10.0 – CLIMATE

10.1 Introduction

Chapter 10 of this Environmental Impact Assessment has been prepared by DKP Environmental (DKP_{EV}) and assesses the effects of the proposed development on Carbon Dioxide (CO2) emissions effecting the current climatic conditions. The proposed development (the project) that is subject to this LRD application and EIAR provides for the demolition of the former rugby clubhouse structure on site and the proposed construction of 297 no. residential units comprising 211 no. houses (14 no. 2 beds, 156 no. 3 beds, 39 no. 4 beds, and 2 no. 5 beds), 46 no. duplex units (9 no. 1 beds, 14 no. 2 beds, and 23 no. 3 beds), 40 no. apartments (23 no. 1 beds, 14 no. 2 beds, and 3 no. 3 beds); 1 no. childcare facility; 1 no. café/restaurant; 1 no. retail unit; 1 no. yoga studio; and all associated site infrastructure and engineering works necessary to facilitate the development. A temporary foul water pumping station is also proposed as part of the development. This section will identify and assess the impact of the proposed development in terms of CO2 emissions during the construction phase and when in full operational use.

We note that although the construction phase contributes to CO2 emissions through the type of construction methods, choice of materials, transport / traffic requirements etc its impact compared with the operational use is minimal. This assessment was prepared in accordance with the EIA Directive 2014/52/EC and current EPA guidelines.

10.2 Research Methodology

CO2 is the largest and most important contributor to climate change. Methane, nitrous oxide, other gases, and ozone are also important greenhouse gases. CO2 is particularly important owing to its role in the global carbon cycle, which is central to life on Earth. This cycle is being significantly disrupted by the combustion of fossil fuels. Consequently, CO2 is accumulating in the atmosphere, where it is the key driver of global climate change. It is difficult to accurately apportion any increase in CO2 emissions as a result of the proposed development at Broomfield to any specific climate impacts other than noting that any increase large or small will more than likely also effect the climate or climate change.

We have therefore concentrated the report on the proposed development's CO2 emission impact and methods to reduce this to a minimum on both the construction and operational stages in line with Ireland's National Policy Position on 'Climate Action and Low Carbon Development' and Fingal County Council Climate Action Plan.

10.2.1 Climate Policy

The National Policy Position on Climate Action and Low Carbon Development was published on in April 2014 but was updated with the government's latest plan in January 2021. The policy sets a fundamental national objective to achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050. The National Policy Position envisages that development of National Mitigation Plans will be guided by a long-term vision of low carbon transition based on aggregate reduction in CO2 emissions of at least 80% compared to 1990 levels by 2050 across the construction and transport section relative to this planning application.

Fingal County Council Climate Action Plan 2024-2029 sets out a range of actions across the six theme areas of Energy & Buildings, Transport, Flood Resilience, Nature Based Solutions, Circular Economy &

Resource Management and Community Engagement. This is aligned to the Government's National Climate Objective, which seeks to pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy.

10.2.2 Transport

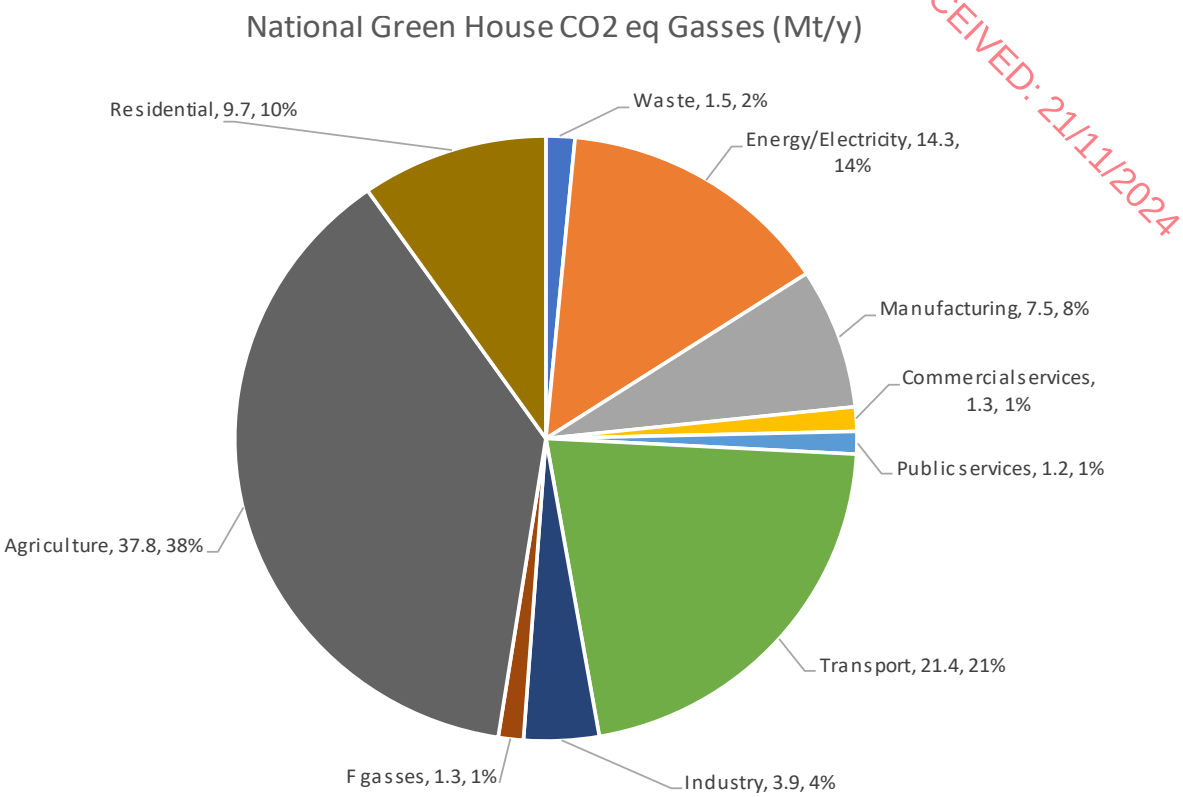
Transport / road transport is currently the second largest contributor of greenhouse gas emissions (after agriculture) at +/- 20%. Between 1990 and 2015, the transport sector showed the greatest overall increase of +/- 130% and increases are linked to economic prosperity with year-on-year increases observed up to 2007 followed by six years of year on year decrease during the economic downturn.

The latest EPA projections from 'An Integrated Assessment 2020' state greenhouse gas emissions from transport accounted for 20.3 per cent of Ireland's total national emissions in 2019. EPA projections indicate that transport emissions are projected to decrease by 38.6 per cent over the period 2021-2030 to 7.6 Mt CO2 eq under the 'with additional measures' scenario, which assumes that 936,000 electric vehicles, including approximately 840,000 passenger cars, will be on the road by 2030.

10.2.3 Residential

Emissions from the residential sector have fluctuated in the period 1990 to 2015 but overall, the 2015 emissions are +/- 20% lower than their 1990 level. Initially there was a sharp reduction in emissions in the early 1990's from residential fuel switching to cleaner fuels. The increase in housing stock drove a gradual upward trend in the emissions from the residential sector after 1998 to reach a peak in 2010. For the residential sector under the various (energy reduction) schemes the CO2 emissions are targeted to be reduced by 60% for new dwellings mainly through the implementation of the new Nearly Zero Energy Building (NZEB) regulations (Part L 2022 for non-residential units and Part L 2022 for residential units) and increased use of renewable energy.

Illustration 10.1: Irelands national 2023 GHG emissions chart..



The latest EPA projections from 'An Integrated Assessment 2020' state emissions are projected to decrease by 52.4 per cent between 2021 and 2030 to 2.9 Mt CO2 eq under the 'with additional measures' scenario. This scenario assumes full implementation of the measures in Ireland's Climate Action Plan, including upgrades to homes and significant supports for heat pumps.

10.3 Receiving Environment

Malahide is a coastal area in Fingal, County Dublin, situated approximately 18 km north-east of Dublin city. The site is approximately 2km from the Malahide town centre. The development site has residential housing (Ashwood Hall) to the west, a number of private dwellings to the north. To the south there is green agricultural fields. Immediately east is the Malahide railway line, beyond the rail line is more residential houses. Overall, the proposed development area is located within an area which includes sources of transportation related noise emissions, local residential estates/houses sources of domestic heating. The survey data in combination with the EPA noise map data has been used to characterise the existing noise environment in the area.

10.4 Potential CO2 Emission Effect

The CO2 impact in this development is affected by the construction phase and operational residential phase with the latter dominating the emissions. In essence any new development will add to existing CO2 emissions until we have managed to construct & operate at zero emissions however in the meantime it is key to limit the additional CO2 emissions to a minimum.

10.4.1.1 The construction phase base line

The base line construction transport CO2 data is based on an average 5000km of vehicular movement of HGV's (50%), LGV's (35%) and private cars (15%) with a combined average carbon output of 255 gr/km/CO2 taken from the Irish Construction Federation statistics resulting in emission totalling +/- 1100 kg CO2 for the construction period.

The base line embodied CO2 data is taken from the data base available from the university of Bath CO2 embodied carbon dioxide tables with a typical average residential unit (90m2) to embody +/- 23,000 kg CO2 using typical traditional building materials. The rates are divided over the 60 year period.

Table 10.1: Construction phase base line CO2 emissions

Construction phase base line CO2 emissions	Single unit	Single unit
	emission rate	emission
	kgCO2/m2	ton-CO2
	baseline	baseline
Construction transport	12.20	1.10
Construction embodied CO2	255.55	23.00
Total impact	267.75	24.10

10.4.2 Operational Phase

The operational phase of the buildings also has 2 no typical CO2 emission sources: Transport and energy mainly for heating/hot-water use. During the operational phase a residential development emits CO2 through vehicular traffic into and out of the development and energy usage within the buildings. Vehicular impact is mainly addressed using a predicted traffic count based on general transport use for a residential development taking in account any proposed central locations for schools, social / recreational spaces, and the inclusion of options for pedestrian and bicycle movement with a view to encouraging public transport. We note that the Governments Climate Change policy sets out to phase out petrol and diesel cars by 2030 hence this will result in a significant CO2 reduction it is envisaged at least 936,000 electric vehicles, both passenger and commercial, will be on the road by 2030 with additional charging infrastructure to cater for planned growth. Transport emissions from the residential sector have fluctuated in the period 1990 to 2015 but overall, the 2015 emissions are +/- 20% lower than their 1990 level. Initially there was a sharp reduction in emissions in the early 1990's from residential fuel switching to cleaner fuels. The increase in housing stock drove a gradual upward trend in the emissions from the residential sector after 1998 to reach a peak in 2010.

CO2 emissions from energy supplies to buildings is the more significant part of the overall operational development operational contribution. The main energy supply CO2 emissions in residential developments come from providing space heating and domestic hot-water heating. In recent years great strides have been made with regards to reducing energy for space heating using efficient technologies (heat pumps, photovoltaic solar panels) however hot-water heating is determined mainly by its use and therefore reductions are harder to achieve.

The operational phase of a building is much longer than the construction phase with the standard building life cycle period of 60 years. As a result of the much longer operational phase any reductions made to this have significant impacts on the CO2 emissions over the life cycle period of the building.

10.4.2.1 Operational Phase base line

The base line construction transport CO2 data for residential vehicular movement CO2 emissions are based on an average of 10,000km/year per residential unit with a current vehicular output of 175 gr/km to represent private and LGV's manufactured between 2005 and 2022 resulting in a yearly emission of 1750 kg/CO2/year or 1.75 ton-CO2/year.

The base line CO2 emissions from energy supplies to buildings is the more significant part of the overall development's operational phase contribution. Using the national software for CO2 emissions attributed to energy supplies for a typical 90m2 residential unit the emissions of a standard reference unit 3229 kg/CO2/year or 3.2 ton-CO2/year.

Table 10.2: Operational phase base line CO2 emissions.

Operational phase base line CO2 emissions.	Single unit	Single unit
	emission rate	1 year
	kgCO2/m2	ton-CO2
	baseline	baseline
Transport	19.44	1.75
Dwelling Energy	35.88	3.23
Total impact	55.33	4.98

We note the transport emissions personal and delivery vehicles are being reduced through EU and national initiatives and regulation on a continuous basis. CO2 emissions from cars are regulated through EU legislation which sets statutory maximum emission targets for new vehicles currently set to achieve an average of 95 grams of CO2 per km in 2022 compared to the current average vehicular emission rate of 175 gr/km.

10.5 Minimizing CO2 Emissions

The following sections are reduction measures implemented in the project's CO2 emission calculations to illustrate the effects of such reductions on the environment.

10.5.1 Construction phase transport

CO2 reduction measures to minimise impacts from transport during the construction phase include the following:

- Local sourcing of construction materials such as the recycling of material from excavations for reuse on site.
- Implementation of the Traffic Management Plan to minimise congestion and queuing, reduce distances of deliveries and eliminate unnecessary loads.
- Reducing the idle times by providing an efficient material handling plan that minimises the waiting time for loads and unloads. Reducing idle times could save up to 10% of total emissions during construction phase.
- To turn off engines when machinery is not required to operate in the relative short term unless this is an issue for security or functionality reasons.
- Periodic maintenance of plant and equipment.
- Technical inspection of vehicles to ensure they will perform the most efficiently.
- Possible use of electric construction equipment / vehicles

10.5.2 Construction phase Embodied CO2

Embodied CO2 is the amount of carbon dioxide a material emits to the environment per unit (weight / volume) including its exploration, manufacturing process, transport to site, its 60-year use and end-of -life requirements also known as the Cradle-to-Grave impact. Embodied CO2 is attributed to all materials to be used on site and by minimising or avoiding certain materials the impact on CO2 emissions can be reduced by:

- Increasing the use of locally available recycled materials.
- Reducing the use of materials with a high embodied CO2 element.
- Increasing the use of "green" concrete (Granulated Blast Furnace Slag to replace Portland cements as the latter has significant embodied CO2.)
- Reducing the use of metals. Metals generally contain the highest embodied CO2 element of all materials mainly due to their exploration and manufacturing processes.

10.5.3 Operational phase transport

Transport emissions personal and delivery vehicles are being reduced through EU and national initiatives and regulation on a continuous basis. CO2 emissions from cars are regulated through EU legislation which sets statutory maximum emission targets for new vehicles currently set to achieve an average of 95 grams of CO2 per km in 2022. The following is applied to lower CO2 emissions as a result of transport:

- Encourage the use of electric cars.
- Encourage the use of new low CO2 petrol cars.
- Utilise available fiscal measures for the use of electric vehicles or renewable fuels.
- Design and plan the overall project in such manner as to encourage walking and cycling.
- Design and plan certain required facilities like schools, medical centres, shopping areas recreational spaces, within the development to lower the need to use motorised vehicles.
- Design and plan public transport routes throughout the development to encourage the use of public transport.

10.5.4 Operational phase energy CO2 Emissions

Under the new building regulation requirements (NZEB), in not so many words, the electrical and thermal energy systems in buildings must be designed and constructed to deliver at least a 70% primary energy reduction and a 60% CO2 reduction over the Part L reference dwelling and have at least 20% primary energy equivalent energy coming from on-site produced renewable energy.

To achieve these reductions to following outline specification can be applied:

- Ground floors: U <= 0.110 W/m2K
- External walls: U <= 0.150 W/m2K
- Party walls: U= 0.0 W/m2K (solid party wall)
- Roofs: U <= 0.125 W/m2K
- Window & frame: U <=1.20 W/m2/K, Solar transmittance <= 0.64
- External (unglazed) door & frame: U <= 1.2 W/m2K
- Cold bridging: U <=0.08 W/m2K special construction joints applied.
- Thermal mass: TP250
- Ventilation: Humidity controlled natural ventilation / intermittent extracts or full MVHR.
- Air tightness: Design assumption <= 1.50 m3/m2*h

- Lighting: 100% LED
- Controls: Time clock/ thermostatic control for each separate heating/hot-water zone
- Circulation pumps: Class A variable speed pump
- Heating / hot-water system: Air source heat pump / exhaust air heat pump.
- Renewable energy: Air source heat pump / exhaust air heat pump.

10.6 Effects of reductions measures.

Applying the suggested reduction measures listed in sections 10.5.1,-2,-3 and -4 effects the construction and operational phase emissions for a single unit and for the total combined number residential units tabled below. The total 297 no of units is made up of 211 no houses, 46 no duplexes and 40 apartments with an average unit floor plate of +/- 90m2.

10.6.1 Construction phase.

Table 10.3: Construction phase 1 year base line CO2 emissions and effects of reductions

Construction phase base line CO2 emissions and effects of reductions	**1 year**		**Single unit**		**297 units**	
	emission rate		emissions		emissions	
	kgCO2/m2		ton-CO2		ton-CO2	
	baseline	reduced	baseline	reduced	baseline	reduced
Construction transport	12.20	10.74	1.10	0.97	326	286
Construction embodied CO2	255.55	210.83	23.00	18.97	6830	5635
Total impact	267.75	221.56	24.10	19.94	7156	5922

We note the reduction of 12.5% on transport and 17.5% on embodied CO2 reductions to result in a reduction of 4.2 tonCO2 for a single unit and a reduction of 1,234 tonCO2 for the 297 units. The emission rate for the construction phase was reduced from 24.1 kgCO2/m2 to 19.9 kgCO2/m2 or an overall reduction of 17.3%.

10.6.2 Operational phase.

Table 10.4: Operational phase annual base line CO2 emissions and effects of reductions.

Operational phase base line CO2 emissions and effects of reductions.	**Annual**		**Single unit**		**297 units**	
	rate / m2		1 year		1 year	
	kgCO2/m2		ton-CO2		ton-CO2	
	baseline	reduced	baseline	reduced	baseline	reduced
Transport	19.44	16.91	1.75	1.52	519	452
Energy	35.88	5.92	3.23	0.53	959	158
Total impact	55.32	22.83	4.98	2.05	1478	610

We note the reduction of 13.0% on transport and 59.0% on energy CO2 reductions to result in a reduction of 2.9 tonCO2 per year for the average single unit totalling 868 tonCO2 / year for 297 units. Over the 60-year life cycle of the building this represents a reduction of 175 tonCO2 for a single unit and a total of 52113 tonCO2 for the 297 units. The emission rate for the construction phase was reduced from 55.3 kgCO2/m2 to 22.8 kgCO2/m2 or an overall reduction of 59.0%.

10.7 National 2023 and 2030 CO2 emissions.

The impact on Irelands current and 2030 predicted CO2 emissions are based on the EPA data issued in their "Greenhouse Gas Emissions projection report 2020-2040" report. For this chapter we have targeted the current and 2030 data being the first major milestone for European. The emissions are expressed in Mt or one million (Mega) tons.

Table 10.5: National overall CO2 emissions in 2022 and 2030.

EPA CO2 emission data	**National emissions**		
	Total	Transport	Residential
	Mt-CO2/year	Mt-CO2/year	Mt-CO2/year
2023 emissions (base line)	62	21.4	9.7
2030 emissions	58	21.0	4.6
2030 emission with additional measures	47.5	17.8	3.8

10.7.1 Proposed development CO2 emissions.

Using the data from tables 10.3 and 10.4 we have calculated to CO2 emissions using the same unit (Mt-CO2/year) as the National CO2 emission table (10.5) to get a better idea of the actual impacts. We note that 1kg = 10^{-9} Mton and 1ton = 10^{-6} Mton or Million ton. For the purpose of this chapter and calculating the impacts we assumed the emissions of the construction phase to be executed in one year. Construction year 2025 for this report.

Table 10.6: Proposed project CO2 emissions in 2025 and 2030.

Total project CO2 emissions	297 units		
	construction	operational	combined
	Mt-CO2 /year	Mt-CO2 /year	Mt-CO2 /year
Year 1 (construction)	0.0059220	0.0000000	0.0059220
Operational years	0.0000000	0.0006101	0.0006101

10.7.2 Effects of the proposed project CO2 emissions on the national emissions.

Using the data from tables 10.5 and 10.6 we have calculated to CO2 emissions from the proposed project and compare these with the National (EPA) listed emissions for 2025 and 2030.

Table 10.7: Effect of proposed project CO2 emissions on national emissions in 2022 and 2030.

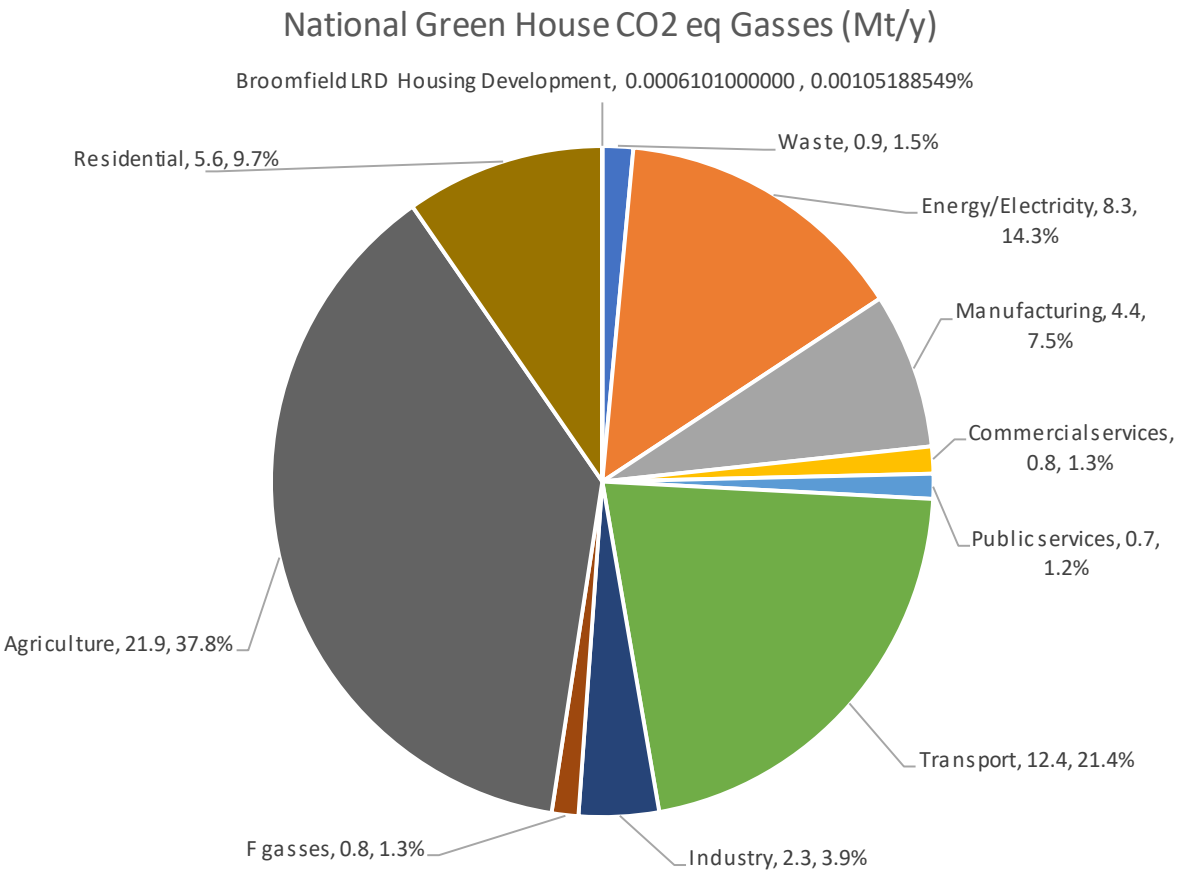
Project CO2 emission impact on National emissions	National emissions Mt-CO2 /year	297 units emissions Mt-CO2 /year	fraction %
2025	62 (2023)	0.0059220	0.009552
2030	58	0.0006101	0.001052
2030 with additional measures	47.5	0.0006101	0.001284

The national impact: The impact of this 297-unit construction phase (2025) of 0.005922 Mt-CO2 on Ireland's current emissions (2023 data) @ 62 Mt-CO2/year represents an increase of 0.0009552% but only for the particular construction year / phase.

The impact of this 297-unit operational period or annual impact of 0.0006101 Mt-CO2 on Ireland's projected 2030 emissions @ 58 Mt-CO2/year represents an increase of 0.001052%.

In term of fraction the chart below illustrates the projects effects in relation to all other GHG emissions including the residential element.

Illustration 10.2: Irelands national 2023 GHG emissions chart and separate proposed project effects.



Based on the above findings we note the impacts on the national CO2 emission at worse to be very fractional. CO2 emission from the construction and operational phase have been reduced to a minimum and the impact on National emissions for the construction phase are therefore deemed to be imperceptible and short term and for the operational phase to be deemed imperceptible and long term both in 2022 and 2030. Any new development in essence will increase CO2 emissions to the national and global environment however by introducing the reduction measures at design stage the increase has been kept to a reasonable minimum.

10.8 Remedial & reductive measures

There are no particular mitigation measures noted. All the recommended reduction measures at design stage and as applied in the CO2 reduction tables are for the greater part mandatory to comply to the relevant regulations and standards. As each development/building can only be certified for compliance under the Building Control Amendment Regulations (BCaR) if the minimum criteria set at design stage is met in full it is very unlikely that noncompliance i.e., mitigation occurs.

10.8.1 Monitoring

Construction phase: No CO2 monitoring is deemed necessary for the construction phase as the CO2 output / emission is relatively small and the duration of the construction phase is short-term.

Operational phase: No CO2 monitoring is deemed necessary for the operational phase as the current and future mandatory CO2 reduction requirement (BER) are a secure process to ensure compliance.

10.8.2 Interactions

The main interactions relating to climate are population and human health and transportation.

10.8.3 Cumulative effects

Cumulative impacts of this and other developments in the Malahide area (as set out below) were considered in combination with the following plans and projects which were relevant to the subject lands:

- Reg. Ref. F24A/0842E permission sought for development of a proposed temporary construction road off Kinsealy Lane to facilitate the implementation of the approved development under ABP-313361-22 on the southern portion of the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin (due decision 14th November 2024).
- Reg. Ref. F23A/0586 permission granted for construction of 71 no. residential units on the southern portion of the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin. This permission also includes a temporary construction road off Kinsealy Lane on the site covered by this application. Additionally, permission has been granted for 87 residential units on the same southern portion of the lands at Back Road & Kinsealy Lane.
- Reg. Ref. F21A/0451 permission granted for proposed upgrade of the existing foul water storage tank to provide for a pumping station with increased storage capacity, new sewer and rising main

along Kinsealy Lane with associated interceptions and manholes, boundary treatments, and all associated engineering and site works necessary to facilitate the development.

- The Broomfield SHD (ABP-313361-22) comprising the construction of 415 no. residential units & a creche on the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin. By the Order dated 4th July 2024, An Bord Pleanála issued a split decision on the case to include a granted permission for construction of 87 no. residential units on the southern portion of the lands and a refusal on the northern portion of the lands.
- The Auburn House SHD (ABP-313360-22) comprising 368 no. residential units and a crèche on lands at Auburn House (Protected Structure), Little Auburn and Streamstown, Off Malahide Road and Carey's Lane, Back Road, and Kinsealy Lane, Malahide, Co. Dublin. With a decision date due 8th August 2022, the case is still under review by the Board. This delayed decision triggered concurrent lodgement of three planning applications on the lands, including 69 no. dwellings under F22A/0579 - ABP-316444-23; 98 no. dwellings under F22A/0580 - ABP-316498-23; 92 no. dwellings under F22A/0581 - ABP-316504-23. By 29th March 2023, Fingal County Council granted planning permission for these applications; subsequently third-party appeals were lodged against the Council decisions and by Order dated 13th May 2024, An Bord Pleanála granted planning permission with revised conditions for all.
- Reg. Ref. F18A/0168 (ABP-303370-19) permission granted for alterations to previously approved development under Reg. Ref. F13A/0443 for construction of 32 no. residential units at Streamstown Wood, Streamstown Lane, Malahide, Co. Dublin. A third-party appeal was lodged against the Council's decision which was then withdrawn.
- Brookfield and Ashwood Hall Developments (Reg. Ref. F13A/0459 - PL06F.243863 - Reg. Ref. F13A/0459/E1 & Reg. Ref. F13A/0460 - PLO6F.243821 - Reg. Ref. F13A/0460/E1) are currently under construction/ nearing completion.
- 89 dwellings under the live pre-application at Lamorlaye, Back Road
- F24A/0988E – 9 no. residential units proposed at Ashwood Hall and Brookfield
- Retail anchor development proposal on lands adjoining Ashwood Hall

It could be assumed that if the abovementioned applications would be granted a total of approximately 540 units could be added to the projects 297 units totalling +/- 840 units. If the additional units would be constructed using similar building specifications as the Broomfield project the effects would be as follows.

Project CO2 emission impact on National emissions	**National**	**589 units**	**fraction**
	emissions	emissions	
	Mt-CO2 /year	Mt-CO2 /year	%
2025	62 (2023)	0.0149556	0.024121
2030	58	0.0015408	0.002656
2030 with additional measures	47.5	0.0015408	0.003243

The national cumulative impact: The construction element impact of a 840 unit development of 0.01495 Mt-CO2 on Ireland's current emissions (2023) @ 60 Mt-CO2/year represents an increase of 0.02412%.

The operational (annual) element impact of a 840 unit of 0.001540 Mt-CO2 on Ireland's projected 2030 emissions @ 58 Mt-CO2/year represents an increase of 0.002656%.

Based on the above findings we note the cumulative impacts on the national CO2 emission at worse to be very fractional. CO2 emissions from the construction and operational phase have been reduced to a minimum. The impact on National emissions for the construction phase are therefore deemed to

be short term and imperceptible. For the operational phase it is deemed long term and imperceptible both in 2025 and 2030. Any new development in essence will increase CO2 emissions to the national and global environment however by introducing the reduction measures at design stage the increase has been kept to a reasonable minimum.

11.0 Material Assets - Traffic and Transport

11.1 Introduction

This chapter of the EIAR assesses the likely traffic and transportation impacts on the receiving environment during the construction and operational phases of the proposed development. The existing and proposed transport infrastructure in the area is described, and an assessment of the current and the future traffic environment is made. The impact of the development in terms of public transportation, pedestrian and cycle is also assessed.

The chapter describes: the methodology; the receiving environment at the application site and surroundings; the characteristics of the proposal in terms of physical infrastructure; the potential impact that proposals of this kind would be likely to produce; the predicted impact of the proposal examining the effects of the proposed development on the local road network; the remedial or reductive measures required to prevent, reduce or offset any significant adverse effects; and the monitoring.

11.2 Assessment Methodology

The following methodology has been adopted for this assessment:

- Review of relevant available information including, current Development Plan, existing traffic information and other relevant studies;
- Site visit to gain an understanding of the site access and observe the existing traffic situation;
- Consultations with Fingal County Council Road Department to agree the site access arrangements and determine the scope of the traffic analysis required to accompany a planning application;
- Detailed estimation of the transport demand that will be generated by the development. The morning and evening peak times will be addressed as well as an estimation of under-construction and potential future developments in the surrounding area.
- Assessment of the impact of traffic on local junctions, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

11.3 Receiving Environment

This section reviews the baseline conditions, providing backing information for the site in order to determine the significance of any traffic implications. It also considers the existing accessibility of the site by sustainable modes of transport.

11.3.1 Site Location

The site is situated in Broomfield, Malahide, Co. Dublin, 17 km northeast of Dublin City.
The site is bounded to the west by the Dublin-Belfast railway line, to the east by the Ashwood Hall development, to the north by existing residential development and to the south by agricultural land.
Access to the subject development is provided via the Broomfield Access Road.
The Broomfield Access Road provides access to Subject Development, Ashwood Hall Development, Brookfield Development, and Broomfield South Development (wating planning approval).

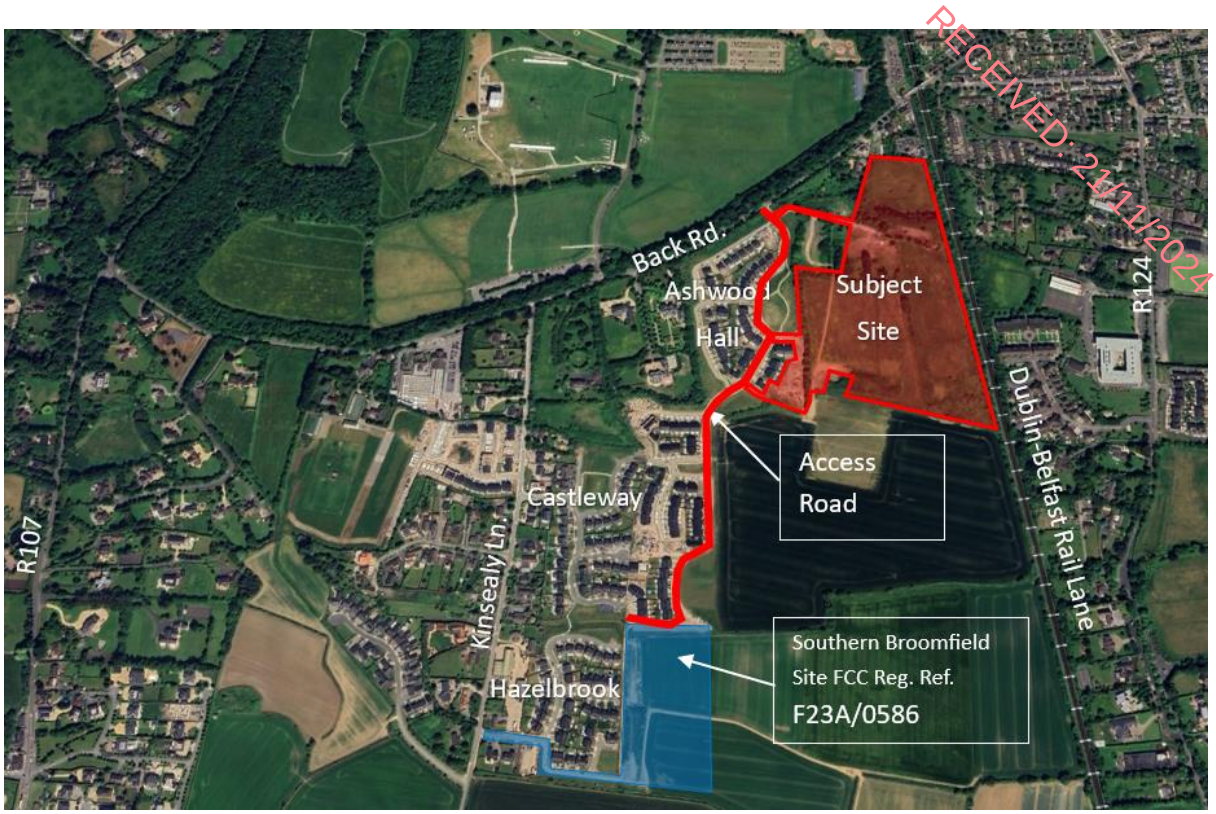


Figure 12.1 | *Proposed Development Location*

11.3.2 Local Road Network

Broomfield Access Road is a single carriageway road which runs north-south for approximately 1.2km, linking the Brookfield and Ashwood Hall developments with Back Road.

R107 (Malahide Road)

R107 Malahide Road is a regional road in north Dublin which runs for approximately 10.5km from Fairview to Malahide. The speed limit along the R107 adjacent to the site is 60kph. This road is approximately 700m in length from the priority-controlled junction with Back Road through to a signalised junction with R106 Swords Road. Along this section, R107 Malahide Road comprises a carriageway of c. 7.5m wide with a narrow footpath provided on the western side. No cycle lanes are provided.

Back Road

Back Road is a single carriageway road running west-east for approximately 1.8km from the priority junction with R107 Malahide Road through to a priority junction with R124 The Hill. This road, which crosses the railway line via an existing bridge, currently comprises a carriageway of approximately 7.30m with narrow footpaths running along both sides of the road for the majority of its length. To the west of the railway line, the speed limit on Back Road is 60kph reducing to 50kph just before the railway bridge.

Kinsealy Lane

Kinsealy Lane is a local road running north-south for approximately 1.8km from a priority junction with Back Road through to a priority junction with Chaple Road. This road is currently comprising a single carriageway of approximately 5.50m with no footpaths for the majority of the road. This road is subject to a speed limit of 50kph and comprises footpaths along the majority of its length.

R124 (The Hill Road)

The Hill Road is a single carriageway road running north-south for approximately 3.2km from a priority junction with St. Margrets Park to a priority junction with the Chapel Road. This road currently comprises a carriageway of approximately 7.00m with narrow footpaths running along both sides of the road for the majority of its length. The R124 is subject to a speed limit of 50kph.

11.3.3 Baseline Traffic data

In order to determine the volume of traffic movements at key points on the road network surrounding the subject site, 2024 traffic count data has been assessed for the following 5no. junctions:

- Junction 1 (Existing Priority Junction – Scenario A & B): R107 Malahide Road / Back Road.
    - Junction 1 (Signalised Crossroads – Scenario C): R107 Malahide Road / Back Road.
- Junction 2 (Existing Priority Junction): Back Road / Kinsealy Lane.
- Junction 3 (Existing Priority Junction): Back Road / Broomfield Access Road.
- Junction 4 (Existing Priority Junction): Back Road / R124 The Hill.
    - Junction 4 (Signalised Crossroads – Scenario C): Back Road / R124 The Hill.
- Junction 5 (Existing Priority Junction): Kinsealy Lane / Hazelbrook Access Road.

During the writing of this Traffic and Transportation Assessment, a junction was added in the access to the site:

- Junction 6 (Future Priority T-Junction): Broomfield Access Road / Main access road to the subject development.

Figure 12.2 shows the location of each junction.

To quantify the volumes of traffic movements at the above key junctions, a traffic survey was commissioned by the applicant and carried out by Tracsis on Wednesday 7th February 2024 for the period of 24 hours. The two-way flows recorded at each junction during the morning and evening peak hours are shown in Table below.

Junction	AM Peak Hour	PM Peak Hour
1	1,110	1,119
2	767	682
3	645	479
4	1,283	1,004
5	256	244

Table 12.1 | *2024 Surveyed Two-way Traffic Flow per junction*

It has been assumed that the proposed development will be constructed with assumed year of opening is 2026. As per methodology adopted in the 'Transport Assessment Guidelines (May 2014)' the

surveyed junctions were also assessed for the future design years of 2031 (Opening year + 5 years) and 2041 (opening year +15 years).

