

Figure 12-15: Scenario – 2040

12.1.5.5 Modelling Background

There are various modelling software packages available to assess every type of junction. Waterman Moylan uses TRANSYT and PICADY to analyse signalised and priority junctions, respectively.

TRANSYT (Traffic Network Study Tool) software is a widely accepted software for modelling signalised controlled junctions. This programme utilises the phases input by the user and optimises their timings over a cycle time. The outputs of a TRANSYT assessment include a Degree of Saturation percentage (DOS%) figure and queue length for each link on the road network.

PICADY is a software for modelling priority-controlled junctions. This programme utilises junction's geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the junction.

Typically, a junction is said to be working satisfactorily when the DOS% or RFC of each link does not exceed 90%/0.9. Acceptable DOS% or RFC values are considered to be in the range of 80%/0.8 to 100%/1.0 with higher values indicating restrained movements.

In terms of the EIAR assessment, the potential impacts of the Proposed Development on each junction will be assessed by the RFC/DOS value. A large increase in RFC or DOS over 90% would indicate a moderate effect while minimum change would be considered a imperceptible or not significant effect.

12.1.5.6 Modelling Results

A summary of the results of the modelling carried out as part of the Traffic and Transport Assessment is provided below.

12.1.5.6.1 Junction 2: Sybil Hill Road (R808) / St. Pauls Access Road

Junction 2 is an existing priority T-junction between Sybil Hill and St. Pauls College. This junction has been modelled based on its current configuration in PICADY. Table 8 below shows the junction analysis results. The arms of the junction are labelled as followed:

- Arm A: Sybil Hill (N)
- Arm B: St. Pauls College
- Arm C: Sybil Hill (S)



Figure 12-16: Junction 2 – Sybil Hill Road / St. Pauls Access Road

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Table 12-22: Junction 2 – PICADY Analysis Results

Traffic Survey 2021						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
Stream B – C	0	0	0	0	6.87	0.01
Stream B – A	0	0	0	0	9.07	0.02
Stream C – AB	0	4.8	0.02	0	4.59	0
DO NOTHING 2025						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
Stream B – C	0	0	0	0	6.92	0.01
Stream B – A	0	0	0	0	9.24	0.02
Stream C – AB	0	4.77	0.02	0	4.55	0
DO NOTHING 2040						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
Stream B – C	0	0	0	0	7.05	0.01
Stream B – A	0	0	0	0	9.64	0.02
Stream C – AB	0	4.77	0.02	0	4.55	0
DO SOMETHING 2025						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
Stream B – C	0	0	0	0	6.92	0.01
Stream B – A	0	0	0	0	9.24	0.02
Stream C – AB	0	4.77	0.02	0	4.55	0
DO SOMETHING 2040						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
Stream B – C	0	0	0	0	7.05	0.01
Stream B – A	0	0	0	0	9.64	0.02
Stream C – AB	0	4.72	0.03	0	4.47	0.01

Junction 2 will remain well under capacity for the DO SOMETHING 2040 scenario with the highest RFC of 0.03 and a corresponding queue of 0.0 vehicles in the AM peak hour and the highest RFC of 0.02 and a corresponding queue of 0.0 vehicles.

It should be noted that during the AM Peak Hour, the school has a dropdown zone along Sybil Hill near the junction. However, the junction is well under capacity and the potential impact would be considered imperceptible.

12.1.5.6.2 Junction 3: Sybil Hill Road (R808) / Vernon Avenue.

Junction 3 is an existing signalised T-junction between Sybil Hill Road and Vernon Avenue. The junction has been modelled based on its current configuration in TRANSYT. Table 8 below shows the junction analysis results. The arms of the junction are labelled as followed:

- Arm A: Vernon Ave. (S)
- Arm B: Vernon Ave. (E)
- Arm C: Sybil Hill



Figure 12-17: Junction 3 – Sybil Hill Road/Vernon Ave.

Table 12-23: Junction 3 - TRANSYT Analysis Results

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Traffic Survey 2021							
Arm	Movement	AM Peak Hour			PM Peak Hour		
		Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
A	S/L	9.05	24.84	55	9.12	25.75	56
B	L/R	5.96	42.29	59	6.42	40.38	59
C	S/R	7.09	37.82	59	6.67	38.3	58
DO NOTHING 2025							
Arm	Movement	AM Peak Hour			PM Peak Hour		
		Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
A	S/L	10.12	26.84	60	10.05	26.73	60
B	L/R	6.44	43.81	63	6.95	41.88	63
C	S/R	7.56	37.46	60	7.26	39.57	62
DO NOTHING 2040							
Arm	Movement	AM Peak Hour			PM Peak Hour		
		Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
A	S/L	12.49	30.87	70	12.63	32.2	72
B	L/R	7.5	45.19	68	8.06	43.22	68
C	S/R	8.96	40.61	69	8.47	40.97	67
DO SOMETHING 2025							
Arm	Movement	AM Peak Hour			PM Peak Hour		
		Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
A	S/L	10.77	29.48	65	10.8	29.53	65
B	L/R	6.85	44.99	65	7.41	41.47	64
C	S/R	8.72	37.22	65	7.9	39.63	64
DO SOMETHING 2040							
Arm	Movement	AM Peak Hour			PM Peak Hour		
		Queue (Veh.)	Delay (S)	DOS %	Queue (Veh.)	Delay (S)	DOS %
A	S/L	13.36	34.61	75	13.12	32.93	73
B	L/R	7.95	46.57	70	8.76	45.34	72
C	S/R	10.2	40.55	72	9.46	43.47	72

Junction 9 will remain under capacity for the DO SOMETHING 2040 scenario with a DOS of 75% and a corresponding queue of 13.36 vehicles in the AM peak hour period and a DOS of 73% and a corresponding queue 13.12 vehicles.

While there is an increase in DOS% the overall potential impact of the Proposed Development on the junction can be considered not significant because the junction does not exceed the capacity limit.

12.1.5.6.3 Junction 6: Sybil Hill Road (R808) / Sybil House Road (Site Access Road)

Junction 6 is an existing priority junction between Sybil Hill Road and gated site access to Sybil House. As part of the Proposed Development this will be used as the site access point. This junction has been modelled based on its current configuration in PICADY. Table 10 below shows the junction analysis results. The arms of the junction are labelled as followed:

- Arm A: Sybil Hill (N)
- Arm B: Sybil House Access Road
- Arm C: Sybil Hill (S)



Figure 12-18: Junction 6 – Sybil Hill Road / Sybil House Access Road

Table 12-24: Junction 6 - PICADY Analysis Results

DO SOMETHING 2025						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	RFC	Queue (Veh.)	Delay (S)	RFC
Stream B - C	0.1	7.23	0.09	0	6.39	0.04
Stream B - A	0.2	12.14	0.14	0.1	10.68	0.07
Stream C - AB	0	7.93	0.04	0.1	7.7	0.06
DO SOMETHING 2030						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	RFC	Queue (Veh.)	Delay (S)	RFC
Stream B - C	0.1	7.47	0.09	0	6.46	0.04
Stream B - A	0.2	12.99	0.15	0.1	11	0.07
Stream C - AB	0	8.16	0.04	0.1	7.79	0.06
DO SOMETHING 2040						
Stream	AM Peak Hour			PM Peak Hour		
	Queue (Veh.)	Delay (S)	RFC	Queue (Veh.)	Delay (S)	RFC
Stream B - C	0.1	7.57	0.09	0	6.51	0.04
Stream B - A	0.2	13.34	0.15	0.1	11.71	0.08
Stream C - AB	0	8.25	0.04	0.1	7.84	0.07

Junction 6 will remain under capacity if used as the site access junction for the Proposed Development for the year 2040 with the highest RFC of 0.09 and a corresponding queue of 0.1 vehicles in the AM peak hour period and an RFC of 0.04 and a corresponding queue of 0.0 vehicles

Junction 6 is the site access junction and therefore the impact will be considered not significant due to the low values of the RFC for DO SOMETHING.

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12.1.5.7 Summary

The analysis of the road network surrounding the Proposed Development has shown that the existing and proposed junctions will operate within satisfactory capacities for the future assessed 2040 + development with acceptable DOS%/RFC and queue lengths. Whilst the surrounding road network can cater for the Proposed Development, the increase in traffic over the baseline condition will result in a not significant impact on the surrounding roads network.

12.1.5.8 "Do Nothing" Scenario

Should the Proposed Development not take place, the access roads and infrastructure will remain in their current state and there will be no change. Background traffic would be expected to grow over time.

12.1.6 Avoidance, Remedial & Mitigation Measures

12.1.6.1 Introduction

This section of the report discusses mitigation measures to reduce the impact the Proposed Development on the surrounding area during the construction and operational phases.

12.1.6.2 Construction Phase

It is considered that a Construction Management Plan (CMP) will be prepared by the appointed contractor in order to minimise the potential impact of the construction phase of the Proposed Development on the safety and amenity of other users of the public road. The CMP will consider the following aspects:

- Dust and dirt control measures.
- Noise assessment and control measures
- Routes to be used by vehicles
- Working hours of the site
- Details of construction traffic forecasts
- Time when vehicle movements and deliveries will be made to the site
- Facilities for loading and unloading
- Facilities for parking cars and other vehicles
- Signage at site access.

A Preliminary Construction, Demolition & Waste Management Plan has been included under a separate cover and includes preliminary mitigation measures. Preliminary measures include:

- Parking will be provided on site. No on-street parking or parking in the local residential areas will be permitted;
- Minimise the volume of material removed from site by optimising the cut to fill requirements within the site in order to reduce construction traffic require;
- A dedicated material storage area will be set up on the site.
- Peak construction traffic and deliveries will occur outside the peak traffic hours for peak traffic and also outside opening and closing times of the school.

Due to the volume of excavation material required (107,500m³) and the large daily number of HGVs required. It is proposed to store excavated material on-site and increase the phasing programme of removing excavated material from the site. The excavation process will remain unchanged, but the removal of excavated material will now be 8-months. This will decrease the daily traffic numbers and reduce the impact of the construction phase on the surrounding network.

Further to the above, a detailed Traffic Management Plan (TMP) will be prepared by the Main Contractor. This document will outline proposals in relation to construction traffic and associated construction activities that impact the surrounding roads network. The document will be prepared in coordination and agreed with the local authority.

The Main Contractor will be required to schedule delivery of materials strictly on a daily basis. As there are adequate storage facilities available on site it is not envisaged that there will be any necessity to provide a secure material staging compound remote from the site in which to temporarily store materials from suppliers until such time as these can be accommodated on site. Instead, a dedicated material storage area will be set up on the site.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles.

It is likely that construction will have a not significant impact on pedestrian and cycle infrastructure. This is because the site is approximately 150m away from the main road and pedestrian pathways. There will be short term effects to the pedestrian and cycle infrastructure at the site access point. Mitigation measures such as specific haul routes and haul times avoiding the peak traffic hours will help reduce the impact of the Construction Phase.

12.1.6.3 Operational Phase

The Proposed Development is situated adjacent to suitable infrastructure and transport services for travel by sustainable modes. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. As such, it is proposed that residents will be made aware of potential alternatives including information on walking, cycle routes and public transport.

