degree of impact is seen as **moderate** in the context of a baseline of a derelict site and a landscape character that is not particularly sensitive

The design of the scheme produces a **neutral** to positive quality in this context.

4.3 Material Assets: Traffic & Transport

The assessment of Traffic & Transport is contained within Chapter 6 of Volume 2.

4.3.1 Existing Environment

The existing traffic and transport conditions on the local road network can be summarised as follows:

- **Baseline Traffic Surveys;** the traffic surveys undertaken on Thursday, 14th September 2017 indicated that the weekday morning peak occurred between 08:00 and 09:00 with the evening peak occurring between 16:00 and 17:00 – these were observed to be the timeframes during which the junctions were most heavily loaded.
- **Walking and Cycling Facilities;** an existing cycle lane and footpath is located on both sides of Coolock Drive as well as all other roads surrounding the proposed development, providing connectivity from the site to surrounding Dublin Bus stops and employment locations.
- **Bus and Rail Facilities;** Dublin Bus stops on Coolock Drive north and southbound are located within 100m of the site entrance. These stops provide a high frequency bus service to Dublin City Centre and further afield. Harmanston DART station is within 1.9km from the site, where services are available to Greystones and Bray.
- **Committed Developments;** In addition to the above, the NTA's proposed Santry River Greenway will improve connectivity of the proposed site, by enhancing existing cycle infrastructure. The NTA's proposed Bus Connects stops on Malahide Road will also help facilitate additional demand for public transport in the local vicinity of the site.

4.3.2 Impact Assessment

4.3.2.1 Do Nothing Scenario

Should the proposed development not take place, the surrounding road network will remain in the current conditions i.e. the development will continue to generate no vehicular traffic to the site as a derelict factory. Background traffic growth is however, anticipated on the surrounding road network at a rate of 1.34% per annum, as indicated with the TII Travel Demand Projections (Unit 5.3) for Region 1 (Dublin).

The respective site is zoned as 'Z1– To protect, provide and improve residential amenities' and Z9 – 'To preserve, provide and improve recreational amenity and open space and green networks', as stated by Dublin City Council. The site is therefore likely to be subject to increased development trips arising from a large scale residential use on the respective site in the future.

4.3.2.2 Construction Phase Impact

It is estimated that maximum construction vehicle numbers will be of the order of 84 no. two way HGV movements and 20 no. two way standard vehicle movements spread across the course of the day, which is considerably less than the traffic expected to be generated by the operational stage of development.

The impact of the construction stage is assessed as follows:

- Increased vehicles numbers are expected to be limited during peak hours meaning congestion impacts are expected to be negligible meaning associated health impacts will also be negligible;
- There will be increased vehicle and HGV movements, however, these will be routed to use the most appropriate routes to limit the associated impact and minimise potential interaction with vulnerable road users where possible;
- The urban nature of the local road infrastructure lends itself to lower speeds and the limited increase in vehicle numbers means there is expected to be no real increase in risk to other vulnerable road users.

Overall, it is considered that the impact of the construction phase on Traffic and Transport will be likely but can be managed to minimise any potential impact on the local road network which will be temporary in nature.

4.3.2.3 Operational Phase Impact

The overall development will generate a resultant trip generation of 176 and 172 two way movements during the AM and PM peak hours respectively. These figures were obtained using the Trip Rate Information Computer System (TRICS 7.6.1).

The percentage impact of additional traffic generated by the proposed development is less than 10% on both junctions assessed during the AM and PM peak hours. This is less than the TII percentage impact standards to warrant detailed assessment of the proposed access junctions (over 10%, of the existing two-way flows on the adjoining highway).

For robustness, AECOM has undertaken a detailed junction modelling analysis using LinSig and Junctions 9 on the Oscar Traynor Road / Coolock Drive signalised junction and the proposed site access respectively. The assumed Opening Year (2022) and Future Year scenarios (2027 and 2037) were calculated using Central Growth Rates from TII's Travel Demand Projections (Unit 5.3) to take into account the level of committed developments in the immediate vicinity of the development.

The result of the junction analysis undertaken demonstrates that traffic from the proposed development can be accommodated on the surrounding road network without any material or adverse impact on the road infrastructure.

4.3.3 Mitigation

4.3.3.1 Construction Phase

The following mitigation measures will be implemented during the construction stage:

A detailed Construction Traffic Management Plan will be prepared by the appointed contractor, prior to construction. The plan will be agreed by DCC and will include measures to minimise the impacts associated with the construction phase upon the peak periods on the surrounding road network.

The majority of site operatives are anticipated to arrive into site prior to 07:30am, therefore avoiding the morning peak hour on the local road network (08:00 – 09:00). Furthermore, in the evening peak hour, approximately 50% of site operatives will depart outside of the evening peak hour, thus minimising the impacts on the surrounding road network.

HGV trips are anticipated to arrive and depart the site at a uniform rate throughout the day, to avoid pressure on the morning and evening peak hour periods. The applicant has also set out a routing methodology for HGVs arriving to the site, to minimise the impact on existing residential dwellings in the vicinity of the site.

4.3.3.2 Operational Phase

The following mitigation measures will assist to reduce the traffic and transport impacts during the operational stage:

The proposed upgrade of the Oscar Traynor Road / Coolock Drive signalised junction will assist to reduce traffic speeds by reducing the widths of the individual approaching lanes of the northern and western arms. The reduced widths will act as a traffic calming measure by increasing driver caution at this location. Introduction of pelican pedestrian crossing features along Coolock Drive and Greencastle Road will provide a more pedestrian friendly environment, and hence reduce traffic speeds of oncoming traffic.