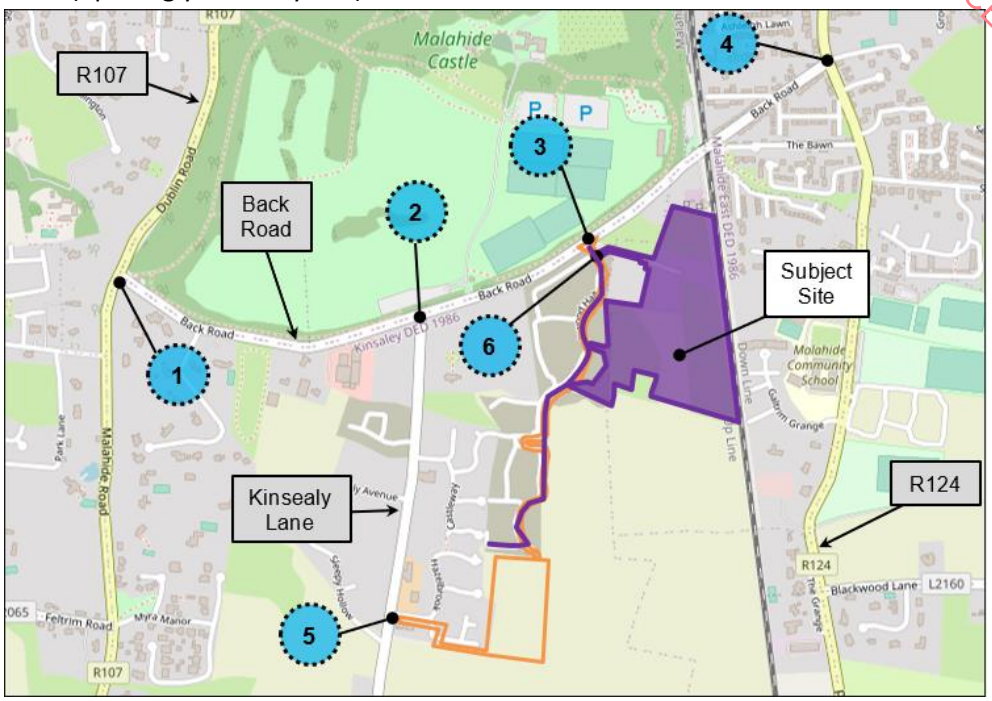


Figure 12.2 | Junctions Assessed

A summary of the 2024 baseline two-way flows and the two-way flow expected to be generated by the proposed + committed and potential future developments in the local area are presented below in Table 12.2 for Junction 1, Table 12.3 for Junction 2, Table 12.4 for Junction 3, Table 12.5 for Junction 4 and Table 12.6 for Junction 5.

Trip generation calculation for the proposed, committed, and potential future developments are presented later in this Chapter.

As recommended in the TII Publication, 'Project Appraisal Guidelines Unit 16.1: Expansion Factors for Short Period Traffic Counts (October 2016)', the traffic count data has been converted to Annual Average Daily Traffic (AADT) data in order to provide a dataset representative of the annual traffic flow profile for the road network surrounding the proposed development.

The General Expansion Factor Method, as outlined in the TII Publication, was used to convert the surveyed flows for the 5 no. surveyed junctions into the Annual Average Daily Traffic (ADDT). The corresponding Factors for the Dublin Region were used.

The AADT flows has been calculated based on the Project Appraisal Guidelines for National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts (October 2016). The ADDT flows are shown below in Tables 12.6, 12.7, 12.8, 12.9 and 12.10.

Proportion of Daily Traffic Flow	Existing Two-way Flows through Junction 1 (Vehicles)		
	Arm A	Arm B	Arm C
AADT:	9,818	6,644	9,239

Table 12.2 | *Junction 1 - R107 Malahide Road / Back Road*

Annual Average Daily Flow	Existing Two-way Flows through Junction 2 (Vehicles)		
	Arm A	Arm B	Arm C
AADT:	6,466	2,467	6,412

Table 12.3 | *Junction 2 – Back Road / Kinsealy Lane*

Proportion of Daily Traffic Flow	Existing Two-way Flows through Junction 3 (Vehicles)		
	Arm A	Arm B	Arm C
AADT:	5,178	937	5,255

Table 12.4 | *Junction 3 – Back Road / Broomfield Access Road*

Proportion of Daily Traffic Flow	Existing Two-way Flows through Junction 4 (Vehicles)			
	Arm A	Arm B	Arm C	Arm D
AADT:	8,738	39	9,959	5,179

Table 12.5 | *Junction 4 – Back Road / R124 The Hill*

Proportion of Daily Traffic Flow	Existing Two-way Flows through Junction 5 (Vehicles)		
	Arm A	Arm B	Arm C
AADT:	2,011	397	1,988

Table 12.6 | *Junction 5 – Kinsealy Lane / Hazelbrook Access Road*

11.3.4 Pedestrian and Cycling Facilities

The site is well located to provide non-car access for residents and visitors of the proposed development with good local walk-in access from the local catchment.

Proposals for the Greater Dublin Area Cycle Network Plan were published by the National Transport Authority in 2022. The plan sets out a vision and a strategy for the construction and/or designation of a comprehensive network of cycling routes throughout the Greater Dublin Area (Counties Dublin, Meath, Kildare and Wicklow). There are cycle routes available along the roads and through Malahide Castle ground connecting to Malahide Town Centre.

11.3.5 Public Transport Facilities

The assessment of the public transport and the surrounding existing roads, junctions and pathways is shown below. The proposed development has adequate capacity of current public transport infrastructure with access to Malahide Dart Station and several Dublin Bus routes.

Train Services Accessibility

The nearest rail station to the subject site is the Malahide Station, located approximately 1500m north of the site (c. 20-minute walk or c. 5-minute cycle). It is also possible to take the 42 Bus to Malahide Train Station, which could potentially reduce the travel time.

The quicker walking/cycling route from the site is via Broomfield and Malahide Castle Gardens (black route in 12.2 below). However, the Malahide Castle Gardens closes at certain times. The alternative to this would be to use the R124 Hill Road (red route in 12.2 below), which is approximately 100m longer.

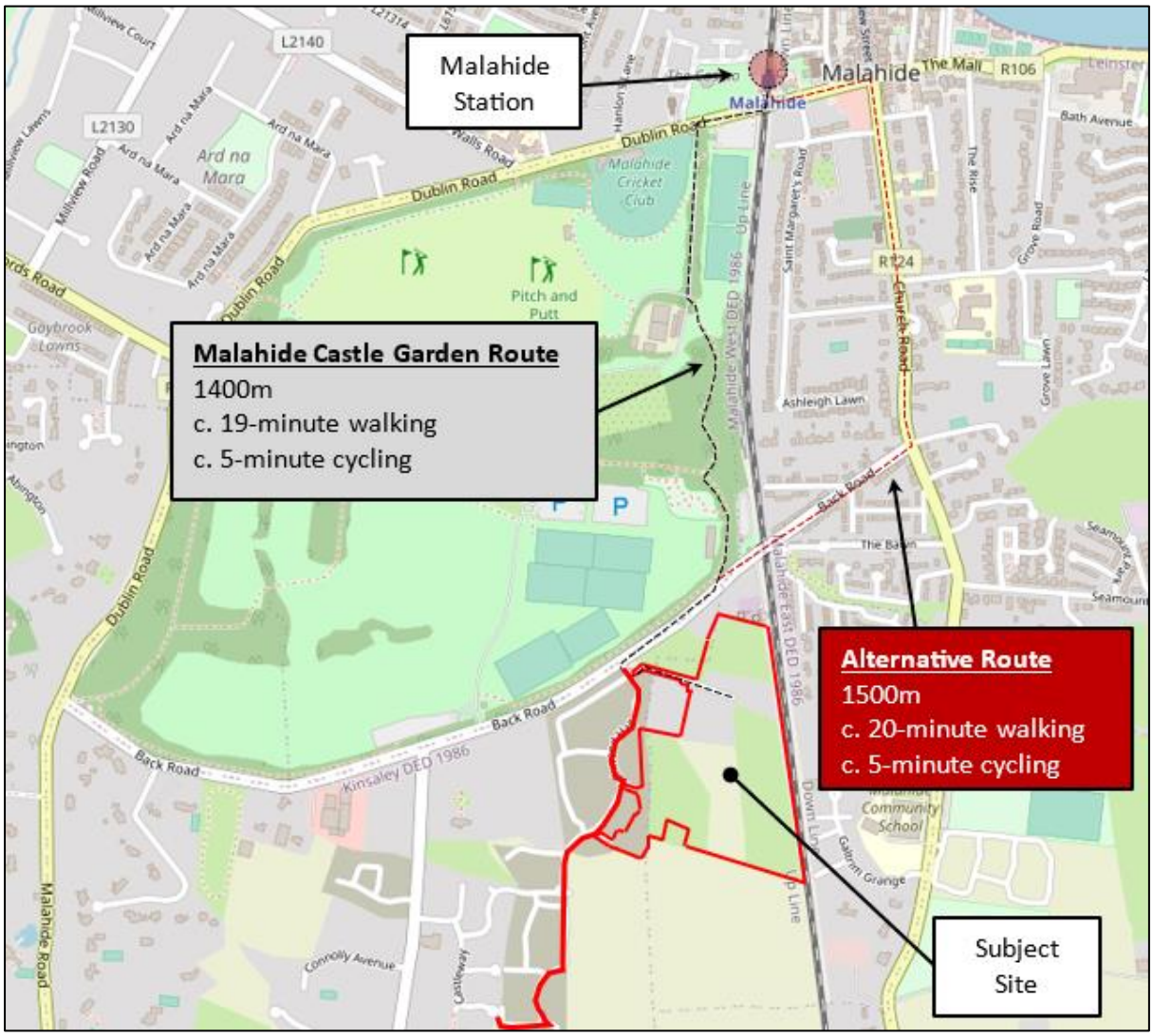


Figure 12.3 | *Location of Malahide Train Station and Routes from the Site*

The trains from this station facilitate services that allow for good connection to other onward destinations both north and south. Services generally operate with 30-minute frequencies during the peak hour morning and evening commuter periods.

The train routes serving Donabate are outlined below:

- Belfast – Dublin Connolly
- Dublin Connolly - Belfast
- Drogheda/Dundalk – Dublin Commuter (S)
- Dublin - Drogheda/Dundalk Commuter (N)
- DART Howth / Malahide to Bray (Daly) / Greystones
- DART Bray (Daly) / Greystones to Howth / Malahide
- Rosslare Europort – Gorey – Dublin Connolly (NW)

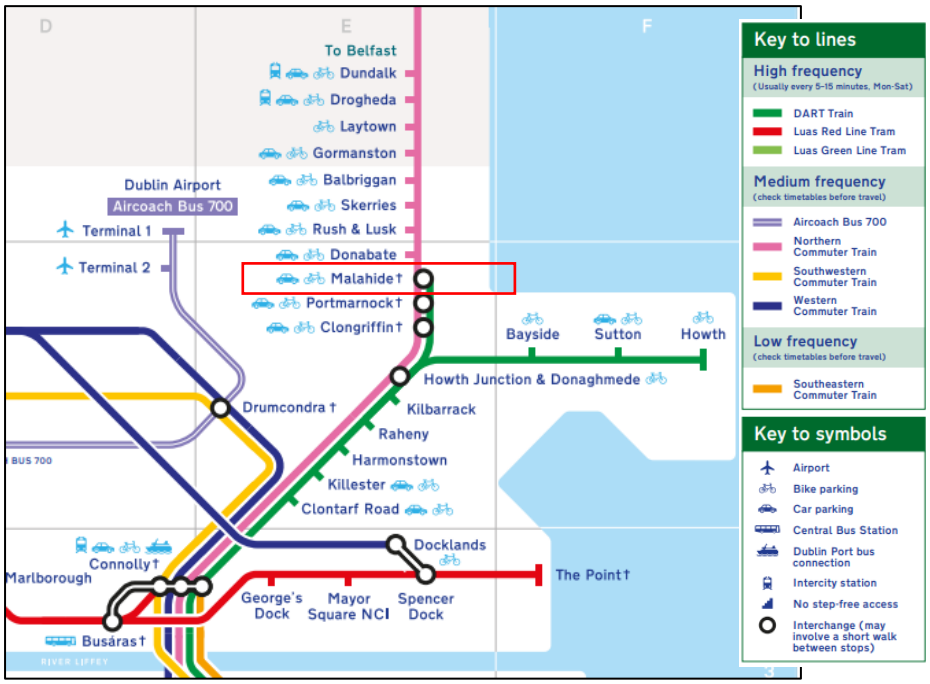


Figure 12.4 | *Location of Rail Station (Source: google maps)*

The Malahide Station is served by Commuter Rail and DART services. The Commuter Rail service through Malahide Station serves all main stations from Dundalk through Dublin City Centre to Gorey. The service operates at 3 to 4 trains per hour in both direction on weekdays.

The DART service through Malahide Station serves all stations from Malahide through Dublin City Centre to Bray and Greystones. On weekdays, this service operates at a 20-minute frequency in both directions.

Malahide Rail Station, located approximately 1.4km north of the proposed development site, is part of the coastal north route of the DART railway network.

The DART+ Programme aims to improve current rail services across Dublin City and Greater Dublin, by modernising and providing an electrified and more frequent and reliable rail service, enhancing capacity on the rail corridors.

The following improvements – extracted from the DART+ website, are included as part of the DART+ Coastal North programme:

- "Increase peak passenger capacity and increase train frequency between Dublin City Centre and Drogheda MacBride Station – inclusive of Howth Branch – facilitating frequent and reliable transport to the surrounding communities.
- Enhance public transport opportunities for work, education, and leisure purposes.
- Facilitate the development and future growth of existing and new communities that will greatly benefit from the connectivity that the DART+ Coastal North project will deliver.
- Help alleviate road congestion.
- Build a sustainable and connected city region, supporting the transition to a low carbon and climate resilient society.
- Facilitate people to make sustainable travel choices by encouraging a move away from private cars to a reliable, efficient, and safer public transport network.
- Improve multi-modal transport connectivity through the development of the wider DART+ Programme.
- Improve journey time reliability."

Public Consultation No. 1 on the Emerging Preferred Option was completed in spring 2022. The DART+ Coastal North Programme is currently at Public Consultation No. 2 on the Preferred Option. Complete design appraisal and statutory documents are planned to be completed by summer 2023, subject to government approval.

Bus Services Accessibility

The closet bus stops serving the surrounding area are located on the R107 (Malahide Road) and R124 (Hill Road) to the northwest and northeast of the site. The bus routes operating at these bus stops are the following:

- R107 (Malahide Road)
  - Bus Stop 3579 (Norther):
    - Route 42: Sand's Hotel Portmarnock – Eden Quay.
    - Route 102c: Balgriffin- Sutton.
  - Bus Stop 3645 (Southern):
    - Route 42: Sand's Hotel Portmarnock – Talbot Street.
    - Route 102c: Sutton-Balgriffin.
- R124 (Hill Road)
  - Bus Stop 3632 (Norther):
    - Route 42d: Portmarnock – DCU
    - Route 42: Sand's Hotel Portmarnock – Talbot Street.
    - Dublin Bus Route 142: Portmarnock – UCD (Belfield).
  - Bus Stop 3626 (Southern):
    - Route 42d: DCU – Portmarnock.
    - Route 42: Talbot Street - Sand's Hotel Portmarnock.
    - Dublin Bus Route 142: UCD (Belfield) – Portmarnock.

The weekday frequency service of which these bus routes operate are shown in Table 12.8. The table below was extracted from the Dublin Bus website and refer to times when the buses leave the first bus station.

Route	Direction	AM Weekday Frequency	PM Weekday Frequency

		(07h00 to 09h00)	*(17h00 to 19h00)*
42	From Talbot St.	Every 15 to 30 minutes	Every 20 to 25 minutes
	To Talbot St.	Every 20 minutes	Every 20 to 25 minutes
42D	From DCU	No morning service	Bus leaves at 17h10
	To DCU	Bus leaves at 07h30	No evening service
142	To UCD Belfield	At 07h10, 07h35, 07h55	No evening buses
	From UCD Belfield	No morning buses	At 16h35, 17h05

Table 12.8 | Local Bus Routes – Peak Hours Weekday Services

Travel time on the bus no. 42 between Malahide and Talbot Street is approximately 42 minutes, while the travel time on the bus no. 142 between Malahide and UCD Belfield is approximately 60 minutes. The walking times from the proposed development to the nearest bus stops on the R107 Malahide Road and the R124 Hill Road are approximately 10 and 16 minutes, respectively.

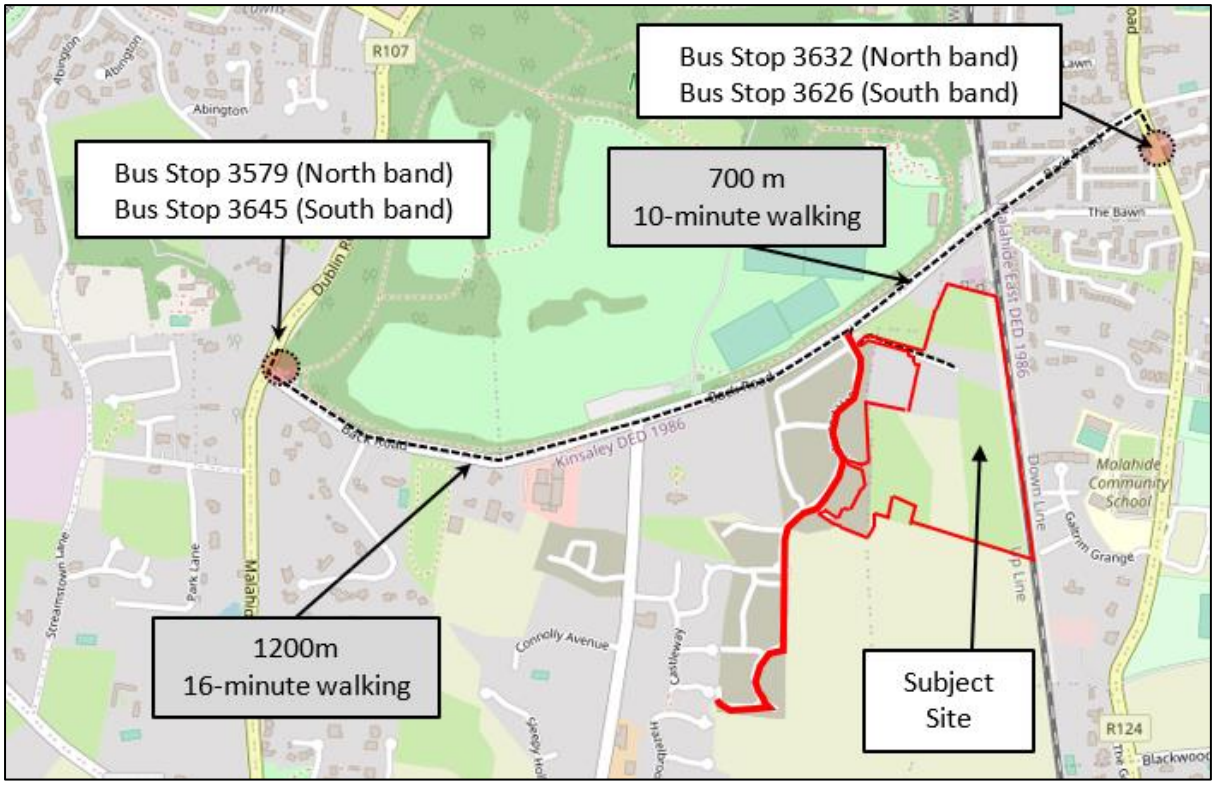


Figure 12.5 | *Location of Closest Bus Stops and Walking Routes from the Site)*

Bus improvements comprising the BusConnects, which is an ongoing public transport infrastructure programme, managed by the National Transport Authority (NTA), focused on the bus networks in several cities in Ireland. Described by the NTA as intended to "improve bus services across the country", as of mid-2022 the programme was in "implementation" phase in Dublin.

There are a number of bus routes proposed to serve the area of Malahide, the figure below shows the BusConnects route surrounding the subject development.

Routes running along R107 Malahide Road to the west of the site:

- Radial Route 20 (Malahide – Kinsealy – City Centre): every 30 minutes during the Weekday AM and PM peak hours.

- Radial Route 21 (Swords Business Park – Kinsealy – City Centre): every 30 minutes during the Weekday AM and PM peak hours.

Routes running along R124 Hill Road to the east of the site:

- Local Route 81 (Sutton – Portmarnock – Malahide – Swords – Airport): every 20 minutes during the Weekday AM and PM peak hours.
- Peak-Only Route X77 (Portmarnock – City Centre – UCD): 6 services during the Weekday AM peak hour and 5 services during the Weekday PM peak hour.

Routes operating through Malahide centre:

- Branch Route H2 (Portmarnock – Bayside – City Centre) – branch of Spine H: every 30 minutes during the Weekday AM and PM peak hours.

The Branch Route H2 route was launched in June in 2022 – together with the H Spine, and replaced the old bus routes 29a, 21 and 31.

- Peak-Only Route X78 (Malahide – Portmarnock – Clontarf – City Centre – UCD): 2 services during the Weekday AM peak hour and 2 services during the Weekday PM peak hour.

11.4 Characteristics of the Proposal

11.4.1 Introduction

The proposed development will consist of the construction of 297 no. residential units comprising 211 no. houses (14 no. 2 beds, 156 no. 3 beds, 39 no. 4 beds, and 2 no. 5 beds), 46 no. duplex units (9 no. 1 beds, 14 no. 2 beds, and 23 no. 3beds), and 40 no. apartments (23 no. 1 beds, 14 no. 2 beds, and 3 no. 3 beds); 712sqm crèche; a two-storey building with a 581sqm commercial/retail area (comprise of 242sqm café, 167sqm pharmacy, and 172sqm yoga studio), and all associated site infrastructure and engineering works necessary to facilitate the development.

The Schedule of accommodation is shown in Table below:

Description	1-bed	2-bed	3-bed	4-bed	5-bed	GFA (Sqm)	Total
House	-	14	156	39	2	-	211
Duplex	9	14	23	-	-	-	46
Apartment	23	14	3	-	-	-	40
Crèche	-	-	-	-	-	712	-
Café / Pharmacy / Yoga Studio	-	-	-	-	-	581	-
Northern Total	**32**	**42**	**182**	**39**	**2**	**-**	**297 units**

Table 12.9 | *Schedule of Accommodation*

11.4.2 Broomfield Development Lands

According to the Fingal Development Plan 2023 – 2029 (FDP), the subject development site is in an area designated with Zoning Objective "RA – Residential Area Residential: to provide for new residential communities subject to the provision of the necessary social and physical infrastructure".

Figure 12.5 below is taken from Donabate / Portrane - Sheet No. 9 of the Fingal Development Plan 2023 - 2029.

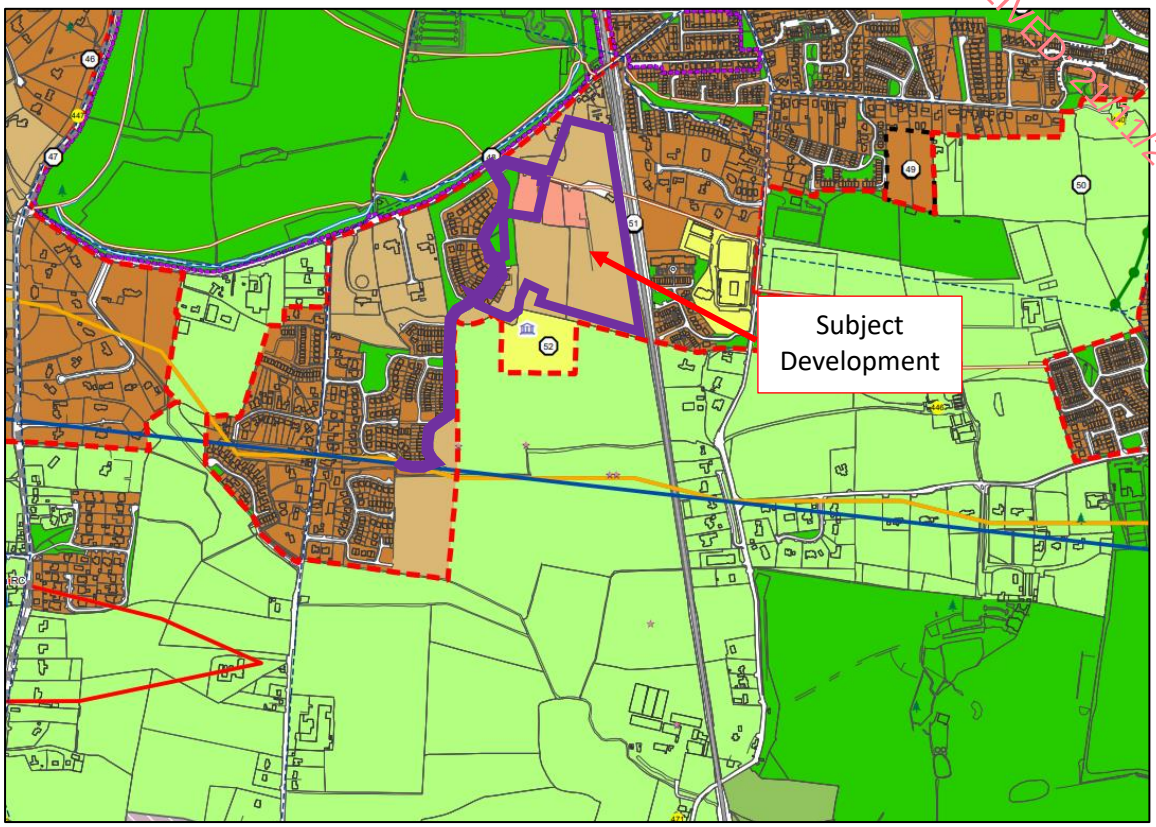


Figure 12.6 | *Broomfield Development Lands*

11.4.3 Potential Future Developments

To provide a robust and cumulative assessment of local road network, the following nearby developments have also been assessed in this TTA with regards to trip generation and additional traffic:

- Ashwood Hall and Brookfield Residential Developments (Plg. Reg. Ref. F13A/0459 and F13A/0460).
- Streamstown / Little Auburn / Auburn Park Residential Developments (Plg. Reg. Ref. F22A/0579; F22A/0580 and F22A/0581).
- Residential Development on the Southern lands at Broomfield (Planning Ref. F23A/0586 / ABP-32562-24)
- Potential Future Commercial Area Development on lands at Broomfield
- Potential Future Primary School Development on lands at Broomfield (Planning Ref. F24A/0541E)

Ashwood Hall and Brookfield were not complete at the time of the traffic survey used in this TTA was carried out. While Streamstown, Little Auburn and Auburn Park received decision of grant permission by FCC. An appeal has been lodged and the three applications are now under consideration by An Bord Pleanála.

The Residential Development on Southern lands at Broomfield have been granted with date decision 18 July 2024.

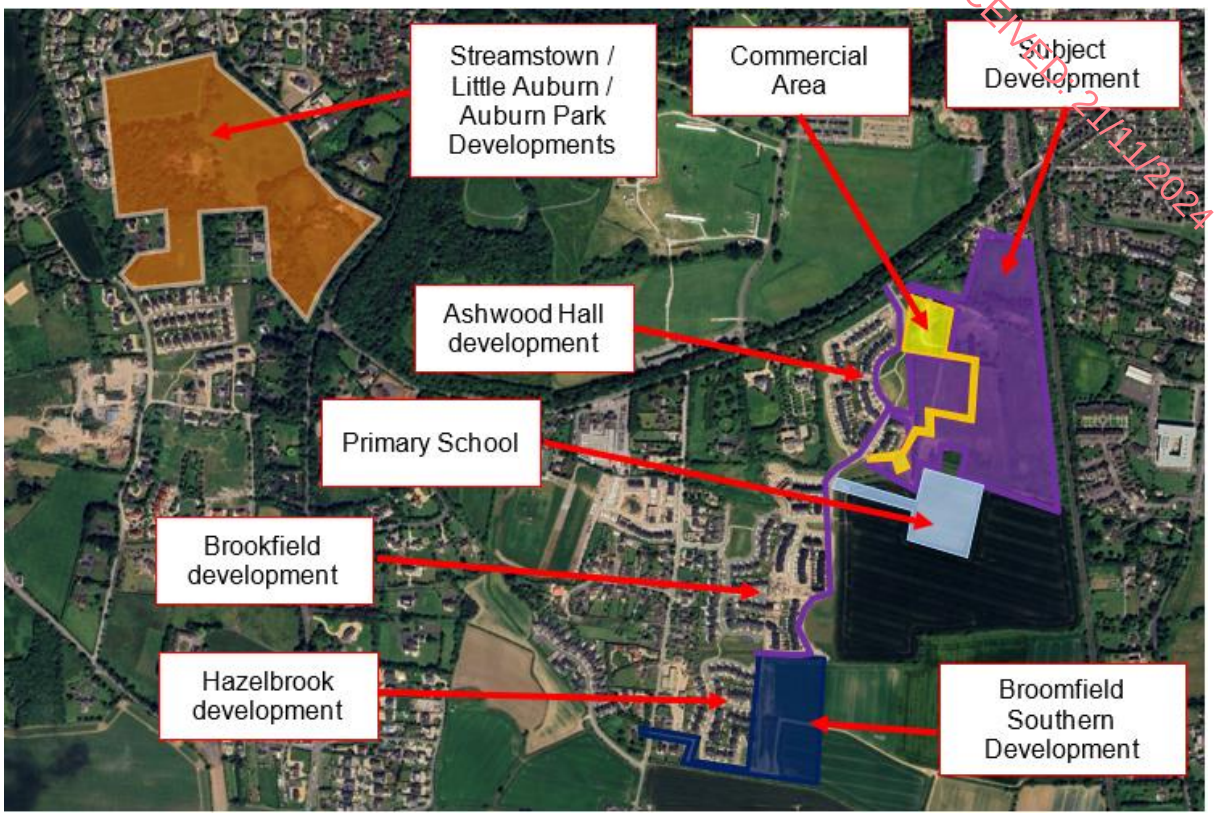


Figure 12.7 | *Location of Nearby Permitted and Potential Future Developments*

Ashwood Hall and Brookfield Developments (F13A/0459 & F13A/0460)

The permission for the recently constructed Ashwood Hall and Brookfield developments within the Broomfield Development Lands provided for the construction of a total of 149 no. houses (61 no. houses in Ashwood Hall (Ref. F13A/0459) and 88 no. houses in Brookfield (Ref. F13A/0460). Additional permits were submitted (Ref. F21A/0125, F21A/0349, F21A/0531, F21A/0537, F21A/0534, F21A/0536, F21A/0532) with modifications to the original development, which kept the number of houses unchanged.

These developments were not completed when the traffic survey used in this TTA was carried out, therefore, it was considered appropriate to account for their trip generation and cumulative traffic impact.

Streamstown/Little Auburn/Auburn Park Developments (F22A/0579; F22A/0580 & F22A/0581)

In total, there are 259 residential units approved by FCC under the three planning applications (69 units in Streamstown (Ref. F22A/0579), 98 units in Little Auburn (Ref. F22A/0580) and 92 units in Auburn Park (Ref. F22A/0581). As part of the Auburn Park application, the signalisation of the junction between R107 Malahide Road and Back Road is also included/approved by FCC – showed previously in Figure 19.

Their associated trips and the signalised crossroads layout for the R107 Malahide Road / Back Road junction were included in the Scenario C only (see section 11.5 below).

Broomfield Southern Site Development (Ref. F23A/0586)

In April 2022, the applicant submitted a planning application to An Bord Pleanála (ABP-313361-22) under the Strategic Housing Development (SHD), seeking permission for the construction of an overall residential development consisting of 415 residential units distributed across two distinct sites at Broomfield – labelled as the northern site (comprising of 328 residential units) and the southern site (comprising of 87 residential units).

On July 4, 2024, An Bord Pleanála made a decision on the planning application, granting permission for the construction of the southern site while denying permission for the northern site

A second application was made on 24 May 2024 for the southern lands (74 no. units). On 18 Jul 2024, a decision GRANT PERMISSION was made by Fingal County Council on this application. Subsequently, an appeal was lodged on 14 Aug 2024 and a decision to Appeal Withdrawn was made by An Bord Pleanála on 04 Oct 2024.

Therefore, for the current assessment, 87 no. residential units have been considered for the Southern lands at Broomfield.

Potential Future Commercial Development on North Broomfield Lands

The potential future commercial area includes the construction of a 1,602 sqm gross floor area with a net sales area of 1,398 sqm. Additionally, the proposal includes 94 no. car parking spaces. Access to the site is proposed via the Broomfield Access Road off Back Road

Potential Future Primary School Development on Lands at Broomfield (Reg. Ref. F24A/0541E)

In Jun 2024 the Department of Education applied for Planning Permission for a development on a c. 1.8 Ha site on lands at Broomfield, Malahide, Co. Dublin.

The site is accessed via the Brookfield Housing Estate to the west, which is accessible via Back Road, to the north.

The development comprises the provision of a new 2 no. storey, 16 no. classroom primary school.

11.4.4 Physical Infrastructure

Internal Road Layout

The internal roads have been designed to comply with DMURS as required by the County Development Plan. The internal roads generally vary between 4.8m and 5.5m in width. All footpaths are 2.0m wide and connect the internal spaces.

The proposed development includes “home-zones”, which have been designed primarily to meet the needs of pedestrians, cyclists, children, and residents. The aim is to reduce the speed and dominance of cars. The “home-zones” consist of a shared-surface carriageway with a differentiated rolling surface (in texture and level) to make it easily identifiable by the driver. This was done in accordance with Section 4.3.4 of DMRUS, where indicate:

- Use a variety of materials and finishes that indicate that the carriageway is an extension of the pedestrian domain. A different finish to the rest of the pavement has been chosen to identify these areas.
- Avoid raised kerb lines. Any Kerb line should be fully embedded within the street surface. The shared areas have been raised from the remaining pavements using small ramps to start and end the shared areas.

- Minimise the width of the vehicular carriageway and /or corner radii. A reduction in the width of the carriageway has been implemented, from 5.50 m to 4.80 m.

All internal roads within the proposed development have been designed with a speed limit of 30km/h. The shared road will have a speed limit of 20km/h. All junctions within the development itself will be priority junctions with raised tables where appropriate.

The low design speeds and traffic calming measures will ensure the safe operation of these junctions and a safe/secure environment for pedestrians and cyclists.

The design and layout of the proposal has been prepared to fully comply with the current relevant design standards and specifications applicable to this form of development.

Additionally, all road intersections within the development itself have been designed as priority junctions. The visibility splays of which these junctions have been designed are in accordance with the requirements set out in the Design Manual for Urban Roads and Streets (DMURS), which recommends visibility splays of 23m x 2.4m on roads without bus routes. The internal junctions have been designed with low speeds to ensure safe operation.

Site Access Points

Access to the proposed development is provided via the Broomfield Access Road, which is situated to the west of the site and connect to Back Road, the access is shows in Figure 12.5.

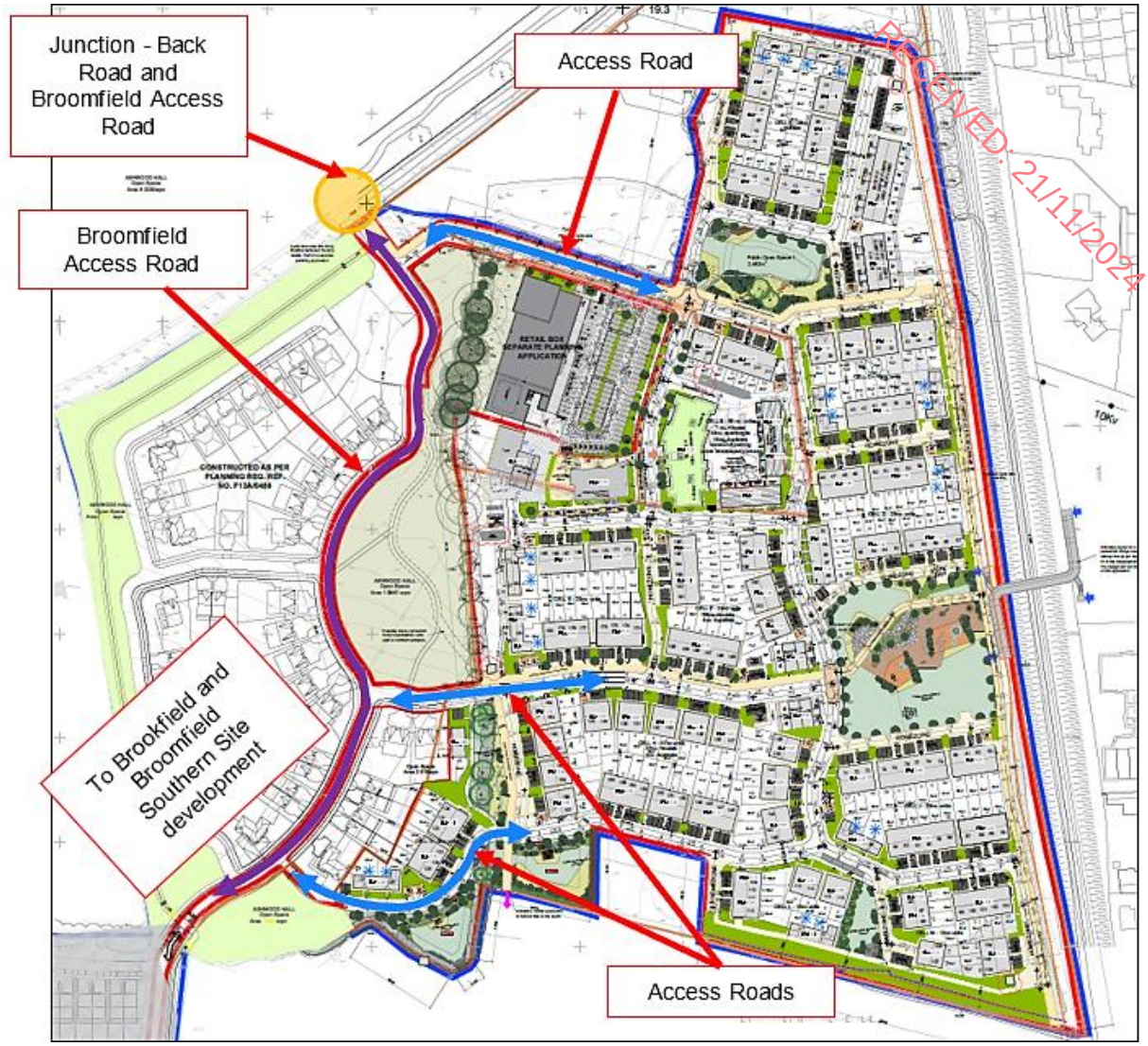


Figure 12.8 | *Proposed Site Layout*

Internal Pedestrian and Cyclist Facilities

The proposed development has been designed with a network of interconnects footpaths providing permeability throughout the site, to the adjacent Hazelbrook residential development and to the surrounding area.

All footpaths within the proposed development have been designed as 2.0m wide. This is in accordance with Section 4.3.1 of the DMURS which suggests that a minimum 1.8m footpath should be provided.

The proposed development will provide for good pedestrian/cycle links from Broomfield Access Road to the west, with pedestrian/cycle connection links proposed between the subject development and the Ashwood Hall development. Cyclists are linked along quiet residential roads from Broomfield Access Road.

A future proposal has been made for a cycle and pedestrian bridge to cross the rail infrastructure.

Car Parking Provision

Based on the guidelines/policies indicated above, it is considered that the *Fingal Development Plan 2023-2029 Standards* are the most restrictive standard for the subject development and is the reference for determining the proposed the car parking.