Residents will be encouraged to avail of these facilities for travel to and from work. Provision of this information would be made during the sales process and will be included in the new homeowner's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. It is anticipated that this measure may help to reduce the level of traffic at the Proposed Development, thus providing mitigation against any traffic and transport effects of the development.

A Travel Plan has been included in this application under separate cover. This Plan sets out methods to reduce the dependence on private car journeys and to encourage residents within the Proposed Development to avail of sustainable forms of transport such as walking, cycling and public transport.

As part of the DCC Draft Development Plan 2022 – 2028, a current and target mode share has been included for the whole DCC Area. This modal split is based on addressing climate change through sustainable mobility.

The current Mode Share available (2019) for the DCC area is broken down as follows:

- Walking – 11%
- Cycling – 6%
- Public Transport (bus, rail, LUAS) – 54%
- Private Vehicles (car, taxi, goods, motorcycles) – 29%

This is for the whole DCC area and therefore the existing modal split in Section 8.2 must also be taken into account.

The Target Modal Split for DCC lands is outlined below.

- Walking: 13%
- Cycling: 13%
- Public Transport (bus, rail, LUAS): 57%*
- Private Vehicles (Car, taxi, goods, motorcycles): 17%

*The increase in public transport mode share anticipates the construction of major public transport infrastructure that is proposed to occur over the lifetime of the plan. The impact of public transport infrastructure projects on mode share is more likely to come into fruition during the lifespan of the following plan.

This target modal split for the subject area surrounding the Proposed Development will differ from the DCC Target split due to the location of the development. The Proposed Development target split proposed is as follows:

- Walking: 15%
- Cycling: 25%
- Public Transport (bus, rail, LUAS): 40%
- Private Vehicles (Car, taxi, goods, motorcycles): 20%

This modal split heavily encourages cycling as the Proposed Development is close to Dublin city centre and with the introduction of the GDA Cycle Network Plan commuting by bicycle will be significantly easier.

12.1.6.4 “Worst Case” Scenario

The “worst case” scenario for the Proposed Development is the final assessment year 2040 (opening year + 15 years). Background traffic will continue to grow and including the potential traffic generated from the Proposed Development will be the “worst case” for the junction analysis.

12.1.7 Residual Impacts

12.1.7.1 Introduction

The predicted impacts of the Proposed Development from a traffic and transport perspective at both construction and operational phases are outlined in the following sections.

12.1.7.2 Construction Phase

Provided the above mitigation measures and management procedures outlined in the Construction Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be short-term (i.e. one to seven years) in the nature and slight in terms of effect.

The storage of excavated material and extending the removal of excavated material to 8-months will help reduce the daily HGV traffic. Based on the volume 107,500m³ there will be total of 7,167 trips in and 7,167 trips out over a 160-day period (8 months). This gives an average of 48 truck arrivals and 48 truck departures per working day during the busiest period. Overall, the expected HGV movements during the construction stage are predicted to vary from 30 to 60 arrivals per day and 30 to 60 departures per day, with a peak rate of up to 4 truck arrivals and 4 truck departures per hour in the AM/PM peak hours.

Through the implementation of preliminary mitigation measures it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period. These are preliminary measures and a detail CMP and CTMP will be provided the Contractor before construction proceeds.

12.1.7.3 Operational Phase

Provided the Travel Plan and above mitigations are implemented correctly the target model split should be reached and reduce the potential impacts and avoid the "worst case" scenario. Details of the Travel Plan are shown in the section below.

12.1.8 Monitoring

12.1.8.1 Construction Phase

During the Construction Phase the following monitoring is advised. The specific compliance exercises to be undertaken in relation to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Construction vehicles routes and parking
- Internal and external road conditions
- Construction activities hours of work

12.1.8.2 Operational Phase

The Travel Plan for the Proposed Development will be monitored and updated at regular intervals. This will enable tracking in terms of a reduction in the dependence on private car journeys and a shift towards sustainable transport options such as walking, cycling and the use of public transport such as buses and trains.

A management company will be appointed by the developer to manage the development. A senior member of staff from the management company who supports the philosophy of the

Plan will be appointed as the Co-ordinator. The Co-ordinator should be appointed within 2 months of the Site being occupied. A dedicated commuter space will be provided within the tenant amenity area where travel information, timetables, access to the internet and notice boards will be provided.

The Co-ordinator's roles in the development, implementation and management of the Plan will include:

- Promotion of the Travel Plan to residents;
- Implementation and maintenance of the Plan;
- Monitoring progress of the Plan;
- Liaison with public transport operators and officers of the Planning and Highway Authorities;
- Production of information reports for the Developer, the Occupier(s) and the Planning and Highway Authorities; and
- Ongoing assessment of the objectives of the Plan.

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Within the first 4 months of being appointed, the Co-ordinator will arrange for a resident's travel survey to be carried out. This can be achieved by means of self-completion questionnaires, which will help to identify travel requirements and set targets and needs.

The information requested in the questionnaire should include:

- Personal details;
- Primary mode of transport;
- Current travel patterns including the time taken to travel to work and the place of work;
- Views on alternative modes to the car (i.e. what would encourage them to switch to other modes); and
- Usage of car sharing scheme;

Traditionally, response rates to such questionnaires are relatively low and it may be necessary to encourage recipients to complete and return them.

The information obtained from the survey should be entered onto a database and used to formulate and monitor the implementation of the Plan and to set and review targets. These targets are to be agreed with the Planning and Highway Authorities or their agents within 6 months of the survey being carried out.

Up to date local bus and rail timetables will be maintained within the tenant amenity area and other fixed points within the facilities on the site. Residents will be advised of their location. In addition, Internet access to travel information will be provided. The developer will provide all new residents with a travel pack showing alternative modes of travel to the development. Where possible, the developer will advise visitors to the site of alternative modes of travel to that of the car.

Secure bicycle parking facilities will be provided for residents at designated areas within the apartment blocks and on the curtilage of each house. For visitors and Crèche users, a number of bicycle parking will be provided through the site at the surface level. Local cycle route information will be provided in the tenant amenity area and at other fixed points within the development, and residents will be advised of their location.

The co-ordinator will be responsible for the management of inappropriate parking within the development.

12.1.9 Interactions

12.1.9.1 Construction Stage

Temporary negative impacts to human health may be likely during the Construction Phase due to noise, dust, air quality and visual impacts which are discussed in the relevant chapters of this EIAR. Temporary traffic management will be required to facilitate connections to existing utilities in the existing roads.

The traffic impacts, which would be temporary in duration are not considered to be significant due to the implementation of the mitigation measures identified.

12.1.9.2 Operational Stage

Noise generated by increased traffic flows have been assessed in the Air and Noise Chapters of the EIAR.

12.1.10 Difficulties Encountered When Compiling

There were no difficulties encountered in compiling this Chapter.

12.1.11 References

Dublin BusConnects Website: [New Dublin Area Bus Network - BusConnects](#)

Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport

Irish Rail Website: www.irishrail.ie

Dublin City Council Development Plan 2016 – 2022.

Dublin City Council Draft Development Plan 2022 - 2028

NRA Guidelines, Traffic and Transportation Assessment Guidelines (2014), National Roads Authority

Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, (May 2019), Transport Infrastructure Ireland Publications

Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, (2016), Transport Infrastructure Ireland Publications

Sustainable Urban Housing: Design Standards for New Apartments, (2020), Department of Housing, Planning and Local Government

Transport for Ireland (TFI): www.transportforireland.ie

12.2 Waste and Utilities

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12.2.1 Introduction

Material Assets have been defined as '*Resources that are valued and that are intrinsic to specific places, they may be either human or natural origin and the value may arise for either economic or cultural reasons*' (EPA 2002).

The definition of Material Assets was further expanded by the EPA in 2022 in '*Guidelines on the information to be contained in Environmental Impact Assessment Reports*' which states:

"In Directive 2011/92/EU this factor included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils."

The scope and definition of Material Assets within the context of the EIA process has been defined by the EIA Directive as including Architectural and Archaeological Heritage or Cultural Heritage. These elements are assessed separately in Chapter 11 under Archaeology & Cultural Heritage.

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Material Assets or physical resources in the environment of human origin including built services and infrastructure comprising:

- Electricity Supply,
- Gas Supply,
- Information and Communications Technology,
- Surface Water Drainage Infrastructure,
- Water Supply and Demand,
- Wastewater Management, and
- Waste Management

Natural resources (water, land, biodiversity, air, etc) are addressed in their respective chapters.

This Chapter was prepared by Nikita Coulter, Senior Environmental Consultant with Enviroguide Consulting. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation, a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

12.2.2 Study Methodology

The methodology adopted for the assessment takes cognisance of the relevant guidelines the following:

- Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
- EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.
- EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

The scope of work undertaken for the assessment included a desk-based study of material assets, namely built services, utilities and infrastructure associated with the existing Site and the Proposed Development. All phases of the Proposed Development were considered in the assessment of potential impacts on material assets.

Information on built assets in the vicinity of the Site of the Proposed Development was assembled by the following means:

- A desktop review of ESB Networks Utility Maps, Irish Water Utility Plans, Gas Networks Ireland Service plans, EIR E-Maps, M&E Utilities Report, Preliminary Construction, Demolition & Waste Management Plan, Energy Analysis Report and the Engineering Assessment Report.

Assessment of the likely impact of features of the Proposed Development, including surface water runoff, foul water discharge and water usage was carried out in accordance with the following guidelines:

- IS EN752, "Drain and Sewer Systems Outside Buildings"

The study area, for the purposes of assessing the baseline conditions for the Material Assets Chapter of the EIAR, extends beyond the site boundaries and includes potential receptors within a 2.0km radius of the Proposed Development site. The extent of the wider study area was based on the Institute of Geologists of Ireland (IGI) Guidelines (IGI, 2013) which recommend a minimum distance of 2.0km radius from the Proposed Development site.

12.2.2.1 Prediction and Assessment of Impacts

Impacts were predicted and assessed based on EPA Guidance (2022) and by using the definitions detailed in Tables 12-25 to 12-29. Impact will vary from negative to neutral or positive, and also will vary in significance on the receiving environment. Where significant potential impacts were identified, mitigation measures are proposed to minimise impacts.

Table 12-25: Terminology used to assess the quality potential impacts & effects

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.

Source: EPA, 2022

Table 12-26: Terminology used to assess the significance of potential impacts & effects

Significance of Effects / Impacts	Definition
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	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Source: EPA, 2022

Table 12-27: Terminology used to assess the duration of potential impacts/effects

Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

Source: EPA, 2022

Table 12-28: Definition of the Extent and Context of Effects

Quality	Definition
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?)

Source: EPA, 2022

Table 12-29: Definition of the Probability of Effects

Quality	Definition
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Source: EPA, 2022

Figure 12-19 (extracted from the *EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022*) shows how the character of the predicted impact in relation to the sensitivity of the receiving environment can determine the significance of the impact.