Furthermore, the internal roads layout has been designed as per the Design Manual for Urban Roads and Streets, to reduce traffic speeds.

It should also be noted that a Mobility Management Plan has been prepared as part of this application, which has outlined a series of measures to reduce the reliance on private vehicular modes of transport for future residents.

4.3.4 Residual Impact

The residual impact of the construction and operational phases is outlined in the table below.

<i>Mode</i>	<i>Effects</i>	<i>Impact</i>	<i>Mitigation</i>	<i>Residual Impact</i>	<i>Impact Rating</i>	<i>Duration of Impact</i>
Construction Phase						
Traffic	Construction Traffic Flows	Significant	Construction Traffic Management Plan	Moderate	Negative	Short Term
Operational Phase						
Car Parking	Potential overspill of on street car parking along Coolock Drive	Significant	The proposed development comprises of double yellow lines along the site access of the development; Ample visitor / car club parking provision on ground floor of site	Slight	Neutral	Long Term
Traffic	Traffic flows upon the junctions	Moderate	Oscar Traynor Road signalised junction upgrade; Improvements to the pedestrian facilities of the local road network; Ample cycle parking on site	Slight	Neutral	Long Term
Public Transport	Increase person flows to and from the site	Moderate	Existing public transport can facilitate additional passengers; Bus connects; Once operational will facilitate additional demand for public transport	Slight	Positive	Long Term
Walking	Increased pedestrian movements on Coolock Road, Greencastle Road, OTR	Slight	New pedestrian links and connectivity of the site to public road network;	Slight	Positive	Long Term
Cycling	Increased cycle movements on local road network	Slight	Dedicated pelican crossings; Cycle facilities on upgraded OTR junction Future upgraded BusConnects cycle lanes	Slight	Positive	Long Term

4.3.5 Monitoring

The Mobility Management Plan will require regular travel surveys to be undertaken by the mobility manager for review by the planning authority.

These surveys will monitor the use of all modes by residents at the proposed development, along with assessing the level of usage of the car club spaces, which can be increased in number if required.

4.4 Material Assets: Built Services

The assessment of Built Services is contained within Chapter 8 of Volume II.

4.4.1 Existing Environment

As part of a desktop study of the existing services infrastructure, serving the development site, the following data was sourced online, for information:

- Public Foul Drainage (Irish Water Records);
- Public Water Main Networks (Irish Water Networks);
- Electricity Supply Networks (ESB);
- Gas Supply (Gas Networks Ireland);
- Telecommunications (Éir, Aurora, Virgin Media, BT).
- Consultation with Utility Providers (Irish Water, GNI, ESB, etc).

4.4.2 Impact Assessment

4.4.2.1 Do Nothing Scenario

In the 'Do Nothing' scenario, the derelict industrial site would likely remain idle; resulting in usage rates of the existing services that would be similar to the site's historical impact i.e. prior to the units becoming redundant.

4.4.2.2 Construction Phase Impacts

The new development will require new connections to all service providers as well as to public water supply and waste water networks, which may result in temporary disruption of existing services in the vicinity of the development; in order to facilitate the connection but this disruption, if any, will be brief and not significant.

4.4.2.3 Operational Phase Impacts

The existence of the proposed development is likely to result in an increase in the demand on all required services.

4.4.2.4 Cumulative Impacts

The existing local infrastructure has been assessed as having sufficient capacity to serve the proposed development with pre-engagement with the utility providers having been carried out.

4.4.2.5 Residual Impacts

There is likely to be a slight increase in air pollution and carbon dioxide emissions due to the development. However, any such threat is considered negligible in terms of adversely impacting the climate due to the high quality and energy efficiency of the development proposed.

4.4.3 Mitigation

4.4.3.1 Construction Phase

Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains.

4.4.3.2 Operational Phase

The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

4.4.4 Monitoring

All potable water will be cleaned and tested to the satisfaction of Irish Water prior to the connection to the public potable water. In addition, all connections to the public potable water and foul water sewer will be carried out under the supervision of Irish Water

All new infrastructure, which is to serve the proposed development, is to be routinely inspected with any maintenance carried out, as required. Any monitoring of the built services required during the operational phase of the proposed project will be as advised by the relevant services providers.

4.5 Land & Soils

The assessment of Land & Soils is contained within Chapter 7 of Volume II.

4.5.1 Existing Environment

Site investigations was carried out to determine the geotechnical properties of the underlying soils plus chemical composition with respect to the design of new foundation systems and to evaluate the waste classifications of the material required to be disposed off site.

4.5.2 Impact Assessment

4.5.2.1 Do Nothing Scenario

There will be no impact on the soils and geology of the area in the “Do Nothing” scenario.

4.5.2.2 Construction Phase Impacts

The proposed development will result in a surplus of fill material within the works area. Approximately 94,500 m³ of topsoil and excavated material will arise during the construction phase. The surplus material will be sampled, tested and classified with respect to Waste Acceptance Criteria. Where possible the material will be reused onsite; the remainder, estimated to be 62,500m³ will be exported to an appropriate suitable approved facility.

4.5.2.3 Operational Phase Impacts

On completion of the construction phase, no direct impacts on the soil environment are envisaged.

4.5.2.4 Cumulative Impacts

The potential cumulative impacts may be considered to be Moderate and Long-term impacts, that is, any impact which may occur would be consistent with existing and emerging trends, and the proposed development will have a design life of fifty years.

4.5.3 Mitigation

4.5.3.1 Construction Phase

It is expected that de-watering of the basement excavation can be controlled by pumping from sumps formed in the excavations.