Nevertheless, subsequent to the receipt of the Large Scale Residential Development Opinion by Fingal County Council received on 23th May 2024, which the Internal Consultee indicated that "(…) *the Transportation Planning Section consider the quantity to be excessively low and we strongly recommend that it is brought closer in-line with the quantities described in the [Sustainable Residential Development and Compact Settlements] Guidelines, and that at a minimum every unit has access to a carparking spaces.*"

Proposed car parking spaces:

CAR PARKING			
APARTMENT		50	Undercroft
Ratio: 1 space per unit		8	On surface parking
		58	
DUPLEX	BLOCK C	8	
Ratio: 1 space per unit	BLOCK D	12	
	BLOCK E	4	
	BLOCK F	4	
		28	
HOUSES			
POSSIBLE)			
2 Spaces per unit (where possible)			
END OF TERRACE			
2 Spaces per unit (where possible)			
MID TERRACE			
1 space per unit			
		321	
CRECHE / CAFE / PHARMACY		**19**	
TOTAL		**426**	
Accessible parking spaces		24	5% of overall total Allocated across scheme
EV Charging spaces		92	20% of overall total Allocated across scheme

Regarding visitor parking, according to the various standards consulted, there are no plans to add additional spaces. However, there may be unoccupied spaces available for visitors that are not being used by residents temporarily or permanently.

11.5 Trip Generation

The distribution of trips was carried out considering three possible scenarios:

Scenario A: The Southern Development has been approved and constructed, and the road linking it to the Hazelbrook development has also been connected for vehicles. Consequently, some of the traffic from the Subject Development will use Broomfield Access Road to the south, to reach Kinsealy Lane via Junction 5.

Scenario B: The Southern Development has been completed, but the road linking it to the Hazelbrook development remains unconnected for vehicles. Therefore, trip generation from the South Development will use Broomfield Access Road to the north, to reach Black Road via Junction 3.

Scenario C: The Streamstown/Little Auburn/Auburn Park (F22A/0579; F22A/0580 & F22A/0581) has been completed with the signalisation of the junction between the R107 Malahide Road and Back Road. Also, this scenario considers Junction 4 signalized. This scenario has been evaluated for the 2031 and 2041 assessment, for both the A and B scenarios.

For the scenarios, the Trip Distribution prepared from previously approved Traffic and Transport Assessments (TTA) have been used. These include the TTA for the Ashwood Hall development (Ref. F13A/0459), the TTA for the Southern Site at Broomfield (Ref. F23A/0586), and the TTA for the An Bord Pleanála ABP-313361-22, which is also located within the Broomfield Site. The decision was to be consistent in terms of the expected level of traffic to be generated by the developments located within the Broomfield Site and surrounding area.

11.5.1 Scenario A

11.5.1.1 Subject Development (Broomfield Northern Site)

In this scenario, the Northen development has vehicular access from the north via Back Road and from the south-west via Kinsealy Lane, through the Broomfield Southern site and the Hazelbrook development.

Although the potential future Broomfield Northern Site will benefit from two access points, it has been assumed that 90% of trips will use the Back Road access, whit the remaining 10% using the Kinsealy Lane access – via Broomfield Southern Site.

Of the 90% traveling via Back Road, 60% are conservatively assumed to arrive/depart from/to west, and the remaining 30% from/to east.

The trip distribution characteristics for the potential future Broomfield Northern Site are detailed in Figure 12.9.

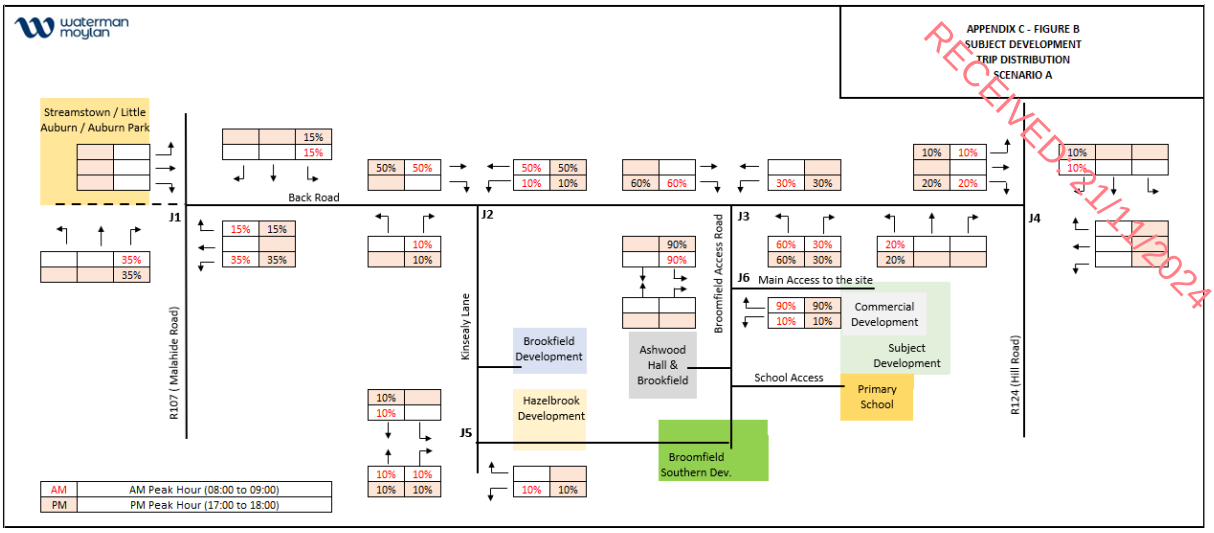


Figure 12.9 | *Trip Distribution – Scenario A – Subject Development*

11.5.1.2 Ashwood Hall and Brookfield (F13A/0459 & F13A/0460)

The trip distribution characteristics for the Ashwood Hall and Brookfield developments are detailed in Figure 12.10 below.

The percentages shown in Figure 12.10. have been taken from the approved Traffic Impact Assessment prepared for the Ashwood Hall development (planning reference F13A/0459) and have been slightly adjusted to take account of the access point proposed as part of this application (from Kinsealy Lane via the Hazelbrook residential development) and the link road currently in place between the Ashwood Hall and Brookfield developments and the southern part of Broomfield.

To the subject assessment, it has been assumed that 5% of the trips generated by Ashwood Hall and Brookfield developments will use this link road and the Kinsealy access.

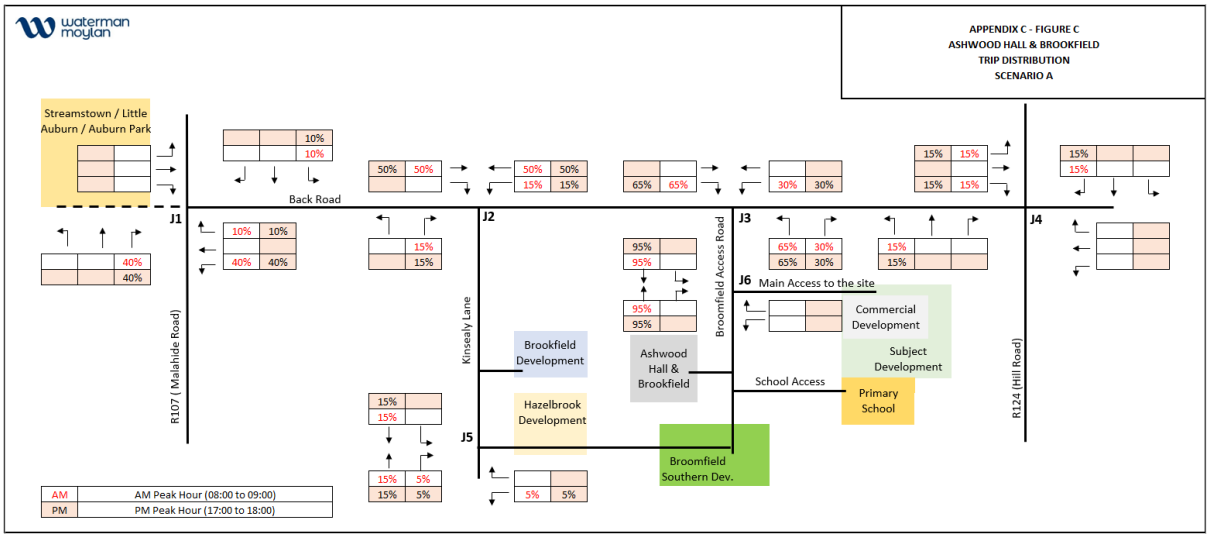


Figure 12.10 | *Trip Distribution – Scenario A – Ashwood Hall & Brookfield*

11.5.1.3 Broomfield Southern Site (F23A/0586)

Vehicular access to the Broomfield Southern Site is proposed from Kinsealy Lane to the west via the Hazelbrook residential development and from north via Back Road, through the Ashwood Hall and Brookfield residential developments. The trip distribution characteristics for the Broomfield Southern Site are detailed in Figure 12.11.

The percentages shown in figure 12.11 have been taken from the approved Traffic Impact Assessment prepared for the Broomfield Southern Site development (planning reference F23A/0586) and have been slightly adjusted to take account of the access point proposed as part of this application.

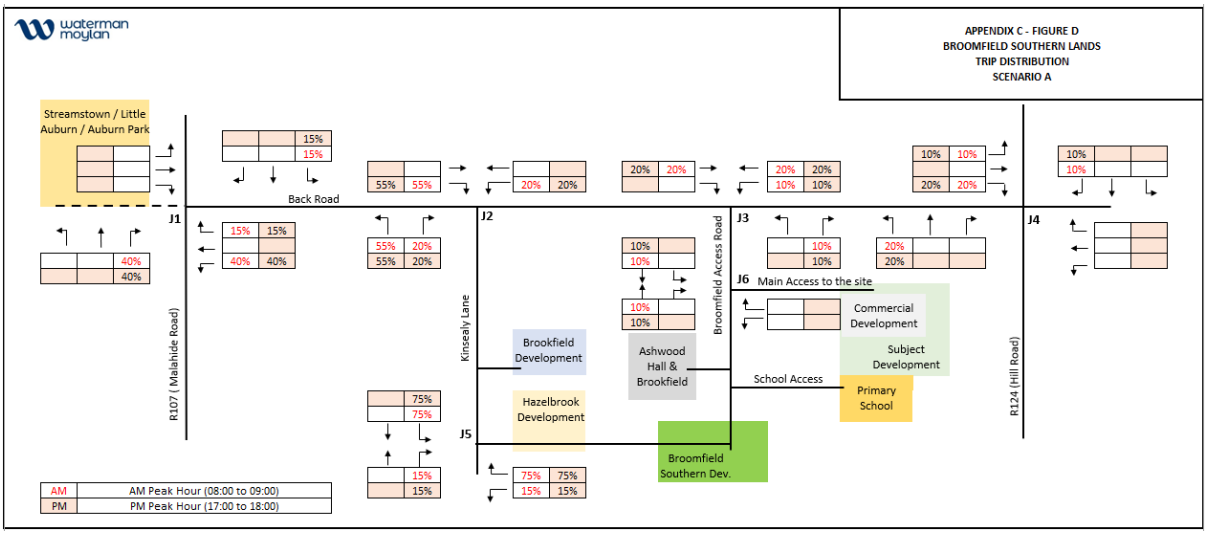


Figure 12.11 | *Trip Distribution – Scenario A – Broomfield Southern Site*

11.5.1.4 Potential Future Commercial Development on North Broomfield Lands

In this scenario, the Potential Future Commercial Development has vehicular access from the north via Back Road and from the south-west via Kinsealy Lane, through Broomfield Southern and Hazelbrook developments.

Based on the location of the development it is estimated that 30% of the total trips to and from the commercial area will be made by residents of the adjacent area (Subject Development: Broomfield Northern Site, Ashwood Hall, Brookfield and Broomfield South Developments) while the remaining 70% will arrive from more distant neighbourhoods and will impact on the junctions under assessment (refer to Section 10.1 below).

Of the 70% of vehicles that will arrive from more distant neighbourhoods, it is estimated that 60% will use the Back Road access, while the remaining 10% will use the Kinsealy Lane access via Broomfield Southern Development. Of the 60% of vehicles travelling via Back Road, considering the location of the development the 35% are conservatively assumed to arrive/depart from/to the west, and the remaining 25% from/to the east.

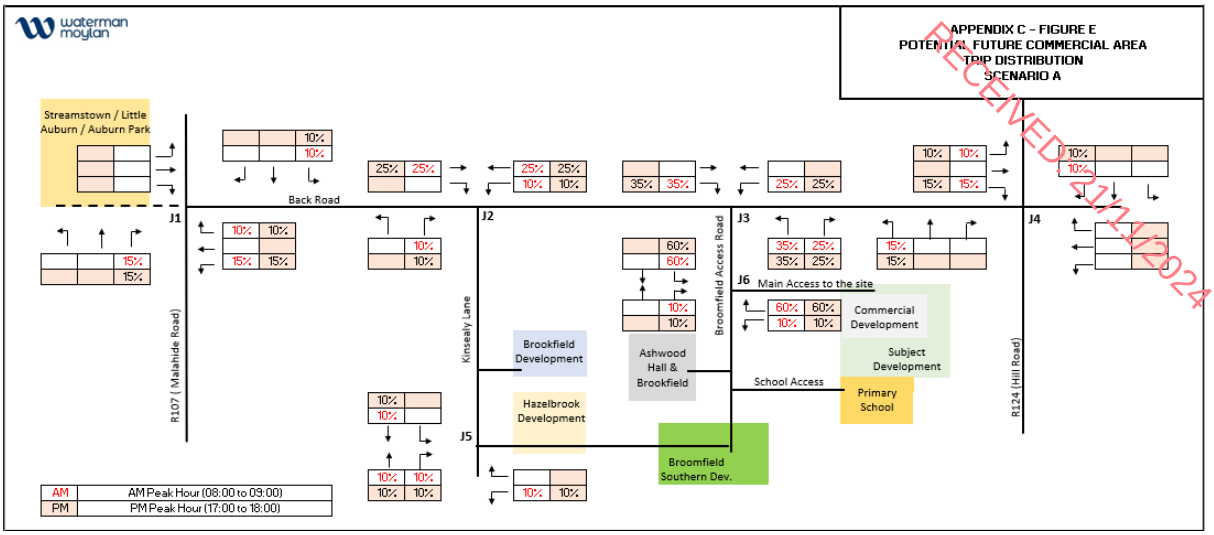


Figure 12.12 | *Trip Distribution – Scenario A – Potential Future Commercial Development*

11.5.1.5 Potential Future Primary School Development on Lands at Broomfield (Reg. Ref. F24A/0541E)

The Potential Future Primary School Development has vehicular access from the north via Back Road and from the south-west via Kinsealy Lane, through Broomfield Southern and Hazelbrook developments.

The trip distribution flows have been obtained from Waterman Moylan Report no. 19-037-15r.1004. It was assumed that 70% of trips to the potential future primary school are from the northern access via Back Road and 10% are from the southern access via Broomfield Southern and Hazelbrook developments.

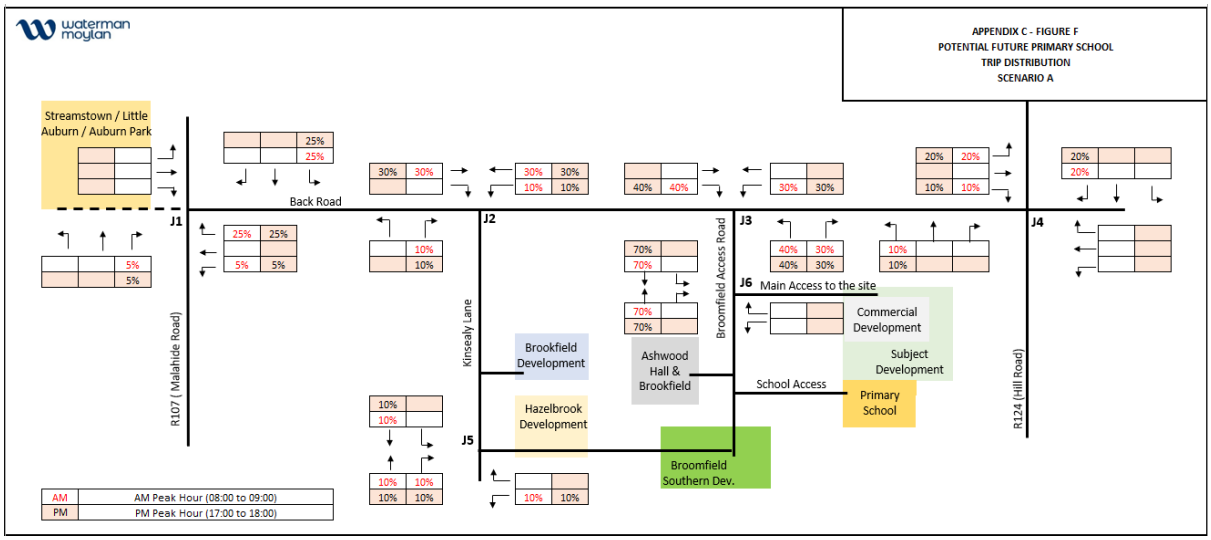


Figure 12.13 | *Trip Distribution – Scenario A – Potential Future Primary School Development*.

11.5.2 Scenario B

11.5.2.1 Subject Development (Broomfield Northern Site)

Under this scenario, the Northen Development has vehicular access only from north via Back Road.

It has been assumed that 70% of trips will use the Back Road to travel to/from the west and the remaining 30% will use the Back Road to travel to/from the east.

The trip distribution characteristics for the potential future Broomfield Northern Site are detailed in Figure 12.14 below.

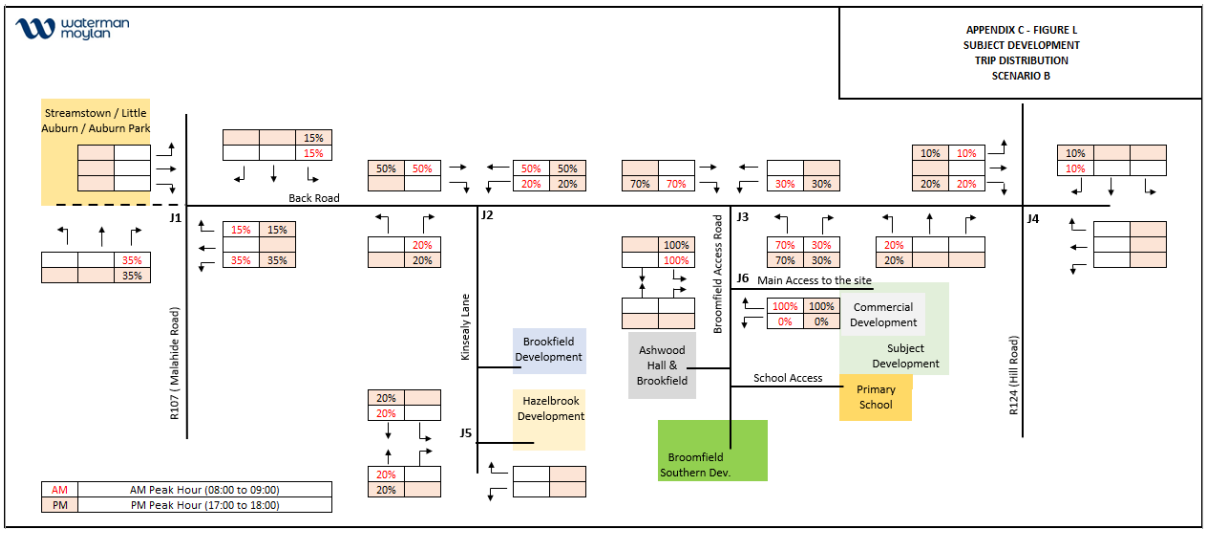


Figure 12.14 *| Trip Distribution – Scenario B – Proposed Development (Broomfield Southern Site)*

11.5.2.2 Ashwood Hall and Brookfield (F13A/0459 & F13A/0460)

In the current scenario, Ashwood Hall and Brookfield only have vehicular access from the north via Back Road. It is important to note that this scenario does not consider the permeability of the development through the Brookfield development to Kinsealy Lane. It therefore places more stress on junction 3.

It has been assumed that 70% of trips will use the Back Road to travel to/from the west and the remaining 30% will use the Back Road to travel to/from the east.

The trip distribution characteristics for the potential future Broomfield Northern Site are detailed in Figure 12.15 below.

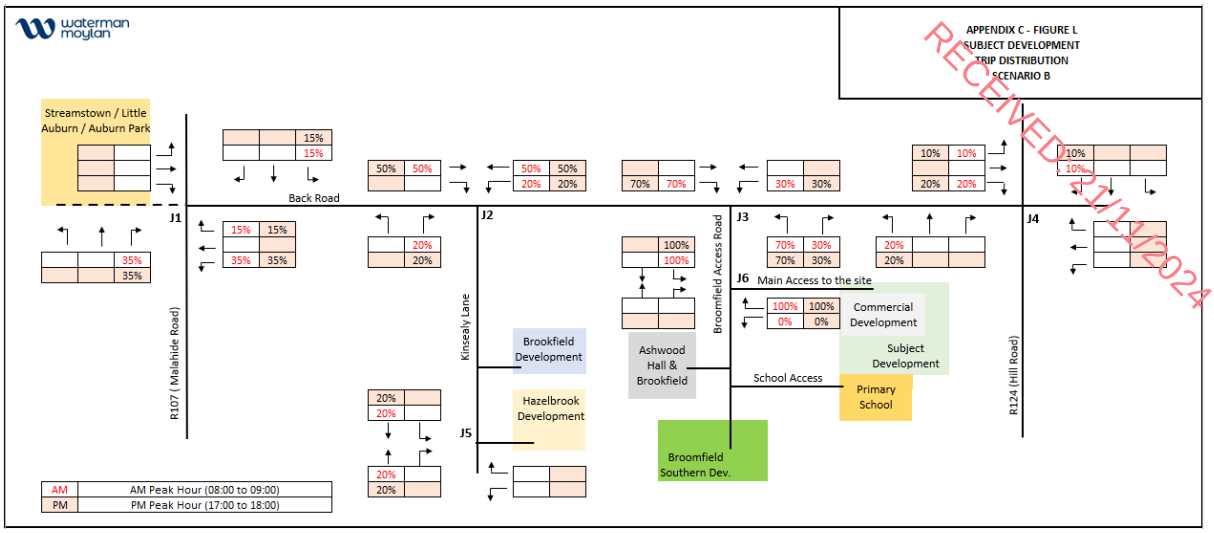


Figure 12.15 | *Trip Distribution – Scenario B – Ashwood Hall & Brookfield*

11.5.2.3 Broomfield Southern Site (F23A/0586)

In the current scenario, Broomfield Southern Site only have vehicular access from the north via Back Road. It is important to note that this scenario does not consider the permeability of the development through the Brookfield development to Kinsealy Lane. It therefore places more stress on junction 3.

It has been assumed that 70% of trips will use the Back Road to travel to/from the west and the remaining 30% will use the Back Road to travel to/from the east.

The trip distribution characteristics for the potential future Broomfield Northern Site are detailed in Figure 12.16 below.

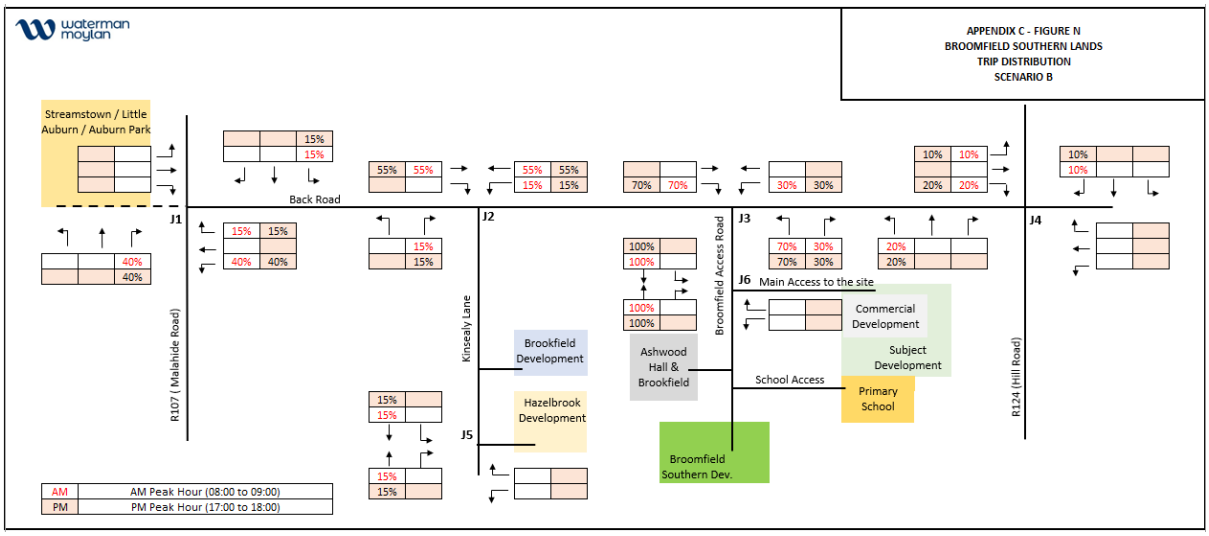


Figure 12.16 | *Trip Distribution – Scenario B – Broomfield Southern Site*

11.5.2.4 Potential Future Commercial Development on North Broomfield Lands

In this scenario, the Potential Future Commercial Development has vehicular access only from north via Back Road.

Based on the location of the development it is estimated that 30% of the total trips to and from the commercial area will be made by residents of the adjacent area (Broomfield Northern, Ashwood Hall, Brookfield, and Broomfield South Developments) while the remaining 70% will arrive from more distant neighbourhoods and will impact on the junction under assessment (refer to Section 10.1 below).

Of the 70% of vehicles travelling via Back Road, considering the location of the development, the 45% are conservatively assumed to arrive/depart from/to the west, and the remaining 25% from/to the east.

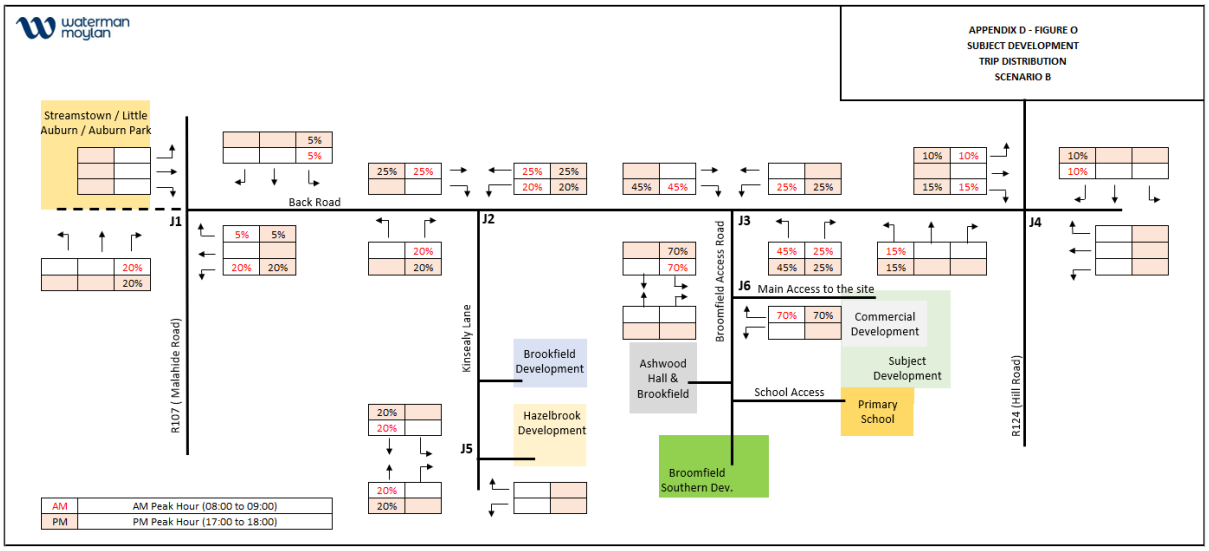


Figure 12.17 | *Trip Distribution – Scenario B – Potential Future Commercial Development*

11.5.2.5 Potential Future Primary School Development on Lands at Broomfield (Reg. Ref. F24A/0541E)

In this scenario, the Potential Future Primary School Development has vehicular access only from north via Back Road. The trip distribution flows have been obtained from Waterman Moylan Report no. 19-037-15r.1004. It was assumed that 80% of trips to the potential future primary school are from the northern access via Back Road.

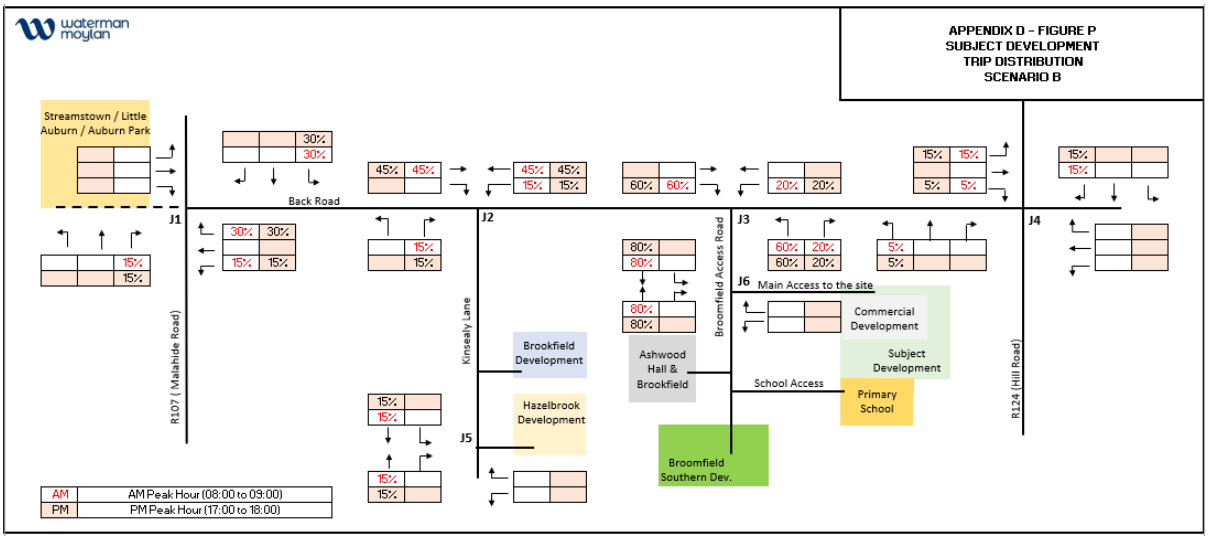


Figure 12.18| *Trip Distribution – Scenario B – Potential Future Primary School Development*

11.5.3 Scenario C

11.5.3.1 Streamstown/Little Auburn/Auburn Park (F22A/0579; F22A/0580 & F22A/0581)

Under this scenario, the spatial assignment of the trips generated by the three developments of Streamstown, Little Auburn and Auburn Park are detailed in Figure 12.19 below.

Of the five junctions assessed as part of the subject application, only the junction between R107 Malahide Road and Back Road was analysed in the Traffic and Transport Assessment reports prepared for the three applications (Planning Ref's F22A/0579; F22A/0580 and F22A/0581). Therefore, the trip distribution profile for that junction has been used and further expanded to estimate the trips along the remaining assessed junctions.

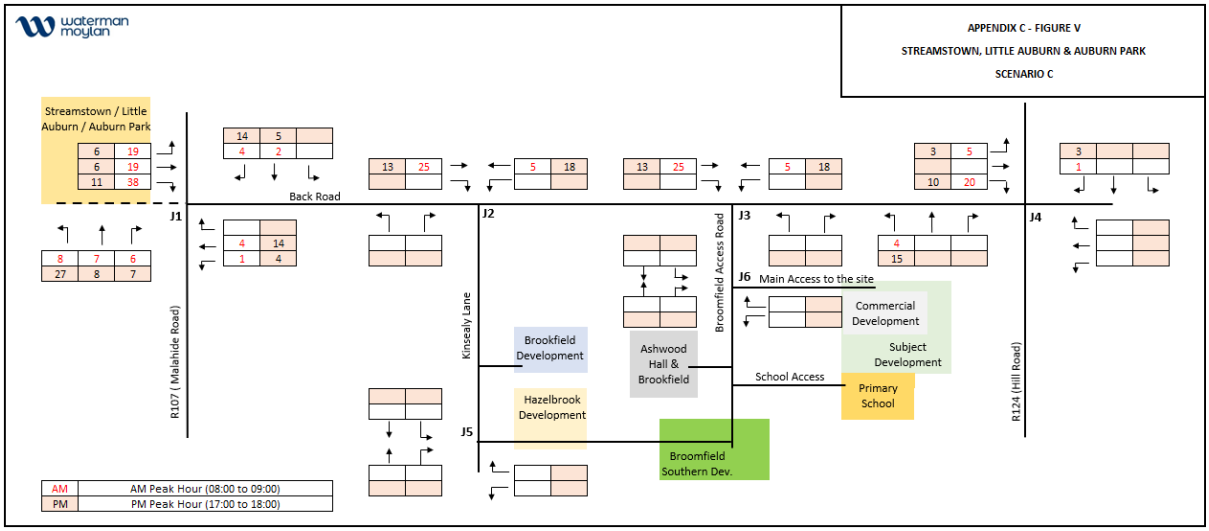


Figure 12.19 | *Trip Distribution – Scenario C – Streamstown, Little Auburn & Auburn Park*

11.6 Potential Impact of the Proposal

11.6.1 Introduction

The potential impacts of the proposed development from a traffic and transport perspective at both construction and operational stage are outlined in the following sections.

11.6.2 Traffic Impact

Construction Traffic

There is potential for construction traffic to impact from a noise and dust perspective in relation to the surrounding road network. Deliveries to and from the site by heavy good vehicles will impact on noise levels, whilst dust may result from vehicles travelling along gravel roads. There is also potential for traffic congestion, due to increased heavy good vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. The potential for inappropriate parking whilst waiting for access to the site, may also impact local road users.

There is potential for construction traffic to have a moderate effect on the surrounding environment. However, the duration of this impact will be short-term (i.e., one to three years).

Operation Traffic

The proposed development will generate a number of trips by various modes of travel including vehicular, pedestrian, cycle and public transport. These trips may have an impact on the surrounding road network and could contribute to increased congestion.

Traffic count data was obtained for the purposes of the planning application. The data surveyed is expected to reflect the peak traffic conditions on the local road network. An estimation of the traffic generation and distribution of the proposed development has been set out in the previous section. This was compared to the background traffic counts in order to ascertain the impact the proposed development will have on the local road network.

11.6.3 Walking and Cycling Infrastructure

There is potential of conflict between construction traffic and pedestrian/cyclists using the existing facilities on Back Road. There is also potential for conflicts and disruption to vehicular access, pedestrian and cyclists during the construction works of the proposed site access junction.

11.6.4 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. Given the location and zoning of the subject site, it is reasonable to assume that a similar development, with a potentially more intensive requirement for vehicular trips would be established on this site at some stage in the future.

11.7 Mitigating measures

11.7.1 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.

11.7.2 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

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.

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 an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CMP and TMP, 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.

11.7.3 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 method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport.

11.8 Potential Impacts

11.8.1 Traffic

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.

11.8.2 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 temporary in the nature and slight in terms of effect.

11.8.3 Operational Phase

In order to assess the potential impact arising from the proposed development during the operational phase, a Traffic and Transport Assessment has been prepared and is included in this planning application under a separate cover. The traffic modelling carried out as part of the Traffic and Transport Assessment includes the analysis of 6 no. Junctions of the surrounding network as set out below.

- **Junction 1**: R107 Malahide Road / Back Road
- **Junction 2**: Back Road / Kinsealy Lane
- **Junction 3**: Back Road / Broomfield Access Road
- **Junction 4**: The Hill / Back Road.
- **Junction 5**: Kinsealy Lane / Hazelbrook
- **Junction 6:** Broomfield Access Road / Main access road to the subject development

11.8.4 Traffic Growth Factors

It has been assumed within this TTA that the proposed development will be constructed with assumed year of opening is 2026.

As per methodology adopted in the '*Transport Assessment Guidelines (May 2014)'*, which the subject TTA is based on, the surveyed junctions were also assessed for the future design years of 2031 (Opening year + 5 years) and 2041 (opening year +15 years).

The traffic growth rate used to factor up the 2024 base year traffic movements is in accordance with *Table 6.1: Link-Based Growth Rates: Metropolitan Area Annual Growth Rates* within the *TII Publications – Project Appraisal Guidelines for National Roads, Unit 5.3 – Travel Demand Projections (October 2021)* and with the *Appendix 4 of the Implementation Roadmap for the National Planning Framework (July 2018)* which defines the Dublin Metropolitan Area.

Based on the Traffic Survey, the urban growth area has been identified as the central area, where Light Vehicles are the predominant vehicle type.

The factors considered in the current assessment are shown below:

- Base line: 2024
- Opening year: 2026 = 1.033 (growth factor from 2024 to 2026)
- Opening year + 5: 2031 = 1.107 (growth factor from 2024 to 2031)
- Opening year + 15: 2041 = 1.164 (growth factor from 2024 to 2041)

11.8.5 Assessment Scenarios

The performance of the junctions has been analysed for the critical AM and PM peak hours (08h00 to 09h00 and 17h00 to 18h00) for the following scenarios:

Scenario A:

- BASE YEAR 2024: with 2024 Surveyed Flows.
- DO NOTHING 2026 / Scenario A (DN-2026/A): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO NOTHING 2031 / Scenario A (DN-2031/A): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO NOTHING 2041 / Scenario A (DN-2041/A): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO SOMETHING 2026 / Scenario A (DS-2026/A): DN-2026/A + traffic to/from the subject development.
- DO SOMETHING 2031 / Scenario A (DS-2031/A): DN-2031/A + traffic to/from the subject development.
- DO SOMETHING 2041 / Scenario A (DS-2041/A): DN-2041/A + traffic to/from the subject development.

Scenario B:

- BASE YEAR 2024: with 2024 Surveyed Flows.
- DO NOTHING 2026 / Scenario B (DN-2026/B): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO NOTHING 2031 / Scenario B (DN-2031/B): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO NOTHING 2041 / Scenario B (DN-2041/B): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments.
- DO SOMETHING 2026 / Scenario B (DS-2026/B): DN-2026/B + traffic to/from the subject development.
- DO SOMETHING 2031 / Scenario B (DS-2031/B): DN-2031/B + traffic to/from the subject development.
- DO SOMETHING 2041 / Scenario B (DS-2041/B): DN-2041/B + traffic to/from the subject development.

Scenario C: Junction 1 (R107 Malahide Road / Back Road) has been modelled as a signalised crossroads as proposed as part of the Auburn Park planning application (Ref. F22A/0581) and Junction 4 (Back

Road / R124 The Hill) has been modelled as a signalised crossroads as proposed as part of the Broomfield South Site planning application (Ref. F23A/0586). This scenario is evaluated for the year 2031 and 2041 assessment, for both the A and B scenarios.