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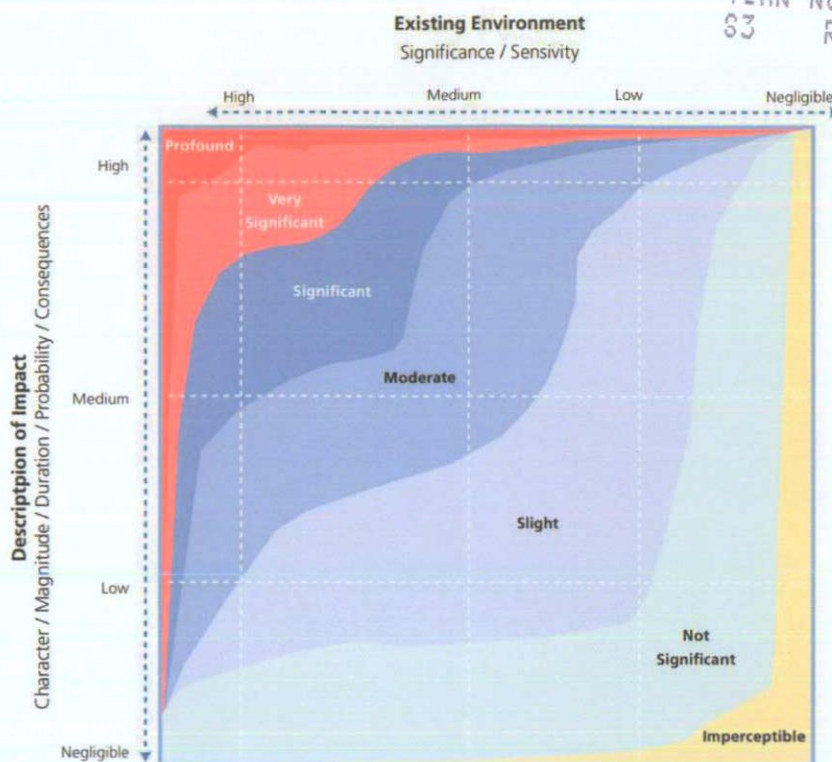


Figure 12-19 Chart showing typical classifications of the significance of impacts (EPA, 2022, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports)

12.2.3 The Existing and Receiving Environment (Baseline Situation)

12.2.3.1 Site Location

The Site of the Proposed Development is situated in the northern suburbs of Dublin City, approximately 5km from Dublin City centre, in an established residential area on lands east of St Paul's College, Sybil Hill Road, Raheny, Dublin 5. The Site is bound to the North, East and South by St Anne's Park and to the West by residential development at The Meadows, Sybil Hill House (a Protected Structure) and St Paul's College. Vehicular access to the site is from Sybil Hill Road.

12.2.3.2 Land Use History

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2021) were reviewed and key observations on-site and off-site are summarised in Table 12-30.

Table 12-30: Historical Land Use

Date	Information Source	Site Description
1837-1842	OSI map 6inch	<p>On-site: Maryville House is located in the north-western corner of the site. The rest of the Site is comprised of the associated buildings, garden and demesne lands of Maryville House.</p> <p>Off-site: The Site is surrounded by gentry settlements including Sybil Hill House (west), St Annes House, Furry Park (west), Rosevale (northeast) and Glebe House (north) and agricultural lands.</p>
1888-1913	OSI map 25inch	<p>On-site: No significant changes</p> <p>Off-site: No significant changes</p>
1830-1930	OSI Cassini map 6inch	<p>On-site: Additional buildings are seen within the grounds of Maryville House.</p> <p>Off-site: A new 2.4km long entrance avenue has been constructed from St Anne's House to the eastern extent of Sybil Hill townland.</p>
1995	OSI Aerial photography	<p>On-site: Maryville House has been demolished and the grounds have been converted to playing fields.</p> <p>Off-site: St. Paul's College and The Meadows residential development have been constructed directly East of the Site. Sybil Hill House is still visible. St. Anne's House has been demolished and the lands to the north and south of the Site are now St. Anne's GAA Pitches. The Millennium Arboretum has been planted to the east of the Site. Further offsite, dramatic changes to the surrounding landscape, with the majority of lands converted to residential development.</p>
2000	OSI Aerial photography	<p>On-site: No significant changes</p> <p>Off-site: No significant changes</p>
2005	OSI Aerial photography	<p>On-site: No significant changes</p> <p>Off-site: No significant changes</p>
2005-2013	OSI Aerial Photography	<p>On-site: No significant changes</p> <p>Off-site: A building directly west of The Meadows has been demolished.</p>
2021	Google Maps Photography	<p>On-site: No significant changes</p> <p>Off-site: A childcare and social services center have been constructed on the site of the demolished building to the west of The Meadows. The trees in the Millennium Arboretum are now well developed.</p>

12.2.3.3 Immediate Surroundings

The Site is bound to the North, East and South by St Anne's Park;; and to the west by a residential development at The Meadows, Sybil Hill House (a Protected Structure) and St Paul's College.

12.2.3.4 Local Settlement and Land Use

St Anne's Park is an extensive, historic parkland and a major amenity and public open space. The c. 110 ha Park is a well-used, popular amenity and recreational resource extending from its entrance off Sybil Hill Road in the west to the coast at Dollymount in the East.

St Paul's College was established in 1950 and forms part of a belt of religious lands located on both sides of Sybil Hill Road. The planned capacity of the school is 600 no. pupils with the ability to accommodate up to 650 no. pupils without significant additional accommodation.

The site of the Proposed Development, together with the lands of Sybil Hill House and of St. Paul's College, are Zoned Z15 under the Dublin City Development Plan 2016-2022 (DCDP) and the Draft Dublin City Development Plan 2022-2028. Land-Use Zoning Objective Z15 is: *"To protect and provide for institutional and community uses"*. A small section of the site to the northeast, is zoned Z9 as this includes lands within St. Anne's Park required to provide for the routing of a surface water discharge from the site via St. Anne's Park to the Naniken River.

As the site of the Proposed Development is Zoned Z15, which zoning includes residential development as 'Open for Consideration Uses' within the associated land use matrix, the logic for residential development is that it: (i) can benefit from established urban infrastructure and services; (ii) can tie into an established residential community and (iii) can contribute to population rejuvenation and support for economic provision of urban services.

"With any development proposal on these lands, consideration should be given to their potential to contribute to the development of a strategic green network... and to the delivery of housing in the city. In addition, development at the perimeter of the site adjacent to existing residential development shall have regard to the prevailing height of existing residential development..."

12.2.3.5 Electricity Supply

12.2.3.5.1 Local Supply & Grid Connection

EirGrid develop and operate the national electricity grid and are responsible for taking electricity from the power generators and delivering it to the distribution network, which is operated by ESB Networks. The high-voltage Irish electricity transmission grid comprises 6,800 km of power lines and operates at 400 kV, 220 kV and 110 kV. Substations provide entry points to, and exits from, the transmission grid.

The site is well located with regard to ESB Networks infrastructure. The M&E Utilities Report (included as Appendix P) states that there doesn't appear to be any transmission cables traversing the site of the Proposed Development. There are 38kV and 20kV/10kV LV/MV underground cables on Sybil Hill Road. The ESB Networks drawing represented in Figure 12-20 indicates the network distribution capacity to the Proposed Development.

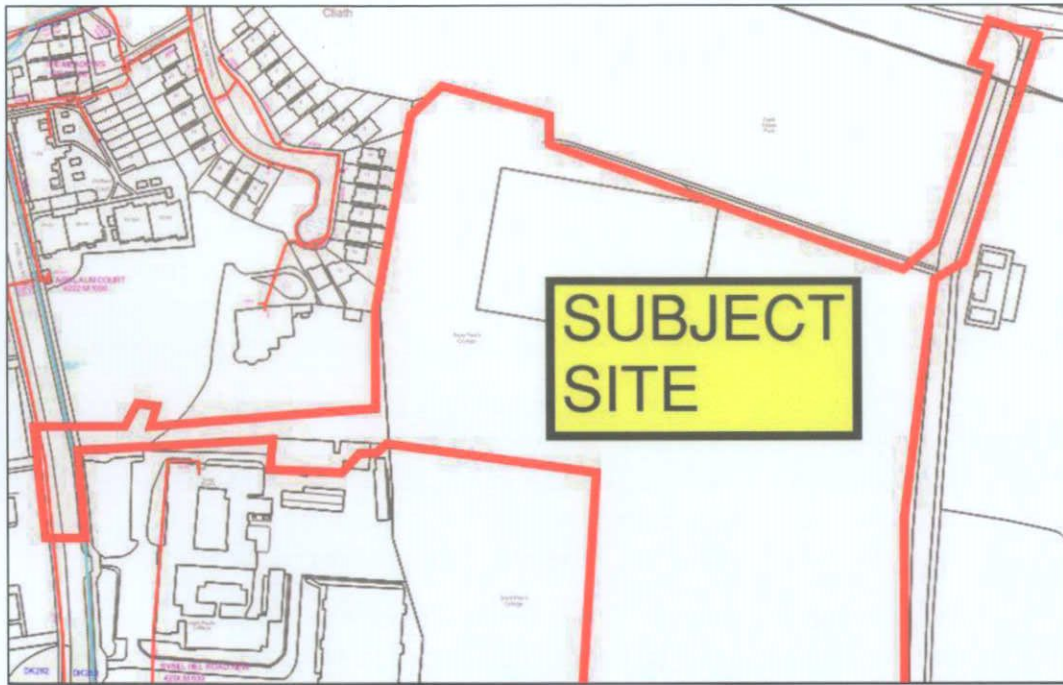


Figure 12-20 ESB Networks distribution capacity drawing for the Proposed Development
(Source: M&E Utilities Report, IN2 Engineering Design Partnership, August 2022)

12.2.3.5.2 Onsite Supply and Consumption

The Site is currently greenfield and was previously used as playing pitches. There is currently no onsite consumption of electricity.

12.2.3.6 Gas Supply

Gas Networks Ireland builds, develops and operates Ireland's gas infrastructure, maintaining over 14,521 km of gas pipelines and two sub-sea interconnectors. Gas Networks Ireland is responsible for connecting all new gas customers to the network, and for work on service pipes and meters at customers' premises, on behalf of all gas suppliers in Ireland.

The Gas Networks Ireland map (refer to Figure 12-21) for the surrounding area indicates buried natural gas pipework local to development to Sybil Road and neighbouring site. There appears to be no existing natural gas connection to the proposed site.



Figure 12-21 Gas Networks Ireland map for the Proposed Development (Source: M&E Utilities Report, IN2 Engineering Design Partnership, August 2022).energy analysis

12.2.3.7 Information and Communications Technology (ICT)

National Broadband Ireland was set up by the Irish Government to facilitate the roll out of fibre broadband across the Country. The Department of the Environment, Climate and Communications have developed an interactive map which details the progress of the rollout of the National Broadband Plan. The High-Speed Broadband map identifies locations and premises as amber or blue and the map is updated on a quarterly basis. Amber areas depict target areas for the State intervention of the National Broadband Plan. Blue areas indicated that commercial operators have instated or are in the process of delivering high speed broadband services. St. Pauls College, St. Annes Park, Sybil Hill Road, and the vast majority of Dublin City are located within a Blue area and High speed broadband is available.

In terms of mobile telecommunication for transmission and reception, the closest mobile/ICT communications mast (Vodafone, Three and Meteor) is located in Saint Anne's Park near the Health Centre on Vernon Avenue, Clontarf, Dublin 3, approximately 400m southwest of the Site of the Proposed Development.

The Site is currently greenfield, hence IT infrastructure for operations and administration is not established or in place.