The adjoining road network will be cleaned on a regular basis, if required, to prevent the build-up of soils from the development site on the existing public roads.

To protect against soils entering the existing drainage networks, soil and silt wash down protection measures such as filters or fences shall be put in place at vulnerable locations including road gullies, drainage channels and kerb inlets.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and fuel leakages.

4.5.3.2 Operational Phase

Mitigation measures taken during the design process ensures that mitigation measures are not necessary for the operational phase.

4.5.4 Monitoring

There is no monitoring proposed as part of the excavation works as there are no pre-existing buildings or other infrastructure that are significantly impacted by the proposed works.

4.6 Water & Hydrology

The assessment of Water & Hydrology is contained within Chapter 9 of Volume II.

4.6.1 Existing Environment

The development area is currently 85% hardstanding. Surface water from the development lands currently drain directly attenuated and untreated to the Santry River which enters the Irish Sea at the James Larkin Road approximately 2.5km to the East of the site.

4.6.2 Impact Assessment

4.6.2.1 Do Nothing Scenario

The site is zoned for residential use that is designed to facilitate increased availability of residential use in a largely residential area. In the 'Do Nothing' scenario, the derelict industrial site would likely remain idle; resulting in surface water run-off directly to water courses and with the decaying factory buildings likely to impact increasingly negative over time.

4.6.2.2 Construction Phase

During the construction of the new foul drainage systems there is the potential for surface water to be discharged to the existing public foul sewer system due to pipes and manholes being left open.

There is risk of pollution of groundwater / watercourses by accidental spillage of foul effluent when making connections to live sewers.

4.6.2.3 Operational Phase

There may be the possibility of leakage from foul sewers and drains within the development and along the route of the outfall sewers. Any foul water leakage would result in contamination of ground waters in the area

4.6.2.4 Residual Impact

Infrastructure will be constructed in line with the current recommendations for the improved treatment of water quality on the site.

4.6.2.5 Cumulative Impact

The potential cumulative impacts may be considered to be Moderate and Long-term impacts. That is, any impact which may occur would be consistent with existing and emerging trends, and the proposed development will have a design life of fifty years.

4.6.3 Mitigation

4.6.3.1 Construction Phase

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from fuel, oil and other hazardous materials (paints, cleaning agents, herbicides, fertilisers, etc.).

4.6.3.2 Operational Phase

All foul drains and sewers will be tested and surveyed prior to connection to the public sewers to minimise the risk of uncontrolled groundwater penetration or leakage of foul water to ground water on the site.

4.6.4 Monitoring

The channel of the Santry River shall be part of, and subject to ongoing inspections as required & maintenance schedule. The water conveyance capacity of the channel shall be maintained to prevent the occurrence of either upstream or downstream flooding. Inspections shall also address the habitat quality, including identification any invasive species, and initiate appropriate actions. See also Chapter 10 – Biodiversity.

4.7 Biodiversity

The assessment of Biodiversity is contained within Chapter 10 of Volume II.

4.7.1 Existing Environment

The proposed development site consists primarily of Built Land (BL3) and Amenity Grassland (GA2) with Treelines (WL2)/ WS1 (Scrub)/ WS3 (Ornamental/non-native shrub)/ WD2 Mixed broadleaved/conifer around the perimeter of the site. No flora or terrestrial fauna species or habitats of National or international conservation importance were noted during the survey surveys. The Santry River flows through the site and has a paucity of diversity. No flora or terrestrial fauna species of conservation importance were noted on site by the National Parks and Wildlife Service or the National Biodiversity Data Centre. However, it is expected that herring gulls (red listed) frequent the site. No evidence of past or current use by bats of any of the onsite structures or trees was found.

The proposed development is not within a designated conservation site and the nearest conservation site is 2.5km from the proposed development across an urban environment. It should be noted that the proposed development site is proximate the Santry River and the Santry Demesne pNHA is located 2.5km upstream and both the North Bull Island SPA/Ramsar site and the North Dublin Bay SAC are located 3.2km downstream of the proposed development site

4.7.2 Impact Assessment

4.7.2.1 Do Nothing Scenario

If the proposed development does not take place it is assumed that the lands will continue to be derelict and unmanaged. In the short term no difference in biodiversity value would be expected. In the longer term biodiversity value may increase with the colonisation of artificial surfaces. The single stand of Japanese knotweed noted on site and distribution of buddleja would be expected to increase and spread on site.

4.7.2.2 Construction Phase

Runoff during site demolition, re-profiling, the construction and operation of project elements could impact on the Santry River, with water quality or downstream/upstream impacts. Impacts on the Santry River would be seen as the primary vector for impacts. As outlined in the CEMP and NIS, ensuring water quality and compliance with Inland Fisheries Ireland procedures/ conditions and the water pollution Acts would be seen as the primary method of ensuring no significant impact on designated conservation sites.

The impact of the development during construction phase will be a loss of existing habitats and species on site. No flora, bird, amphibian or mammal species of conservation importance were recorded on site or in NPWS or NBDC records. No evidence of past or current use by bats of any of the onsite structures or trees was found.

Standard construction phase and operational controls and good environmental practice in relation to construction and onsite drainage will be carried out and no impact is foreseen in relation to designated conservation sites. See NIS and CEMP for further details.

4.7.2.3 Operational Phase Impacts

Currently the site has no attenuation or SUDS control or petrochemical interception. The proposed development has a sustainable drainage strategy. This will improve the drainage network, particularly during extreme weather events. The development will comply to DCC requirements and the Water Pollution Acts and measures will be in place to prevent downstream impacts. Lighting on site may reduce the foraging activity on site but this would be expected to be a minor impact. Lighting is not proposed in the riparian corridor or in the vicinity of the treeline. No significant operational phase impacts are foreseen.