- DO NOTHING 2031 / Scenario C with Scenario A (DN-2031/C-A): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments, with Scenario A.
- DO NOTHING 2041 / Scenario C with Scenario A (DN-2041/C-A): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments, with Scenario A.
- DO SOMETHING 2031 / Scenario C with Scenario A (DS-2031/C-A): DN-2031/C-A + traffic to/from the subject development with Scenario A.
- DO SOMETHING 2041 / Scenario C with Scenario A (DS-2041/C-A): DN-2041/C-A + traffic to/from the subject development with Scenario A.
- DO NOTHING 2031 / Scenario C with Scenario B (DN-2031/C-B): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments, with Scenario B.
- DO NOTHING 2041 / Scenario C with Scenario B (DN-2041/C-B): 2024 surveyed flows factored up + traffic to/from the committed Ashwood Hall, Brookfield and Broomfield Southern Site developments, and the Potential Future Commercial Area and Primary School Developments, with Scenario B.
- DO SOMETHING 2031 / Scenario C with Scenario B (DS-2031/C-B): DN-2031/C-B + traffic to/from the subject development with Scenario B.
- DO SOMETHING 2041 / Scenario C with Scenario B (DS-2041/C-B): DN-2041/C-B + traffic to/from the subject development with Scenario B.

11.8.6 Summary of Assessment Result

The modelling results show that the existing priority-controlled T-junction 1 would operate within capacity during both peak hours for all scenarios assessed. The same results are obtained with the proposed upgrade of Junction 1 to a signalised controlled T-junction.

In addition, the same results are achieved for the existing priority-controlled T-junctions 2, 3, 5 and 6: The junctions would operate within capacity during both peak hours for all assessed scenarios.

The modelling results for Junction 4 with its current configuration show that it is operating close to its capacity during the AM peak hour and within its capacity during the PM peak hour:

- For both scenarios, the A and B, Junction 4 would operate above capacity during the AM peak hour and within capacity during the PM peak hour for both the 2026 DO NOTHING and 2026 DO SOMETHING scenarios. For the year 2041, the results indicate that Junction 4 would operate above capacity during the AM peak hour and at capacity during the PM peak hour, with or without the subject development.

- For Scenario C, with the addition of traffic signals at Junction 4, the modelling results show that the junction would operate within its capacity.

The traffic impact assessment shows that the effect of the proposed and cumulative developments on all junctions assessed is neutral in all scenarios assessed. Junction 4 will reach its capacity with or without the proposed development, unless traffic signals are introduced.

11.9 Monitoring and Reinstatement

11.9.1 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

11.9.2 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.

11.10 Interactions

There may be temporary negative impacts to human health during the Construction Phase caused by noise, dust, air quality and visual impacts which are covered in other chapters of this EIAR. There may also be interaction with the surrounding water bodies through surface water runoff during topsoil stripping and earthworks which will be required to construct the roads.

The effects of these will be mitigated through the implementation of the measures outlined in this Chapter and within the Construction Management Plan.

11.11 Difficulties in compiling Information

There were no difficulties encountered in compiling this Chapter.

11.12 References

The following documents have been consulted in the preparation of this Traffic and Transport Assessment:

BusConnects Routes Map
https://busconnects.ie/wp-content/uploads/2021/01/swords-area-map.pdf
Cycle Design Manual

https://www.nationaltransport.ie/wp-content/uploads/2023/08/Cycle-Design-Manual_Sept.-2023_Low-Res.pdf

Eastern and Midland Regional Spatial and Economic Strategy 2019-2031

https://emra.ie/dubh/wp-content/uploads/2020/05/EMRA_RSES_1.4.5web.pdf

Fingal Development Plan 2023 – 2029

https://www.fingal.ie/development-plan-2023-2029

Greater Dublin Area Transport Strategy (2022 – 2042) Standards

https://www.nationaltransport.ie/wp-content/uploads/2023/01/Greater-Dublin-Area-Transport-Strategy-2022-42-1.pdf

Greater Dublin Area – Cycle Network Plan

https://www.nationaltransport.ie/wp-content/uploads/2023/01/2022-GDA-Cycle-Network.pdf

Implementation Roadmap for the National Planning Framework

https://npf-cdn-prod.s3.eu-west-1.amazonaws.com/wp-content/uploads/20240502101327/NPF-Implementation-Roadmap.pdf

National Planning Framework – Project Ireland 2040

www.gov.ie/pdf/?file=https://assets.gov.ie/246231/39baaa8c-48dc-4f24-83bd-84bbcf8ff328.pdf#page=null

New Dublin Area Bus Network – Bus Connects

https://busconnects.ie/wp-content/uploads/2021/01/busconnects-final-summary-report-fa.pdf

Planning and Development of Large-Scale, Rail Focused Residential Areas in Dublin (2013)

https://www.nationaltransport.ie/wp-content/uploads/2011/12/Planning_and_Development_of_Large-Scale_Rail_Focussed_Areas_in_Dublin21.pdf

Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections. PE-PAG-02017

https://www.tiipublications.ie/library/PE-PAG-02017-03.pdf

Traffic and Transport Assessment Guidelines. PE-PDV-02045

https://www.tiipublications.ie/library/PE-PDV-02045-01.pdf

Traffic Impact Assessment Ashwood Hall and Brookfield Developments, DBFL, 2014

https://planning.agileapplications.ie/fingal/application-details/67498#documents Document no. DEF43057619411E3B781002564EBDAB1.TIF

Traffic and Transport Assessment reports, Proposed Development of the Southern Site at Broomfield, Kinsealy Lane, Malahide, Co. Dublin. Waterman Moylan, 2023

https://planning.agileapplications.ie/fingal/application-details/96082 Document no. 00109998_E0015F62_20231004_1442.pdf

Traffic and Transport Assessment reports, Proposed housing Development at Streamstown, Malahide. Waterman Moylan, 2022

https://planning.agileapplications.ie/fingal/application-details/93526 Document no. BF5B4885A9011ED8612005056926A5C.pdf

Traffic and Transport Assessment reports, Proposed housing Development at Little Auburn, Malahide. Waterman Moylan, 2022

https://planning.agileapplications.ie/fingal/application-details/93525 Document no. 941FDE43668811ED8612005056926A5C.pdf

Traffic and Transport Assessment reports at Auburn Park, Malahide Road. Waterman Moylan, 2022

https://planning.agileapplications.ie/fingal/application-details/93524 Document no. 39A7545F5A8D11ED8612005056926A5C.pdf

Traffic and Transport Assessment, Strategic Housing Development at Broomfield Site, Malahide. Waterman Moylan, 2022

https://planning.agileapplications.ie/fingal/application-details/92097#documents Document no. 23ABEE6FCAC711EC860B005056926A5C.pdf

Smarter Travel: A Sustainable Transport Future

www.gov.ie/pdf/?file=https://assets.gov.ie/19854/37d829c9748446349ff586045bfbcaba.pdf#page=null

South Fingal Transport Study - Swords Sub-Area Report

https://www.fingal.ie/sites/default/files/2019-10/20190404_sfts_swords_sub_area_report_v1.19_20190404.pdf

Spatial Planning and National Roads: Guidelines for Planning Authorities

https://www.gov.ie/pdf/?file=https://assets.gov.ie/111220/ef2d43a4-d3a0-418a-b0ba-03340e6d083a.pdf#page=null

Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities.
www.gov.ie/pdf/?file=https://assets.gov.ie/280882/af1b1694-6ff4-4a14-b2c6-f104347ffb53.pdf#page=null
Sustainable Urban Housing: Design Standards for New Apartments.
www.gov.ie/pdf/?file=https://assets.gov.ie/243715/d60aaacd-0b2b-4422-ab91-d511a4720132.pdf#page=null

12.0 Material Assets – Built Services & Waste Management

12.1 Introduction

This Chapter has been prepared by Waterman Moylan Consulting Engineers and describes the Material Assets – Built Services and Waste Management, that are potentially impacted by the proposed development at Broomfield. Material assets are resources that are valued and intrinsic to the site of the proposed development and surrounding environs. Material assets may be of either natural or human origin and the value may arise for economic or cultural reasons.

This Chapter considers and assesses the effects of the proposed development on the material assets, including major utilities within and around the site during the construction and operational phases such as built services (i.e. gas, electricity, telecommunications, etc.) and waste management. Water, Roads and Traffic are also counted as material assets and are assessed under separate chapters of this EIAR.

The EPA Guidelines (2022) state that:

> *'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 transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.'*

Given the importance of Archaeological and Cultural Heritage and noting established EIA best practice within Ireland, the Archaeological and Cultural Heritage has been comprehensively considered and assessed as a standalone chapter within this EIAR. Land/soil/geology, water and road infrastructure, have also been assessed by Waterman Moylan Consulting Engineers in Chapters 6, 7, and 11 of this report, respectively.

A preliminary Construction and Demolition Waste Management Plan (CDWMP) has been prepared by Waterman Moylan Consulting Engineers which may be used as a guide for the Main Contractor to prepare their Construction Waste Management Plan upon appointment, which will detail as to how the Contractor will address the issue of waste generation during the construction phase of the proposed development and is included as part of the application packs. This document was prepared in accordance with best practice guidelines. Operational Waste Management Plan (OWMP) has been prepared by Enviroguide Consulting which may be used by the property management companies on site and the appointed licenced waste contractor to ensure the sustainable management of domestic and commercial waste arising from the development in accordance with legislative requirements and best practice standards.

12.2 Study Methodology

12.2.1 Desk Study

The methodology followed for this Chapter is in accordance with the EPA's *"Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022"*(EPA 2022). Information on built assets in the vicinity of the development lands was assembled from the following sources:

- A Desktop review of ESB, GNI, Eir and Virgin utility network maps.
- Site inspection/walkover.
- Review of the topographical survey map.

12.2.2 Rating of Impacts

Material assets are generally considered to be location sensitive. The likely significance of all impacts is determined in consideration of the magnitude of the impact and the baseline rating upon which the impact has an effect (i.e., the sensitivity or value of the material asset). Having assessed the magnitude of impact with respect to the sensitivity/value of the asset, the overall significance of the impact is then classified as imperceptible, slight, moderate, significant, or profound. The criteria for the assessment of impact significance are as per that set out in the relevant EPA Guidelines and in accordance with the EIA Directive. This EIAR focuses on the likely, significant effects as recommended by the EPA 2022 guidelines.

12.3 Baseline Environment

12.3.1 Site Location and Context

The site is located at northern Broomfield, Malahide, Co. Dublin. It is bounded to the north by existing residential units fronting the Back Road, to the west by Ashwood Hall residential development, to the east by the Dublin-Belfast rail line and to the south by the agricultural lands.

The subject site is predominantly greenfield and was the former location of a rugby club. There is a small area of hardstanding which was previously the club's car park, together with existing structures, formerly the clubhouse and outhouse now in derelict condition.

A topographic survey of the area indicated that the site generally slopes uniformly from north-east to south, from a height of 20.500m to 11.500m OD Malin, with an existing static ditch system along the south-east boundary, and ditch to the south-west.

The ditch systems referenced above join the Hazelbrook stream, which in turn outfalls to the Sluice River which in turn ultimately outfalls to the sea at Baldoyle Bay, C. 2.3km south-east of the subject site.

The subject site will primarily be accessed via the existing junction to Back Road serving the Ashwood Hall residential development. Secondary access will be provided for south via the Hazelbrook residential development to connect to Kinsealy Lane.

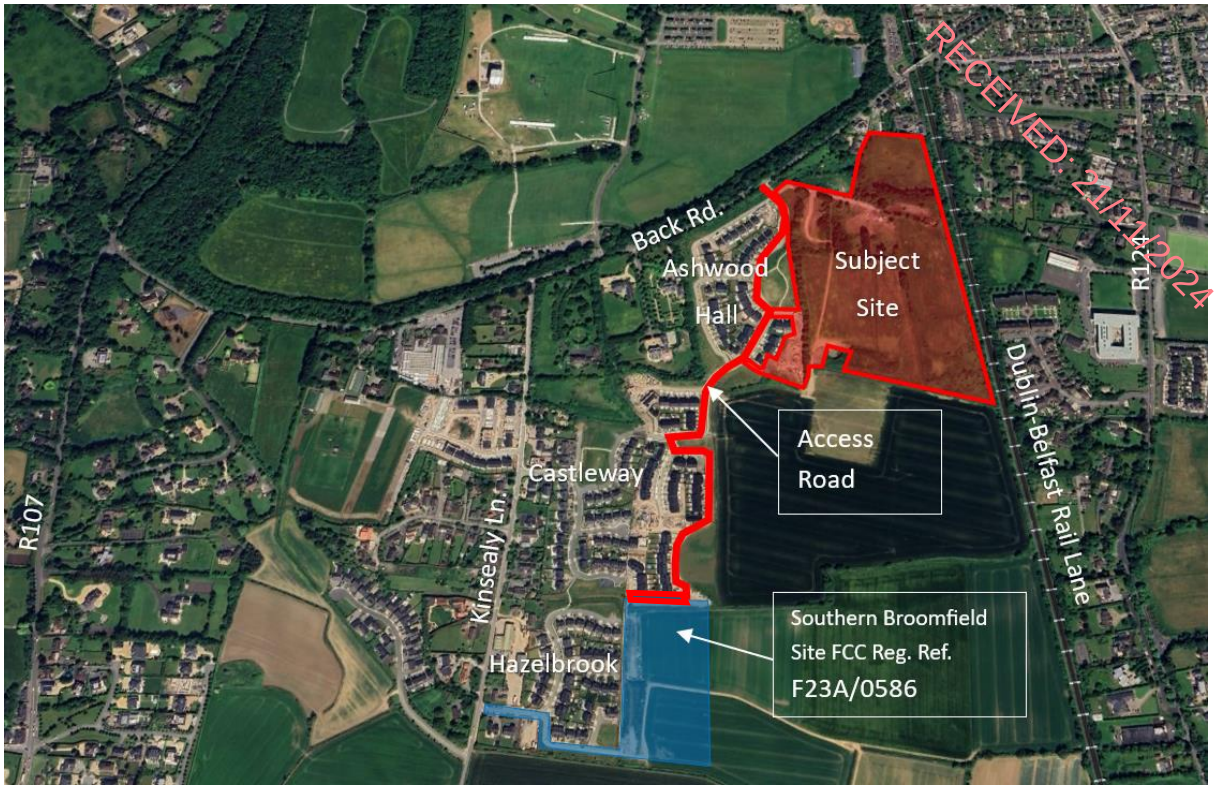


Figure 12.1 | Site Location (Source: Google Earth)

There is currently electricity, gas, and telecommunications utilities available to the site.

Based on the information received from ESB Networks (ESBN), the subject lands are traversed by existing ESB cables with overhead lines. Underground networks have been constructed to the existing residential developments adjacent to the subject site. The undergrounding of the overhead networks will need to be agreed with ESB at the detailed design stage. There are no supply issues envisaged.

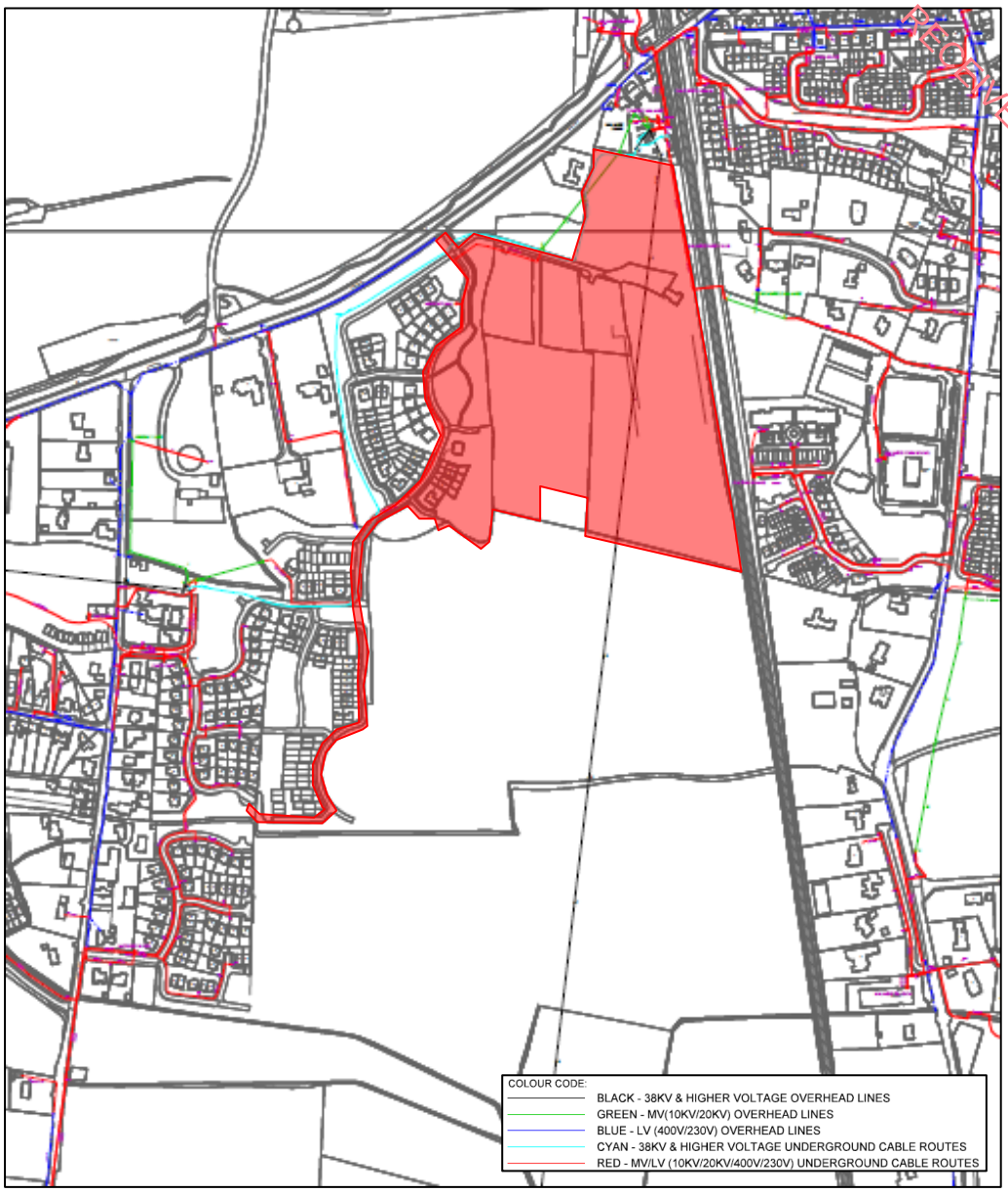


Figure 12.2 | Existing ESB Network Layout

There is an existing Gas network in the adjacent site. The gas network to the adjacent site is served via a connection across Kinsealy Lane to the Sleepy Hollow residential development.

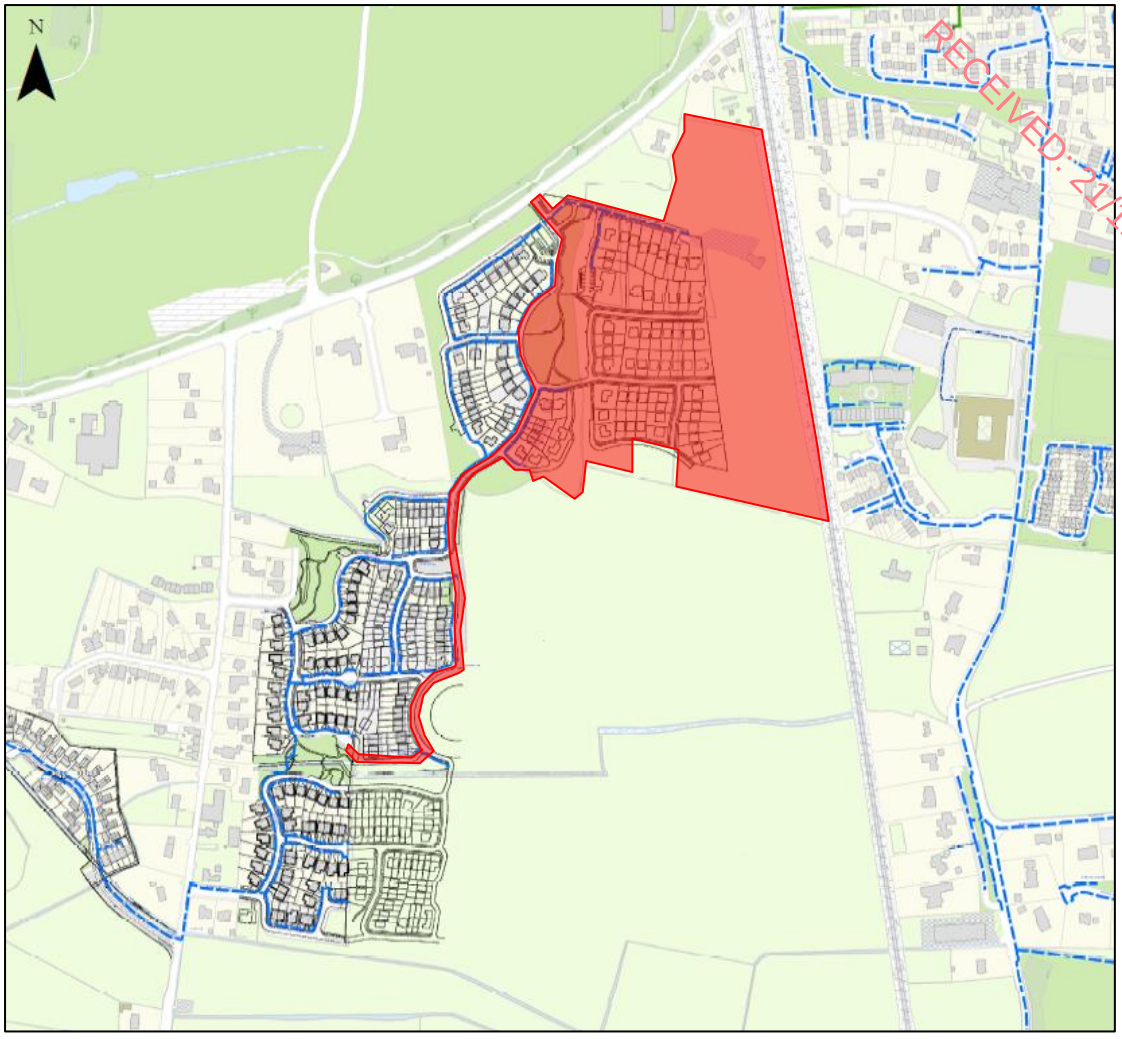


Figure 12.3 | Existing Gas Network Layout

In terms of telecommunications, it is known from Eir E-Maps that there are existing networks in the adjacent residential development, Back Road and Kinsealy Lane.

Maps for the Virgin Media networks also inform of the same.

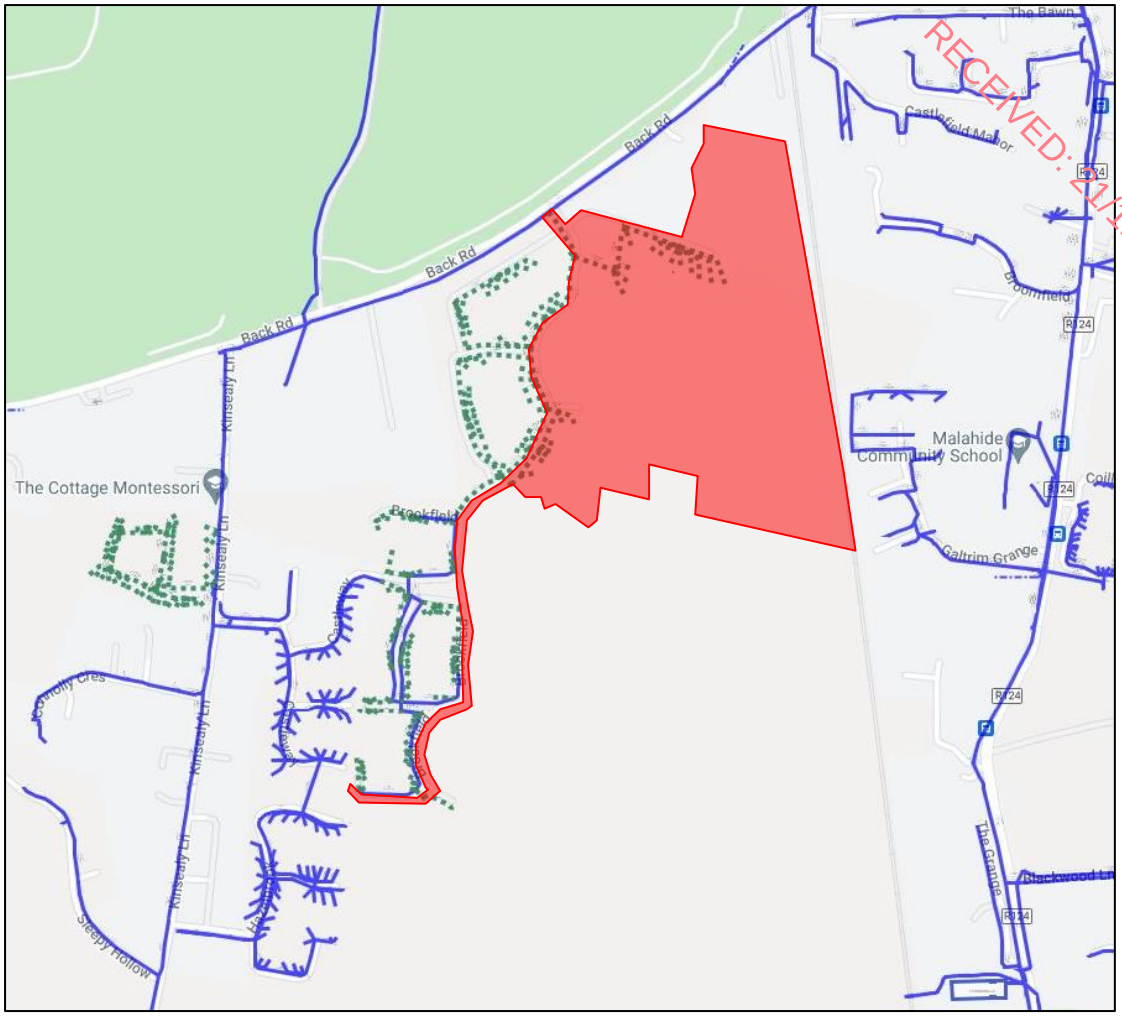


Figure 12.4 | Existing Eir Telecommunications Network Layout

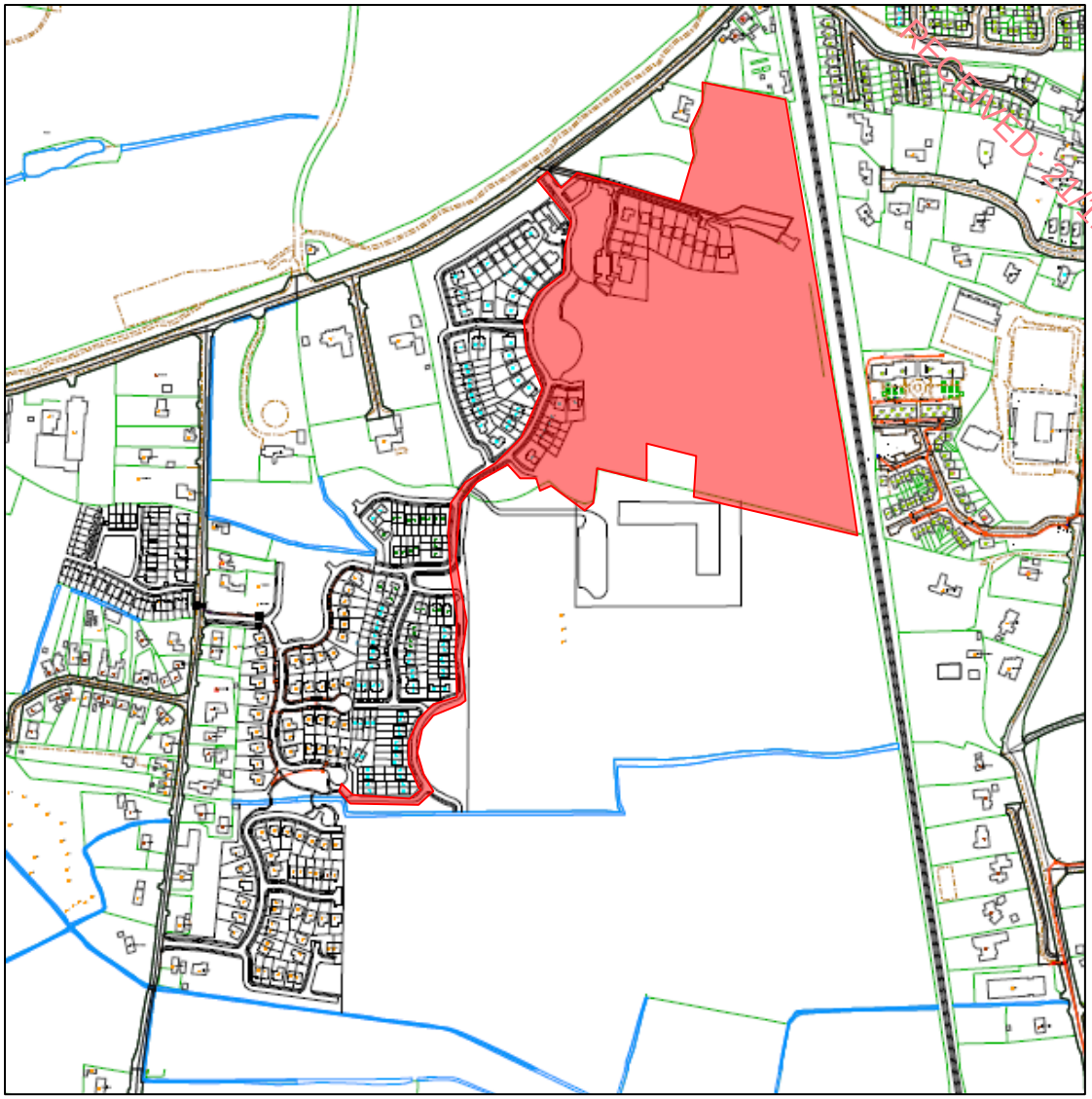


Figure 12.5 | Existing Virgin Media Telecommunications Network Layout

12.3.5 Waste Management

In terms of waste management, the receiving environment is defined by Fingal County Council as the Local Authority with responsibility for setting standards and targets and for monitoring/regulating waste management activities in the area. The Eastern and Midlands Region Waste Management Plan 2015–2021 (EMRWMP) as referred to in the Fingal *County* Development Plan 2023-2029, sets out policies and objectives regarding waste management. Waste operators already service the area as there are existing residential properties adjacent to the subject lands.

12.4 Potential Impact of the Proposed Development

This section provides a description of the potential impacts of the proposed development may have during the Construction and Operational phases. The impact assessment addresses the *direct, indirect, cumulative, short, medium, and long term, permanent, temporary, positive and negative effects.*

12.5 Construction Phase

Site Location and Context

The Construction phase will likely have a temporary impact on the existing settlement in the vicinity of the subject lands. There may also be some slight and temporary impacts to the existing population which may arise during the construction phase, refer to the following EIAR Chapters: population and human health, air quality, noise and vibration, and climate for further information.

Access

During the construction phase, access will be affected by hoarding and security fencing required onto the site boundary. A detailed traffic management plan will be prepared and implemented by the Main Contractor and agreed with the Local Authority prior to commencing works. As a result, there will be a temporary disturbance to traffic in the surrounding area during construction.

The number of construction vehicle movements anticipated is low compared to the number of trips expected to be generated by the proposed development during the operational phase. It should be noted that the majority of such vehicle movements would be undertaken outside of the traditional peak hours, and it is not considered that this level of traffic would result in any operational problems.

It is estimated that 75% of construction traffic will come from M50 / Swords and 25% from city centre / Baldoyle direction. Delivery trucks will be instructed to access the site via the main site access from Back Road. Flag men shall operate to ensure safe access and egress of HGV's. It is likely that construction will have a negligible impact on pedestrian and cycle infrastructure. It is proposed that a Construction Management Plan (CMP) would 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.

Electricity, Gas and Telecommunications

Electricity will be required during the construction phase. In conjunction with the ESB, the provision of a temporary builders' power supply will be provided. There is potential for temporary impacts to the local electricity supply network, by way of disruption in supply to the local area during electricity connection works for the proposed development. However, this is a potential impact which is likely to be neutral, slight, and temporary.

The supply of gas will not be operational during the construction phase of the proposed development. There is potential for temporary impacts to the local gas supply network, by way of disruption in gas supply to the local area. However, this is a potential impact which is likely to be neutral.

Telecommunications will not be operational during the construction phase of the proposed development. There is potential for temporary impacts to local supply, by way of disruption during connections works. However, this is a potential impact which is likely to be neutral, slight, and temporary.

Waste Management

The proposed development will generate a range of waste materials during the excavation and construction phase as outlined in the Construction and Demolition Waste Management Plan that is prepared under separate cover as part of the planning application. Typical municipal waste will also be generated by construction works on sites such as food waste. Waste materials will be stored temporarily on site until such time as collection takes place by a licenced waste contractor. Dedicated, easily accessible locations for collection will be clearly identified across the construction sites.

If waste is not managed or stored appropriately, it is likely to give rise to litter and/or pollution issues on the construction sites and surrounding area. In addition, if unauthorised waste contractors were used, waste materials could be incorrectly managed and disposed of illegally and result in negative environmental impacts or pollution. Thus, all waste generated must be managed in accordance with regional and national waste legislation and taken to suitably registered and licenced waste facilities for processing, segregation, reuse, recycling, recovery, or disposal, as deemed appropriate. There are numerous licensed waste facilities in the region which can accept waste generated. The potential effect of construction waste generated from the proposed development is considered to be short-term, not significant, and neutral. For further information, please refer to the Construction and Demolition Waste Management Plan (C&DWMP).

12.6 Operational Phase

Site Location and Context

The proposed mixed use development consists of a total of 297 no. residential units, comprising of 211 no. houses, 46 no. duplex units and 40 no. apartments, 710 sqm creche, 242sqm café, 167sqm pharmacy and 172sqm yoga studio. The development includes all associated site works, boundary treatments, drainage, and additional service connections.

Access

The operational phase of the proposed development will result in increased traffic volumes to the local road network, primarily the Back Road. A Traffic and Transport Assessment has been prepared and is submitted as part of the planning applications for the proposed development. Please also refer to the Chapter on transport, included in this document for further information.

Electricity, Gas and Telecommunications

Electricity will be required during the operational phase. In conjunction with the ESB, the provision of supply will be facilitated. This will result in increased demand for electricity in the area. The potential impact from the operational phase is likely to be slight and long term.

The supply of gas will be required during the operational phase. In conjunction with Gas Networks Ireland, the provision of supply will be facilitated. The proposed development will result in increased demand for gas in the area. The potential impact from the operational phase is likely to be moderate and long term.

Telecommunications will be required during the operational phase of the proposed development. The proposed development will result in increased demand for telecommunications in the area. The potential impact from the operational phase is likely to be neutral, imperceptible, and long term.

A utilities layout drawing has been prepared as part of the planning application with the appropriate services being designed as part of the proposed development.

Waste Management

Given the nature of the proposed development, waste materials during the operational phase will be generated. As Malahide is an established suburb of Dublin City, an existing network of waste collection, treatment and disposal contractors and facilities already serve the adjacent residential area and will provide service to the proposed development.

If waste is not managed or stored appropriately, it is likely to give rise to litter and/or pollution issues. The implications of such are that vermin may be attracted to the immediate area as a result. In addition, if unauthorised waste contractors were used, waste materials could be incorrectly managed and disposed of illegally and result in negative environmental impacts or pollution. Thus, all waste generated must be managed in accordance with regional and national waste legislation and taken to suitably registered and licenced waste facilities for processing, segregation, reuse, recycling, recovery or disposal, as deemed appropriate. There are numerous licensed waste facilities in the region which can accept waste generated.

It is noted that appropriate waste storage areas have been incorporated into the design of the development with shared waste stores serving the apartments and duplex units while the houses will be provided with their own bin stores. The proposed development will also be managed by a Management Company ensuring that waste will be managed correctly.

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. There will be bins and receptacles provided to facilitate segregation at source. The appointed waste contractor will collect and transfer the wastes to the licensed waste facility. Waste contractors will be required to service the development on a regular basis each week.

The potential effect of operational waste generated from the proposed development is considered to be long-term, not significant and negative.

12.7 Avoidance, Remedial & Mitigation Measures

All possible precautions shall be taken to avoid unplanned disruptions to any services or utilities during the construction phase of the proposed development. It should be noted that a number of mitigation measures proposed in other EIAR chapters are also of relevance to Material Assets and should be referred to when reading this EIAR.

The construction phase mitigation measures include, avoidance, reduction and remedy measures as set out within the Development Management Guidelines document. The design and construction of the necessary service infrastructure will be in accordance with relevant codes of practice and

guidelines. As a result, this is likely to avoid any potential negative impacts during the operational phase of the proposed development. However, routine maintenance of the site services will be required from time to time, as such any mitigation measures will be advised by the relevant service provider. A site-specific Construction and Demolition Waste Management Plan (C&DWMP) has been prepared to deal with waste generation during the construction phase of the proposed development and is included as part of the application packs. This document was prepared in accordance with best practice guidelines.

An Operational waste management plan (OWMP) has been prepared to ensure that the management of waste during the operational phase of the Proposed Development is undertaken in accordance with current legal and industry standards development and is included as part of the application packs. OWMP aims to provide a detailed plan for the storage, handling, collection, and transport of the wastes generated at the development in a manner that does not present a risk to human health or the environment, or a risk of common waste related nuisance such as litter or odour. A designated management company and an appointed licenced waste contractor will ensure the sustainable management of domestic and commercial waste arising from the development is in accordance with legislative requirements and best practice standards.

12.8 Predicted Impacts

If unregulated, predicted impacts associated with the construction phase of the proposed development would be expected to include potential disruption to local natural and human material assets resulting in both short-term and long-term impacts. The implementation of the mitigation measures set out in this chapter and other chapters of this EIAR would ensure that there is unlikely to be significant residual impacts during the construction phase. Therefore, impacts are likely to be temporary and neutral. During the operational phase, the impact to services and utilities is considered to be positive and permanent positive to all end users.

12.9 Monitoring

Prior to the operational phase of the proposed development, all services/utility connections will be tested by a suitably qualified professional under the supervision of the service provider.

Any monitoring of the built services required during the operational phase of the proposed development will be as advised by the relevant service provider.

The management of waste during the construction and operational phases of the proposed development should be monitored to ensure compliance with best practice and relevant legislative requirements.

12.10 Reinstatement

No reinstatement will be required regarding Material Assets. Residual impacts on services and utilities are considered to be imperceptible.

12.11 Interactions

The main interactions relating to Material Assets are water, air quality, and population and human health.

During the operational phase, the water supply and wastewater services will have a potential interaction with the available water supply and the potential emissions to the water cycle.