12.2.3.8 Water Supply and Demand

The Site is greenfield and as such there is no water supply or demand at present. The Site is currently not connected to a municipal water supply, but it is located in a well-serviced urban area. There is an existing 250mm uPVC watermain in Sybil Hill Road, which continues south of the proposed Site entrance, connecting to an existing spun iron watermain. North of the Site, there is an existing 300mm cast iron trunk watermain, which serves the local area including feeding the Sybil Hill Road main (*Engineering Assessment Report, Waterman Moylan, 2022*).

12.2.3.9 Local Hydrology and Hydrogeology

The Site of the Proposed Development is located within the Liffey and Dublin Bay catchment and the Mayne_SC_010 sub-catchment. The closest mapped watercourse to the Site is the Naniken River, which is located approximately 100m north of the Site. The Naniken River is visible through St. Anne's Park for its entire lower course and is culverted upstream of St. Annes Park for its upper course. The river discharges to the sea via a culvert beneath the James Larkin Road (R807) approximately 1.7km east of the Site between North Bull Island and the mainland.

The Site is situated on the Dublin groundwater body, which is Not at Risk of not meeting its Water Framework Directive objectives. The aquifer within the Site boundary is a Locally Important Aquifer (LI) on bedrock which is Moderately Productive only in Local Zones. The groundwater rock units underlying the aquifer are classified as Dinantian Upper Impure Limestones (GSI, 2021). The level of vulnerability of the Site to groundwater contamination via human activities is Low. The soil within the east area of the Site is classified as Urban, with the remaining soil designated as Fine loamy drift with siliceous stones and the subsoil is comprised of Limestone till (Carboniferous) and Man-Made (EPA, 2021).

12.2.3.10 On-site Surface Water Drainage

The Site is a greenfield site composed of grass-based playing fields pitches and natural parkland coverage. As such, surface water currently infiltrates to ground and run-off discharges to the surrounding watercourses in line with the existing topography of the Site. Topographic survey data indicates that the site falls generally from west to east, with a high point of approximately 25.5m OD Malin at the west of the site and a low point of approximately 21.4m OD Malin at the south-eastern corner of the site and 21.7m OD Malin and the north-eastern corner of the site. The site lies within the catchment of the Naniken River, which ultimately discharges to Dublin Bay (*Engineering Assessment Report, Waterman Moylan, 2022*).

12.2.3.11 Wastewater Management

The Site is greenfield and as such there are no wastewater management requirements at present. There is no foul water sewer in Sybil Hill Road at the site entrance. As the Site is located in an urban area, there are foul sewer lines in the surrounding area. An existing 1,350mm diameter foul sewer, which is part of the North Dublin Drainage Scheme, discharges in an easterly direction immediately south of the Site, before traversing the south-eastern corner of the site. Also, there are existing sewers in The Meadows at the north-west of the site, connecting to an existing 225mm sewer in Howth Road (*Engineering Assessment Report, Waterman Moylan, 2022*).

12.2.3.12 Waste Management

Dublin City Council (DCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. DCC's waste management activities are governed by the requirements set out in the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. The subject site is currently a greenfield site and therefore has no waste management requirements.

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12.2.4 Characteristics of the Proposed Development

The Proposed Development consists of the construction of a residential and nursing home development set out in 7 no. blocks, ranging in height from 4-7 storeys to accommodate 580 no. apartments, residential tenant amenity spaces, a crèche and a 100 bed nursing home. The site will accommodate car parking spaces, bicycle parking spaces, storage, services and plant areas at both basement and podium level.

Landscaping will include extensive communal amenity areas, and a significant public open space provision on the east and south of the site. The proposed application includes all site landscaping works, green roofs, substations, boundary treatments, lighting, servicing, signage, surface water attenuation facilities and associated and ancillary works, including site development works and services above and below ground. For a full description of the Proposed Development please refer to the Statutory Notices.

12.2.4.1 Construction Phase

The Proposed Development is to be constructed in two stages which will include, in broad terms, the following:

- Stage I: Site demolition works, site clearance and preparation work for the construction. A site compound including offices and welfare facilities will be set up by the Main Contractor.
- Stage II: Site development and construction. The development includes all associated site works and infrastructure which includes roads, utilities, foul and surface water drainage.

The Construction Phase is intended to be an 18 month programme. The operational hours for the site will be 08:00 to 17:00 Mondays to Fridays and 08:00 to 14:00 Saturdays. No work is permitted on Sundays or public holidays. Deviation from these hours will only be allowed in exceptional circumstance with prior written approval from the planning authority.

12.2.4.2 Operational Phase

The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a creche and nursing home, and the ongoing maintenance of residential units and amenity space.

The traffic assessment presented in Chapter 12.1 of this EIAR concludes that whilst the surrounding road network can cater for the Proposed Development, the increase in traffic over the baseline condition will result in a moderate impact on the surrounding roads network.

12.2.5 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the Material Assets of the area.

12.2.5.1 Local Settlement

Specific issues relating to Population and Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR. The Operational Phase of the Proposed Development will result in an increase in the population of the area, and it will have a positive impact on the long-term supply needs of housing in the greater Dublin area. The Proposed Development has the potential to increase the level of direct and indirect employment associated with the operation of the creche, the nursing home and property management services.

12.2.5.2 Electricity Supply

12.2.5.2.1 Construction Phase

There will be temporary power requirements during the Construction Phase for lighting and construction activities. The power demand during the Construction Phase will be catered for by way of on-site power generators.

Connecting a new multi-unit housing development to the electricity distribution system must be carried out in accordance with ESB Networks' specifications, and in particular with the guidance provided in the documents ESB Networks National Code of Practice for the Customer Interface Version 5 (2021) and ESB Networks Construction Standards for MV Substation Buildings (2019). The developer must undertake the preparatory work such as installation of ducting and provision of substation plinth or building. Once the preparation work has been completed to a satisfactory standard, ESB Networks will commence installation of the electricity cabling/lines and any other necessary equipment. A temporary suspension of the network locally to facilitate the connection works may be required during the Construction Phase, and an additional temporary suspension will also occur when power is provided to the Site of the Proposed Development. These temporary suspensions will be controlled by ESB Networks as the statutory undertaker and in accordance with standard protocols.

The potential impact from the Construction Phase of the Proposed Development on the local electrical supply network is likely to be negative, slight, and short-term.

12.2.5.2.2 Operational Phase

Contact has been made with the utility provider, ESB Networks, to discuss the power supply to support the Proposed Development. ESB Networks has indicated that there are currently no issues with the provision of the required power to the Proposed Development (*M&E Utilities Report, IN2 Engineering Design Partnership, August 2022*).

Electricity will be required to provide public lighting, domestic lighting, power supply and heating for each individual unit for the Proposed Development. Electric car charging facilities will be provided in the car park in line with Government policy. An Energy analysis has been undertaken by IN2 Engineering Design Partnership (August 2022) in order to demonstrate the Proposed Development's compliance to Building Regulations Technical Guidance Document (TGD) Part L 2019. The analysis determined that through the following energy and servicing strategies that an A2/A3 BER should be obtainable:

- Improvements to building thermal transmittance (U-Values), air permeability and thermal bridging with respect to Part L defaults.
- De-Centralised Heating and Hot Water Plant arrangement to each apartment.
- Exhaust Air Heat Pumps (EAHP's) plant delivering all the annual heating and hot water requirement.
- Exhaust Air Heat Pump extracting stale air from apartment creating negative pressure. Passive make-up air from façade providing fresh air to all liveable spaces.
- Photovoltaic (PV) array for electricity generation, centralised to connect to Landlord systems. Minimum required 6/8 no. panels total (330 W peak/ 1.68m² each) per landlord core allocated at roof level.

Further information is available within the Energy Analysis Report (IN2 Engineering Design Partnership, August 2022), and the Building Lifecycle Report (Aramark, August 2022) that will be submitted as part of this application.

The impact of the Operational Phase of the Proposed Development on the electricity supply network is likely to be to increase demand to the existing supply, however, taking into account the energy strategies that are proposed in the Energy Analysis Report, the potential effect from the Operational Phase on the electricity supply network in the study area is likely to be neutral and not significant in the long term.

12.2.5.3 Gas Supply

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12.2.5.3.1 Construction Phase

Connecting a new multi-unit housing development to the gas network system must be carried out in accordance with Gas Networks Ireland's specifications. The developer must employ the services of a registered mechanical installer or plumber and select and register with a natural gas supplier. A temporary suspension of the network locally to facilitate the connection works may be required during the Construction Phase. These temporary suspensions will be controlled by Gas Networks Ireland as the statutory undertaker and in accordance with standard protocols. The potential impact from the Construction Phase of the Proposed Development on the local gas supply network is likely to be negative, slight, and short-term.

12.2.5.3.2 Operational Phase

The utility strategy for the residential development will avail of a centralised plant room consisting of modular gas fired condensing boilers, gas fired condensing combined heat and power plant and air source heat pump plant. A gas connection has been allowed for at this stage of the project (*M&E Utilities Report, IN2 Engineering Design Partnership, November 2022*).

There will be an increase in the gas demand from existing resources. The natural gas supply to support the new development has been discussed with utility provider, Gas Networks Ireland (GNI). GNI have confirmed that there is adequate pressure in the gas network and have raised no concerns about providing natural gas to the Proposed Development. The increase in demand is not significant.

12.2.5.4 Information and Communications Technology (ICT)

12.2.5.4.1 Construction Phase

Connections will be required to the existing ICT network during the Construction Phase of the Proposed Development which, if not conducted in accordance with best practice, has the potential to impact on local telecoms & ICT connectivity. However, due to the temporary and phased nature of the Construction Phase the potential impact of the Construction Phase on the local telecoms network is considered negative and not-significant.

12.2.5.4.2 Operational Phase

The impact of the Operational Phase of the Proposed Development on the telecoms network is likely to be a marginal increase in demand. The Site of the Proposed Development is located within an area where high speed broadband is available, and as such, the impact from the Operational Phase on the telecoms network is likely to be neutral and not significant in the long term.

12.2.5.5 Water Supply and Demand

It is noted that specific issues relating to Hydrology associated with the Proposed Development are set out in Chapter 7 of this EIAR.

12.2.5.5.1 Construction Phase

Site offices and construction activities will create a demand for water supply to the site. Commencement of construction will therefore result in a net increase in the water demand for the site.

Irish Water (IW) issued a Confirmation of Feasibility (COF) (Ref. CDS21008008) dated 9th December 2021, confirming that water supply connections for the site are 'feasible without infrastructure upgrade by Irish Water'. It is proposed to provide a new 180mm diameter connection to the existing 250mm diameter water supply main in Sybil Hill Road. A new looped network will be constructed through the site and a bulk meter with associated telemetry system will be connected to the new watermain along the entrance road, in accordance with Irish Water requirements. All watermains will be laid strictly in accordance with Irish Water requirements, and valves, hydrants, scour and sluice valves and bulk water meters will be provided in accordance with the requirements of Irish Water.

Some local diversions may be required to water supplies to accommodate the construction works which may require temporary outages. Additionally, new connection works may cause water supply disruptions during the Construction Phase. These disruptions will be controlled by Irish Water and DCC in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, not significant and temporary.