4.7.2.4 Residual Impact

It is considered that the proposed development has satisfactorily addressed the current ecology on site into its design so that application of the standard construction and operational phase controls in this EIAR and the accompanying CEMP and NIS will help reduce its impact on the local ecology to an adequate level. The overall impact on the ecology of the proposed development will result in a long term slight neutral residual impact on the existing ecology of the site and locality overall. This is primarily as a result of the loss of terrestrial habitats on site, supported by the creation of attenuation features, additional biodiversity features such as green roofs, standard construction and operational controls and a sensitive native landscaping strategy. The implementation of SUDS drainage on site and riparian features in consultation with IFI would be seen as beneficial to the Santry River.

4.7.2.5 Cumulative Impact

The proposed development site is within a significant urban area with both domestic and industrial pressures. The construction and presence of this development would not be deemed to have a significant cumulative impact.

4.7.3 Mitigation

4.7.3.1 Construction Phase

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence. The mitigation outlined in the CEMP, NIS and EIAR has been designed to ensure that the project will comply with the Water Pollution Acts and standard DCC and IFI Conditions in relation to construction and drainage. All works in the riparian corridor (<10m from the river) will be carried out in consultation with Inland Fisheries Ireland and the project ecologist following the best practice guidelines for construction in the vicinity of watercourses. Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). All additional measures outlined in the EIAR and in the CEMP will be followed.

4.7.3.2 Operational Phase

No significant effects are predicted for the operational phase thus mitigation measures are not proposed.

4.7.4 Monitoring

Mitigation measures outlined above should be integrated into the Construction Environmental Management Plan to be prepared by the appointed contractor. The effectiveness of the proposed mitigation should be monitored throughout the construction period. An ecologist will be appointed to monitor ground clearance and excavation due to the presence of the Santry River.

4.8 Noise & Vibration

The assessment of Noise & Vibration is contained within Chapter 11 of Volume II.

This chapter of the Environmental Impact Assessment Report (EIAR) considers the existing baseline noise levels in the vicinity of the site, predicted construction (including demolition) and operational noise levels and the impact of the predicted change in noise levels. Noise and vibration mitigation measures are proposed as required.

4.8.1 Existing Environment

The Noise Assessment is based on measurements of existing noise levels which were carried out over a 5-day period the daytime and night time. These measurements provided the baseline levels which were compared to the predicted noise from the construction and operational phase of the site.

4.8.2 Impact Assessment

The site was assessed in line with the appropriate standards as set out in the ProPG, Dublin City Development Plan and TII Guidance and the results of the assessment presented in line with the requirements of the EIAR.

The vibration assessment considered the impacts of vibration from the construction phase on existing properties in line with the levels provided in BS5228 and the TII Guidelines.

4.8.2.1 Do Nothing Scenario

If the proposed development were not to proceed, noise levels in the locality will remain unchanged as there will be no additional traffic movements or construction noise as a consequence of the proposed development. In addition, there will not be any additional receptors introduced to the locality to be exposed to existing noise levels.

There will be a natural increase in traffic flows over time, but the predicted levels of increase will not cause a noticeable difference in the noise levels on the site.

The site is zoned for regeneration so would be likely to be developed in the future with either residential or enterprise led development. The impact of any future similar development is likely to be comparable to the effects identified in this assessment.

4.8.2.2 Construction Phase Impact

A similar methodology was relied upon for both the construction and demolition phases.

4.8.2.3 Operational Phase Impact

The Table below sets out the predicted effects of the proposed development during the operational stage.

Descriptor	Assessment	Comment
Quality of Effects	Neutral Effects	There are no significant noise sources which will affect existing residential properties further away from the site. The noise sensitive receptors which have the greatest potential impact are those associated with the development. The predicted noise levels show that the predicted worst-case scenario is in the low to medium range of the ProPG Guidance. When the good acoustic design as identified is taken into account, the effects will not be perceptible within the proposed units.
Significance of Effects	Slight Effects	The predicted noise levels are lower than the existing background daytime noise levels at all stages after the existing earthworks.
Probability of Effects	Unlikely effects	The site is primarily designed to minimise impact on the proposed residential development, as there will not be a significant impact on the existing properties in the wider area. The mitigation measures will be incorporated into the building design to ensure the ongoing noise effects are minimised.
Duration and Frequency of Effects	Permanent Effects	The proposed site will be expected to last over 60 years
Types of Effects	Do-nothing effects	The site is zoned for regeneration so would be likely to be developed in the future with either residential or enterprise led development. The impact of this development is likely to be similar to future development on the site

TABLE 6 NOISE IMPACT ASSESSMENT

4.8.2.4 Residual Impact

A noise impact assessment has been undertaken for the proposed mixed-use development. Construction noise impacts were assessed against BS5228:2014 noise limits and noted to be compliant at all existing residential properties. There will therefore be no residual construction impacts from the proposed development.

The impact of existing and proposed transportation noise sources on the proposed residential development has been assessed. The ProPG Noise Risk Impact has been found to be 'Low-Range'

during the day and 'Mid-Range' at night, indicating that a post-consent Acoustic Design Statement is required.

Further to appropriate mitigation measures being incorporated into the proposed development, it was found that operational noise from the proposed development is likely to have a low impact during both the daytime and night-time periods.