12.12 Difficulties Encountered in Compiling

The exact location of existing service infrastructure is reliant upon the records obtained, where relevant. Overall, no difficulties were encountered in compiling this chapter.

12.13 Cumulative Impacts

The assessment has considered cumulative impacts of construction and operational phases of the proposed development, in conjunction with surrounding developments.

Multiple sites under construction at the one time may result in increased demand for volumes of waste to be removed off site. Licenced appointed waste contractor handle, transport, and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of wase removal from construction activities from multiple developments. This is likely to have a temporary effect on improvement of efficiencies of waste collection and indeed is likely to result in an improvement in waste targets in line with national and local legislation on construction and demolition waste.

During the operational phase of the development, similar existing and residential developments in proximity to the proposed development, such as at Ashwood Hall, Brookfield and Hazelbrook, will generate similar waste types. Licenced waste collectors will be required to collect segregated waste materials from multiple development which is likely to result in an improvement of efficiencies of waste collection and indeed is likely to result in an improvement in waste targets in line with national and local legislation. As such the long-term effect will be imperceptible and neutral.

12.14 'Do-Nothing' Impact

A 'do-nothing' scenario is not considered valid as the lands are currently zoned for development under the Fingal County Development Plan. However, if a do-nothing scenario were to occur, the lands would not be developed and therefore would be no adverse impacts to material assets. In the event that the proposed development does not proceed, the lands would remain in its current condition in the short-term or until alternative development proposals are granted planning permission.

12.15 References

- Environmental Protection Agency (EPA), Guidelines on the information to be contained in Environmental Impact Assessment Reports (March 2022).
- Preliminary Construction and Demolition Waste Management Plan, Preliminary Construction Management Plan, and Traffic & transport Assessment Reports, prepared by Waterman Moylan Consulting Engineers.
- Operational Waste Management Plan prepared by Enviroguide Consulting.
- ESB Network Maps
- Virgin Media Network Maps
- GNI network Maps
- Eir online E-map Viewer

13.0 CULTURAL HERITAGE

13.1 Introduction

This chapter of the Environmental Impact Assessment Report has been prepared by Dermot Nelis Archaeology on behalf of Birchwell Developments Ltd. The chapter provides an assessment of the archaeological, architectural and cultural heritage background for a proposed development at Broomfield, Kinsaley and Malahide townlands, Malahide, County Dublin (figure 13.1; Ordnance Survey Sheet 012). The chapter includes an identification of potential significant impacts or effects which may arise and outlines mitigation measures, based on current information, which may be used to avoid, reduce or offset any potential adverse effects.

The key objectives of this chapter are to assess, as far as is reasonably possible from existing records, any effects the proposed development may have on the archaeological, architectural and cultural heritage resource. The following key issues are addressed:

- Direct and indirect construction phase effects on archaeological, architectural and cultural heritage features;
- Direct and indirect operational phase effects on archaeological, architectural and cultural heritage features; and
- Cumulative and residual effects on archaeological, architectural and cultural heritage features.

13.1.1 Statement of Authority

Dermot Nelis BA ArchOxon AIFA MIAI

Dermot Nelis graduated from Queen's University Belfast, and after gaining extensive fieldwork experience undertook postgraduate studies at the University of Oxford in archaeological consultancy and project management.

Dermot has acted as Senior Archaeologist on several road schemes for various County Councils, and Directed large-scale multi-period excavations associated with those developments. He has completed over 180 licensed fieldwork programmes and over 250 archaeological, architectural, and cultural heritage desk-based reports and Environmental Impact Assessment Reports.

13.2 Study Methodology

13.2.1 Desk Study

There is no professional standard for defining the extent of a study area when assessing potential impacts or effects on archaeological, architectural, or cultural heritage remains. A 1km study area has been imposed around the development site to assess the presence of Recorded Monuments, World Heritage Sites, sites included in the Tentative List as consideration for nomination to the World Heritage List, National Monuments, sites with Preservation Orders or Temporary Orders.

A 500m study area has been imposed around the development site to assess the presence of Protected Structures, Architectural Conservation Areas, structures and historic gardens recorded on

the National Inventory of Architectural Heritage, or any additional archaeological, architectural, or cultural heritage features recorded in the *Fingal Development Plan* (2023).

The following sources were examined, and a list of sites and areas of archaeological, architectural, or cultural heritage potential was compiled:

- Record of Monuments and Places of County Dublin;
- Topographical Files of the National Museum of Ireland;
- Cartographic and documentary sources relating to the study area;
- Aerial photographs of Ordnance Survey Ireland and Bing aerial photography;
- Fingal Development Plan 2023 – 2029;
- National Inventory of Architectural Heritage; and
- Environmental Protection Agency.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Service. Back-up files of the Sites and Monuments Record (SMR) provide details of documentary sources and field inspections where these have taken place.

Topographical Files of the National Museum of Ireland is the archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts, but also includes references to monuments and unique records of previous excavations. The findspots of artefacts are important sources of information in the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within an area of land take, as well as providing important topographical information on sites and areas of archaeological potential. Cartographic analysis of relevant maps has been made to identify any topographical anomalies that may no longer remain within the landscape. **Documentary sources** were consulted to gain background information on the historical and archaeological landscape of the proposed development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its potential to contain previously unidentified archaeological remains.

Fingal Development Plan 2023 - 2029 contains Objectives and Policies on the preservation and management of archaeological, architectural and cultural heritage sites and features. It was consulted to obtain information on sites within the proposed development area and the 1km study area.

National Inventory of Architectural Heritage (NIAH) is a section within the Department of Housing, Local Government and Heritage. The work of NIAH involves identifying, recording and evaluating on a non-statutory basis the architectural heritage of Ireland from 1700 to the present day. The NIAH website also contains a non-statutory register of historic gardens and designed landscapes in County Dublin.

Environmental Protection Agency's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022) provide definitions for potential effects on archaeological, architectural and cultural heritage remains.

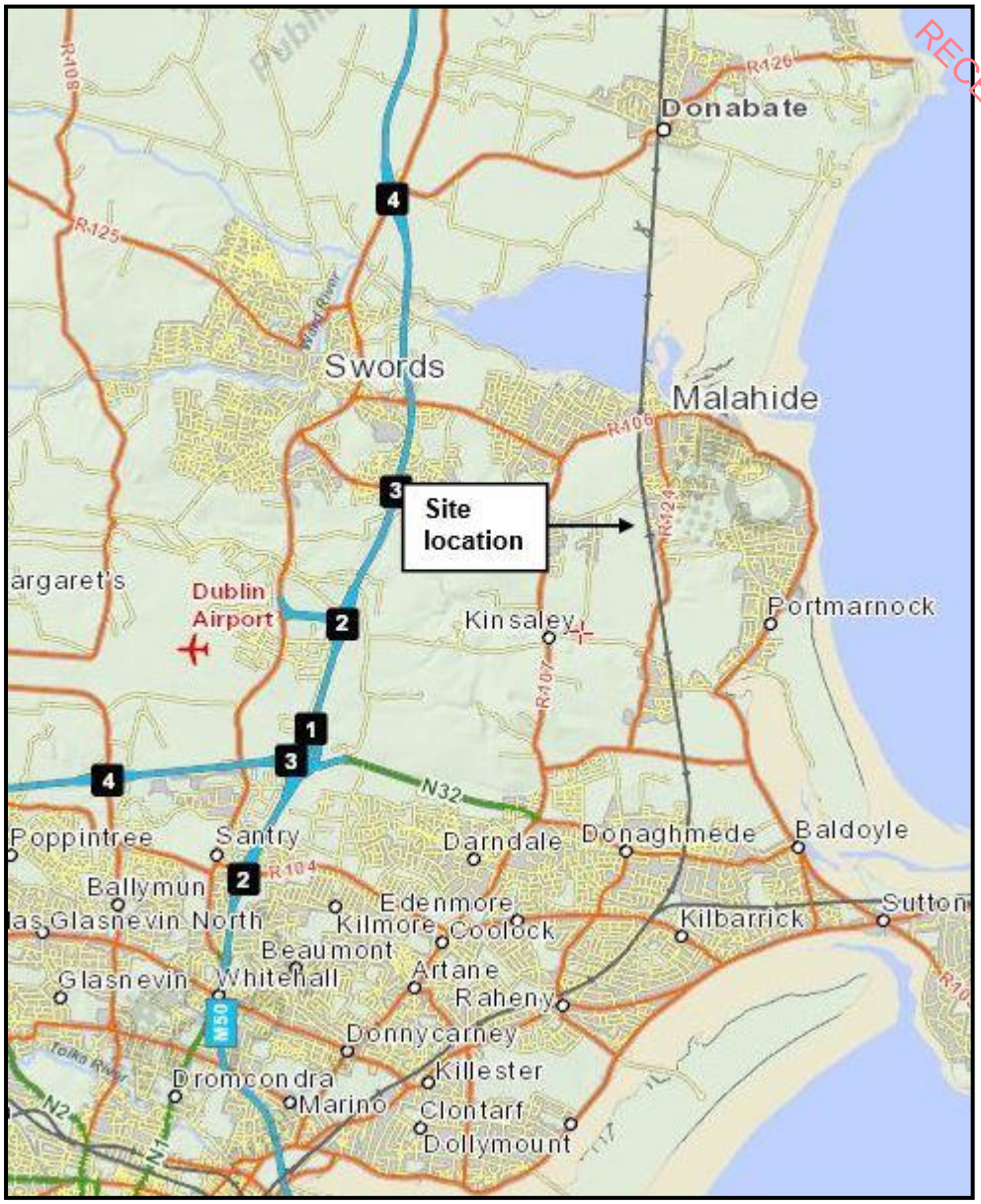


Figure 13-1. Site location

13.2.2 Legislation and Guidelines

Archaeological Resource

The National Monuments Acts, 1930 to 2014 and relevant provisions of the National Cultural Institutions Act, 1997 are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date, except buildings habitually used for ecclesiastical purposes.

A number of mechanisms under the National Monuments Acts are applied to secure the protection of archaeological monuments. These include the Record of Monuments and Places, the Register of Historic Monuments, placing Preservation Orders and Temporary Preservation Orders on endangered sites and National Monuments in the Ownership or Guardianship of the Minister for Housing, Local Government and Heritage or a Local Authority.

The Minister may acquire National Monuments by agreement or by compulsory order. The State or the Local Authority may assume guardianship of any National Monument (other than dwellings). The owners of National Monuments (other than dwellings) may also appoint the Minister or the Local Authority as Guardian of that monument if the State or Local Authority agrees. Once the site is in ownership or Guardianship of the State, it may not be interfered with without the written consent of the Minister.

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic Monuments and archaeological areas present on the Register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the Register is illegal without the permission of the Minister. Two months' notice in writing is required prior to any work being undertaken on or in the vicinity of a Registered Monument. The Register also includes sites under Preservation Orders and Temporary Preservation Orders. All Registered Monuments are included in the Record of Monuments and Places.

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

Section 12(1) of the 1994 Act requires the Minister to establish and maintain a Record of Monuments and Places where the Minister believes that such monuments exist. The Record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the State. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994.

Section 12(3) of the 1994 Act provides that:

> *"where the owner or occupier (other than the Minister for Arts, Heritage and the Gaeltacht) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Arts, Heritage and the Gaeltacht to carry out work and shall not, except in the case of urgent necessity and with the consent of the Minister, commence the work until two months after the giving of notice."* (www.archaeeology.ie).

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 is in the process of being enacted, and will comprehensively modernise and eventually replace the National Monuments Acts, 1930 to 2014. The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 will streamline and simplify existing systems and processes, and provides for the State to ratify some key international conventions in the area of heritage protection, should the Government decide to do so. There are also proposals for innovative measures, such as the automatic legal protection for finds from archaeological sites, a system of civil enforcement to be used as an alternative to, or to supplement, criminal proceedings, and an appeal process for licence applications.

Architectural and Built Heritage Resource

The main laws protecting the built heritage are the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 and the Planning and Development Act 2000 (as amended). The Architectural Heritage Act requires the Minister to establish a survey to identify, record and assess the architectural heritage of the country. The National Inventory of Architectural Heritage records built heritage structures within all the counties of the State. As inclusion in the Inventory does not provide statutory protection, the document is used to advise Local Authorities on compilation of a Record of Protected Structures (RPS) as required by the Planning and Development Act 2000.

The Planning and Development Act 2000 requires Local Authorities to establish a Record of Protected Structures to be included in their County Development Plan. This Plan includes objectives designed to protect the archaeological, architectural and cultural heritage resource during the planning process. Buildings recorded in the RPS can include Recorded Monuments, structures listed in the NIAH, or buildings deemed to be of architectural, archaeological or artistic importance by the Minister. Sites, areas or structures of archaeological, architectural or artistic interest listed in the RPS receive statutory protection from injury or demolition under the 2000 Act. Damage to or demolition of a site registered on the RPS is an offence. The RPS list is not always comprehensive in every county.

A Local Authority has the power to order conservation and restoration works to be undertaken by the owner of a Protected Structure if it considers the building in need of repair. An owner or developer must make a written request to a Local Authority to carry out any works on a Protected Structure and its environs, and this will be reviewed within 12 weeks of application. Failure to do so may result in prosecution.

Figure 13-2. Site plan showing the proposed site layout

13.2.3 Rating of Effects

Effects can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. The construction and use of housing developments can affect the archaeological, architectural and cultural heritage resource of a given landscape in a number of ways:

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape;
- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation;
- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits;

- Visual effects on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value;
- Landscape measures, such as tree planting, can damage sub-surface archaeological features due to topsoil stripping and through the root action of trees and shrubs as they grow;
- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluvium or peat deposits;
- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, service trenches, etc; and
- Although not widely appreciated, positive effects can accrue from permitted developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

There is no standard scale against which the significance of effects on the archaeological and historic landscape may be judged. The severity of a given level of land take or visual intrusion varies with the type of monument, site or landscape features and its environment. Significance of effect can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;
- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected; and
- Assessment of the levels of noise, visual and hydrological impacts, either in general or site specific terms, as may be provided by other specialists.

For this assessment the significant effects criteria outlined in **Table 13.1** are used. This is as per the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency (2022), Section 3: 50):

Table 13-1. Significance of Effects

Level of Impact	Significance Criteria
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 Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment

Level of Impact	Significance Criteria
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound Effects	An effect which obliterates sensitive characteristics

Figure 13-3. Aerial photograph showing the proposed development area

13.3 Archaeological Heritage

13.3.1 Site-Specific Archaeological Background

During the Mesolithic period (*c*. 7000-4000 BC) people existed as hunters/gatherers, living on the coastline, along rivers and lakesides. They used flint and other stones to manufacture sharp tools, and locating scatters of discarded stone tools and debris from their manufacture can sometimes identify

settlements. The native landscape consisted of woodland with hazel, oak, ash and Scot's pine as the primary species and Mesolithic hunting groups made no significant impact on the landscape.

Late Mesolithic and Neolithic fish traps were discovered during archaeological monitoring of development works on reclaimed land on the north bank of the River Liffey in 2004 (at depths of approximately -6m OD and -4m OD, respectively) (McQuade and O'Donnell 2007, 569-584). A Mesolithic shoreline was revealed and the remains of up to five wooden fish traps were excavated. The fish traps were constructed almost exclusively of hazel (*Corylus avellana*), and while fragmentary, were in a relatively good state of preservation, with tool marks in evidence. Radiocarbon determinations from five wood samples returned a date range of between 6,100 – 5,720 cal BC, suggesting that these are the earliest fish traps recorded in Ireland or Britain.

The population became more settled during the Neolithic period (*c*. 4000-2400 BC) with a subsistence economy based on crop growing and stock-raising. This period also saw changes in burial practices, and a tradition of burying the dead collectively and carrying out of cremations emerged. Neolithic monuments from County Dublin include portal, passage and wedge tombs.

By the 4th millennium BC a farming economy was developing that involved forest clearance. Archaeological and pollen records show an increasingly settled landscape with some fixed field boundaries for livestock and cereal production. While farming did spread throughout the country, the preference was for light soils and upland margins with free draining soils and light woodland cover. Extensive use of the productive though heavy soils of the poorly drained central lowlands was restricted by virtue of the limitations of available tools and technology.

The Bronze Age (*c*. 2400-600 BC) is characterised by the introduction of metalworking technology to Ireland and coincides with many changes in the archaeological record, both in terms of material culture as well as the nature of the sites and monuments themselves. Though this activity has markedly different characteristics to that of the preceding Neolithic period, including new structural forms and new artefacts, it also reflects a degree of continuity.

Bronze Age monuments from County Dublin include standing stones, stone pairs, cairns, barrows and *fulachta fiadh,* which are one of the most numerous monument type in Ireland with over 4,500 examples recorded (Waddell 2005, 174).

During the Iron Age (*c*. 600 BC-400 AD) new influences came into Ireland which gradually introduced the knowledge and use of iron, although for several centuries bronze continued to be widely used. The Iron Age in Ireland however is problematic for archaeologists as few artefacts dating exclusively to this period have been found, and without extensive excavation it cannot be determined whether several monument types, such as ring-barrows or standing stones, date to the Bronze Age or Iron Age.

The Early Medieval period (*c*. 400-1169 AD) is depicted in the surviving sources as entirely rural, characterised by the basic territorial unit known as *túath.* Walsh (2000, 30) estimates that there were at least 100, and perhaps as many as 150, kings in Ireland at any given time during this period, each ruling over his own *túath*.

Archer (1975, 7) equates the area of North Dublin with the ancient plain of Magh-Mhuireadha, within the sub-kingdom of Brega. Brega was under the control of the Saithne, a branch of the Cianachta tribe,

whose seat was at Balrothery in north Dublin (Ryan 1949, 67). The Cianachta were said to have received these lands from the 3rd century High King Cormac MacArt, in return for services against Ulster (*ibid*.), suggesting their domination of the area was long-standing and undisputed. By the 8th century, both the Cianachta and the Gailenga were subject to the powerful sept of the Southern Uí Néill who had gained control of the kingdom of Brega (Ryan 1949, 67; Byrne 2001, 68-69).

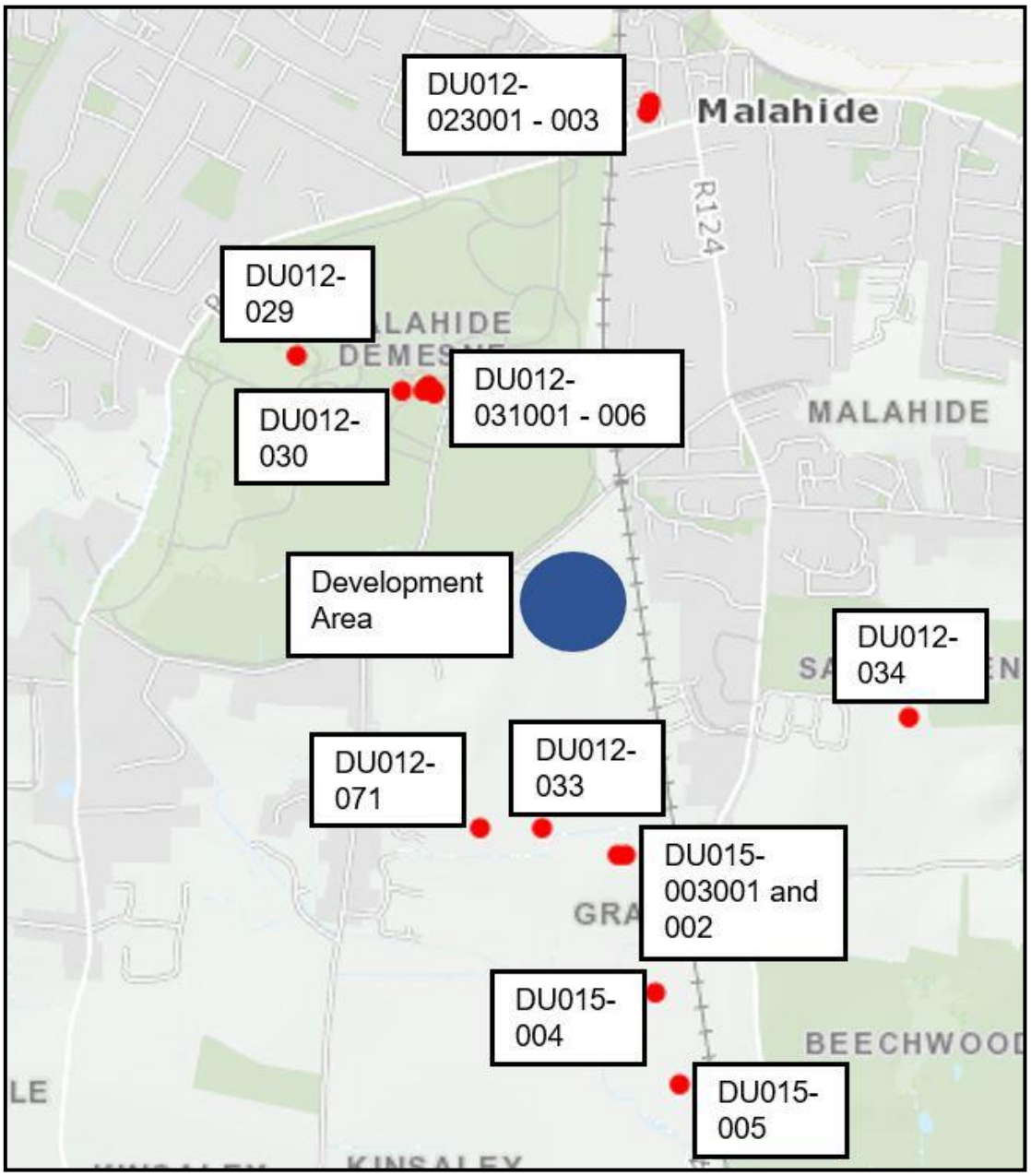


Figure 13-4. RMP sites within the 1km study area

One of the principal thoroughfares of Early Medieval Ireland – the *Slighe Cualann* – ran northwards from Dublin to the west of the general development area near Feltrim Hill, and a branch of this is said to have extended eastwards from Feltrim through the area of Malahide Demesne to Seamount Heights and southwards to Howth (Kennedy 1984, 49). The presence of a principal routeway, the proximity of the coast and the general fertile nature of the land would have made the area very attractive for settlement in the Early Medieval period.

During this turbulent period roughly circular defensive enclosures known as ringforts were constructed to protect farmsteads. They were enclosed by an earthen bank and exterior ditch, and ranged from approximately 25m to 50m in diameter. The smaller sized and single banked type (univallate) was more than likely home to the lower ranks of society, while larger examples with more than one bank (bivallate/trivallate) housed the more powerful kings and lords. They are regarded as defended family homesteads and the extant dating evidence suggests they were primarily built between the 7th and 9th centuries AD (Stout 1997, 22-31). Cashels are stone built and are generally situated in coastal or mountainous areas.

Ringforts are considered to be the most common indicator of settlement during the Early Medieval period. Detailed study (*ibid*., 53) has suggested that there is an approximate total of 45,119 potential ringforts or enclosure sites throughout Ireland.

There are four ringforts recorded within the 1km study area. RMP DU015-003001 and RMP DU015-003002 are located in Grange townland, approximately 310m south of the proposed development area (figure 13.4). RMP DU015-003001 is recorded (www.archaeology.ie) as the cropmark of a single-ditched enclosure, roughly circular in plan and measuring *c*. 45m in diameter. RMP DU015-003002 is also recorded as cropmark evidence for a sub-circular enclosure measuring approximately 55m east/west x 45m north/south. This feature is recorded on the First Edition (1844) Ordnance Survey map. Neither of these monuments are visible at ground level, and both are interpreted as the below-ground remains of ploughed-out ringforts. Local folklore identifies these ringforts as the stronghold of Hamund MacTorcaill, brother of the last Norse Earl or king of Dublin (Kennedy 1984, 55).

RMP DU015-004 is located in Grange townland, approximately 640m south of the proposed development area (figure 13.4). It is recorded on the First Edition Ordnance Survey map (1844) as a univallate enclosure with a centrally located internal feature which may have been a house site. It is interpreted as the remains of a ploughed-out ringfort and is not visible at ground level.

RMP DU015-005 is recorded approximately 870 south of the proposed development area in Grange townland (figure 13.4). It is recorded (www.archaeology.ie) as a platform ringfort comprising a circular raised area with slight traces of a bank around the perimeter and an external ditch at the base. There is an entrance ramp in the south east corner.

Enclosure sites belong to a classification of monument whose precise nature is unclear. Often they may represent ringforts which have either been damaged to a point where they cannot be positively recognised, or are smaller or more irregular in plan than the accepted range for a ringfort. An Early Medieval date is in general likely for this site type, though not a certainty.

There are two enclosures recorded within the 1km study area. RMP DU012-071 is located in Kinsaley townland, approximately 270m south of the proposed development area (figure 13.4), and is recorded (www.archaeology.ie) as a circular enclosure visible as a cropmark which does not survive above-ground. A 1995 black and white aerial photograph (www.map.geohive.ie) shows it as measuring approximately 60m-70m in diameter east/west and with a minimum north/south measurement of approximately 50m. An east/west oriented band of differential growth is noted extending across the northern end of the enclosure on the 1995 aerial photograph, and this may be the remains of an

associated field boundary. This feature is also clearly visible on more recent aerial photography (www.bing.com/maps).

RMP DU012-033 is located in Broomfield townland, approximately 270m south of the proposed development area (figure 13.4). A 1997 aerial photograph records the cropmark of a sub-circular enclosure measuring approximately 20m in diameter and with internal features. This feature does not survive above-ground (www.archaeology.ie).

The classification of archaeological monuments is often made difficult by their condition, whether it be the result of deliberate destruction, trampling by livestock or natural weathering and erosion. The term "*earthwork*" is used to denote any monument or feature of artificial origin which cannot be further categorised without excavation. The term "*earthwork site*" indicates sites which were levelled before detailed archaeological inspection took place. The majority of such sites may be levelled or destroyed ringforts.

An earthwork (RMP DU012-029) is recorded approximately 740m north west of the proposed development area in Malahide Demesne townland (figure 13.4). Formerly located within the ornamental grounds of Malahide Demesne, the site originally consisted of an earthen platform approximately 17m in diameter, enclosed by a 3m-4m wide ditch, a *c*. 2m wide bank and an outer ditch measuring 3m-4m in width and 1m deep (www.archaeology.ie).

The Early Medieval period is also characterised by the foundation of a large number of ecclesiastical sites throughout Ireland in the centuries following the introduction of Christianity in the 5th century AD. The early churches tended to be constructed of wood or post-and-wattle. Between the late 8th and 10th centuries mortared stone churches gradually replaced the earlier structures. Many of the sites, some of which were monastic foundations, were possibly originally defined by an enclosing wall or bank similar to that found at coeval secular sites. This enclosing feature was probably built more to define the sacred character of the area of the church than as a defence against aggression. An inner and outer enclosure can be seen at some of the more important sites; the inner enclosure surrounding the sacred area of church and burial ground and the outer enclosure providing a boundary around living quarters and craft areas. Where remains of an enclosure survive it is often the only evidence that the site was an early Christian foundation.

A church (RMP DU012-031001) is located in the grounds of Malahide Castle, approximately 470m north west of the proposed development area in Malahide Demesne townland (figure 13.4). It contains a nave and chancel with a sacristy attached to the south east corner. There are stepped battlements on the side walls of the nave. Built of coursed, well-mortared limestone masonry, there are buttresses against the west gable either side of the window and a batter or buttress in the south west corner. The church is entered towards the west end of the nave through opposed doorways with pointed arches, chamfered jambs and a hood moulding. The interior is lit by a triple light, ogee-headed west window of 15th century date and two double-light tracery windows in the east end. Above the west gable is a triple bellcote with steps leading up to it. The chancel is entered through a pointed, segmental chancel arch. There are wide, flat-arched windows in the south wall. The east window is a large, limestone, triple-light, tracery window. The sacristy is entered off the chancel into a vaulted ground floor with wall presses. There is an external stairs to first floor which contains a fireplace and

wall presses in the east wall. A possible sheela-na-gig (RMP DU012-031003) is located at the exterior east gable wall of the Medieval church. Another sheela-na-gig (RMP DU012-031002) is built into a quoin at the north east angle of the chancel of the church. Both features are of sandstone and show evidence of having been worked to fit their present location (www.archaeology.ie).

A graveyard (RMP DU012-031006) is located in the grounds of Malahide Castle. It is a relatively small sub-circular graveyard measuring approximately 45m north/south x 40m east/west and is enclosed by a battlemented wall. It is raised in the centre and is dominated by the Medieval church (RMP DU012-031001). There are low headstones of 19th/20th century date (www.archaeology.ie).

The apex on the exterior of the south door of the Medieval church contains a carving of a "*mitred head*" (RMP DU012-031004). Located inside the church is an altar tomb (RMP DU012-031005) dedicated to Maud Plunkett (died 1494) with a recumbent effigy of a female figure in a horned cap (www.archaeology.ie).

A Medieval church (RMP DU012-023002) is reputed to have existed on the present site of St. Sylvester's Catholic church (www.archaeology.ie). The site is located approximately 1km north of the proposed development area (figure 13.4). Test trenching (Licence No. 10E0426), undertaken in advance of an extension to the modern church, revealed two Post-Medieval masonry walls which were interpreted as the remains of the early 19th century church building that previously occupied the site. A small undated pit/drainage gully and a silty deposit that may date from the Medieval period were also identified. No burial remains were uncovered. A second phase of test trenching on the site (Licence No. 11E0326) uncovered Medieval structural remains, a ditch, pits and 18th/19th century masonry walls.

RMP DU012-023001 is a holy well, traditionally called "*Sunday Well*" or "(*St*.) *Sylvester's Well*", located in a square at the rear of St. Sylvester's Church. The well is covered by a conical stone-built superstructure, and access is from a flight of steps. Pattern day is on August 15th. A modern stone plaque at the foot of the well is inscribed: "*St Sylvester's well ca. AD 430, restored 2001*" (www.archaeology.ie).

Tradition also notes that an earthwork or mound (RMP DU012-023003) existed on the present site of St. Sylvester's Catholic church (www.archaeology.ie). The recovery of Medieval pottery from the site during the above-mentioned test trenching exercises is interpreted as some level of activity having taken place on the site or in the vicinity during the 13th or 14th centuries. It is possible the pottery sherds could relate to activity associated with the mound that once stood on the site, perhaps suggesting it may have been a motte or ringfort that was occupied for a considerable period of time.

The commencement of Viking raids at the end of the 8th century and their subsequent settlement during the following two centuries marked the first ever foreign invasion of Ireland. Viking settlement evidence is scarce and has been found in Cork, Dublin and Waterford, however excavations there have revealed extensive remains of the Viking towns. Outside these towns, understanding of Viking settlement is largely drawn from documentary and place-name evidence. In addition to Cork, Dublin and Waterford, documentary sources provide evidence for the Viking foundation of the coastal towns of Limerick and Wexford (Edwards 2006, 179). Other indirect evidence which suggests Viking settlement, or at least a Norse influence in Ireland, is represented by upwards of 120 Viking-age coin

hoards, possible votive offerings of Viking style objects and the assimilation of Scandinavian art styles into Irish designs. While the initial Viking raids would have been traumatic, the wealth and urban expansion brought into the country as a result of Viking trading would have benefited the Gaelic Irish and cultural assimilation in some parts would have been significant.

The late 8th and early 9th centuries saw the arrival of Viking raiders to the east coast of Ireland, with the islands and coastline of north Dublin among the earliest casualties. Annalistic sources record Viking raids on Howth and the coast of Brega in 821 and Lusk in 824, 825 and 854 (Ryan 1949, 68; Kennedy 1984, 46). Within a short time the raiders had occupied the lands of Malahide and Howth and had assumed possession of Dublin to the south (*ibid.*).

The arrival of Anglo-Normans in Ireland towards the end of the 12th century caused great changes during the following century. Large numbers of colonists arrived from England and Wales and established towns and villages. They brought with them new methods of agriculture which facilitated an intensification of production. Surplus foods were exported to markets all along Atlantic Europe which created great wealth and economic growth. Results of this wealth can be seen in the landscape in the form of stone castles, churches and monasteries.

The political structure of the Anglo-Normans centered itself around the establishment of shires, manors, castles, villages and churches. In the initial decades after the Anglo-Norman invasion a distinctive type of earth and timber fortification was constructed- the motte and bailey. Mottes were raised mounds of earth topped with a wooden or stone tower while the bailey was an enclosure, surrounded by an earthen ditch with a timber palisade, used to house ancillary structures, horses and livestock.

A motte and bailey (RMP DU012-034) is located approximately 630m east of the proposed development area in Sainthelens townland (figure 13.4). Located in level pasture, it is a flat-topped elongated mound with a flat-bottomed ditch enclosing the north side. There are indications of an intervening berm 2m in width. The ditch stops abruptly in the south where the ground is uneven, indicating the possible presence of a bailey (www.archaeology.ie).

In certain parts of Ireland Anglo-Norman settlers constructed square or rectangular enclosures, now termed moated sites. Their main defensive feature was a wide, often water-filled, fosse with an internal bank. As in the case of ringforts, these enclosures protected a house and outbuildings usually made of wood. They appear to have been constructed in the latter part of the 13th century though little precise information is available.

More substantial stone castles followed the motte and bailey and moated sites in the 13th and 14th centuries. Tower houses are regarded as late types of castle and were erected from the 14th to early 17th centuries. Their primary function was defensive, with narrow windows and a tower often surrounded by a high stone wall (bawn). An Act of Parliament of 1429 gave a subsidy of £10 to "*liege*" men to build castles of a minimum size of 20ft in length, 16ft in breadth and 40ft in height (6m x 5m x 12m). By 1449 so many of these £10 castles had been built that a limit had to be placed on the number of grants being made available. The later tower houses were often smaller, with less bulky walls and no vaulting.

Malahide Castle (RMP DU012-030) is located approximately 500m north west of the proposed development area in Malahide Demesne townland (figure 13.4). It is associated with the Talbot family who were granted these lands by Henry II in 1174 (www.archaeology.ie). The Late Medieval core of the castle is largely masked by a re-build dating to *c.* 1760, which involved the construction of a long symmetrical wing with corner towers that enclosed the earlier castle. The castle was re-roofed and renovated in the 19th century.

The 14th century throughout north west Europe is generally regarded as having been a time of crisis, and Ireland was no exception. Although the Irish economy had been growing in the late 13th century, it was not growing quickly enough to support the rapidly expanding population, especially when Edward I was using the trade of Irish goods to finance his campaigns in Scotland and Wales. When the Great European Famine of 1315-1317 arrived in Ireland, brought about by lengthy periods of severe weather and climate change, its effects were exacerbated by the Bruce Invasion of 1315-1318. Manorial records which date to the early 14th century show that there was a noticeable decline in agricultural production. This economic instability and decline were further worsened with the onset of the Bubonic Plague in 1348.

Before the Tudors came to the throne the kings of England were also the kings of western France and so, during the 14th and 15th centuries, the various lords who ruled in Ireland were largely left to themselves. The Tudor conquest however brought a much greater interest in the affairs of Ireland. They wanted to put a stop to the raids of the Gaelic Irish on areas under English rule. To do this, they ruthlessly put down any rebellions and even quashed inter-tribal feuds. English settlers were then brought in to settle their lands. The first of these plantations occurred in the mid-16th century in what is now Laois and Offaly. After the Desmond rising in Munster in 1585 came another plantation, and parts of south western Tipperary were planted at that time.

From 1593 until 1603 there was a countrywide war between the Gaelic Irish, who were supported by the French, and the Elizabethan English. The Irish were finally defeated and with the "*Flight of the Earls*" from Rathmullan, County Donegal in 1607 Ulster, which had previously been independent of English rule, was planted.

Austin Cooper writing in 1780 described Malahide as a "*very small Vile*" with a few cabins and a large strand at low tide (cited in Little 1948, 1-2). The Demesne was noted as having been recently "*modernised and improved*" (*ibid*.), suggesting expansion to its present limits, and the construction of Back Road may have already been completed. The incumbent Talbot at that time, Col. Richard Talbot, appears to have been an improving landlord, and is credited with the advance of industry in Malahide in the later 18th century (*ibid*., 13). This was primarily based on the manufacture of cotton, although it was short-lived as by the end of the century the market for cotton had collapsed, resulting in the abandonment of plans to expand the industry and to link Malahide and Swords via canal (*ibid*.; Lewis 1837, Vol. II, 234).

By the early 19th century silk manufacture was still carried on in the town, while the harbour continued to export meal and flour and import coal (*ibid*.). Malahide was also a fishing town and particularly noted for its oysters, with which it supplied the city of Dublin (*ibid*.). Lewis described the town as pleasing, with "*many handsome cottages*", although he noted a large number of these were only

occupied seasonally as holiday homes (*ibid*.). Notwithstanding the arrival of the railway to Malahide in 1844 (Little 1948, 3), the town appears to have gone into decline in the later 19th century, and an account from 1912 describes it as "*a decayed watering-place which had attained an ephemeral popularity about sixty years ago*" (Joyce 1912, 280).

13.3.2 Toponyms

Townland names are important in understanding the archaeology, geology, land-use, ownership and cultural heritage of an area.

Broomfield means "*field of the broom*".

Kinsaley translates from the Irish *Cionn Sáile* as "*head of the salt water or brine*".

Malahide translates from *Mullach Íde* as "*Íde's summit or hilltop*".

13.3.3 Topographical Files of the National Museum of Ireland

The discovery of a stone axe-head is recorded in the Topographical Files from a field beside a house at Kinsealy Lane, which is to the west of the proposed development area in Kinsaley townland. No additional information is available, as the axe was retained by the finder and does not form part of the Museum's collections.

A large quantity of flint artefacts was recovered from freshly ploughed fields in Broomfield townland in the 1960s. These appear as four separate collections from the years 1964, 1966 and 1968. NMI Ref. 1964:29-30 consists of 16 waste flakes, one blade and three cores, along with flint nodules, pebbles and a probable gunflint. These were recovered from an orchard in the northern part of the townland, most likely in the area of Ivy Grange to the east of the railway line.

NMI Ref. 1966:42 is a fragment of a flint side-scraper, noted as a surface find. It was further noted that in the same area the sawn tooth of a sperm whale and a fragment of tortoiseshell were also recovered, although these were considered to be of relatively modern origin and were therefore not retained by the Museum.

There are two collections recorded from 1968. NMI Ref. 1968:151-171 includes two stone axeheads, along with 72 flint and chert artefacts and a small number of miscellaneous finds of uncertain date. The flint and chert artefacts included scrapers, blades, flakes and cores, while some 58 were later noted as "*waste flakes, cores and chips of flint*" (Lucas 1971), suggesting flint-working had occurred in the vicinity. These artefacts, along with those presented to the National Museum in 1964 and 1966, are part of a more extensive collection of flint artefacts from the Malahide area recovered by the antiquarian Noel Flanagan. It is likely the Broomfield finds were recovered from lands close to his home, in the north of the townland. Indeed, the provenance for most of these finds is recorded at the northern end of the townland, while two flint flakes (NMI Ref. 1968: 159-160) were found in the north west of the townland, to the west of the railway line.