12.2.5.5.2 Operational Phase

During the Operational Phase of the Proposed Development there will be a demand for water from the public water supply. The calculated water demand is set out in detail in Chapter 7 of this EIAR. The domestic demand has been based on an average occupancy ratio of 2.7 persons per dwelling with a daily domestic per capita consumption of 150 litres with a 10% allowance factor. The average day/peak week demand has been taken as 1.25 times the average daily domestic demand, while the peak demand has been taken as 5 times the

average day/peak week demand (Irish Water Code of Practice for Water Infrastructure, 2020). The average demand for the Proposed Development is 3.56 litres/second (l/s), with a peak demand of 22.22l/s. In accordance with best practice, water conservation appliances are to be incorporated as part of the Proposed Development to reduce the water demand.

Excess usage is the consumption of water services above the threshold amount stipulated in the Water Services Act (2017). Water use above the annual household allowance (213m³) is considered to be excessive use and Irish Water customers may be liable for charges on the amount above this level.

The likely effect of the increase in mains water demand will be neutral, not significant, and long-term on mains water supply.

12.2.5.6 Water Environment – Hydrology and Surface Water Drainage

It is noted that specific issues relating to Hydrology associated with the Proposed Development are set out in Chapter 7 of this EIAR.

12.2.5.6.1 Construction Phase

Surface water currently discharges to the Naniken River to the North of the Site. There is a possibility of temporary contamination to the surface water network during construction activities. Sedimentation and silt arising from construction activities could contaminate the surface water network. Refuelling of vehicles may result in spillages, which could impact local surface water bodies. In the event of spillages, steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following an oil / chemical spill. Water quality mitigation measures are set out fully in the Construction Environmental Management Plan (CEMP) (Enviroguide Consulting, 2022), which is submitted as a separate document with this planning application.

12.2.5.6.2 Operational Phase

Surface water runoff from the catchment will be restricted via a Hydro-brake or similar approved flow control device, limited to the calculated greenfield equivalent runoff rate of 17l/s, before discharging to the public network. The proposed flow control device is to be limited to the greenfield equivalent runoff rate. The net runoff volume from the site will therefore remain unchanged.

The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts, to the surface water system which could result in pollution to the surface water network. At-source treatment SuDS techniques will be employed to address this issue, including roadside tree pits and the installation of a petrol interceptor to remove hydrocarbons before the surface water outfall to the Naniken River. The surface water drainage incorporating the SuDS proposals for the Proposed Development will result in an overall 'neutral', 'imperceptible' 'long-term' impact on receiving surface water quality and groundwater quality and associated receptors compared to the baseline conditions.

12.2.5.7 Wastewater Management

It is noted that specific issues relating to Hydrology associated with the Proposed Development are set out in Chapter 7 of this EIAR.

12.2.5.7.1 Construction Phase

Irish Water (IW) issued a Confirmation of Feasibility (COF) (Ref. CDS21008008) dated 9th December 2021, confirming that connections from the site to the 1,350mm sewer at the south of the development is feasible without any infrastructure upgrade by IW.

Foul water sewer connections will be constructed strictly in accordance with IW requirements and drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document H. During the construction of the new foul sewers specific measures will be taken to prevent the release of effluent to the Naniken River and Dublin Bay during the Construction Phase. These measures include, but are not limited to, the use of silt traps, silt fences, silt curtains, settlement ponds and filter materials. Further information on these measures and their implementation is provided in the CEMP. The adherence and full implementation of the appropriate mitigation measures will ensure there is no potential for pollution of watercourses to arise.

The new connection works may cause disruptions to the foul water network during the Construction Phase. These disruptions will be controlled by IW and DCC in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, non-significant and temporary.

12.2.5.7.2 Operational Phase

It is proposed to drain wastewater from the site by gravity to the existing 1,350mm wastewater sewer at the south-eastern corner of the Site. There will be a net peak foul water flow of 10.207l/s discharging to the existing sewer. The Proposed Development will result in a net increase in flows to the network.

Foul water from the Proposed Development is ultimately discharged to Ringsend Wastewater Treatment Plant (WwTP). An in-depth study of the foul water treatment infrastructure in the Greater Dublin Area was ordered by the Dublin Region Local Authorities in 2005, which identified the Ringsend WwTP as overloaded and not in compliance with the EU's Urban Wastewater Treatment Directive.

A major upgrade is now underway at the Ringsend WwTP to increase the treatment capacity of the facility from 1.6 million Population Equivalent (PE) to 2.4 million PE. The upgrade works will allow (on a phased basis) the facility to treat the increasing volumes of wastewater while achieving the standards of the Urban Wastewater Treatment Directive, enabling future housing and commercial development in the Greater Dublin Area. Additionally, a proposed WwTP at Clonshaugh will, in the future, reduce the dependency on the Ringsend WwTP.

The increase in foul water at the Ringsend WwTP as a result of the Proposed Development is considered to be insignificant in terms of the overall scale of the facility. Therefore, the impact on the foul water network as a result of the Operational Phase of the Proposed Development is considered to be neutral, not significant and long term.

12.2.5.8 Waste Management

12.2.5.8.1 Construction Phase

The majority of waste arising during the Construction Phase will comprise soil and stone materials associated with the excavation works required for the basement, foundations and connections to utilities and services.

While efforts have been made to follow the existing topography of the site, in order to minimise the cut and fill requirements, the Proposed Development includes two large basements which will significantly increase the cut volume. The volume of soil to be excavated and removed from the site is 86,000m³, without any bulking factor applied. Applying a 25% bulking factor, the volume of soil to be removed by appropriately authorised waste collection contractors will be approximately 107,500m³.

There will be some demolition waste associated with the demolition of an existing prefabricated building. If concrete needs to be crushed on site, a waste permit will be required. Minimal quantities of crushed concrete are anticipated, and arisings will be used as crushed and used as site haul roads as per detailed in the CDWMP. A member of the construction team will be appointed as the Waste Manager to ensure commitment, operational efficiency and accountability during the Construction Phase of the Proposed Development.

The waste streams that will be generated by Construction and Demolition (C&D) activities are as follows:

- Demolition waste from the existing prefabricated buildings
- Topsoil and subsoil
- Packaging and general waste from construction activities
- General site clearance waste including tree stumps

These wastes are as defined in the Construction and Demolition Waste Management Plan (CDWMP) (*Waterman Moylan, 2022*). As set out in the CDWMP, which is submitted as a separate document with this planning application, all waste generated during the Construction Phase will be segregated onsite to enable ease in re-use and recycling, wherever appropriate.

In general, the priority of the CDWMP will be to promote recycling, reuse and recovery of waste and diversion from landfill wherever possible. After in-situ reuse and recycling options have been fully considered, all residual waste streams will be collected by appropriately authorised waste collection contractors and will be managed using suitably permitted/licensed waste disposal or materials recovery facilities. Due to the use of permitted/licensed waste collection/waste management facilities, it is anticipated that the likely effects arising from the production of waste will be neutral, short term and not significant on the environment of the study area. It is the responsibility of the Main Contractor to ensure that waste collection contractors are legally permitted to carry the waste, and that the facility they bring the waste to is licensed to handle that type of waste as outlined in the Waste Management Acts 1996 (as amended).

It is noted that there will be small amounts of domestic waste generated by workers present on the site during the Construction Phase. This will be managed in accordance with the DCC byelaws on waste and in accordance with the principles set out in the CEMP. All wastes generated from the work force on site will be managed and disposed of in accordance with the principles of segregation and will be removed from site by a provider with appropriate licencing.

12.2.5.8.1.1 Asbestos Containing Material

Occupational Hygiene & Safety Services (OHSS) carried out an asbestos survey to HSG264 requirements in 2019 for the purposes of identifying Asbestos Containing Materials (ACM) in the premises(s) prior to planned demolition. OHSS produced a report which is included in full as Appendix C of the CDWMP. The findings of the ACM survey are as follows:

- Asbestos containing cellulose board was found in the walls and ceiling of the older prefabs. This asbestos board is on both side of the partition walls and on the ceilings. In many places the board is covered over with particle board and hard board.
- Asbestos containing slates were found under the floor joists of the older prefabs where they were used to level the timbers during construction.
- Asbestos containing green floor tiles were found in Room X6 of the prefab.
- As the prefab was still in use at the time of the survey it was not possible to core through the roof. Once the prefab is decanted a core should be drilled to assess the makeup of the roof. Asbestos may be present in lower layers of felt or on strawboard.

Prior to demolition of the building or structure ACM must be removed and disposed of by a competent contractor. ACM removal will form part of a construction project and will require careful coordination to be carried out safely. Following removal of the ACM a site clearance for reoccupation certificate must be obtained from a competent independent analyst prior to demolition of the structure in accordance with Regulation 15 (10) of the Safety Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. Full details are included in the CDWMP.

12.2.5.8.1.2 Invasive Plant Species

An invasive plant species survey will be required prior to construction, and if any are identified on site, they will be removed by a competent and experienced contractor and will be disposed of as a waste material using appropriately permitted/licensed waste collection/waste management facilities.

12.2.5.8.2 Operational Phase

An Operational Waste Management Plan (OWMP) has been prepared for the Proposed Development by AWN Consulting (2022). The OWMP contains full details of the types and quantities of waste that may arise at the Proposed Development.

The typical wastes that will be generated during the Operational Phase of the Proposed Development will include the following:

- Dry Mixed Recyclables (DMR) – includes wastepaper, cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons. These materials could potentially catch fire, and this would be a significant local effect with a short-term, negative impact.
- Organic waste – food waste and green waste generated from internal plants / flowers. These materials could attract vermin if they are not appropriately stored, and the stores maintained.
- Glass – no significant environmental concerns have been identified for the storage of domestic glass waste at the Proposed Development.
- Mixed Non-Recyclable (MNR) / General Waste – these materials could attract vermin if they are not appropriately stored, and the stores maintained.

There will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green / garden waste may be generated from internal plants or external landscaping
- Batteries (both hazardous and non-hazardous)

- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous)
- Printer cartridges / toners
- Chemicals (paints, adhesives, resins, detergents, etc.)
- Light bulbs (Fluorescent Tubes, Long Life, LED and Filament bulbs)
- Textiles (rags)
- Waste cooking oil (if any generated by the residents or creche tenants)
- Furniture (and from time-to-time other bulky wastes)
- Abandoned bicycles

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In addition to the typical waste materials that will be generated at the Proposed Development daily, healthcare waste will also be generated at the Nursing Home. Healthcare waste is defined as "solid or liquid waste arising from healthcare". Waste materials generated will fall into two main categories, namely healthcare non-risk waste (i.e. non-clinical healthcare waste) and healthcare risk waste (hazardous). Healthcare risk waste will be generated from the treatment of residents and from contaminated items associated with treatment. The Nursing Home will provide care services only and will not carry out significant surgical procedures or cancer care services. Hence, the healthcare risk waste generated at the Nursing Home will comprise waste disposed of in yellow bags (such as dressings, swabs, bandages, gloves, nappies etc.) and yellow sharps buckets (for waste such as needles, syringes, razors, stitch cutters etc.). Full details regarding the segregation, storage and management of healthcare waste are provided in the OWMP (AWN Consulting, 2022).