Given the above, it can be concluded that residual effects from the construction and operation of the proposed development would not be deemed significant.

4.8.2.5 Cumulative Impact

There are no other development sites in the vicinity of this proposed area and the site was assessed in terms of overall noise from all of the proposed buildings being operational at the same time.

4.8.3 Mitigation

4.8.3.1 Construction Phase

While the effect of construction noise is not considered to be significant, the following noise control measures, are recommended in order to minimise noise disturbance.

- To the extent practicable, complete works during standard construction hours. Where practical, organise for deliveries to be made during standard construction hours and carry out loading and unloading away from sensitive receivers. Construction timetabling to minimise noise impacts; this may include time and duration restrictions and respite periods and should be considered after consultation with affected receivers.
- Using quieter construction methods where required and where considered reasonable and feasible. Avoid rock hammering; where possible by using other excavation methods such as jaw crushers and, if unavoidable, use the smallest practical excavator/backhoe and hammer. Use rubber wheeled in preference to steel tracked equipment. Make sure all diesel equipment is fitted with appropriate mufflers (e.g. residential grade). Where acceptable from an occupational health and safety perspective, using quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and 'smart' reversing alarms), particularly during night time activities.
- Switch off equipment when not in use (including during breaks and down times of more than 30 minutes).
- Where reasonable and feasible, locate haulage routes as far away as possible from residential receivers. Truck movements would be restricted to identified haulage routes.
- Where possible, avoiding using noisy plant simultaneously or close together to avoid cumulative noise impacts.
- Orienting equipment and excavation work sites where possible to reduce noise emissions to sensitive receivers.
- Maintaining equipment in efficient working order.
- Establish a noise complaint handling procedure and respond quickly to resolve any complaints in accordance with WPD's established policy.

4.8.3.2 Operational Phase

The proposed building will include double glazed windows with a mechanically ventilated internal environment which ensures that windows can be kept closed to maximise the sound insulation from external noise.

The layout of the scheme has incorporated significant design measures to maximise the amenity of the external areas:

- A communal external area will be at first floor level, with the building between the external areas and the roads, which will provide in the region of 10dB noise reduction.
- The apartments on the site will be set back from the boundary edge, increasing the separation distance to the road traffic noise and maximising the noise attenuation provided by the balconies themselves.

4.8.4 Monitoring

The provisional monitoring programme for each type of activity is:

- When the works start to verify the sound, levels assumed for each of the major items of equipment, and to assess the effectiveness of noise control measures and implementation of this plan.
- At regular intervals during the works, at least every four weeks in line with the site safety inspection, to check ongoing compliance with the construction noise limits.
- During critical phases of construction, such the use of heavy earth moving machinery and other noisy activities within 50 metres of neighbours.
- As required by a construction noise management schedule.

4.9 Air Quality & Climate

The assessment of Air Quality & Climate is contained within Chapter 12 of Volume II.

The air quality assessment considered both the short-term dust impacts from the construction phase of the site as well as the longer-term impacts from the traffic related pollutants from the operational phase of the site.

4.9.1 Existing Environment

The closest monitoring station to the site is St Anne's Park, where continuous monitoring is undertaken for Nitrogen Dioxide and Particulate Matter (PM₁₀). As can be seen from the information presented above, the annual mean concentrations for both parameters is well below the relevant limit value for the protection of human health and vegetation.

A review of other Zone A monitoring stations in Dublin demonstrates that for all pollutants excluding NO_x, the average annual mean is well below the individual limit value.

The annual average mean for NO_x is in excess of the relevant limit value and is associated with inter alia transportation emissions.

The background concentrations utilised within the ADMS modelling represents an average of the above values (unless measurements have been specifically undertaken in the St Anne's Park area i.e. (NO₂ and PM₁₀) as these better represent the setting in proximity to the proposed development.

4.9.2 Impact Assessment

The assessment considered the current guidelines for the Clean Air for Europe (CAFÉ) Directive and Institute of Air Quality Management Guidance in relation to the dust assessment.

Site specific mitigation measures are outlined for the construction phase and ADMS modelling software was used to assess the impacts of the long-term air quality.

4.9.2.1 Construction Phase Impact

Construction traffic would be expected to be the dominant source of greenhouse gas emissions as a result of the development. Vehicles will give rise to CO₂ and NO₂ emissions during construction of the proposed development.

The main construction works will take place over approximately a 36-month period within which the majority of truck movements will occur. This covers the enabling works, demolition, excavation and construction phases.

Within this period there will be some activities such as excavation for the building which will produce the greatest number of HGV movements in and out of the site. This will only occur over a short period of time (3 months) within this 36-month period.

Emissions of dust to air can occur during the preparation of the land (e.g. demolition, land clearing, and earth moving), and during construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations being undertaken, and the weather conditions. The scale of these impacts depends on the dust suppression and other mitigation measures applied

4.9.2.2 Operational Phase Impact

It is anticipated that development of the site will promote a modal shift due to its location in close proximity to a range of public transport, including the DART, bus routes, the cycle network and pedestrian infrastructure.

Energy efficient measures are incorporated into the scheme's design. The scheme is Part L compliant and an important element of Part L is the requirement for onsite or nearby renewables to meet the energy demand. The predicted air quality pollutant concentration results have been compared with the relevant Air Quality Standards Regulations 2011. Using the information as described, based on the results of the ADMS Roads Assessment, it is predicted that the annual mean PM₁₀, CO and NO₂ limit values will not be exceeded at existing dwellings in the vicinity of the site or at dwellings as proposed within this application for permission.