The second collection acquired by the National Museum in 1968 (NMI Ref. 1968:174-184) consists of 91 flint artefacts recovered as surface finds within Broomfield townland. As with the first collection, a large number of these artefacts are considered to be waste material from flint-working, along with

flint cores, flakes and scrapers. No find-spots within Broomfield townland were recorded for the second collection.

A number of finds have also been recovered from test trenches excavated within Malahide Demesne, including a polished stone axehead (NMI Ref. 2012:17), Medieval pottery (NMI Ref. 2012:19), a clay pipe stem (NMI Ref. 2012:20) and associated animal bone (NMI Refs. 2012:18 and 2012:21).

13.3.4 Cartographic Analysis

Ordnance Survey Map First Edition 1:10,560 1844 (figure 13.5)

The First Edition 1:10,560 Ordnance Survey map records the proposed development area as part of six fields, with it being located either side of a townland and parish boundary. Research suggests that:

> *"hoards and single finds of Bronze Age weapons, shields, horns, cauldrons and gold personal objects can all be shown to occur on boundaries" (Kelly 2006, 28).*

The "*Dublin and Drogheda Railway in Progress*" is recorded as forming the eastern boundary of the proposed area of land take. All areas of land take within Broomfield townland are recorded as part of Broomfield House demesne, which is noted in the National Inventory of Architectural Heritage (www.buildingsofireland.ie) as having "*virtually no recognizable features*".

There are no archaeological or architectural features recorded on the First Edition 1:10,560 Ordnance Survey map within the area of proposed land take.

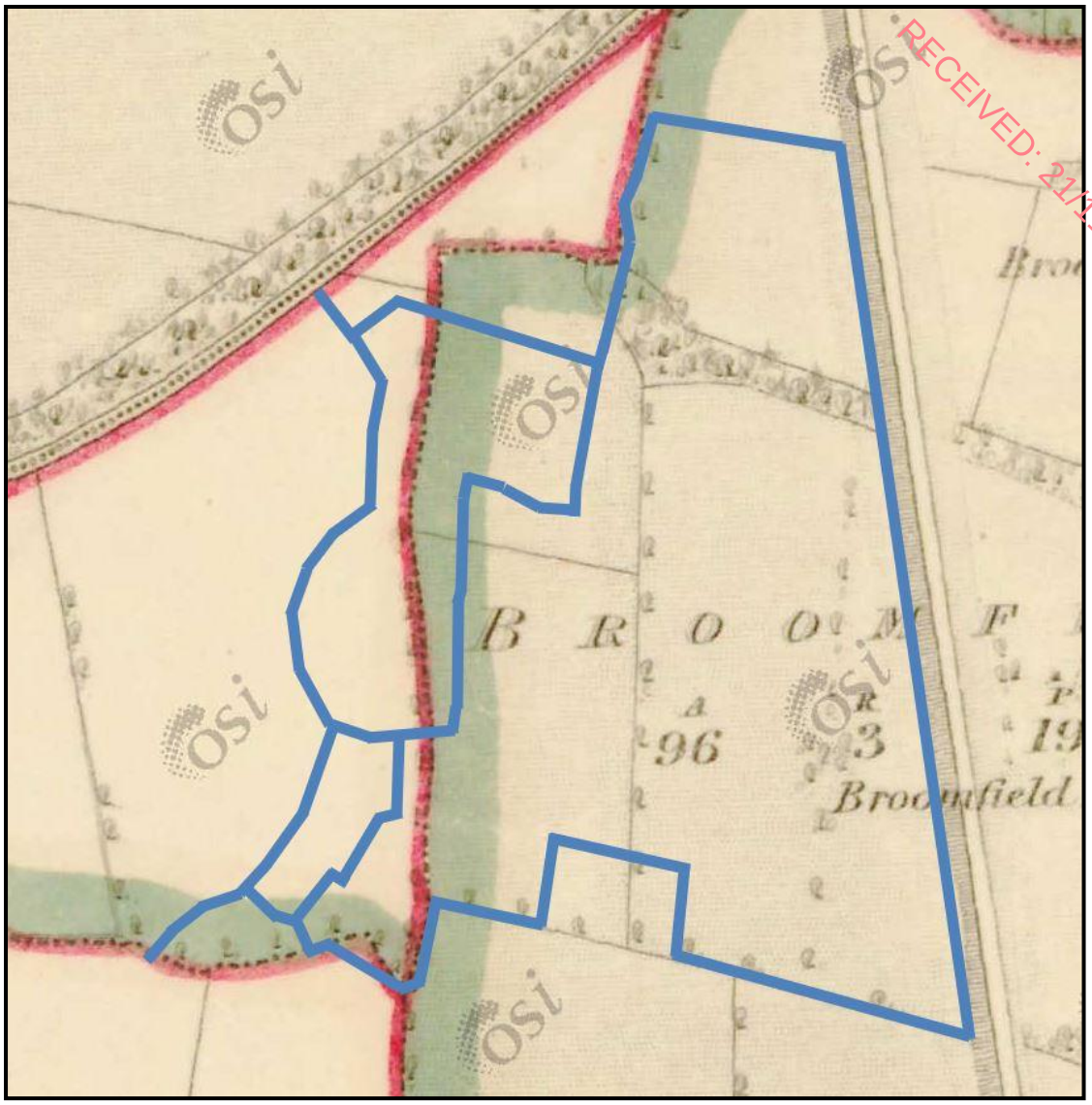


Figure 13-5. *First Edition Ordnance Survey map 1:10,560 (1844), showing the proposed development area*

Ordnance Survey Map First Edition 1:2,500 1863 (figure 13.6)

Broomfield House demesne is not recorded within the proposed development area on the First Edition 1:2,500 map. There are no other differences within the proposed development area between the First Edition 1:10,560 map and the First Edition 1:2,500 map.

There are no archaeological or architectural features recorded on the First Edition 1:2,500 Ordnance Survey map within the area of proposed land take.

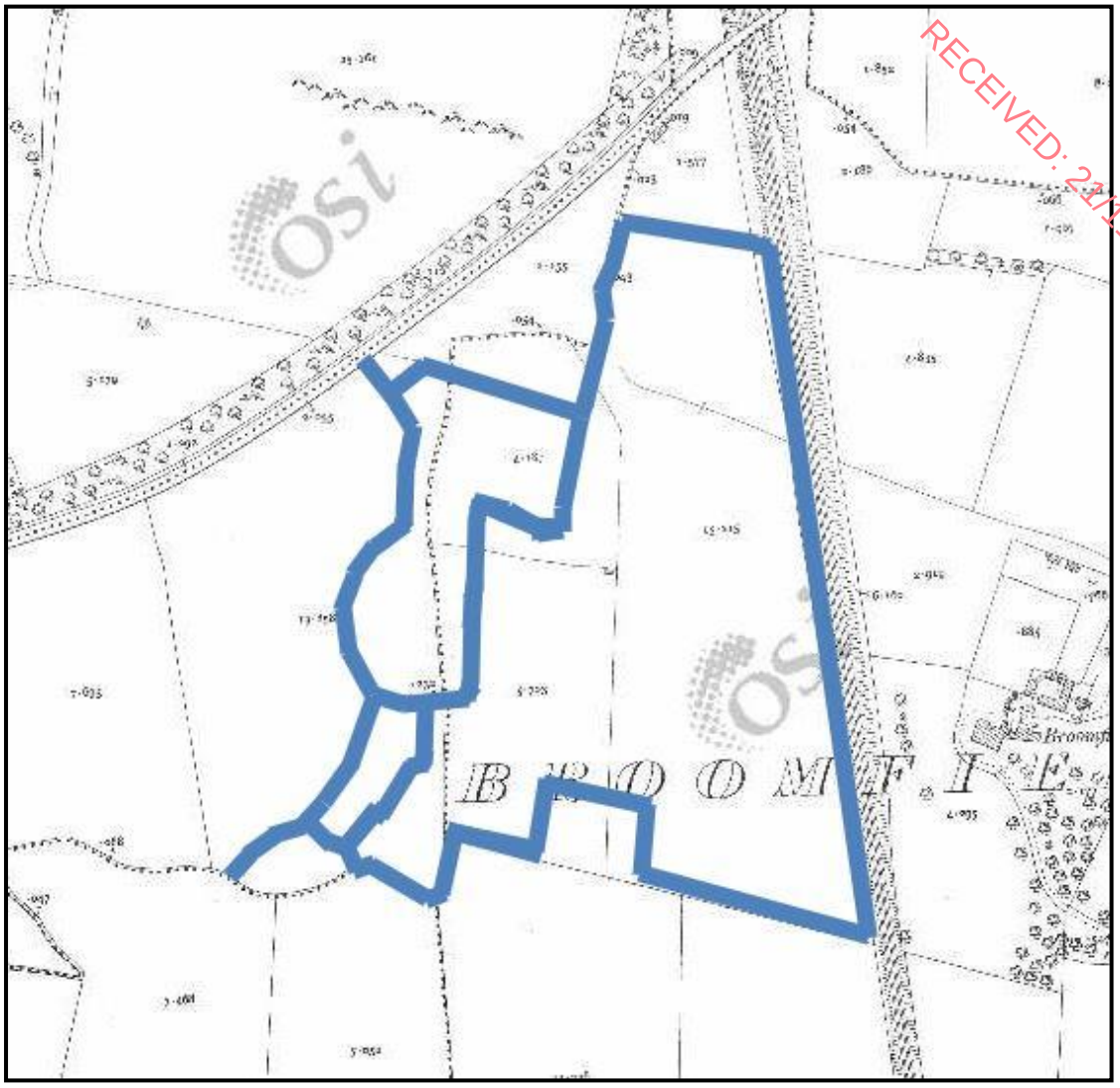


Figure 13-6. First Edition Ordnance Survey map 1:2,500 (1863), showing the proposed development

Ordnance Survey Map Third Edition 1:10,560 1906 (figure 13.7)

There are no differences recorded within the proposed development area between the First Edition 1:2,500 map and the Third Edition 1:10,560 map.

There are no archaeological or architectural features recorded on the Third Edition 1:10,560 Ordnance Survey map within the area of proposed land take.

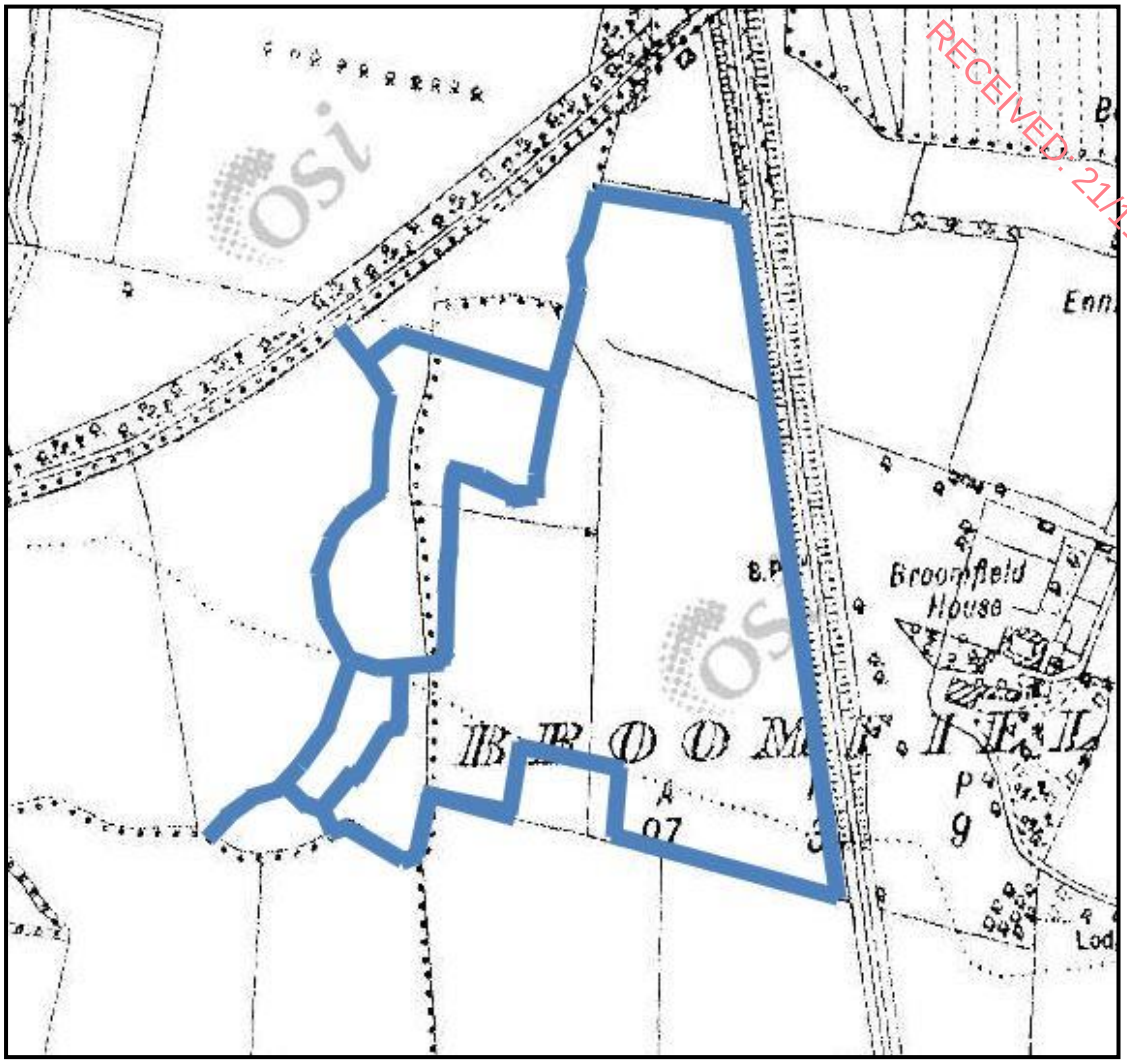


Figure 13-7. Third Edition Ordnance Survey map 1:10,560 (1906), showing the proposed development area

13.3.5 Aerial Photographs

Aerial photographs held by Ordnance Survey Ireland (www.map.geohive.ie) were consulted to look for the presence of archaeological or architectural remains within the proposed development area.

The 1995, 2000 and 2005 photographs, along with more recent aerial photography (www.bing.com/maps), record a similar landscape to that which was noted during the test trenching programmes with generally medium-sized fields enclosed by mature boundaries being recorded.

There was no evidence of any archaeological, architectural or cultural heritage features recorded on aerial photography within the proposed development area.

13.3.6 Summary of Previous Fieldwork in the General Development Area

Reference to Summary Accounts of Archaeological Excavations in Ireland (www.excavations.ie) revealed that a number of fieldwork programmes have been carried out in Broomfield, Kinsaley and Malahide townlands.

Test trenching was carried out by the writer in 2014 (Licence Number 14E0162) in a field located immediately west of the proposed development area in Broomfield and Kinsaley townlands (see **Site-**

Specific Archaeological Fieldwork below, pp. 13.29 – 13.30). Subsequent monitoring (Licence Number 17E0227) revealed four archaeological features in the middle/northern half of the development area. A radiocarbon determination for one of the features placed activity in the Late Neolithic/Early Bronze Age.

A ditched circular enclosure was excavated in Broomfield townland in 1985 (Licence Number 1985:23), and was noted as being one of three barely visible enclosures situated just below the south-facing brow of a low east/west ridge. Excavation revealed a flat circular area, 14m in diameter, enclosed by a ditch 0.90m - 1.0m deep, with a slight internal bank (0.10m – 0.15m high x 1m - 1.5m wide) and 16 pits. Fifteen of the pits were contemporary with the enclosure, while one was earlier and sealed beneath the internal bank. This contained three sherds of Beaker pottery, charcoal and burnt earth. Around the entire circumference of the base of the ditch a line of 2" tile drains (*c.* 1800 - 1850) had been inserted, and a sod drain had been dug across the interior of the enclosure. The evidence points to the enclosure being the remains of a ploughed-out tree ring which had been erected in the 18th/19th century in an area of Early Bronze Age activity.

Test trenching was carried out in 2019 (Licence Number 19E0464) in an area straddling the boundary between Kinsaley and Broomfield townlands. The excavation of nine trenches with a cumulative length of 810m failed to reveal any archaeological features or artefacts.

Test trenching (Licence Number 08E0529) was carried out in 2008 along the line of the Malahide Distributor Road. At Kinsaley, a 90m long trench and five offsets measuring 10m–13m were excavated on the summit of a hill and on its north-facing slope. A shallow pit, 1.33m x 0.8m, with a charcoal-rich fill was uncovered at the top of the hill. Another similarly sized pit was uncovered 27m further south where three field drains, at least two of which were Post-Medieval in date, were also uncovered. An *ex situ* sherd of prehistoric pottery was recovered towards the base of the hill.

Test trenching and monitoring were carried out by the writer (Licence Number 14E0009) towards the southern end of Kinsaley townland, as part of a Grant of Planning for a housing development. Testing revealed a possible small pit containing a sherd of Medieval pottery. No additional archaeological features or artefacts were revealed.

Test trenching was carried out by the writer (Licence Number 14E0165) in a field located south west of the proposed development in Kinsaley townland. The excavation of 17 test trenches throughout the development area revealed 13 features of archaeological significance. An enclosure ditch (RMP DU012-071) was revealed to vary from 3.1m to 3.65m in width and from 1.1m to 1.3m in depth. In addition to the ditch, nine archaeological features in the form of spreads, linear features, a pit and a post-hole were revealed within the enclosure. No artefacts or environmental evidence were revealed by the hand-testing of these features. Subsequent monitoring of this area (Licence Number 18E0090) revealed the remains of a possible hearth.

Archaeological monitoring (Licence Number 18E0096) was carried out between April and July 2018 during topsoil-stripping for a housing development on a 3.65 hectare greenfield site at Chapel Road, Kinsealy. The site was near a ruined Medieval church (RMP DU015-002001) and graveyard (RMP DU015-002002), but nothing related to these monuments was found. No archaeological structures,

features or deposits were found during monitoring. Finds comprised two prehistoric flints, some clay-pipe fragments and Post-Medieval and modern pottery.

Test trenching was carried out by the writer in 2020 and 2021 (Licence Number 20E0495) on a site located west of the proposed development area. A 1995 black and white Ordnance Survey aerial photograph appeared to show the remains of a possibly partially ploughed-out previously unrecorded enclosure towards the middle of the development area. A geophysical survey (Licence 20R0151) was carried out in August 2020 which revealed the remains of a clear curvilinear response in the same location as the feature on the aerial photograph. Two archaeological features and another possible feature were identified during the test trenching programme: an enclosure (consisting of three enclosure ditches and a ditch to the south); a spread of burnt stone; and a shell spread of possible archaeological significance. A cow tooth, recovered from the ditch fill, was submitted to Queen's University Belfast for radiocarbon dating. A date range of cal AD 667-824 (UBA 45020-2 sigma) was returned, with a median probability of 727 AD.

Archaeological excavation of a number of features exposed during topsoil stripping at Kinsaley House in Kinsaley townland (Licence Number 20E0238) was carried out in September 2020 and April to July 2021. The development site was previously subject to an archaeological assessment and test excavation (Licence Number 17E0084), during which archaeological features were identified in two areas. The features covered extensive areas to the north and south west of the 18th century Kinsaley House. There were a number of shallow pits, more or less oval, containing animal bones and, especially, seashells. There were also ditches and other linear features, and stone-built drains. Two wells were discovered to the north of the house, one of which had been converted to provide piped water for the house in relatively recent times. An area of paving near the former farmyard was probably also of recent date. A number of flint fragments were found, but these were debitage from manufacture rather than actual artefacts. Medieval pottery was also present, but it was mostly residual in layers which also contained later material. The shallow pits and some of the linear features appear to represent prehistoric activity, whereas other linear features, drains and wells are contemporary with the house or its Medieval predecessor.

Reference to Summary Accounts of Archaeological Excavations in Ireland (www.excavations.ie) revealed that a number of fieldwork programmes have been carried out in townlands surrounding the proposed development area.

A landscape feature was excavated in 1980 in Auburn townland (Licence Number 1980-84:0093), but no further information is provided in the Summary Accounts of Archaeological Excavations in Ireland.

Monitoring of engineering pits in Malahide Demesne in 2004 (Licence Number 04E1528) in the grounds of Malahide Castle in the area of the Barbican Tower failed to reveal any archaeological features or artefacts.

Monitoring in 2006 (Licence Number 06E0661) of topsoil stripping associated with the construction of a pavilion and car park within the demesne of Malahide Castle failed to reveal any features of archaeological significance.

Limited hand excavation at Malahide Castle in 2011 (Licence Numbers C451 and E4381) following a geophysical survey (Licence Number 10R070) revealed a series of linear ditches, curvilinear slot-trenches and pits producing evidence of possible structural remains, domestic occupation and agricultural/landscaping activity. The majority of the linear features were identified as drainage gullies and field boundaries of Post-Medieval date. Other features consisted of two curvilinear slots or gullies, a metalled surface and 10 widely dispersed pits, of varying form, containing charcoal-stained soils, Medieval pottery and possible prehistoric lithic material.

Various fieldwork exercises in Malahide dating from 1999 onwards have revealed worked flint from two fieldwalking programmes, Medieval pottery and Post-Medieval structural remains.

13.3.7 Fingal Development Plan 2023 - 2029

It is a Policy (HCAP3) of Fingal County Council (Fingal Development Plan 2023, 377) to:

> *"Safeguard archaeological sites, monuments, objects and their settings listed in the Record of Monuments and Places (RMP), Sites and Monuments Record (SMR), underwater cultural heritage including protected wrecks and any additional newly discovered archaeological remains."*

It is also a Policy (HCAP5) of Fingal County Council (*ibid*., 378) to:

> *"Incorporate heritage features into infrastructure design at an early stage in the development planning and management process to protect and promote the cultural heritage resource and create awareness and interpretation."*

It is an Objective (HCAO1) of Fingal County Council (*ibid*., 377) to:

> *"Favour the preservation in situ or at a minimum preservation by record, of archaeological sites, monuments, features or objects in their settings. In securing such preservation the Council will have regard to the advice and recommendations of the National Monuments Service of the Department of the Housing, Local Government and Heritage."*

It is an Objective (HCAO2) of Fingal County Council (*ibid*., 378) to:

> *"Protect all archaeological sites and monuments, underwater archaeology, and archaeological objects, which are listed in the Record of Monuments and Places, Wreck Inventory of Ireland and all sites and features of archaeological and historic interest discovered subsequent to the publication of the Record of Monuments and Places, and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process."*

It is an Objective (HCAO7) of Fingal County Council (*ibid*.) to:

> *"Ensure archaeological remains are identified and fully considered at the very earliest stages of the development process, that schemes are designed to avoid impacting on the archaeological heritage."*

It is also an Objective (HCAO15) of Fingal County Council (*ibid*., 380) to:

"Promote best practice for archaeological excavation by ensuring that they are undertaken according to best practice as outlined by the National Monuments Service, Department of Housing, Local Government and Heritage, The National Museum of Ireland and the Institute of Archaeologists of Ireland."

13.3.8 National Monuments

The Department of Housing, Local Government and Heritage maintains databases on a county basis of National Monuments in State Care: Ownership and Guardianship and monuments with Preservation Orders or Temporary Orders. The term National Monument is defined in Section 2 of the National Monuments Act (1930) as:

"a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto." (www.archaeology.ie).

There are no National Monuments in State Care within the proposed development area or the 1km study area.

There are no sites with Preservation Orders or Temporary Preservation Orders within the proposed development area or the 1km study area.

There are no World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List within the proposed development area or the 1km study area.

13.4 Architectural and Cultural Heritage

13.4.1 Fingal Development Plan 2023 - 2029

It is a Policy (HCAP8) of Fingal County Council (Fingal Development Plan 2023, 382) to:

"Ensure the conservation, management, protection and enhancement of the architectural heritage of Fingal through the designation of Protected Structures and Architectural Conservation Areas, the safeguarding of designed landscapes and historic gardens, and the recognition of structures and elements with no specific statutory designation that contribute positively to the vernacular, industrial, maritime or 20th century heritage of the County."

It is a Policy (HCAP11) of Fingal County Council (*ibid*., 385) to:

"Conserve and protect buildings, structures and sites of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest by adding or retaining them on the Record of Protected Structures or by designating groups of structures as Architectural Conservation Areas."

It is also a Policy (HCAP14) of Fingal County Council (*ibid*.) to:

"Protect the special interest and character of all areas which have been designated as an Architectural Conservation Area (ACA). Development within or affecting an ACA must contribute positively to its character and distinctiveness and take opportunities to protect

and enhance the character and appearance of the area and its setting wherever possible. Development shall not harm buildings, spaces, original street patterns, archaeological sites, historic boundaries or features, which contribute positively to the ACA."

Appendix 5 of the Fingal Development Plan (*ibid*.) contains the Record of Protected Structures for Fingal.

There are no Protected Structures recorded in the Fingal Development Plan within the proposed development area.

There are two Protected Structures recorded in the Fingal Development Plan within the 500m study area.

Table 13-2. Protected Structures within the 500m Study Area

Protected Structure	Distance from Proposed Development Area
RPS No. 384. Malahide Abbey (in ruins)	*c*. 470m (at its nearest point)
RPS No. 383. Malahide Castle	*c*. 500m (at its nearest point)

A number of additional Protected Structures are located within the wider landscape of the proposed development area. Given the intervening distance between the proposed development area and the Protected Structures, along with natural screening and the built-up urbanised environment of Malahide village, it is considered no significant visual effects on any Protected Structures will occur.

An Architectural Conservation Area (ACA) is:

"*a place, area, group of structures or townscape that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value or contributes to the appreciation of Protected Structures*." (*ibid*., 383).

Appendix 5 of the Fingal Development Plan (*ibid*.) contains a list of Architectural Conservation Areas in Fingal.

There are no Architectural Conservation Areas recorded in the Fingal Development Plan within the proposed development area.

There are two Architectural Conservation Areas recorded in the Fingal Development Plan within the 500m study area.

Table 13-3. Architectural Conservation Areas within the 500m Study Area

Architectural Conservation Area	Distance from Proposed Development Area
Malahide Castle Demesne	*c*. 10m (at its nearest point)
Malahide – The Bawn, Parnell Cottages and St. Sylvester's Villas	*c*. 140m (at its nearest point)

13.4.2 National Inventory of Architectural Heritage

Building Survey

The National Inventory of Archaeological Heritage (NIAH) maintains a non-statutory register of buildings, structures *etc*. recorded on a county basis (www.buildingsofireland.ie).

There are no structures recorded on the NIAH within the proposed development area.

There are five structures recorded on the NIAH within the 500m study area.

Table 13-4. NIAH structures within the 500m Study Area

Reg. No.	Structure Name	Description	Distance
11344019	Malahide Castle	Detached five-bay three-storey over basement Medieval mansion, *c*.1450, renovated and extended, *c*.1650. Partly rebuilt and extended, *c*.1770, with single-bay three-storey Georgian Gothic style circular towers added at each end of the front elevation. Single-bay three-storey flat-roofed entrance block with single-bay full-height square turrets to corners added *c*.1825. In use as museum, *c*.1975, extensively renovated, *c*.1990.	*c.* 500m
11344020	Graveyard/cemetery	Graveyard with various cut stone grave markers. Ruined church with nave, chancel and sacristy to south. Late 15th century nave, 16th century chancel, possibly post-Reformation.	*c.* 470m
11344021	Farmyard complex	Two-storey stable yard complex on a U-shaped plan, *c*. 1840, comprising gabled central block. Pairs of carriageway arches to north and south gables attached to flanking perpendicular blocks. Remodelled *c*. 1990 to accommodate workshops and retail outlets.	*c.* 450m
11344022	House	Detached three-bay two-storey house, *c*. 1860, retaining original features with single-bay two-storey return to rear.	*c.* 440m
11344026	Gate lodge	Detached three-bay single-storey former gate lodge, *c*. 1890, retaining original fenestration. Single-bay single-storey return to rear extended to east and to south, *c*. 1930. Now in use as detached house.	*c.* 260m

Garden Survey

The National Inventory of Archaeological Heritage maintains a non-statutory register of historic parks and gardens recorded on a county basis.

There is one historic park and garden recorded on the NIAH within the proposed development area.

Table 13-5. NIAH historic park and garden within the Proposed Development Area

Site ID	Name	Description	Distance
2522	Broomfield House	Eastern area of parkland covered by residential and industrial development. Western side arable farmed.	Within the proposed development area

The NIAH Survey Data for Broomfield House notes:

> *"Eastern area of parkland covered by residential and industrial development. Western side arable farmed." (www.buildingsofireland.ie).*

The NIAH Survey Data for Broomfield House notes that the site footprint is not visible, that "*Significant Development*" has taken place within the parkland, and that no architectural or landscape features, such as buildings, garden structures, avenues, woodland, parkland, formal garden, vistas or other features, survive.

Reference to the First Edition Ordnance Survey map (figure 13.5) shows that the area of proposed land take located within Broomfield demesne did not contain any architectural or landscape features associated with the parkland, other than regular field boundaries. Broomfield House and its associated landscaped grounds and gate lodge are all recorded east of the Dublin to Drogheda railway line on the First Edition Ordnance Survey map, and have therefore been historically severed from the area of proposed land take. Later edition cartographic sources (figures 13.6 and 13.7) confirm that the Broomfield parkland area had been substantially reduced in the 19th and early 20th century, and that no associated features survive within the area of proposed land take.

The western side of the proposed development area is recorded as a townland and parish boundary, and forms the western extent of Broomfield demesne (**Section 13.4.4 Townland Boundary**).

There are an additional three historic parks and gardens recorded on the NIAH within the 500m study area.

Table 13-6. NIAH historic parks and gardens within the 500m Study Area

Site ID	Name	Description	Distance
2514	Malahide Demesne	Buildings and woodland indicated. Area labelled Malahide Demesne.	*c.* 10m (at its nearest point)
2529	Sainthelens	Buildings indicated. Area labelled Sainthelens.	*c.* 235m (at its nearest point)
2533	Beechwood House	Buildings indicated. Golf course in parkland area to the south, housing in area to the north.	*c.* 420m (at its nearest point)

There are no features recorded on the *Fingal Industrial Heritage Survey* (2011) within the proposed development area.

13.4.3 Cultural Heritage

The Fingal Development Plan (2023 - 2029) does not contain any designated lists or sites of cultural heritage importance or significance.

13.4.4 Townland Boundary

The western side and part of the southern side of the proposed development area is recorded as a townland and parish boundary on historic cartographic sources. Proposed access roads and footpaths will truncate the townland and parish boundary in four places.

13.5 Site-Specific Archaeological Fieldwork

13.5.1 Geophysical Survey

A geophysical survey (Licence 18R0101) was carried out by Joanna Leigh within the proposed development area in June 2018 (Leigh 2018). The survey was undertaken to locate and identify any potential archaeological responses within the area of land take.

Due to ground conditions it was not possible to carry out the geophysical survey in Fields 1, 2, 4, 7 and 8 (figures 13.9).

In summary, the geophysical survey revealed the presence of a possible plough-damaged enclosure measuring approximately 40m north east/south west x 35m north west/south east in the north west corner of Field 5 (figure 13.8). Isolated responses within and in the vicinity of the possible enclosure may represent small pit-type features, although the geophysical survey report noted that this interpretation is speculative (*ibid*., 4).

A possible small plectrum-shaped enclosure measuring approximately 35m north/south x 25m east/west was noted in the eastern end of Field 5 (figure 13.8). Elsewhere in Field 5, four small separate faint curvilinear trends were noted towards the southern and eastern ends of the field (each referred to as "4" on figure 13.8). Although it is possible these isolated anomalies represent plough-damaged short ditch-type features, the geophysical survey report (*ibid*.) noted that such an interpretation is cautious as no clear archaeological pattern is discernible.

Linear responses were noted towards the middle of Field 3 (referred to as "6" on figure 13.8). The geophysical survey report (*ibid*.) noted that while they may be the remains of modern field divisions, it is possible that archaeological ditch-type features are represented in these areas.

A circular trend with a 5m diameter (referred to as "8" on figure 13.8) was detected towards the southern end of Field 3. This feature is interpreted in the geophysical survey report (*ibid*.) as being of possible archaeological potential.

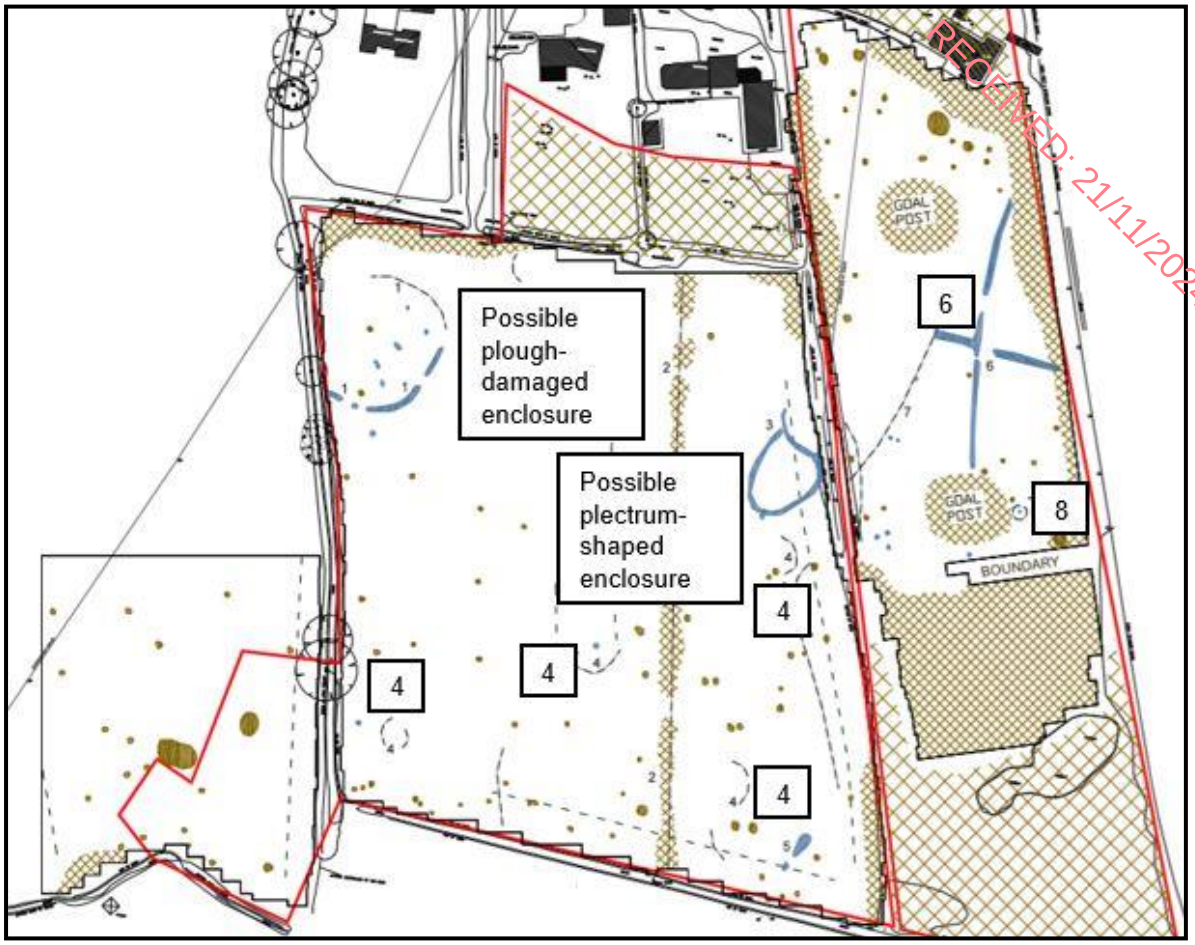


Figure 13-8. Results of the geophysical survey

13.5.2 Phase 1 Test Trenching

Test trenching (Licence No: 14E0162) was carried out by Dermot Nelis Archaeology between 3rd and 6th June 2014 in a field located immediately west of the proposed development area (Nelis 2014). The excavation of 13 test trenches revealed four features of archaeological significance. Two of these features relate to the possible plough-damaged enclosure revealed in the geophysical survey in the north west corner of Field 5 and which is located within the current development area (figure 13.8).

Testing in 2014 revealed the possible plough-damaged enclosure ditch located within the current development area to measure 1.75m wide. It extended beyond the test trench to both the east and west. A 0.40m wide hand-dug section revealed it to have a maximum depth of 0.60m. No artefacts or environmental evidence were revealed in the hand-dug section.

A sub-circular pit was revealed 0.17m north of the above-mentioned enclosure ditch, *i.e.* within the possible plough-damaged enclosure and within the current development area. It measured 0.98m east/west x 0.85m north/south x 0.25m deep, and extended beyond the trench to the west. It was revealed in the test trench as an obvious feature with burning, along with small amounts of animal bone on the surface. It was preserved *in situ*, and no artefacts or environmental evidence were revealed in the hand-dug section.

Phase 1 (2014) test trenching revealed an east/west oriented archaeological feature approximately 50m north west of the proposed development area, *i.e.* outside the current development area. It

measured 1.5m north/south x 0.30m deep maximum, and extended beyond the trench to the east and west. This feature has been preserved *in situ*.

Phase 1 (2014) test trenching also revealed a possible archaeological feature approximately 15m north of the proposed development area, *i.e.* outside the current development area. It took the form of a 0.38m north/south x 0.35m east/west x 8cm deep feature, revealed as a charcoal surface directly under topsoil. This feature was fully excavated at the time of Phase 1 test trenching.

Subsequent monitoring (Licence Number 17E0227) revealed four archaeological features to the west of the current development area. A radiocarbon determination for one of the features placed activity in the Late Neolithic/Early Bronze Age (Nelis 2019).

13.5.3 Phase 2 Test Trenching

Phase 2 test trenching (Licence No: 20E0058) was carried out by Dermot Nelis Archaeology between 28th May and 1st July 2020, and in total took nine days to complete (Nelis 2021). Test trenching revealed four possible archaeological features (a pit; a hearth/burnt pit; and two possible enclosure ditches) in two fields (Field 1 and Field 5; figure 13.9).

No archaeological features or artefacts were revealed in Fields 3, 4, 7 or 8.

The Phase 2 test trenching site visit carried out to facilitate submission of the Licence Application to National Monuments Service showed Field 2 (figure 13.9) to be overgrown and with large amounts of rubble, along with a large concrete hardstand. In addition, an overhead powerline was shown to extend across the middle of Field 2. As such, it was agreed in the Method Statement submitted to National Monuments Service that trenches would not be excavated in Field 2.

Field 6 (figure 13.9) was shown to have been previously topsoil stripped, and monitoring in this area (Nelis 2019) failed to reveal any archaeological features or artefacts. As such, Phase 2 test trenches were not excavated in Field 6.