12.2.5.9 Potential Cumulative Impacts

Cumulative Impacts can be defined as "impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this assessment. There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to some larger-scale developments. The larger-scale developments identified within the vicinity of the Proposed Development are detailed in Table 12-31:

Table 12-31 Relatively large-scale developments permitted in the vicinity of the Proposed Development

Planning Ref No.	Applicant Name	Summary of Development	Cumulative Impact Assessment
2857/18 Decision: Grant Permission. Decision Date: 19/12/2018	MKN Developments Limited	Amendments to the permitted development (Reg. Ref. 4242/15; ABP Ref. PL29N.246250 and as amended by Reg. Ref. 2977/17, ABP Ref. PL29N.249043) at this 0.53 hectares site at Sybil Hill Road, Raheny Dublin 5. The site is bounded by St. Pauls School to the south, Sybil Hill Road to the west, The Meadows residential development to the east and north and the Kare Social Services Centre to the north. The site	The Planning Authority (DCC) granted permission for the development subject to 11 no. condition(s). The conditions relate to working hours, noise control, public road

Planning Ref No.	Applicant Name	Summary of Development	Cumulative Impact Assessment
		<p>formerly incorporated No. 1, 1A and 1B Sybil Hill Road (and lands to the rear of same).</p> <p>The proposed amendments consist of:</p> <ul style="list-style-type: none"> - The provision of an additional penthouse unit to Block A at 5th floor level and the extension of the 4th floor level to provide for 2 no. additional units (1 no. 3 bed unit and 1 no. 4 bed unit) to Block A increasing the unit number from 49 no. to 51 no. in Block A and from 76 no. to 78 no. overall (71 no. apartments and 7 no. houses); - The proposed additional units will result in a part increase in height of Block A at the south western corner fronting Sybil Hill Road from 16.1m to 19.25m; - The proposed extension to the 4th floor level to provide for 1 no. 3 bed units will be set back c. 5.6m from the western boundary along Sybil Hill Road with the penthouse unit at the new 5th floor level being set back c.2.5m from the western boundary with Sybil Hill Road. - Amendments to communal open space at 4th floor level to accommodate the additional residential units; - Minor elevational changes to Block A including the provision of private roof terraces at 4th and 5th floor level; - SUDs drainage and all ancillary and associated site development and landscaping works. 	<p>cleaning, traffic management and waste management. Specific conditions have been set by the Drainage Division regarding surface and foul water sewers and SuDS measures, which must be strictly adhered to. Therefore, there are no cumulative impacts anticipated with this development.</p>
3167/19 Decision: Grant Permission. Decision Date: 09/09/2019	Sean Carroll Garages Ltd.	<p>Planning permission for development approved under Dublin City Council Reg. Ref. 4353/16 at the existing petrol filling station consisting of revisions to existing shop and forecourt including:</p> <p>(i) Change of use and internal alterations to ground floor to provide additional retail floorspace of 8 sq.m and ancillary facility for sales of hot food for consumption off the premises, (ii) New ground floor window and pay hatch to front elevation, (iii) Revisions to car parking layout, and (iv) all associated site, drainage and boundary development works.</p>	<p>The Planning Authority (DCC) granted permission for the development subject to 8 no. condition(s). The conditions relate to the sale of hot food, visual amenity, noise control, and traffic safety. Therefore, there are no cumulative impacts anticipated with this development.</p>
3047/21 Decision: Grant Permission. Decision Date: 01 Oct 2021	The Board of Management of Greenlanes National School	<p>Planning permission for the construction of a single storey extension to the rear of the existing school at the north western side of the site and including all associated site works.</p>	<p>The Planning Authority (DCC) granted permission for the development subject to 8 no. condition(s). The conditions relate to working hours, noise control, public road cleaning, transport and parking. Conditions have been set by the Drainage Division regarding surface and foul water sewers and SuDS measures, which must be strictly adhered to. Therefore,</p>

Planning Ref No.	Applicant Name	Summary of Development	Cumulative Impact Assessment
		PLAN NO: LRD6002/22- \$3 REC:06/09/2022	there are no cumulative impacts anticipated with this development.
2998/20 Decision: Grant Permission. Decision Date: 19 Oct 2020	St. Paul's College, Raheny	The development will consist of the following: construction of (i) a pergola structure consisting of a timber frame with retractable awning system above; (ii) sand and cement rendered block walls (0.8 m in height) with precast concrete capping to surround the proposed pergola structure; (iii) raised planted bedding along the block walls; and (iv) all site works necessary to facilitate the development. The proposed structure is located within the internal courtyard area at St. Paul's College.	The Planning Authority (DCC) granted permission for the development subject to 6 no. condition(s). The conditions relate to working hours, noise control, public road cleaning, transport and drainage. Therefore, there are no cumulative impacts anticipated with this development.
3803/21 Decision: Grant Permission. Decision Date: 17 Feb 2022	The Society of Jesus	PROTECTED STRUCTURE: Permission for development at this site, which contains a Protected Structure known as Manresa House. The Proposed Development will consist of: 1) a new single storey, flat-roofed building located to the northeast of the protected structure, to provide for new reception, dining, cooking and associated ancillary spaces, with rooflights, solar panes and part sedum roof; 2) a new single-storey, flat-roofed open loggia structure forming a covered route from the existing Retreat Building to the proposed new building; 3) associated hard landscaping, including new terrace and external steps, 2no. disabled parking bays, and extensive planting works to the courtyard; 4) landscaping works, including the provision of 36 no. car-parking spaces, new planting to the west lawn and the formation of a new stormwater attenuation pond; and 5) the removal of an existing single-storey, pitched roof timber structure.	The Planning Authority (DCC) granted permission for the development subject to 12 no. condition(s). The conditions relate to working hours, noise control, public road cleaning, surface water drainage and SuDS, transport, parking and maintaining the integrity of the protected structure. Therefore, there are no cumulative impacts anticipated with this development.
2038/18 Decision: Grant Permission. Decision Date: 08 Jan 2019	MKN Property Group	PROTECTED STRUCTURE: Permission for a residential development of 72 no. units across 4 no. blocks with a single level basement, consisting of the change of use of the existing Verville Retreat building from nursing home use to residential use and the change of use of the existing former outbuilding to residential use. The overall development will comprise of the following: Block A: construction of a 4 storey building (3 storeys with a setback fourth storey) comprising 14 no. apartments (12 no. 2 bedroom units and 2 no. 3 bedroom units) with balconies/terraces to the north and south elevations; Block B: The change of use of the existing 4 storey Verville Retreat building from nursing home use to residential use comprising 9 no. apartments (3 no. 1 bedroom units and 6 no. 2 bedroom units). Demolition of later additions and extensions to the existing Verville Retreat	The Planning Authority (DCC) granted Retention Permission under planning ref. no. 3081/20 on 28 Oct 2020. The development is subject to the conditions of the original planning grant, with additional conditions relating to drainage. Therefore, there are no cumulative impacts anticipated with this development.

Planning Ref No.	Applicant Name	Summary of Development	Cumulative Impact Assessment
		building as well as associated modifications to elevations and internal modifications/reconfiguration of the refurbishments to the existing building in order to accommodate the provision of the new apartment units and the construction of a new external stair core at the buildings eastern elevation; Block C: Construction of a 4 storey building (3 storeys with a setback fourth storey) comprising 48 no. apartments (1 no. studio apartment, 20 no. 1 bedroom units, 21 no. 2 bedroom apartments and 6 no. 3 bedroom apartments) with balconies/terraces to all elevations and roof garden; Block D: The conversion of the existing single storey outbuilding into 1 no. single storey, 2 bedroom mews dwelling with associated internal and external modifications to accommodate the proposed change of use; A basement level comprising a total of 69 no car parking spaces, 80 no. bicycle parking spaces, ancillary plant room and refuse storage areas; Revisions and improvements to the existing vehicular entrance to Vernon Avenue; Demolition of the existing single storey block to the north of Verville Retreat; landscaping (including communal and private open space); Boundary treatment; and, all associated engineering and site development works necessary to facilitate the development.	
4656/18 Decision: Grant Permission. Decision Date: 27 Mar 2019	Clontarf Hospital	Permission for development at Castle Avenue, Clontarf, Dublin 3. The development will consist of the removal of the existing maintenance portacabins and demolition of the existing hard standing area, removal of 4 young trees which will be replaced in the area to suit the development, removal of 3 car spaces and the construction of a single storey maintenance building including, workshop, office, store and bin store and associated site works adjacent to the existing services yard.	The Planning Authority (DCC) granted permission for the development subject to 12 no. condition(s). The conditions relate to working hours, noise control, public road cleaning, surface water drainage and SuDS, public infrastructure, public health and safety, amenity, ecology and sustainable development. Therefore, there are no cumulative impacts anticipated with this development.

The cumulative effects of Proposed Development on Material Assets have been assessed taking other planned, existing, and permitted developments in the surrounding area into account. Good construction management practices, as detailed in the CEMP will minimise the risk of pollution and nuisance arising from construction activities at the Site. The works will be carried out in such a way that inconvenience to the public arising from increase in traffic flows and disruptive effects of construction traffic on local and main roads is limited wherever

practical. Each of the developments that have been permitted in the vicinity of the site (detailed in Table 12-29) are subject to conditions, which, when considered in conjunction with the Proposed Development, it is predicted that the cumulative effects the Proposed Development on surface water, foul water disposal, potable water supply, natural gas supply, electrical supply, telecoms, and municipal waste will be negligible.

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12.2.5.10 "Do Nothing" Scenario

If the Proposed Residential Development is not advanced, the site will remain as a greenfield site. If the Proposed Development was not to proceed, there would be no increase in the demand on the existing water supply network and there would be no increase in wastewater discharging to the sewer network. Additionally, if the Proposed Development was not to proceed, there would be no increase in the demand on the existing power networks and there would be no increase in the demand on the existing waste management infrastructure. Hence, the effect of a "Do Nothing" scenario on the Material Assets of the study area would be neutral and imperceptible in the long term.

12.2.6 Avoidance, Remedial & Mitigation Measures

Specific avoidance, remedial and mitigation measures will be required for the Proposed Development. Waste management during the Construction Phase will be managed in accordance with the CDWMP prepared by Waterman Moylan (2022) for the Proposed Development. Waste will be managed in compliance with the Waste Management Act 1996 (as amended) and all subordinate legislation. Measures to minimise waste generation, promote re-use and recycling and recovery of wastes will be implemented throughout the Construction Phase.

Waste will be stored onsite in the dedicated waste segregation areas in such a manner as to:

- Prevent environmental pollution.
- Minimise nuisance generation such as dust.
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery.

Waste segregation areas, particularly those containing flammable wastes, will be located away from any potential sources of ignition (i.e., hot works zones), and no smoking will be allowed onsite, in order to prevent fire outbreak in waste segregation areas.

In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify DCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the proposed authorised waste collector(s). This soil will then be removed by an appropriately accredited contractor and disposed of at an appropriately accredited facility.

12.2.6.1 "Worst Case" Scenario

The worst-case scenario where mitigation measures fail for the Proposed Development, it is considered that localised nuisances may arise if construction works resulted in an extended power or telecommunications outage, or disruption to water supply or sewerage systems for existing properties in the area due to unforeseen delays on site. Alternatively, if an unclassified hazardous waste stream were to arise on the site during excavations, which resulted in the

contamination of a large volume of non-hazardous wastes, such as soil and stones, this would require specialist removal and treatment. However, taking account of the avoidance and mitigation measures, these scenarios are considered highly unlikely and indeterminable.