4.9.2.3 Residual Impact

Taking into consideration the original risk assessment of the proposed construction works and further to mitigation being enacted, it is concluded that no significant impacts will result as a consequence of the proposed development.

Proposed and existing residents will not experience a significant air quality impact as deduced from the results of the ADMS Roads Assessment which compares air quality pollutant concentrations without and with the proposed mixed-use development, hence no monitoring is deemed necessary.

4.9.2.4 Cumulative Impact

A search of Dublin City Council's planning database did not identify any significant applications for development permitted and not built or currently under consideration. Therefore, it is considered that the information used to inform this assessment represents the worst-case scenario.

4.9.3 Mitigation

4.9.3.1 Construction Phase

The mitigation measures have been divided into general measures and measures applicable specifically to demolition, earthworks, construction and trackout, for consistency with the assessment methodology. Site-specific mitigation required for the proposed development address dust management, the construction and demolition stage as well as the trackout.

4.9.3.2 Operational Phase

Proposed residents will not experience a significant air quality impact as deduced from the results of the ADMS Roads Assessment which compares air quality pollutant concentrations without and with the proposed mixed-use development, hence no mitigation is deemed necessary.

4.9.4 Monitoring

Construction dust has the potential to impact at the nearest receptors outside of the proposed development. The nearest dwellings will generally be most affected and therefore assessing compliance with dust limits at those 'controlling points' will also ensure compliance at other dwellings further away.

Proposed residents will not experience a significant air quality impact as deduced from the results of the ADMS Roads Assessment which compares air quality pollutant concentrations without and with the proposed mixed-use development, hence no monitoring is deemed necessary.

4.10 Cultural Heritage

The assessment of Cultural Heritage is contained within Chapter 13 of Volume II.

4.10.1 Existing Environment

The site is located in north Dublin city, c. 2.3km to the east of the M50 motorway. The Chivers Factory site consists of former factory buildings with car parking and open space. The Santry River runs in a south-east/north-west direction in the northern part of the site. A green area stands between the river and the northern site boundary adjacent to the Greencastle Road.

The proposed development site is currently a well screened site with c. 1.08ha of greenfield land to the north and existing factory buildings to the south. There are no recorded archaeological monuments or protected structures within its boundary.

A cut stone single arch bridge spans the Santry River to the North. The bulk of the site to the south of the Santry River has been previously developed and the archaeological potential here is limited.

4.10.2 Impact Assessment

4.10.2.1 Do Nothing Scenario

If the development were not to proceed there would be no impact on the cultural heritage resource. There remains a low potential that groundworks for the new development may impact on previously unrecorded archaeological material.

4.10.2.2 Construction Phase Impact

There are no known archaeological monuments or sites within the proposed development site. There will be no impact on any recorded archaeological monuments by the proposed development. Internally there are no Protected Structures or NIAH site within the planning application red line boundary or adjacent to the site. A cut stone single arch bridge crosses the Santry River to the north of the site. There will be no direct impacts on the bridge. A balustrade may be added to the bridge.

4.10.2.3 Operational Phase Impact

There are no recorded archaeological sites/features listed as being located within the boundary of the subject site. Archaeological sites in the vicinity are well screened and separated from the PDA by existing housing and commercial development. There will be no adverse impact on the setting any recorded archaeological sites by the development. There are no architectural sites whose settings are likely to be affected by the proposed development. The cut stone bridge is a discreet low lying feature and will be preserved in situ.

4.10.2.4 Cumulative Impact

The cumulative impact of the proposed development on the cultural heritage resource is insignificant.

4.10.3 Mitigation

4.10.3.1 Construction Phase

It is recommended that archaeological monitoring of works in the greenfield area/proposed linear park be carried out during excavation works by a suitably qualified archaeologist.

It is recommended that a suitably qualified individual demarcate the location of the existing bridge and that a suitable buffer be established during construction works. No works should be carried out at or near the bridge and that the area should be avoided by site traffic.

4.10.3.2 Operational Phase

No further mitigation is recommended.

4.10.4 Monitoring

If the above recommendations are fully implemented the residual impacts of the proposed development on the local archaeological resource would be negligible and no further monitoring will be required.

4.11 Description of Significant Interactions

The construction, operational and cumulative impacts of the proposed development have been assessed individually, this section considers the significant interactions of impacts between each of the separate disciplines.

In practice many impacts have slight or subtle interactions with other disciplines. The Table below highlights those interactions which are considered to potentially be of a significant nature. Discussions of the nature and effect of the impact is presented in the individual assessments within Volume II, EIAR.

Con.	Construction Phase
Op.	Operational Phase
✓	Potential Significant Interaction
✗	No Significant Interaction

Interaction	Population & Human Health		Landscape		Material Assets- Traffic		Material Assets- Built Services		Land & Soils		Water		Biodiversity		Noise & Vibration		Air Quality & Climate		Cultural Heritage	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Population & Human Health			x	✓	✓	✓	x	x	✓	✓	✓	✓	x	x	✓	✓	✓	✓	x	x
Landscape	✓	✓			x	x	x	x	✓	✓	x	✓	x	✓	x	x	x	x/✓	x	✓
Material Assets-Traffic							x	x	x	x	x	x	x	x	✓	✓	✓	✓	x	x
Material Assets-Built Services									x	x	✓	✓	x	x	x	x	✓	✓	x	x
Land & Soils											✓	x	✓	x	x	x	x	x	x	x
Water													✓	x	x	x	x	x	x	x
Biodiversity															x	x	x	x	x	x
Noise & Vibration																	x	x	x	x
Air Quality & Climate																			x	x
Cultural Heritage																				