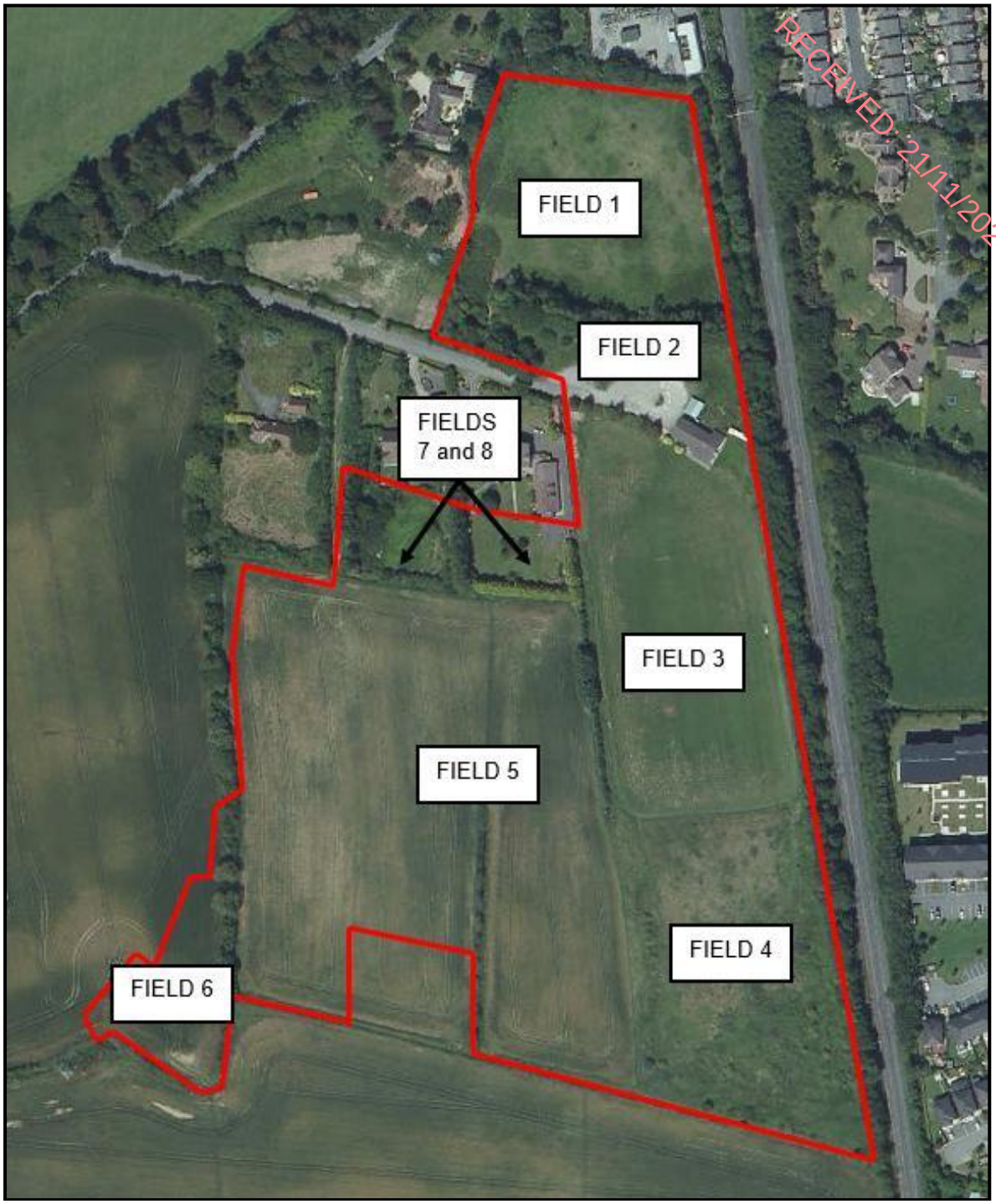


Figure 13-9. Location of Fields 1 – 8 in the Northern Area of the Phase 2 Test Trenching

A pit was identified towards the northern end of Field 1 (figure 13.10; plate 13.1). It was orientated roughly north west/south east and measured 1.5m long x 1.1m wide. The fill was a friable charcoal-stained dark brown fine silt. The pit was fully preserved *in situ*, and no artefacts were revealed in association with the feature.

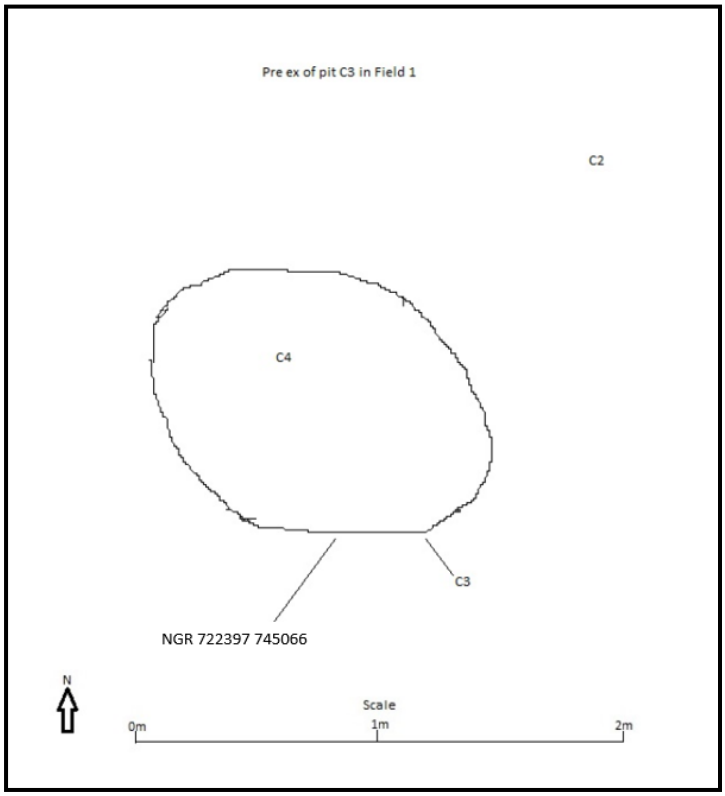


Figure 13-10. Plan of pit identified towards the northern end of Field 1

***Plate 13-1.** Pit identified towards the northern end of Field 1*

A hearth/burnt pit was identified at the northern end of Field 5 (figure 13.11; plate 13.2). It was irregular in plan and measured 1.25m east/west x 0.6m north/south, although this feature appears to have been disturbed by ploughing activity. It was revealed as a spread of oxidized reddened silt with charcoal. No diagnostic artefacts were recovered from the fill, and the feature has been fully preserved *in situ*.

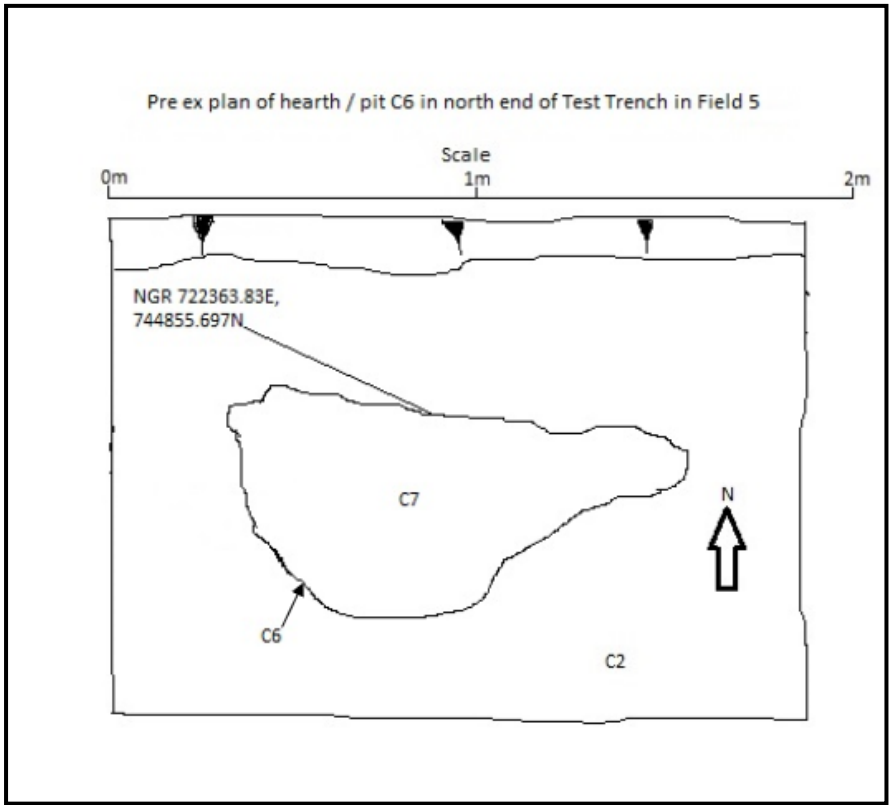


Figure 13-11 Plan of hearth/burnt pit identified at the northern end of Field 5

***Plate 13-2. Hearth**/burnt pit identified towards the northern end of Field 5*

The geophysical survey indicated the presence of two previously unrecorded possible plough-damaged enclosures in Field 5 (figure 13.8). Four trenches (Trenches 1 – 4 on figure 13.12) were excavated as part of the Phase 2 test trenching programme to assess these geophysical anomalies.

Test Trenches 1 and 2 were excavated to assess the extent, character and condition of a possible plough-damaged enclosure located in the north west corner of Field 5. Both trenches extended from within the possible enclosure and across the possible ditch, while also assessing internal isolated geophysical responses. Trench 1 measured 10m in length and assessed the ditch in the northern end of the possible enclosure. Trench 2 measured 20m in length and assessed the ditch in the south east corner of the possible enclosure.

Pre-test trenching, the anomaly in Test Trench 1 was interpreted as possibly representing a badly plough-damaged enclosure ditch. Test trenching did not reveal any archaeological features associated with the geophysical anomaly in Test Trench 1, and it is suggested the ditch may have been removed through repeated ploughing in this location.

An archaeological feature was identified 3.5m from the south eastern end of Test Trench 2, in the location of the geophysical anomaly (figure 13.13; plate 13.3). It took the form of a possible ditch with gently regular curving sides and a slightly rounded base. It measured approximately 1.1m wide north/south x approximately 0.3m deep, and continued beyond the trench to the north east and south west. The single fill was a loose mid brown silty clay with occasional small stone inclusions evenly distributed. No artefacts were recovered, and no additional archaeological features were identified in Geophysical Test Trench 2.

The possible enclosure ditch identified in Test Trench 2 is the same feature as that recorded in the Phase 1 (2014) test trenching programme (**Section 13.5.2 Phase 1 Test Trenching**).

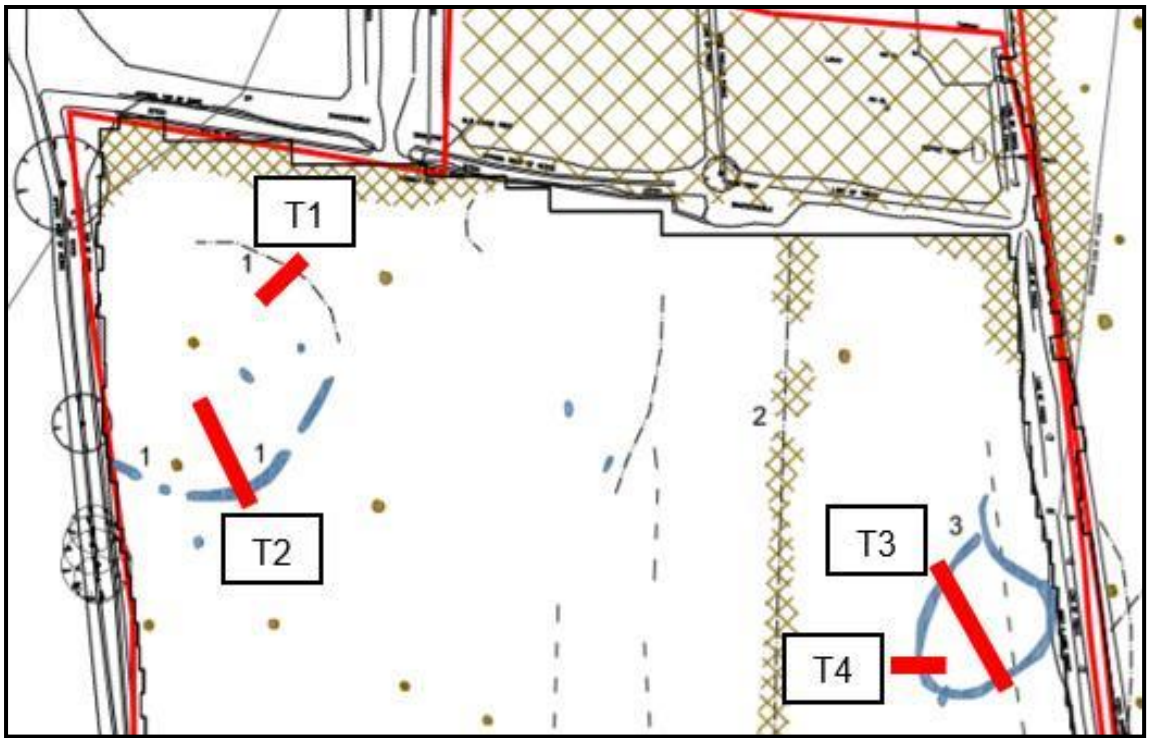


Figure 13-12. Location of Test Trenches 1 – 4 assessing geophysical anomalies in Field 5

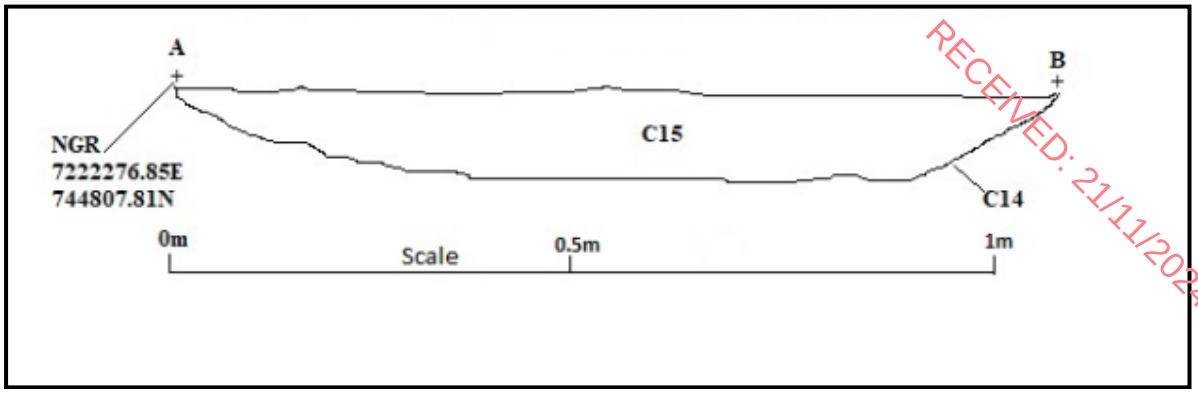


Figure 13-13. Section of possible enclosure ditch in Test Trench 2 Field 5

Plate 13-3. Possible enclosure ditch in Test Trench 2 Field 5

Test Trenches 3 and 4 (figure 13.12) were excavated to assess the extent, character and condition of a possible small enclosure located in the eastern end of Field 5 as revealed through the geophysical survey. Trench 3 extended across the possible enclosure in a north west/south east direction, thus assessing the potential ditch in two locations as well as any potential internal features. Trench 4 was excavated in an east/west direction and assessed the possible ditch in the south west corner of the possible enclosure. Trench 3 measured 25m in length and Trench 4 measured 10m in length.

An archaeological feature was identified at the north western end of Test Trench 3, in the location of the geophysical anomaly (figures 13.14 and 13.15; plate 13.4). It continued beyond the trench in a north east/south west direction and consisted of a narrow linear cut measuring 0.25m wide x 0.2m deep. It was V-shaped in profile, and the single fill was a greyish brown stony silt. Angular stones and

cobbles were present in the fill, and these resembled packing material. This tentatively suggests the feature may have functioned as a slot-trench which supported upright wooden posts. A small amount of animal bone was recovered from a hand-excavated section.

Pre-test trenching, the geophysical anomaly in the south east corner of Test Trench 3 was interpreted as part of a possibly plough-damaged enclosure ditch. Test trenching did not reveal any archaeological features associated with the geophysical anomaly in this location, and it is suggested the ditch may have been removed through repeated ploughing in this area. No additional archaeological features or artefacts were identified in Test Trench 3.

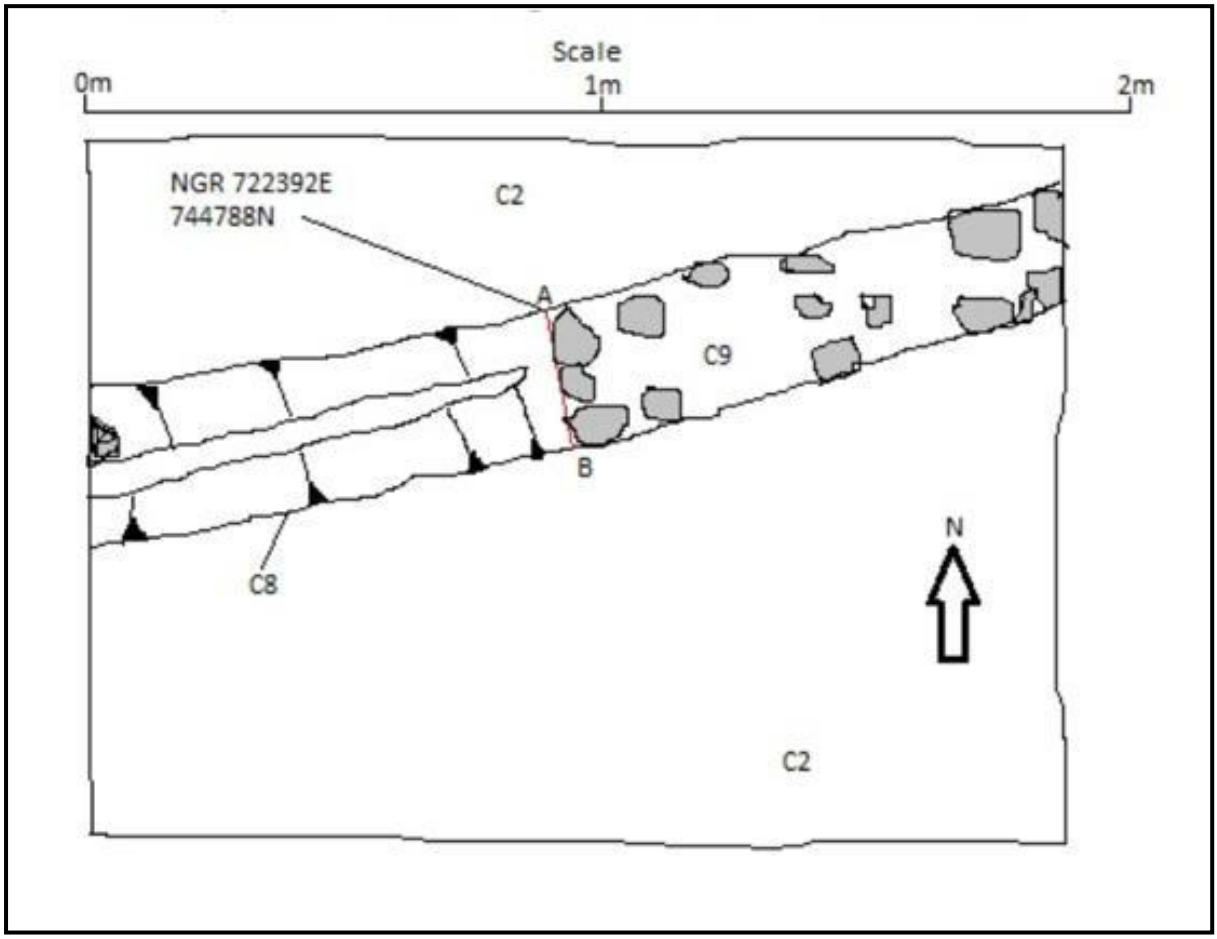


Figure 13-14. Plan of possible slot-trench in Test Trench 3 Field 5

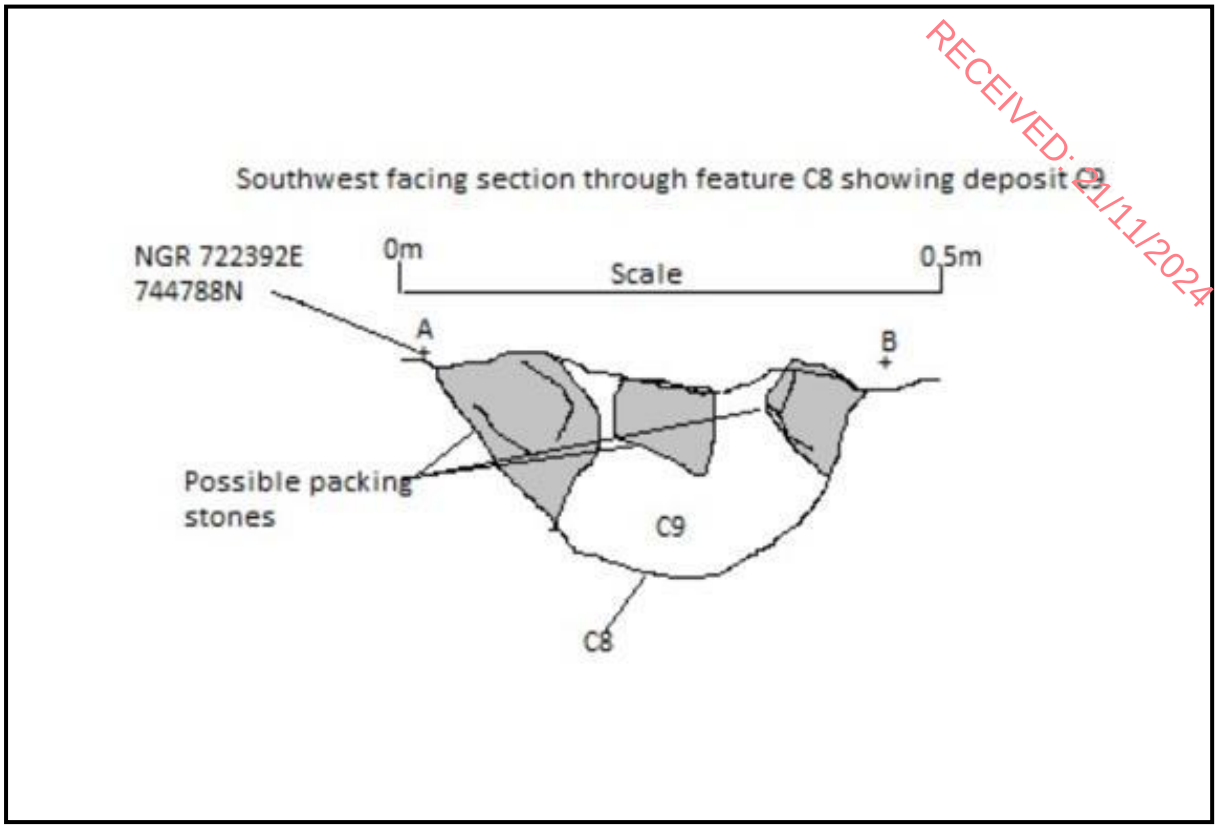


Figure 13-15. Section of possible slot-trench in Test Trench 3 Field 5

Plate 13-4. Possible slot-trench in Test Trench 3 Field 5

Test Trench 4 was oriented east/west, and was located a short distance west of Test Trench 3. A roughly north/south oriented linear feature was noted in the middle of the trench in the location of the geophysical anomaly, which took the form of a possible shallow ditch measuring 1.3m wide x 0.2m deep (plate 13.5). The single fill contained occasional small animal bone fragments and two sherds of 18th/19th century glazed red earthenware. The recovery of 18th/19th century pottery suggests the interpretation of this feature as an enclosure ditch is tentative. No additional archaeological features or artefacts were identified in Test Trench 4.

No environmental evidence was revealed during the Phase 2 test trenching exercise, and no additional archaeological features or artefacts were revealed as a result of carrying out the test trenching. With the exception of the hand-excavated sections discussed above, all archaeological features have been preserved *in situ*.

Plate 13-5. Linear feature in Test Trench 4 Field 5

13.6 Characteristics of the Proposed Development

The proposed development (the project) that is subject to this LRD application and EIAR provides for the demolition of the former rugby clubhouse structure on site and the proposed construction of 297 no. residential units comprising 211 no. houses (14 no. 2 beds, 156 no. 3 beds, 39 no. 4 beds, and 2 no. 5 beds), 46 no. duplex units (9 no. 1 beds, 14 no. 2 beds, and 23 no. 3 beds), 40 no. apartments (23 no. 1 beds, 14 no. 2 beds, and 3 no. 3 beds); 1 no. childcare facility; 1 no. café/restaurant; 1 no. retail unit; 1 no. yoga studio; and all associated site infrastructure and engineering works necessary to

facilitate the development. A temporary foul water pumping station is also proposed as part of the development.

13.7 Potential Impact of the Proposed Development

13.7.1 Archaeological Heritage

Test trenching revealed the presence of four previously unrecorded below-ground archaeological features (a pit; a hearth/burnt pit; and two possible enclosure ditches) within the proposed development area.

Construction works will have a significant, permanent, direct effect on these previously unrecorded archaeological remains.

Construction works will have a significant, permanent, direct effect on any previously unrecorded archaeological remains that may exist within the development area, and which may be discovered during the construction phase.

There will be no indirect construction phase effect on the archaeological resource.

There will be no operational phase effect on the archaeological resource.

13.7.2 Architectural Heritage

There are no Protected Structures within the proposed development area. There are two Protected Structures within the 500m study area.

There are no Architectural Conservation Areas within the proposed development area. There are two Architectural Conservation Areas within the 500m study area.

There are no structures recorded on the NIAH within the proposed development area. There are five structures recorded on the NIAH within the 500m study area.

There are three historic parks and gardens recorded on the NIAH within the 500m study area.

It is assessed that there will be an imperceptible, permanent, visual effect on the above-mentioned architectural heritage features recorded within the 500m study area.

There is one historic park and garden (Broomfield House) recorded on the NIAH within the proposed development area. With the exception of the western boundary of the proposed development area, which formed the western extent of the parkland, there are no features associated with Broomfield demesne extant within the proposed development area. As a result, it is assessed that there will be no construction or operational phase effect on Broomfield demesne.

There will be no construction phase effect on the architectural resource.

There will be no indirect operational phase effect on the architectural resource.

13.7.3 Cultural Heritage

The western side and part of the southern side of the proposed development area is recorded as a townland and parish boundary on historic cartographic sources. Proposed access roads and footpaths will truncate the townland and parish boundary in four places.

Construction works will have an imperceptible, permanent, direct effect on the townland and parish boundary.

There will be no indirect construction phase effect on the cultural heritage resource.

There will be no operational phase effect on the cultural heritage resource.

13.8 Cumulative Effects

Cumulative effects are defined as:-

> "*The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*" (Environmental Protection Agency 2022, Section 3: 52).

Cumulative effects encompass the combined effects of developments or activities on a range of receptors. In this case, the receptors are archaeological, architectural and cultural heritage sites. Cumulative effects at the construction and operational phases are considered.

With the exception of a proposed retail development located within the redline boundary of the application area, and which forms a separate planning application, there are no existing, permitted or proposed residential or commercial developments, or any additional large-scale infrastructure projects, within the immediate environment of proposed development area.

Construction phase cumulative effects are largely concerned with direct impacts on any unrecorded sub-surface archaeological features or artefacts which may exist within the area where it is proposed to construct the project. Since likely direct effects on the archaeological, architectural and cultural heritage resource have been assessed and mitigated (in respect of the subject project), cumulative direct effects will not occur during construction of the proposed development.

It is assessed that the proposed residential development and the proposed retail development will result in a cumulative imperceptible, permanent, visual effect on the architectural heritage features recorded within the 500m study area.

13.9 'Do Nothing' Impact

No 'Do Nothing' impact is predicted.

13.10 Avoidance, Remedial & Mitigation Measures

It is recommended that the four archaeological features (a pit; a hearth/burnt pit; and two possible enclosure ditches) revealed during the test trenching programmes be fully excavated and recorded well in advance of groundworks commencing on site. Excavation would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Copies of the final excavation report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

It is recommended that monitoring of all groundworks be carried out. Monitoring would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Provision would be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. On completion of monitoring of groundworks, and any excavations arising, copies of the final monitoring report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

It is recommended that written and photographic records be created, well in advance of groundworks commencing on site, where the proposed access roads and footpaths will truncate the townland and parish boundary. It is recommended that archaeological monitoring of all interventions through the townland and parish boundary be carried out. Monitoring would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Provision would be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. On completion of monitoring of groundworks, and any excavations arising, copies of the final monitoring report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

There are no mitigation measures available to offset the imperceptible, permanent, visual effect on the architectural heritage features recorded within the 500m study area.

13.11 Residual Impacts

There will be no residual effects on the archaeological resource if the mitigation measures outlined in **Section 13.10 Avoidance, Remedial & Mitigation Measures** are implemented in full.

There will be no residual effects on the cultural heritage resource if the mitigation measures outlined in **Section 13.10 Avoidance, Remedial & Mitigation Measures** are implemented in full.

It is assessed that there will be a residual imperceptible, permanent, visual effect on the architectural heritage features recorded within the 500m study area.

13.12 Monitoring

With the exception of the mitigation measures outlined in **Section 13.10 Avoidance, Remedial & Mitigation Measures**, there are no future monitoring requirements.

13.13 Reinstatement

No reinstatement will be required in relation to the proposed development.

13.14 Interactions

No interactions are predicted in relation to the proposed development.

13.15 Difficulties Encountered in Compiling

No difficulties were encountered in compiling this report.

13.16 References

13.16.1 References

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13.16.2 Cartographic Sources

Ordnance Survey Ireland	*1844, 1863 and 1906*

13.16.3 Internet Sources

www.archaeology.ie	*National Monuments Service*
www.bing.com/maps	*Bing Aerial Photography*
www.buildingsofireland.ie	*National Inventory of Architectural Heritage*
www.excavations.ie	*Database of Irish Excavation Reports*
www.fingal.ie	*Fingal County Council*
www.map.geohive.ie	*Ordnance Survey Ireland aerial*

14.0 Landscape & Visual Impact

14.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Kevin Fitzpatrick Landscape Architects and provides an assessment of the impact that the proposed large-scale residential development of lands at Broomfield, Malahide, Co. Dublin, will have regarding landscape and visual impacts both during the construction and operation phases.

14.2 Study Methodology

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2022);
- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (Landscape Inst. + IEMA 2013)

The GLVIA 3rd Edition (Landscape Inst. + IEMA 2013) gives specific guidelines for landscape and visual impact assessment. The GLVIA advises that effects on views and visual amenity be assessed separately from the effects on landscape, however acknowledging the two topics are fundamentally linked.

'Landscape' results from the interaction of the physical, social, and natural components of our surroundings. How these elements interact creates the intrinsic landscape character of a place. Landscape impact assessment identifies the changes to this character which would result from the proposed development and assesses the significance of those effects on the landscape. Visual impact assessment is concerned with changes that arise in the composition of available views (primarily public views), the response of people to these changes and the overall effects on visual amenity.

The assessment was carried out by visiting the site and its surroundings in October 2024 and by analysis of the relevant documents as listed below:

- Analysis of the proposals through photomontages, plans and aerial photographs
- Arboricultural Reports and Drawings by Charles McCorkell Arboricultural Associates Ltd.,
- historic maps of the site and surrounds using Ordnance Survey Ireland's National Historic Maps Archive
- Fingal Development Plan 2023-2029.

Through analysis of the above, the subject lands were assessed in relation to their surrounding environment to identify a study area in which both visual and landscape character impacts would be perceivable. Important landscape features on subject lands and in the wider area were identified as part of this process.

The proposed viewpoints for the verified views were selected to represent points in the local landscape from which the development would potentially be visible and are relate to views from potential visual receptors. Various viewpoints have been selected to provide a well-rounded and realistic representation of how the development will look from different aspects and demonstrate views from sensitive receptors. Views are located, North, South, East and West of the subject lands, both at close-range and long-range, and have been selected from specific locations where more expansive views are possible.

The buildings roads and landscape are modelled in three-dimensional AutoCAD software by the CGI consultant (Digital Dimensions Ltd). Two-dimensional AutoCAD drawings are provided by the design team for the CGI consultant to accurately model the external parts of the development. Liaison between the CGI consultant and the project Architect, Engineer and Landscape Architect on their respective designs informs the final appearance of the verified views. For details on methodology in relation to the surveying of photo view locations, lenses and specifics on the development of the verified views, refer to the accompanying Appendix completed by Digital Dimensions Ltd.

14.2.1 Relevant Legislation and Guidance

The criteria as set out in the current EPA Guidelines on Information to be contained in Environmental Impact Assessment Reports (Published May 2022), Table 3.4 are used in the assessment of the likely impacts

The subject lands are designated as having a 'Low Lying Character Type' in the Fingal Landscape Character Assessment. The character type is dominated by agricultural land with few protected views or prospects. This Landscape Character type would be considered to have low to medium sensitivity and in general to have a modest value.

Within the Fingal Development Plan 2023-2029 there are no specific landscape objectives that apply to the subject lands. There are several objectives that apply to the general environs of the site and new development which may occur on subject lands listed below.

GINHO3:

Make provision for biodiversity within public open space and include water sensitive design and management measures (including SuDS) as part of a sustainable approach to open space design and management.

GINHP6:

Ensure delivery of multifunctional green and civic spaces that meet community needs, promote active and passive recreation, flood and surface water management and local habitat improvements. The multi-functionality of spaces will be balanced against the need to protect and enhance local habitat and the recreational and functional requirements of parks.

GINHO7:

Provide a range of accessible new parks, open spaces and recreational facilities accommodating a wide variety of uses (both passive and active), use intensities and interests.

GINHO15:

Limit surface water run-off from new developments through the use of appropriate Sustainable Urban Drainage Systems (SuDS) using nature-based solutions and ensure that SuDS is integrated into all new development in the County.

GINHO21:

Avoid the fragmentation of green spaces in site design and to link green spaces /greening elements to existing adjacent Green Infrastructure / the public realm where feasible and to provide for ecological functions.

GINHP9:

Ensure green infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place.

GINHP21:

Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.

GINHP22:

Provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations.

GINHO44:

Ensure adequate justification for tree removal and require documentation and recording of reason where felling is proposed and avoid removal of trees without adequate justification.

GONHO54:

Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and

landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.

GONHO54:

Protect the natural and built heritage of the following Fingal County Council owned lands (which include important historic sites, landscapes and gardens), while providing significant public amenities. (Malahide Castle listed)

14.3 Receiving Environment

14.3.1 Overview

The site is in the townland of Broomfield, on the outskirts of Malahide, North Dublin approximately 15 kilometres from the city centre and 3km from the Marina at Malahide. The site is located to the immediate South of the Malahide Castle grounds, separated only by Back Road, which connects the town of Malahide to the R107/Malahide Road. The shape of the site is large and irregular, being framed for the most part by low-density residential development to the East and West and existing agricultural land to the South.

The northern boundary is formed predominantly by existing vegetation in the form of native hedgerow, thick boundary hedging and existing trees, structural boundaries such as fences and walls associated with the neighbouring residences may also be present here, hidden and overgrown by the vegetation. There is no apparent structural boundary to the south, however there is a drop in level between the subject lands and the neighbouring agricultural field. The south-eastern portion of this earth bank contains emerging trees and scrub vegetation. A circa 2-3m high, green palisade fence defines the eastern site boundary, much of which is partially hidden by emerging native hedgerow and scrub vegetation. This is associated with the DART railway line to the east of the development. The western boundary is dominated by varying forms of existing vegetation such as native hedgerow, mature Leyland and Lawson Cypresses, mature trees such as Ash, Birch, Elm, Oak and Sweet Chestnut and groups of hybrid Poplars. The south-western site boundary is formed by existing vegetation and a partially constructed blockwork boundary wall associated with neighbouring 'Ashwood Hall' development.

14.3.2 Characteristics of the site and its environs

The character of the site and its environs has largely been determined by the following:

- the flat topography of the subject site and its surrounding environs
- a number of large trees along external roads and footpaths, in neighbouring developments and in local green space areas
- a number of large, mature moderate quality trees, native mixed hedgerows and naturally emerging growth on subject lands
- a number of low-density residential developments and individual suburban dwellings located in the immediate area
- close proximity to 'Malahide Castle' and effects of the associated landscape history in the local area
- flat, agricultural land in the immediate and wider area

In the wider environment, the landscape can be divided into residential, agricultural, and recreational green space areas. The area to the North of the subject lands is dominated by 'Malahide Castle' and its associated grounds which now make up a public park. The land-use would be considered recreational green space and is zoned as such in the County Development Plan. Also of importance here are the national heritage features, with the grounds containing a number of heritage monuments and protected trees. The area to the South of the subject lands consists of a large green belt which extends from the coast, north of Portmarnock across the city to Dublin Airport. The green belt as it relates to the subject lands consists predominantly of agricultural land with native hedgerow boundaries, typical of those found in the Irish rural landscape. The coastal suburbs of Malahide and Portmarnock are located to the East of the subject lands, like any towns they have a mixed-use. The residential settlement here typifies that of suburban Dublin.

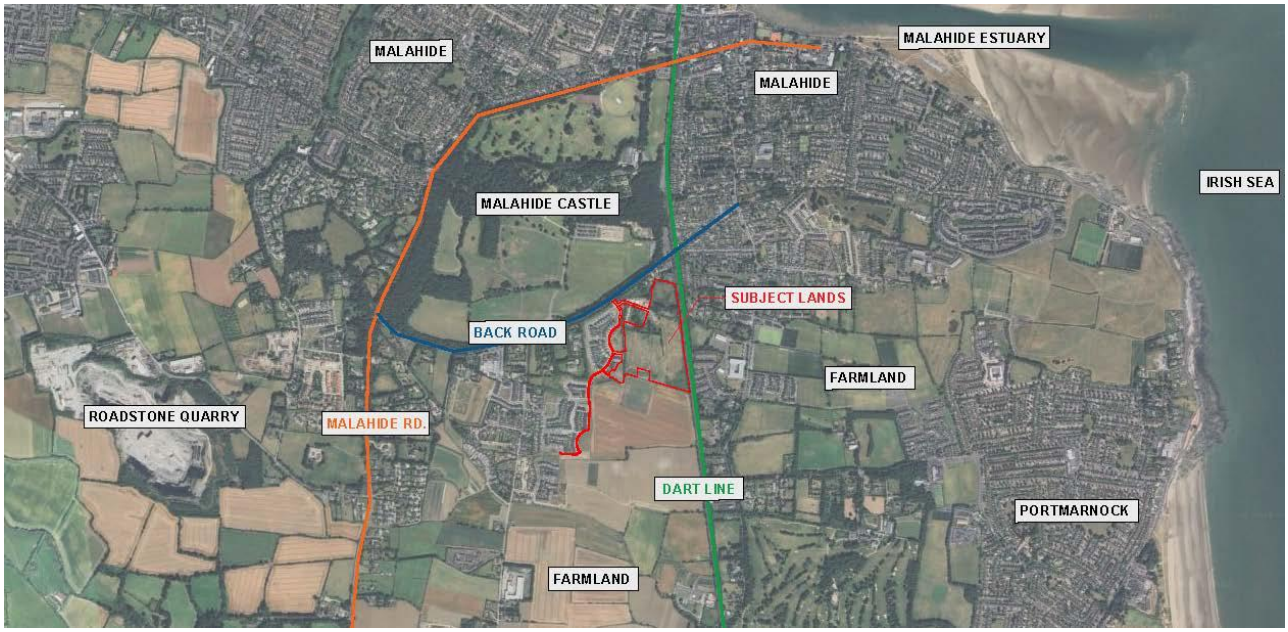

Figure 1.1 - Context Map

The site could be considered as consisting of a variety landscape types. Much of the overall site could be considered a transitional landscape, changing from the previous use, which in many cases is still observable, to a state of natural revegetation, where emerging saplings, scrub and noxious weeds are beginning to establish. The northern section of the site has a greater variety of landscape typologies, while the southern section would have only one.