12.2.7 Residual Impacts

Residual Impacts are defined as "*effects that are predicted to remain after all assessments and mitigation measures*". They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

Having regard to the mitigation measures proposed within this and other chapters of the EIAR, residual impacts from the Proposed Development on Material Assets in the study area are anticipated to be neutral and not significant in the long term.

12.2.8 Monitoring

12.2.8.1 Construction Phase

The monitoring of C&D waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. The Main Contractor will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site. These monitoring measures are standard protocol and no additional, specific monitoring is required.

12.2.8.2 Operational Phase

The building management company, residents, tenants, childcare facility and nursing home operators will be required to maintain the bins and storage areas in good condition as required by the DCC Waste Bye-Laws. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.

12.2.9 Interactions

The Proposed Residential Development will provide additional housing in a densely populated urban area. Material assets, utilities and waste interact with other environmental receptors as follows:

12.2.9.1 Population and Human Health

In the absence of mitigation, the improper removal, handling and storage of waste could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Chapter 4 (Population and Human Health) of this EIAR has concluded that the likely significant effects will be negligible with mitigation measures..

12.2.9.2 Biodiversity

The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity, as small mammals may become entangled in waste

materials, however, Chapter 5 (Biodiversity) of this EIAR has concluded that provided all mitigation measures are implemented in full and remain effective throughout the lifetime of the facility, no significant negative residual impacts on the biodiversity of the study area are expected from the Proposed Development..

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12.2.9.3 Water (Hydrology & Hydrogeology)

Any connections to the public water network (water supply or foul sewer) during the Construction and Operational Phases will be under consent from Irish Water. Potential impacts on water are addressed in Chapter 7 (Water) of this EIAR, which concludes that there are no likely significant adverse residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

12.2.9.4 Traffic

Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the Raheny and Clontarf areas. Potential impacts on traffic are addressed in Chapter 12.1 of this EIAR.

12.2.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter.

12.2.11 References

- Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)
- EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.
- EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999)
- <https://siteviewer.comreg.ie/#explore> (ComReg, 2021). Commission for Communications Regulation Mast Viewer. Consulted on 04.01.2022.
- <https://www.gov.ie/en/publication/5634d-national-broadband-plan-map/> Consulted on 04.01.2022.
- <https://www.gasnetworks.ie/corporate/company/our-network/pipeline-map/> (Gas Networks Ireland, 2021). Gas Networks Ireland Pipeline Viewer. Consulted on 04.01.2022.
- <https://myplan.ie/> (DHLGH, 2021) Zoning and National Planning Applications Map Viewer. Consulted on 04.01.2022

- National Standards Authority of Ireland (NSAI), 2017. IS EN752, "Drain and Sewer Systems Outside Buildings – Sewer system Management. NSAI, 1 Swift Square, Northwood, Santry, Dublin 9
- Ordnance Survey Ireland, 2020 (OSI, 2021). Ordnance Survey Ireland webmapping <https://geohive.maps.arcgis.com/apps/webappviewer/index.html> Consulted on 04.01.2022.

13 RISK MANAGEMENT

13.1 Study Methodology

13.1.1 Scope and Context

The relevant legislation that applies to this Chapter is the Planning and Development Regulations 2001 – 2021, as amended, and in particular Schedule 6 – Information to be contained in EIAR. The following paragraph of Schedule 6, Paragraph 2(e)(i)(IV), specifically refers to *"a description of the likely significant effects on the environment of the Proposed Development resulting from ... the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)"*.

Paragraph 2(h) further expands with *"a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events."*

Additionally, the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), which implement the Seveso III Directive (2012/18/EU), and which revoked the 2006 Major Accident Regulations also applies to this Chapter.

This Chapter was prepared by Nikita Coulter, Senior Environmental Consultant with Enviroguide Consulting. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation, a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

13.1.2 Guidelines and Reference Material

Cognisance has been taken of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022). This document follows the requirements laid out in the Directive 2014/52/EU.

Specifically, the EPA Guidelines state that the EIAR must take account of *"the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)... The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive plants. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment*

may be required. The EIAR should refer to those separate assessments while avoiding duplication of their contents."

Reference has also been made to the Department of the Environment, Heritage & Local Government (DoEHLG) Publication 'Guide to Risk Assessment in Major Emergency Management 2010' and the Office of Emergency Planning, Department of Defence (DOD) Publication 'A National Risk Assessment for Ireland 2020'. A consolidated list of national hazards for Ireland identified in the DOD document are identified in Table 13-1.

Table 13-1 Consolidated List of National Hazards (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

Hazard: Civil <ul style="list-style-type: none"> • Large Crowd Event • Pandemic • Water Supply Distribution and Contamination • Food Chain Contamination • Animal Disease • Terrorist Incident 	Hazard: Natural <ul style="list-style-type: none"> • Storm • Snow and Ice (Including prolonged low temperature) • Flooding (Including pluvial, fluvial and coastal)
Hazard: Transportation <ul style="list-style-type: none"> • Maritime Incident • Air Incident • Transport Hub (Includes Airports, Ports and Rail Stations) 	Hazard: Technological <ul style="list-style-type: none"> • Structural Collapse (Including Dam, Tunnel, Bridge and Building) • Nuclear Incident (Abroad) • Cyber Incident • Disruption of Energy Supply (Including oil, gas, electricity and communications)

13.1.3 Risk Assessment Methodology

The risk assessment methodology has been supported by general risk assessment methods. Hazard analysis and risk assessment are accepted internationally as essential steps in the process of identifying the challenges that may have to be addressed by society, particularly in the context of emergency management. Mitigation as a risk treatment process involves reducing or eliminating the likelihood and/or the impact of an identified hazard (DoEHLG, 2010).

Table 13-1 Classification of National Likelihood Criteria (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

National Likelihood Criteria		
Rating	Classification	Average Recurrence Interval
1	Extremely Unlikely	100 or more years between occurrences
2	Very Unlikely	51-100 year between occurrences
3	Unlikely	11-50 years between occurrences
4	Likely	1-10 years between occurrences
5	Very Likely	Ongoing/Less than 1 year between occurrences

13.2 Predicted Impacts

The EIAR chapters within this report identify that the Proposed Development has been designed in accordance with best practice and that the Proposed Development can be safely undertaken without risk to health.

In order to understand the potential consequences and predicted impacts of any major accident or disaster due to the Proposed Development and the vulnerability of the project a desk study was undertaken. The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following phases:

Phase 1 Assessment:

The DOD Consolidated List of National Hazards was used to identify a preliminary list of potential major accident and disasters. Receptors covered by legislation were not included within the assessment e.g. construction workers.

Phase 2 Screening:

The list was screened and major events such as volcanoes were not included given the unlikely event of one occurring. Elements already addressed as a key part of the design e.g. risks of building collapse, are not repeated.

Phase 3: Mitigation and Evaluation

In the event that mitigation measures included did not mitigate against the risk, then, the potential impacts on receptors are identified in the relevant chapter. Table 13-3 lists the major accidents and/or disasters reviewed.

Table 13-2: Major Accidents and/or Disasters Reviewed

Major Accident or Disaster	Relevant for this Proposed Development? (Y/N)	Why relevant?	Potential Receptor	Covered within EIAR?
Civil				
Large Crowd Event		Not considered vulnerable	N/A	N/A
Pandemic	Y	<p>COVID-19 is an illness that can affect your lungs and airways. It is caused by a virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is spread in sneeze or cough droplets. The Proposed Development poses no additional COVID-19 risk.</p> <p>It is anticipated that there will be approximately 300 jobs created by the Construction Phase, with a maximum of 150 construction workers onsite at any one time at the peak of the construction works. Additionally there will be approximately 135 jobs created during the Operational Phase. During the Construction and Operational Phases of this Proposed Development, HSE guidelines will be adhered to as relevant.</p> <p>All workers directly and indirectly employed during the Operational Phase of the Proposed Development will comply with the relevant Government protocols that will be in place at that point in time in relation to COVID-19.</p>	Employees	Chapter 4 Population & Human Health

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Water Supply Distribution and Contamination	Y	Not considered vulnerable. Waterborne diseases can be caused by consuming contaminated drinking water. A potable water supply will be supplied to the Proposed Development via a connection to Irish Water supply.	Employees Residents	Refer to Chapter 7 Water and Hydrology and Chapter 12 Material Assets for information on water supply.
Food Chain Contamination	N	Not considered vulnerable	N/A	N/A
Animal Disease	N	Not considered vulnerable	N/A	N/A
Terrorist Incident	N	Not considered vulnerable	N/A	N/A
Transportation				
Maritime Incident	N	Not considered vulnerable, as the site is approximately 1.5km from the coast.	N/A	N/A
Air Incident	N	Not considered vulnerable. The closest commercial airport is Dublin Airport, which is approximately 6km from the Site.	N/A	Public Safety Zones for Dublin Airport are assessed in Section 13.3 of this Chapter.
Transport Hub (Includes Airports, Ports and Rail Stations)	N	Not considered vulnerable. The proposed Site is not considered a transport hub.	N/A	N/A
Natural				
Cultural, Archaeological and Architectural Heritage	N	Not considered vulnerable. There are no protected structures or conservation areas located within the Site of the Proposed Development.	N/A	Chapter 10 (Archaeology and Cultural Heritage) of this EIAR assessed the impact of the Proposed Development on the Archaeological and Cultural Heritage.
Landslides	N	The potential for landslides was already considered within the design therefore no future assessment or potential required.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to landslides.