5 Summary of Mitigation Measures

5.1 Incorporated Design Mitigation

Discipline	Proposed Mitigation Measure
Landscape & Visual	<ul style="list-style-type: none"> The design seeks to mitigate potential negative effects by: the design form heights and layout of the architectural scheme the integration of the landscape design with the architectural and engineering the extension of the Santry River linear park.
Material Assets- Traffic & Transport	<p>The design seeks to mitigate potential negative effects by:</p> <ul style="list-style-type: none"> Proposing an upgrade to the Oscar Traynor Road / Coolock Drive signalised junction in order to assist to reduce traffic speeds by reducing the widths of the individual approaching lanes of the northern and western arms. The reduced widths will act as a traffic calming measure by increasing driver caution at this location. Introducing pelican pedestrian crossing features along Coolock Drive and Greencastle Road in order to provide a more pedestrian friendly environment, and hence reduce traffic speeds of oncoming traffic. Proposing an internal roads layout as per the Design Manual for Urban Roads and Streets, to reduce traffic speeds. Preparing a Mobility Management Plan, which has outlined a series of measures to reduce the reliance on private vehicular modes of transport for future residents.
Material Assets- Built Services	<p>The design seeks to mitigate potential negative effects by:</p> <p>All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment.</p>
Land & Soils	<p>The design seeks to mitigate potential negative effects by:</p> <ul style="list-style-type: none"> All new-build infrastructure is to be designed in accordance with the Technical Guidance Documents of the Building Regulations and associated codes of practice, which require due cognisance of the receiving environment. Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time.
Water & Hydrology	<p>The design seeks to mitigate potential negative effects by:</p> <ul style="list-style-type: none"> Surface water treatment has been designed to significantly improve the quality of the site run-off to water courses or to ground. Storm water run-off shall pass through at least 2 stages of treatment with over 90% of rainfall events passing through soakaway systems into the receiving ground. The form of the development is such that groundwater shall be unaffected.

TABLE 7 INCORPORATED DESIGN MITIGATION

5.2 Construction Phase

Discipline	Proposed Mitigation Measure
Population & Human Health	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • Preparation of a detailed Construction and Environmental Management Plan (CEMP) by the selected contractor prior to work commencing on site; • Project supervisors for the construction phase will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013; and • A Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phases.
Landscape & Visual	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • The provision of site hoarding along the property boundaries; and • Measures will be included in the Outline Construction Management Plan relating to the control of lighting, storage of materials, placement of compounds, control of vehicular access, and effective dust and dirt control measures, etc.
Material Assets- Traffic & Transport	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • Measures contained in the Traffic Construction Management Plan <ul style="list-style-type: none"> ○ Daily and weekly working hours; ○ Agreed haul routes for incoming materials; ○ Licensed hauliers to be used; ○ Disposal sites, if necessary; ○ Travel arrangements for construction personnel; ○ Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network; ○ Temporary construction entrances to be provided; ○ Wheel wash facilities if required; ○ Road cleaning and sweeping measures to be put in place if required; ○ Temporary construction signage to be put in place and maintained; and ○ Any proposed traffic management measures such as temporary traffic lights and signage on any public roads.

Discipline	Proposed Mitigation Measure
<p>Material Assets-Built Services</p>	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • Intrusive testing by the appointed contractor to establish the location of underground services in advance of works commencing on site; • Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution water mains; • Advising neighbouring sites of construction methodologies in advance of works, in situations which may affect them; • Placing protection of all underground services for which diversions are not required; • All decommissioned infrastructure to be sent to a suitably licenced waste management facility; • Construction methods used by the contractor are to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas; • 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 a suitably licenced waste management facility; • All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines; • Potable water supply networks and waste water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Irish Water Requirements; • Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning; • All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase; • Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption; and <p>All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority.</p>

Discipline	Proposed Mitigation Measure
<p>Land & Soils</p>	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • Control of Soil Excavation and Export from Site using the reduce, reuse and recycle approach; • All excavation arisings will be reused on site where possible; • The implementation of an appropriate earthworks handling protocol; • Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads; • All fill and aggregate for the project will be sourced from reputable suppliers; • Designation of bunded refuelling areas on the site (if required); • Provision of spill kit facilities across the site; • Where mobile fuel bowsers are used the following measures will be taken: <ul style="list-style-type: none"> ○ Any flexible pipe, pump, tap or valve will be fitted with a lock and will be secured when not in use; ○ All bowsers to carry a spill kit and operatives must have spill response training; and ○ Portable generators or similar fuel containing equipment will be placed on suitable drip trays. • In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted: <ul style="list-style-type: none"> ○ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas; ○ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; ○ All drums to be quality approved and manufactured to a recognised standard; ○ If drums are to be moved around the site, they should be done so secured and on spill pallets; and ○ Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment. • There will be a requirement for a Construction Management Plan to oversee the development; • Earthwork operations will be carried out such that surfaces, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing; and <p>Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer regulated under a Discharge Licence obtained from the Regulator (Irish Water) issued under the Water Pollution Act.</p>

Discipline	Proposed Mitigation Measure
Water & Hydrology	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • 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 are 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 to be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning; • All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase; • Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption; and • All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority

Discipline	Proposed Mitigation Measure
<p>Biodiversity</p>	<ul style="list-style-type: none"> • Fuel, oil and chemical storage should be sited within a bunded area. The bund must be able to take the volume of the largest container plus 10% and be located at least 10m away from drains, ditches, excavations and other locations where it may cause pollution. Bunds should be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination; • Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). • Replanting of the perimeter treelines and hedgerows should be carried out with native species where possible; • Native Hedgerow planting should be included in planting schemes within the site, to reinstate nesting resource lost during site clearance; • Construction operations outside of daylight should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species; • Linear features such as hedgerows and treelines serve as commuting corridors for bats (and other wildlife) and the onsite boundary vegetation should be retained and/or replaced once construction ends. Native species should be chosen in all landscaping schemes. Planting schemes should attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development; and • If bats are encountered during any works at the site the relevant works will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site. <p>All works in the riparian corridor (<10m from the river) will be carried out in consultation with Inland Fisheries Ireland and the project ecologist following the best practice guidelines for construction in the vicinity of watercourses.</p>

Discipline	Proposed Mitigation Measure
Noise & Vibration	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • To the extent practicable, works are to be completed during standard construction hours. Where practical, deliveries are to be made during standard construction hours and carry out loading and unloading away from sensitive receivers; • Quieter construction methods will be used where required and where considered reasonable and feasible. Avoiding rock hammering where possible by using other excavation methods such as jaw crushers and, if unavoidable, use the smallest practical excavator/backhoe and hammer. Use rubber wheeled in preference to steel tracked equipment. Make sure all diesel equipment is fitted with appropriate mufflers (e.g. residential grade). Where acceptable from an occupational health and safety perspective, using quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and 'smart' reversing alarms), particularly during night time activities; • Equipment will be switched off when not in use (including during breaks and down times of more than 30 minutes); • Where reasonable and feasible, haulage routes will be located as far away as possible from residential receivers. Truck movements would be restricted to identified haulage routes; • Where possible, using noisy plant simultaneously or close together will be avoided; • Equipment and excavation work sites will be oriented where possible to reduce noise emissions to sensitive receivers; • Maintain equipment in efficient working order; and • A noise complaint handling procedure will be established and respond quickly to resolve any complaints in accordance with Dublin City Council established policy.

Air Quality

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on or off site, and the action taken to resolve the situation in the log book.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided if necessary.

Dust Management

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Cover, seed of fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Discipline	Proposed Mitigation Measure
	<ul style="list-style-type: none"> • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet methods. • Avoid bonfires and burning of waste materials. <p>Demolition</p> <ul style="list-style-type: none"> • Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). • Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground • Avoid explosive blasting, using appropriate manual or mechanical alternatives • Earthworks: <ul style="list-style-type: none"> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surface as soon as practicable. • Construction <ul style="list-style-type: none"> • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overflowing to prevent dust. • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever the site size and layout permits. • Access gates to be located at least 10m from receptors where possible.

Discipline	Proposed Mitigation Measure
Cultural Heritage	<p>Mitigation measures proposed during the construction phase of development are:</p> <ul style="list-style-type: none"> • archaeological monitoring of works in the greenfield area/proposed linear park be carried out during excavation works by a suitably qualified archaeologist. • In the event of archaeological features or material being uncovered during construction phase, it is crucial that machine work cease in the immediate area to allow the archaeologist to assess, excavate and record any such material. • Should archaeological features or material be uncovered during construction phase, adequate funds to cover excavation, fencing (if required), post-excavation analysis and reporting, and conservation work should be made available.

TABLE 8 CONSTRUCTION MITIGATION

5.3 Operational Phase

Discipline	Proposed Mitigation
Population & Human Health	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The inclusion of a childcare facility within the proposed development; • Incorporating extensive open space, and extensive provision for walking and cycling throughout the development; • The inclusion of a comprehensive foul and surface water management system; • Energy efficient measures; and • High quality finishes and materials.
Landscape & Visual	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The provision of significant additional public space, including; boulevard/streets at the ground level entrances and throughout the development at ground level; a public park linking the proposed scheme with the surrounding area to the north.; and • The relationship between the buildings and the adjacent newly created public realm is fully considered and includes semi-private buffering where appropriate between public realm and internal living areas at 'ground' level; The provision of communal/public uses within the building courtyards, in order to facilitate public access and permeability and to assist in activating public spaces
Material Assets- Traffic & Transport	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The proposed upgrade of the Oscar Traynor Road / Coolock Drive signalised junction will assist to reduce traffic speeds by reducing the widths of the individual approaching lanes of the northern and western arms. The reduced widths will act as a traffic calming measure by increasing driver caution at this location. • Introduction of pelican pedestrian crossing features along Coolock Drive and Greencastle Road will provide a more pedestrian friendly environment, and hence reduce traffic speeds of oncoming traffic. • Furthermore, the internal roads layout has been designed as per the Design Manual for Urban Roads and Streets, to reduce traffic speeds. • It should also be noted that a Mobility Management Plan has been prepared as part of this application, which has outlined a series of measures to reduce the reliance on private vehicular modes of transport for future residents.
Material Assets- Built Services	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

Discipline	Proposed Mitigation
Water & Hydrology	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services; and • Regular maintenance of the development's green roofs and bio-retention strips will be required; to ensure consistency of the positive operational impact on the water and hydrology environment, regular maintenance of landscaped areas, bio-retention and green roof areas is required.
Noise & Vibration	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • The design of the fabric of the building along with the internal ventilation provision will insure the internal noise levels will meet the appropriate standards for the future occupants of the development. • The layout of the scheme will ensure that external areas will be afforded the maximum noise reduction from the barrier affects provided by balconies and the buildings themselves.
Cultural Heritage	<p>Mitigation measures proposed during the operation phase of the development are:</p> <ul style="list-style-type: none"> • No further mitigation is recommended.

TABLE 9 OPERATIONAL MITIGATION