Sinkholes	N	The potential for sinkholes was already considered within the design therefore no future assessment or potential required.	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of the Proposed Development to sinkholes.
Earthquakes	N	Area is not geologically active.	N/A	N/A
Floods/Storm surge/tidal flooding	Y	<p>A Site Specific Flood Risk Assessment was conducted for the site of the Proposed Development, and concluded: The likelihood of tidal flooding is extremely low and no mitigation is required. The likelihood of fluvial flooding is extremely low and no mitigation is required. The likelihood of pluvial flooding ranges from low to high and mitigation measures include implementing appropriate drainage design, SuDS and attenuation design, setting appropriate floor levels and overland flood routing. The likelihood of groundwater flooding is low if appropriate mitigation measures are put in place including setting appropriate floor levels, flood routing and damp proofing membranes.</p>	Residents/ workers/ service users/ members of the public/ the development	Chapter 7 (Hydrology) of this EIAR and the Site Specific Flood Risk Assessment (Waterman Moylan, 2022) identifies the vulnerability of the project to flooding.
Severe weather such as Tornadoes, Heatwaves, Blizzards and Droughts	N	<p>Not considered vulnerable.</p> <p>A Microclimate Assessment was carried out to evaluate the predicated performance of the buildings and the impact of the buildings on microclimate (B-Fluid, 2021). The Proposed Development will not introduce any critical impact on the surrounding buildings, or nearby adjacent roads</p> <p>In the event of severe weather events, the national meteorological service, Met Éireann, provides advance notice of severe weather, usually several days in advance. When appropriate, colour-coded weather warnings are issued. The Office of Emergency Planning works with the government departments and other key public authorities in order to ensure the best possible use of resources and compatibility across different emergency planning requirements.</p>	N/A	N/A
Air Quality events	Y	<p>Vehicular emissions</p> <p>Dust emissions</p>	Residents/ workers	Chapter 8 (Air Quality) of this EIAR identifies the impact of the construction and operation of the development on

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				ambient air quality.
Wildfires	N	Not relevant. A landscape plan has been completed for the Proposed Development.	N/A	N/A
Dam, Bridge or Tunnel Failure	N	Not considered vulnerable as none are present on the site of the Proposed Development or proposed as part of the scheme.	N/A	N/A
Flood defence failure	N	Appropriate drainage design, SuDS and attenuation design, setting appropriate floor levels and overland flood routing have all been included in the design of the Proposed Development and will be installed according to appropriate regulations and best practise guidelines.	Residents/ workers/ service users/ members of the public/ the development	Chapter 7 (Hydrology) of this EIAR and the Site Specific Flood Risk Assessment (Waterman Moylan, 2022) identifies the vulnerability of the project to flooding.
Fire	Y	The risk of fire might lead to loss of life.	Residents, service users, members of the public & nearby properties.	Section 13.3.1 of this Chapter deals with Fire Safety. A Preliminary Fire Safety and Access & Use Strategy' has been prepared by Maurice Johnson & Partners (2021).
Invasive species	N	Not considered vulnerable	N/A	Chapter 5 (Biodiversity) of this EIAR has assessed invasive species.
Technological				
Structural Collapse (Building)	N	This has been taken into consideration in the building design. All buildings have been designed to modern standards. No further assessment is required.	Residents / Employees	The design criteria of the buildings are in accordance with all relevant building design standards.
Nuclear incident	N	Not considered vulnerable	N/A	N/A
Cyber incident	N	Not considered vulnerable	N/A	N/A
Disruption to energy supply (oil, gas, electricity)	N	Not considered vulnerable	N/A	Chapter 12 (Material Assets) of this EIAR contains information on energy systems.
Utilities failure (communications)	N	Not considered vulnerable	N/A	Chapter 12 (Material Assets) of this EIAR contains information on communications systems.

Utilities failure (water supply)	N	Not considered vulnerable	N/A	Chapter 7 (Hydrology) and Chapter 12 (Material Assets) of this EIAR contain information on water supply
Utilities failure (wastewater, sewage)	N	Not considered vulnerable	N/A	Chapter 7 (Hydrology) and Chapter 12 (Material Assets) of this EIAR contain information on wastewater and sewage removal and treatment
Utilities failure (solid waste)	N	Not considered vulnerable	N/A	Chapter 12 (Material Assets) of this EIAR contains information on solid waste removal and treatment
Industrial accidents (defence, energy, oil and gas refinery, food industry, chemical industry, manufacturing, quarrying, mining)	N	There are no Upper Tier Seveso sites near the Proposed Development. The closest is located approximately 2.5km from the Proposed Development at Dublin Port.	N/A	N/A

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13.3 Management Plans

13.3.1 Fire Safety and Emergency Response Plans

13.3.1.1 Construction Phase

Sufficient labour and resources will be arranged for the project, together with sufficient security arrangements to ensure safe access and egress of construction staff. Co-ordination of works will be required with others in the active buildings in terms of the emergency escape arrangements as the project progresses.

13.3.1.2 Operational Phase

A 'Preliminary Fire Safety and Access & Use Strategy' report has been prepared for the Proposed Development by Maurice Johnson & Partners, Fire Safety Engineering & Access Consultants (2021). The report details the means of escape in case of fire from the residential buildings, the nursing home, the childcare facility and the various amenity spaces.

A Building Lifecycle Report (Aramark, 2022) has been prepared for the Proposed Development which reviews the outline specification of materials and infrastructure to be utilised for the Proposed Development. Protective Services that will be installed in the Proposed Development are listed within report and include:

- Fire alarms
- Fire extinguishers
- Apartment sprinkler system (where applicable by fire cert)
- Dry risers, and
- Firefighting lobby ventilation.

Fire alarms, fire extinguishers and fire blankets will be installed in all internal areas. All fire alarms will be in accordance with the current IS3218:2013 + A1 2019 and the Fire Certificate, and all fire extinguishers will meet the requirements of I.S. 291:2015 – Selection, Commissioning, Installation, Inspection and Maintenance of Portable Fire Extinguishers. A sprinkler system will be installed in the apartments in accordance with BS 9251:2005 – Sprinkler Systems for Residential and Domestic Occupancies – Code of Practice (as amended). Dry Risers are a system of empty pipes and valves that can be connected externally to a pressured water source by emergency services and firefighters in the event of a fire. They will be installed in the common area cores of the apartment blocks. The Dry Risers will be installed in accordance with BS 5041 – Fire Hydrant Systems Equipment & BS 9999 – Effective Fire Safety in the Design, Management and Use of Buildings. Fire-fighting ventilation consisting of smoke extract/exhaust systems will be installed in the common area lobbies to the fire consultants design and specification (Aramark, 2022).

The individual residential units will each be designed as standalone compartments fire separated from all adjoining accommodation. The basement and podium car parks and ancillary accommodation will also be compartmented from the various Blocks overhead. The nursing home building will be compartmented from the car parks and will also be sub-divided into compartments to allow for progressive horizontal evacuation (Maurice Johnson & Partners, 2021).

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13.3.2 Traffic Management Plan

13.3.2.1 Construction Phase

A Traffic Management Plan will be developed by the Main Contractor for the Construction Phase of the Proposed Development. A 'just in time' delivery system will avoid a backup of traffic on approach. Additionally, a booking system will be considered, whereby contractor deliveries and collections can be managed to avoid traffic delays. The Construction Phase Traffic Management Plan will include segregation of construction vehicles from staff and visitor vehicles that will be present on the site. The Main Contractor will be responsible for ensuring that all access routes to the college and Vincentian Community Residence are kept clear of obstruction and that suitable traffic and pedestrian warning signage is in place.

13.3.2.2 Operational Phase

A Travel Plan has been developed for the Operational Phase of the Proposed Development by Waterman Moylan (2022). The implementation of the strategy proposed in the Travel Plan, such as the provision of secure cycle parking spaces; up-to-date information of public transport routes and bus stop locations; information about bike to work scheme to all residents; will encourage residents to reduce dependency of private car and increase the travel by green modes of transport. These measures will not only benefit the residents but will also prevent any transport impacts that can be provoked by the operational phase of the Proposed Development.

13.3.3 Public Safety Zones

Public Safety Zones (PSZs) are mapped out around airport runways to protect the public on the ground from possible aircraft crashes in populated area. PSZs are used to prevent inappropriate use of land where the risk to the public is greatest, e.g., by limiting the type and allowable height of buildings and structures within the zones.

Two individual risk factors relating to chance of death by aircraft crash have been assessed in determining appropriate Public Safety Zones (PSZs) at Dublin Airport. The inner PSZ risk value is 1 in 100,000 per year and the outer PSZ risk value is 1 in 1,000,000 per year, for each runway.

The Site of the Proposed Development is located approximately 6km to the southeast of Dublin Airport. There are no PSZs directly over the Site of the Proposed Development. The nearest PSZ is an outer PSZ which is located approximately 4km to the north of the Site of the Proposed Development. The PSZs at Dublin Airport and the location of the Site of the Proposed Development are shown in Figure 13-1. Based on the locations of the PSZs in relation to the Proposed Development, an aircraft strike disaster is not considered relevant to this Proposed Development.

Figure 3 Dublin Airport - Proposed Public Safety Zones, including Proposed Runway 10L/28R

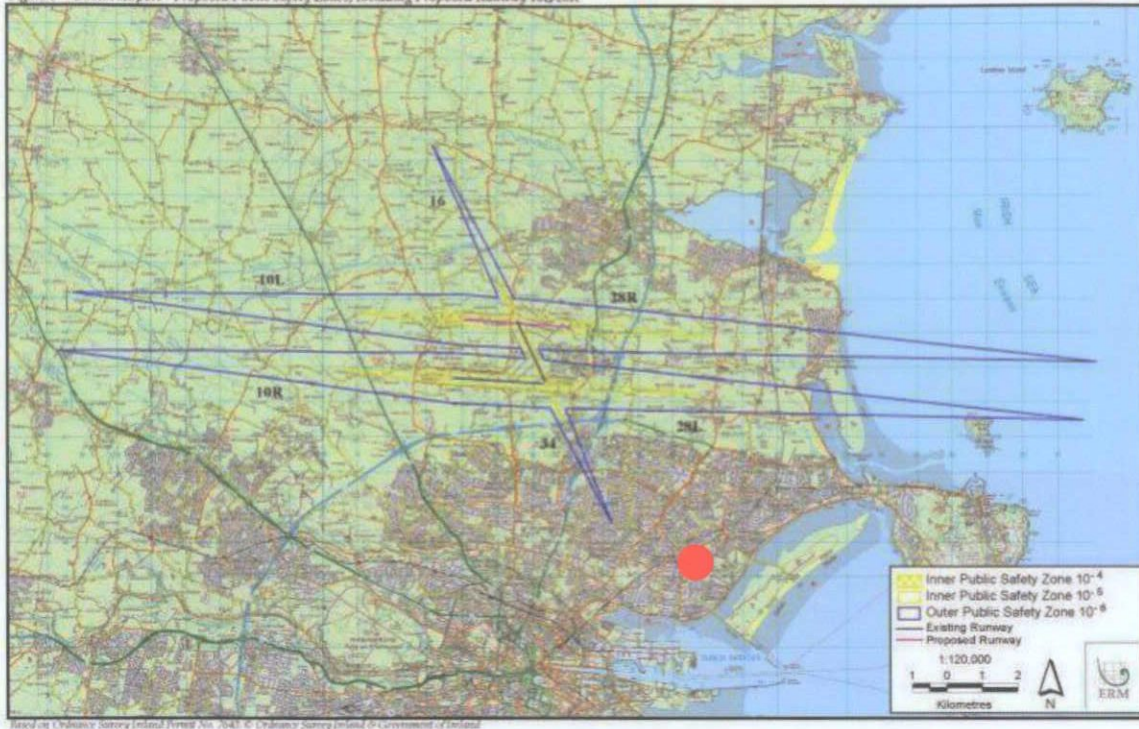


Figure 13-1 Dublin Airport Public Safety Zones – the approximate location of the site of the Proposed Development is represented by a red dot

13.4 Residual Impacts

Control measures observed for health and safety and environmental management as per relevant code of practices (Code of Practice for Inspecting and Certifying Buildings and Works) and relevant legislation including Building Control Act 1990 (No. 3 of 1990), as amended and Building Control Regulations 1997, as amended. The residual impacts will be negligible once all control, mitigation and monitoring measures have been implemented.

13.5 Monitoring

There is no monitoring required regarding risk management. All monitoring proposals for the interacting chapters have been detailed in the relevant technical chapters and are included in Chapter 15 Mitigation Measures and Monitoring.

13.6 Conclusions

The design has considered the potential for flooding, road accidents or fire within the design methodology. The vulnerability of the Proposed Development to major accidents and/or disasters is not considered significant.

13.7 Difficulties Encountered When Compiling

No difficulties were encountered when preparing this chapter.