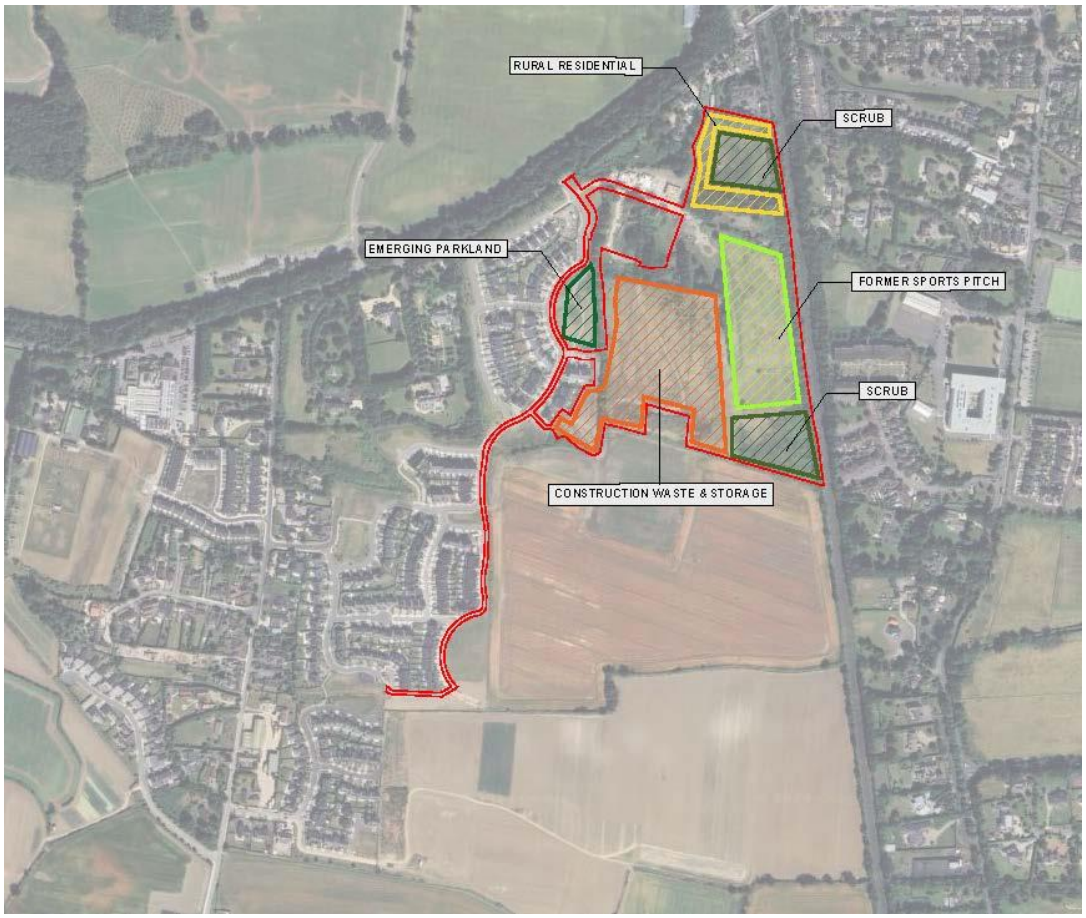

Figure 1.1 - Subject Lands - Landscape Typologies

There are a range of landscape typologies to be found on the subject lands, all of which are in a current state of transition. The remnants of a former GAA pitch are present in the eastern field beside the railway line. Goals, floodlights and a former clubhouse/changing room are all still present, but in a state of disrepair. This points to a former recreational/sports use on the subject lands and may also explain the presence of Leylandiis which have often been used in Irish landscapes to provide windbreaks.

Along the northern site boundary, evidence of residential settlement can be found. The houses are not on subject lands, however the gardens extend back to form a boundary with the proposed development site. Ornamental hedging species such as Beech and Laurel are present and, according to the arborists survey, have a maintained quality. Native hedgerow and emergent native trees such as Ash and Hawthorn are also present. This part of the site would be considered to have the character of a traditional rural residential landscape.

The western site boundary abuts the open space in the neighbouring development 'Ashwood Hall'. Although this area is not technically within the site boundary, it has an effect on the landscape typology for this part of the site. The existing hedgerow along the western boundary contains many mature trees with species such as Elm, Oak and Sweet Chestnut dominating, these trees would be considered typical parkland species. New trees have been planted as part of the 'Ashwood Hall' development, many of which would also be typically associated with parkland, such as Beech, Field Maple, Oak and Pine. This part of the subject lands would be considered an emerging parkland landscape.

The site is relatively flat in nature, with the levels falling by circa. 9m across the site from a highest point of +20.00 in the north-east beside the railway line to the lowest point of +11.00 in the south-west beside 'Ashwood Hall'.

14.3.3 Existing Trees and Vegetation

The trees and hedgerows on the subject lands have been surveyed by a qualified arborist (Charles McCorkell Arboricultural Consultancy Ltd) and the arborist's report forms part of this submission. In general, the trees and vegetation are of a mixed quality in terms of their amenity value, health and vigour. There are a total of 24 no. Category B trees and tree Groups, the remainder of the trees, tree groups and hedgerows on site are Category C and U. The Category B trees consist of Beech, Birch, Oak, Sweet Chestnut and Sycamore.

Many of the Category B trees can be found along the northern and western site boundaries in the form of hedgerows and emerging trees, while the remainder can be found in clusters within the site.

Each tree is assessed as to their quality and assigned a grading. The grading categories as defined in the Arborists report are listed as follows:

Category U – Those trees in such a condition that any existing value would be lost within 10 years.

Category A - Trees of high quality/value with a minimum of 40 years life expectancy.

Category B – Trees of moderate quality/value with a minimum of 20 years life expectancy.

Category C – Trees of low quality/value with a minimum of 10 years life expectancy.

14.3.4 Landscape Development and History

From an analysis of historic maps, the name 'Broomfield' dates back to the 6-inch maps from the 1830/40s and appears to have been a townland in the Malahide area. Malahide at this time was a much smaller town concentrated on the coast, while the surrounding land was dominated by farmland. The subject lands formed part of 'Broomfield' townland, which consisted of an estate house and cottage, this is now the site of Malahide Community School. The subject lands do not appear drastically different to what we see today. Some sections of the internal hedgerows have been removed; however, the majority still remain. Some of the existing vegetation found on site at present cannot be traced back to the historic maps. The railway line is present in both the 6-inch maps and 25-inch maps; however, it is noted as being 'In Progress', therefore it is unclear to what extent it was built. Malahide Castle is a dominant feature through the series of historic maps. In later 25-inch maps, the castle appears slightly more wooded, with existing woodland along 'Back Road' that we see today being prominent. Expansion of built structures around the castle is also evident.

From studying aerial photography from the last 20-30 years, some changes to the landscape are apparent. The southern field which currently holds spoil and construction detritus was formerly an agricultural field used for a form of crop production. The sports pitch referenced in Section 1.3.2 is visible. In images from the early 2000's the grass seems to be lusher and line markings can be made out, which would suggest more frequent use and maintenance. The residential dwellings formerly to the East of 'Ashwood Hall' and North-West of the subject lands, were present until recent years, most likely being demolished between 2017 to 2021, this area is currently utilised for construction storage. Another prominent change apparent from studying the aerial photography is the maturing of the boundary and internal hedgerows, tree lines and other vegetation on site.

14.3.5 Views and Visibility

In the assessment of the visibility of the subject lands within the site it is noted that that views of the lands from the surrounding lands are extremely limited to non-existent. The lack of vertical features and flat topography of the site contribute to the above, along with the lack of road frontage. The mature tree lines and hedgerows in addition to the extent of the surrounding built development prevents any long-distance views of the subject lands.

14.4 Characteristics of the Proposed Development

Planning permission is sought by Birchwell Developments Ltd. for a proposed Large-scale Residential Development (LRD) on lands to the south of Back Road and to the east of Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin. The proposed development will consist of the construction of 297 no. residential units comprising 211 no. houses (14 no. 2 beds, 156 no. 3 beds, 39 no. 4 beds, and 2 no. 5 beds), 46 no. duplex units (9 no. 1 beds, 14 no. 2 beds, and 23 no. 3beds), and 40 no. apartments (23 no. 1 beds, 14 no. 2 beds, and 3 no. 3 beds); 1 no. childcare facility; 1 no. café/restaurant, 1 no. retail unit and 1 no. yoga studio, and all associated site infrastructure and engineering works necessary to facilitate the development.

14.4.1 Potential impact of Proposed Development

14.4.1.1 Construction Phase:

- Visual impacts due to the introduction of new structures, access roads, machinery, materials storage, associated earthworks, car parking, lighting and hoarding.
- Change of character due to the change in use.
- Visual impacts due to removal of trees and vegetation.
- Visual impacts as a result of change in ground level and earthworks.

14.4.1.2 Operational Phase:

- Visual impacts due to the introduction of new buildings and built structures.
- Visual impacts due to the introduction of new roads, infrastructure, parking and lighting.
- Change of character due to the change in use.
- Visual impact of landscape proposals – installation of new trees and vegetation, play spaces, boundaries, hard surfaces, paths, etc.

14.5 Potential Cumulative Impacts

There are no anticipated cumulative impacts arising from the proposed development, or any further development in the locality in relation to landscape and visual impact, other than those noted above.

14.6 Do Nothing Scenario

In the event of this scenario the lands would continue to lie idle and the areas discussed in Section 1.3.2 would continue to fall further into disrepair as scrubland becomes more dominant. As the area has a specific zoning for development it is likely that the site would be developed in the future in a similar scale and type as is currently proposed.

14.7 Mitigation Measures

This section of the report will discuss mitigation measures to reduce the impact of the proposed development on the surrounding water environments during the construction and operation phase.

14.7.1 Incorporated Design Mitigation

- Retention and enhancement of a number of moderate-quality existing trees and incorporation into the landscape design
- Significant level of proposed perimeter planting including native woodland, hedgerow, copses of native trees and formal hedging
- Significant level of proposed street, parkland and ornamental trees within the subject lands
- Significant level of proposed woodland planting

14.7.2 Construction Phase Mitigation

- The protection of existing trees and other vegetation to be retained to BS 5837:2012 standards with the Root Protection Area (RPA) securely protected by fencing for the duration of the construction process.
- Implementation and monitoring of a well-managed and organised construction site, with control of construction activity, traffic, materials storage and lighting with due consideration for neighbouring residences

14.7.3 Operational Phase Mitigation

- Implementation and monitoring of a landscape management plan for the full duration of the defects liability period to ensure successful establishment of all proposed trees and vegetation.
- Periodic tree surveys and implementation of a tree management plan for the mature trees on site to ensure their continuing sustainability.

14.8 Predicted Impacts of the Proposed Development

Landscape assessments measure the sensitivity of specific landscape types and features and describe the nature and significance of changes to that landscape occurring because of a proposed development. In general, it can be assumed that landscape and visual impacts are intrinsically linked however both types of impacts are assessed separately in this study where a development characteristic may result in a starkly different type, quality or magnitude of impact in landscape or visual terms. The assessment of likely significant impacts has been made on the basis that all incorporated design mitigation measures are included.

Character, for the purposes of this assessment refers to the interaction of elements in the landscape that combine to give the area its identity. In this context, impacts on character include the effect on existing land uses and responses that are felt towards the combined effects of the new development.

14.8.1 Construction Phase:

The change of use of the site from its current state to that of a construction site has the potential to result in the following impacts:

14.8.1.1 Removal of vegetation

As detailed in the Arborists package a number of the existing trees are to be removed due to both tree health and to accommodate the built development. The loss of any trees will normally result in a negative impact on the landscape character. The impact in this instance has been mitigated by design measures including the retention of the highest quality trees and their incorporation into the landscape design along with the planting of a significant amount of newly proposed trees and woodland. The impact would be considered **negative, short-term in duration and slight.**

14.8.1.2 Change in use to a construction site

The change of use of the site from its existing use to that of a construction site will result in an impact on the landscape character. The level of this impact will be somewhat mitigated by the retention of some of the larger trees and the sites' location away from major roads in the area. Similar construction activities in close proximity to the site and the current state of the subject lands in relation to the construction storage, waste and access would also lessen the impact. The impact would be a **negative and moderate** local impact; however, the impact would be **short-term** in duration.

14.8.2 Operational Phase:

14.8.2.1 Impact on landscape character due to a change of landscape type

The character of the subject lands will be significantly changed from its current character to that of a residential scheme with all the associated facilities. As a result of land zoning, development trends in the local area are of both a similar scale and nature. In addition to this, the site is currently unused, overgrown and in disrepair. As described in section 1.3.2 of this report the current landscape has the character of a transitional landscape and therefore its current state is temporary. The proposed scheme includes a comprehensive landscape scheme which includes the retention of many of the highest quality trees on site along with a variety of soft and hard landscaping proposals. These design measures will mitigate the level of impact. The resulting impact would be considered **positive and slight in magnitude in the long-term.**

14.8.2.2 Landscape and visual impacts due to the introduction of a new landscape

The proposed scheme includes a comprehensive landscape scheme (refer to KFLA drawings 101 – 107 and Landscape Report) which includes the retention and enhancement of the highest quality tees on the subject lands along with a large amount of newly proposed landscape softworks. Included in the proposed landscape scheme are native and ornamental trees, street trees, amenity lawn, native shrubs and perennials, formal boundary hedging, native hedgerow, wildflower meadow, woodland planting and a range of pollinating plants with a complex planting palette. This scheme will significantly enhance local biodiversity, provide a range of high-quality amenity options to the new residents and integrate

the proposed structures into the surrounding landscape and suburban context. The impact of the proposed landscape scheme would be considered **positive, long-term, and moderate** in magnitude.

14.8.2.3 Visual impacts due to the introduction of new buildings and built structures

The subject lands are surrounded by existing development and vegetation, due to its lack of public road frontage, visibility of the application site from the public realm is restricted by intervening development and trees.

The extent of potential visual impact of the proposed development on the built environment from 6 representative view locations around the proposed development and is discussed below. The view locations assessed are representative of locations from which it was suggested by mapping analysis that development might be visible. Photomontages, prepared by Digital Dimensions Ltd. and included as an Appendix, from these locations are included with this submission as a separate A3 document.

14.8.2.4 Assessment of visual impacts from specific locations

The proposed development will not be visible from any of the view locations shown in Figure 1.7 below. Intervening development and existing trees and woodland between the viewpoints and the subject lands deter any views of the proposed development, hence there is no visual impact associated with these views. Refer to the Appendix for details.

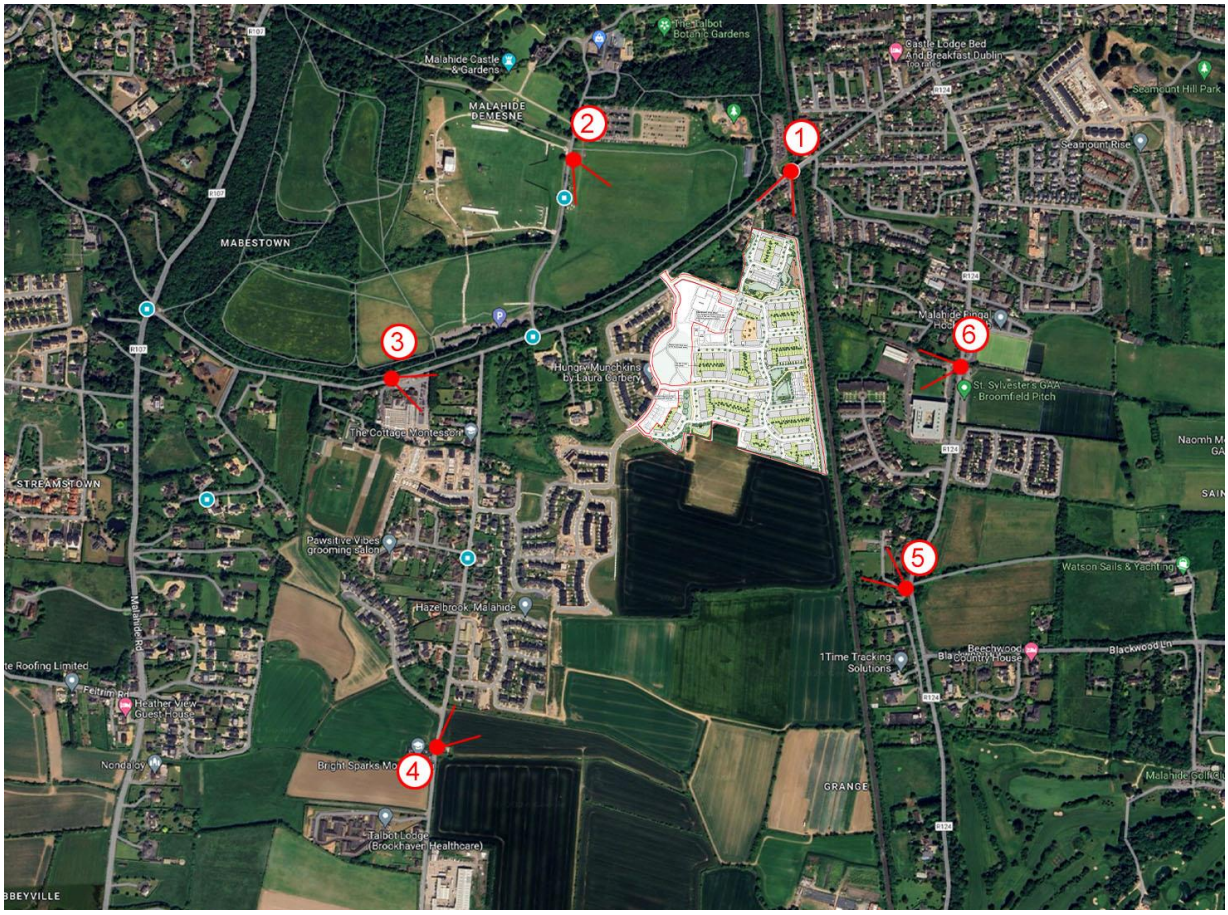

Figure 1.7 - Proposed Viewpoints (Verified Views labelled 1-6)

14.8.2.5 Cumulative Impacts

The primary developments in the area which will combine with the proposed development to cause a cumulative impact are the existing residential developments to the south and south-east of the site. The proposed development will read as an extension of the existing developments 'Brookfield', 'Hazelbrook' and 'Ashwood Hall'. In regards to landscape character, the subject lands are located on a fringe area between emergent residential development, the edge of a major suburb and traditional farmland. The nature of the proposed development would be considered as consistent with emerging development trends and a continuation of residential development in the area.

Furthermore, there have been two recent applications in the local area for a proposed Retail development and application ref. F24A/0988E for 9 residential units on the sites in Ashwood Hall and Brookfield (previously intended for a neighbourhood centre and a creche), all of which demonstrates the level of emergent development in the surrounding area. This type of mixed development will begin to read as an extension of Malahide.

14.9 Worst Case Scenario

The worst-case scenario in relation to landscape and visual impacts during both the construction and operation phases would be the failure to implement the mitigation measures outlined above. This may result in impacts on existing trees to be retained as part of the design scheme, which would have an adverse effect on the existing landscape character. Failure to implement a well-managed construction site would also likely increase negative visual impacts associated with the construction process.

14.10 Monitoring

Contracts will ensure good working practices to reduce any negative impacts arising from construction to the lowest possible level and to ensure that all machinery operates within clearly defined construction area. Storage areas will be so located to avoid impacting on sensitive views, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to at the end of the construction contract. The works will also have continuous monitoring to ensure adequate protection of areas outside of the construction works.

14.11 Reinstatement

On completion of sections of the proposed scheme, any area of landscape will be restored to previous state or enhanced as part of the new landscape scheme.

14.12 Interactions

The main interactions relating to this EIAR Chapter are Population and Human Health, Biodiversity and Cultural Heritage.

14.12.1 Landscape and Population and Human Health:

Interactions between landscape and Population and Human Health have been considered. Landscape has the potential to impact greatly on human health by providing external spaces which provide for communities in various ways such as recreational use, visual enhancement of streets and external

spaces, sports and play facilities and so on. The landscape mitigation measures include a significant amount of designed usable spaces for both future and existing residents which will have a long-term and moderate positive impact on Population and Human Health.

14.12.2 Landscape and Biodiversity:

Interactions between landscape and biodiversity have been considered. An adverse impact to the biodiversity of the lands during either the construction or operational phases has the potential to negatively impact the landscape character. The landscape mitigation measures will ensure that where possible the existing trees on site are retained, and a new planting scheme is proposed that will improve and extend the area native planting area on the subject lands. Therefore, the measures proposed to mitigate impact on the landscape character will result in a positive impact on the biodiversity value of the lands. This impact would be considered moderate in magnitude and long-term in duration.

14.12.3 Landscape and Cultural Heritage:

Interactions between landscape and cultural heritage have been considered. The proposed development has the potential to impact on cultural heritage in the local area. Landscape character, history and visual characteristics can be considered a part of cultural heritage. The proximity of the subject lands to historic landscape spaces, namely Malahide Castle and its associated parkland could be considered to have a potential impact on cultural heritage. Furthermore, the landscape mitigation measures include the retention of a number of local trees into the landscape scheme which will have a positive impact on cultural heritage.

14.13 Difficulties Encountered

There were no particular difficulties encountered compiling this chapter of the EIAR.

14.14 References

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2022);
- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (Landscape Inst. + IEMA 2013)

15.0 Interactions & Cumulative Effects

15.1 Introduction

The matrix incorporated in Table 15.1 below, inter-relates Chapters 4.0 to 14.0 of the Environmental Impact Assessment Report to the various impacts referred to in the relevant Environmental Impact Assessment Regulations.

The EIAR has identified potential for interactions between a range of factors identified in Table 15.1. These interactions require the implementation of suitable mitigation measures to ameliorate the impact of the development on the environment. This EIAR has found that subject to the full implementation of the various mitigation measures specified by the EIAR team and summarised in Chapter 16, the development will have no significant negative impact on the environment.

15.2 Summary of Interactions

The following sub-sections seek provide an overview of the interactions identified within the EIAR chapters. Such interactions include the following:

Heading	Population and Human Health	Biodiversity	Land & Soils	Water	Air	Noise & Vibration	Climate	Landscape & Visual Impact	Traffic & Transport	Cultural Heritage	Built Services & Waste Management
Population and Human Health				X	X	X			X		
Biodiversity				X				X	X		
Land and Soils											
Water		X	X								X
Air	X					X	X		X		
Noise & Vibration	X								X		
Climate	X				X	X			X		
Landscape	X	X								X	
Traffic and Transport					X	X		X			
Cultural Heritage											
Built Services & Waste Management	X			X	X						

Table 15-1 Interactions Identified in the EIAR

15.3 Population & Human Health (Chapter 4)

Interactions

The main interactions relating to population and human health are water, air quality, noise, and traffic during the construction phase.

Construction activities will have a temporary impact the landscape of the area by way of visual disturbance. These impacts are not considered to be significant.

During the operational phase, the main interactions relating to population and human health are water, air quality, noise, and traffic. These impacts are not considered to be significant. Please refer to the associated chapters for further information on these interactions.

Cumulative effects

The assessment has considered cumulative impacts of construction and operational phases of the proposed project, in conjunction with surrounding developments.

Multiple sites under construction at the one time may result in cumulative impacts in terms of noise and vibration during the construction period for human beings. However, such impacts are short-term, and the implementation of appropriate mitigation measures will ensure that noise and vibration impact is kept to a minimum. Please refer to Chapter 9.0 for further details in this regard.

During the operational phase of the development, there will be residential, recreational, and retail/ commercial developments in proximity to the proposed project which will generate a synergy of uses. This will increase population, increase employment opportunities, and increase community facilities such as childcare facilities, and as such the long-term effect will be a positive and permanent impact for Broomfield and the overall town.

15.4 Biodiversity (Chapter 5.0)

Interactive effects

The key environmental interactions with Biodiversity are Water, Landscaping and Transport. In respect of Water, there is interaction between hydrology and accidental spills of fuels/hydrocarbons and washing down into the drainage pipe network has the potential to impact on the receiving hydrogeology and ecology. A series of mitigation measures are proposed in the Water Chapter of this EIAR document to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) is of an appropriate standard. In respect of the Landscape, some of the nature features of the site are retained where possible and includes some positive planting proposals which will add some diversity to the site and favour some species. Finally, interactions exist between Traffic and Transport in relation to mortality from direct impact, the effects of which cannot be completely removed but will be reduced through mitigation.

Cumulative effects

A number of the identified environmental impacts can also act cumulatively with other impacts from similar developments in this area of Fingal. These arise through the urbanisation of habitat for wildlife and the increasing urbanisation of the local hinterland, on land of varying ecological sensitivity, as provided for by land-use zoning and include loss of habitats and species, particularly hedgerows, habitats and disturbance of species.

This proposed development can be viewed alongside the permitted construction of a series of residential developments in Broomfield. This project represents the completion of the zoned lands in

the Broomfield area so the ability to influence any future development beyond this application is limited. The development of the site is consistent with emerging baseline trends albeit with comprehensive ecological mitigation applied to the development which should be implemented.

15.5 Land and Soils (Chapter 6.0)

Interactions

No significant interactions are anticipated.

Cumulative effects

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

15.6 Water (Chapter 7.0)

Interactions

The main interactions relating to this EIAR Chapter are Land & Soils, Biodiversity and Utilities.

During construction stage, the connection of wastewater services has the potential to impact groundwater and soils if wastewater were to leak from the network during the construction process. There are potential implications for the local populations if there is a disruption to utility services during the connection of the new services to the proposed development. The construction of the various services will also interact with construction traffic as outlined in the Traffic and Transport Chapter.

During the operation stage, the water supply and foul drainage services have a potential interaction with the available water supply and with potential pollution to natural water bodies.

In respect of Land & Soils, interaction between surface and ground water and the bedrock geology is feasible. The implementation of the mitigation measures outlined in this chapter will reduce the potential of surface contaminants into the underlying geology.

In respect of Biodiversity, there is interaction between hydrology and the downstream habitats present along the Hazelbrook Stream & Sluice River. The mitigation measures ensure that surface water runoff is treated to the required standards so that downstream habitats are not negatively impacted.

Cumulative effects

There are no anticipated cumulative impacts arising from the proposed development, or any further development in the locality in relation to water, other than those noted above.

15.7 Air (Chapter 8.0)

Interactive effects

Interactive effects may be felt with the disciplines of noise, climate, population and transport but none are anticipated in this case.

Cumulative effects

15.7.1 Construction Phase

According to the IAQM guidance (IAQM, 2024) if the construction phase of the proposed development coincides with the construction phase of any other development within 500m then there is the potential for cumulative construction dust impacts. A review of relevant planning applications within 500m of the site was conducted in order to identify sites with the potential for cumulative impacts. The proposed development at Broomfield has been assessed as having no significant effects of dust soiling during the construction phase as a number of mitigation measures have been proposed in order to ensure significant dust impacts do not occur. Provided these measures are in place and adhered to for the duration of the construction phase, significant cumulative construction dust impacts are not predicted. Cumulative impacts to air quality will be short-term, localised and not significant.

15.7.2 Operational Phase

The cumulative effects during the operational phase were assessed from changes in traffic flows during the operational phase. The traffic data supplied with other planning documents was used to assess the cumulative traffic. where such information was not available, conservative traffic figures were used to predict increased operational traffic. The results of the impact assessment at the proposed development site arising from the cumulative developments are presented in Table 8.8. The results predict the air quality relative to the existing baseline.

Receptor A	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average PM2.5 ($\mu g/m^3$)	Annual Average SO2 ($\mu g/m^3$)
Background	12.67	13.23	7.9	2.36
Limits	40	40	20	20
Do Nothing	13.14	13.76	8.15	2.56
Increase	+0.47	+0.53	+0.25	+0.20
Magnitude	small	small	imperceptible	imperceptible
Description	negligible	negligible	negligible	negligible
Do Something	13.58	14.21	8.6	2.81
Increase	+0.91	+0.98	+0.70	+0.45
Magnitude	small	small	small	small
Description	negligible	negligible	negligible	negligible

Table 8.8: Modelled results for proposed development site with combined cumulative developments.

Modelled results show that concentrations of ambient air pollutants show a small increase in annual emissions to air quality but each remain well below the limit values for EU regulations, which are based on the protection of human health. The predicted cumulative impacts on air quality is negligible and would not result in a perceptible change in the existing local air quality environment. The effects are deemed long-term and not significant.

15.8 Noise and Vibration (Chapter 9.0)

Interactive effects

The main interactions relating to noise and vibration are population and human health and transportation.

Cumulative effects

15.8.1 Construction phase

The construction noise/vibration assessment in the previous sections represents the worst-case scenario's and it is very unlikely that the same noise/vibration event would happen to coincide at the same time of other potential developments giving rise to a theoretical increase in predicted noise levels. However, the impact of any predicted cumulative noise or vibration levels on nearby sensitive receptors is assumed not to exceed the worst-case scenario and is temporary, negative, and deemed not significant.

15.8.2 Operational phase

The anticipated noise impacts from the development during the operational phase will mainly be as a result of increased vehicle traffic flows along the incoming and outgoing routes into the proposed development site. It is anticipated that additional road traffic noise attributable to the overall masterplan will result in an increase in the baseline noise environment.

The change in noise levels and the significance of such changes can be categorised by the Guidelines for Noise Impact Assessment, Institute of Environmental Management and Assessment. Based on these guidelines the anticipated increase in noise levels can be categorised as 'Slight' at the worst case. The increase in traffic associated with the proposed development scheme together with other potential developments is therefore not expected to give rise to any significant noise nuisance in the area. We note that as part of the Government Climate Change action plan that petrol and diesel passenger vehicles are being phased out and potentially replaced by quieter electric vehicles eventually leading to less operational noise.

Traffic/transportation has been identified as the only likely source of vibration during the operational phase of the scheme. In the case of nominally continuous sources of vibration, such as traffic, vibration is perceptible at around 0.5 mm/s PPV and may become disturbing or annoying at higher magnitudes. There may, in theory, be a small increase (< 10%) in vibration levels as a result of increased traffic from the other potential developments, however, it would still be appropriate to assume that negligible vibration impacts will occur during the operation and no further assessment is deemed to be required. The cumulative noise / vibration impact is determined to be not significant.

15.9 Climate (Chapter 10)

Interactive effects

Interactive effects may be felt with the disciplines of noise, air quality, population and transport but none are anticipated in this case.

Cumulative effects

Cumulative impacts of this and other developments in the Malahide area (as set out below) were considered in combination with the following plans and projects which were relevant to the subject lands:

- Reg. Ref. F24A/0842E permission sought for development of a proposed temporary construction road off Kinsealy Lane to facilitate the implementation of the approved development under ABP-313361-22 on the southern portion of the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin (due decision 14th November 2024).
- Reg. Ref. F23A/0586 permission granted for construction of 71 no. residential units on the southern portion of the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin. This permission also includes a temporary construction road off Kinsealy Lane on the site covered by this application. Additionally, permission has been granted for 87 residential units on the same southern portion of the lands at Back Road & Kinsealy Lane.
- Reg. Ref. F21A/0451 permission granted for proposed upgrade of the existing foul water storage tank to provide for a pumping station with increased storage capacity, new sewer and rising main along Kinsealy Lane with associated interceptions and manholes, boundary treatments, and all associated engineering and site works necessary to facilitate the development.
- The Broomfield SHD (ABP-313361-22) comprising the construction of 415 no. residential units & a creche on the lands at Back Road & Kinsealy Lane, Kinsaley, Broomfield, Malahide, Co. Dublin. By the Order dated 4th July 2024, An Bord Pleanála issued a split decision on the case to include a granted permission for construction of 87 no. residential units on the southern portion of the lands and a refusal on the northern portion of the lands.
- The Auburn House SHD (ABP-313360-22) comprising 368 no. residential units and a crèche on lands at Auburn House (Protected Structure), Little Auburn and Streamstown, Off Malahide Road and Carey's Lane, Back Road, and Kinsealy Lane, Malahide, Co. Dublin. With a decision date due 8th August 2022, the case is still under review by the Board. This delayed decision triggered concurrent lodgement of three planning applications on the lands, including 69 no. dwellings under F22A/0579 - ABP-316444-23; 98 no. dwellings under F22A/0580 - ABP-316498-23; 92 no. dwellings under F22A/0581 - ABP-316504-23. By 29th March 2023, Fingal County Council granted planning permission for these applications; subsequently third-party appeals were lodged against the Council decisions and by Order dated 13th May 2024, An Bord Pleanála granted planning permission with revised conditions for all.
- Reg. Ref. F18A/0168 (ABP-303370-19) permission granted for alterations to previously approved development under Reg. Ref. F13A/0443 for construction of 32 no. residential units at Streamstown Wood, Streamstown Lane, Malahide, Co. Dublin. A third-party appeal was lodged against the Council's decision which was then withdrawn.
- Brookfield and Ashwood Hall Developments (Reg. Ref. F13A/0459 - PL06F.243863 - Reg. Ref. F13A/0459/E1 & Reg. Ref. F13A/0460 - PLO6F.243821 - Reg. Ref. F13A/0460/E1) are currently under construction/ nearing completion.
- 89 dwellings under the live pre-application at Lamorlaye, Back Road
- F24A/0988E – 9 no. residential units proposed at Ashwood Hall and Brookfield

- Retail anchor development proposal on lands adjoining Ashwood Hall

It could be assumed that if the abovementioned applications would be granted a total of approximately 540 units could be added to the projects 297 units totalling +/- 840 units. If the additional units would be constructed using similar building specifications as the Broomfield project the effects would be as follows.

Project CO2 emission impact on National emissions	National	589 units	fraction
	emissions	emissions	
	Mt-CO2 /year	Mt-CO2 /year	%
2025	62 (2023)	0.0149556	0.024121
2030	58	0.0015408	0.002656
2030 with additional measures	47.5	0.0015408	0.003243

The national cumulative impact: The construction element impact of a 840 unit development of 0.01495 Mt-CO2 on Ireland's current emissions (2023) @ 60 Mt-CO2/year represents an increase of 0.02412%.

The operational (annual) element impact of a 840 unit of 0.001540 Mt-CO2 on Ireland's projected 2030 emissions @ 58 Mt-CO2/year represents an increase of 0.002656%.

Based on the above findings we note the cumulative impacts on the national CO2 emission at worse to be very fractional. CO2 emissions from the construction and operational phase have been reduced to a minimum. The impact on National emissions for the construction phase are therefore deemed to be short term and imperceptible. For the operational phase it is deemed long term and imperceptible both in 2025 and 2030. Any new development in essence will increase CO2 emissions to the national and global environment however by introducing the reduction measures at design stage the increase has been kept to a reasonable minimum.

15.10 Material Assets - Traffic and Transport (Chapter 11)

Interactions

There may be temporary negative impacts to human health during the Construction Phase caused by noise, dust, air quality and visual impacts which are covered in other chapters of this EIAR. There may also be interaction with the surrounding water bodies through surface water runoff during topsoil stripping and earthworks which will be required to construct the roads.

The effects of these will be mitigated through the implementation of the measures outlined in this Chapter and within the Construction Management Plan.

Cumulative effects

The traffic modelling carried out as part of the Traffic and Transport Assessment also accounts for a committed and potential future development in the area to assess the cumulative effects. The modelling results show that the existing priority-controlled T-junction 1 would operate within capacity

during both peak hours for all scenarios assessed. The same results are obtained with the proposed upgrade of Junction 1 to a signalised controlled T-junction.

In addition, the same results are achieved for the existing priority-controlled T-junctions 2, 3, 5 and 6: The junctions would operate within capacity during both peak hours for all assessed scenarios.

The modelling results for Junction 4 with its current configuration show that it is operating close to its capacity during the AM peak hour and within its capacity during the PM peak hour:

- For both scenarios, the A and B, Junction 4 would operate above capacity during the AM peak hour and within capacity during the PM peak hour for both the 2026 DO NOTHING and 2026 DO SOMETHING scenarios. For the year 2041, the results indicate that Junction 4 would operate above capacity during the AM peak hour and at capacity during the PM peak hour, with or without the subject development.
- For Scenario C, with the addition of traffic signals at Junction 4, the modelling results show that the junction would operate within its capacity.

The traffic impact assessment shows that the effect of the proposed and cumulative developments on all junctions assessed is neutral in all scenarios assessed. Junction 4 will reach its capacity with or without the proposed development, unless traffic signals are introduced.

15.11 Material Assets – Built Services & Waste Management (Chapter 12)

Interactions

The main interactions relating to Material Assets are water, air quality, and population and human health.

During the operational phase, the water supply and wastewater services will have a potential interaction with the available water supply and the potential emissions to the water cycle.

Cumulative effects

The assessment has considered cumulative impacts of construction and operational phases of the proposed development, in conjunction with surrounding developments.

Multiple sites under construction at the one time may result in increased demand for volumes of waste to be removed off site. Licenced appointed waste contractor handle, transport, and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of wase removal from construction activities from multiple developments. This is likely to have a temporary effect on improvement of efficiencies of waste collection and indeed is likely to result in an improvement in waste targets in line with national and local legislation on construction and demolition waste.

During the operational phase of the development, similar existing and residential developments in proximity to the proposed development, such as at Ashwood Hall, Brookfield and Hazelbrook, will generate similar waste types. Licenced waste collectors will be required to collect segregated waste materials from multiple development which is likely to result in an improvement of efficiencies of

waste collection and indeed is likely to result in an improvement in waste targets in line with national and local legislation. As such the long-term effect will be imperceptible and neutral.

15.12 Cultural Heritage (Chapter 13)

Interactions

No interactions are predicted in relation to the proposed development.

Cumulative effects

Cumulative effects are defined as:-

> "*The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*" (Environmental Protection Agency 2022, Section 3: 52).

Cumulative effects encompass the combined effects of developments or activities on a range of receptors. In this case, the receptors are archaeological, architectural and cultural heritage sites. Cumulative effects at the construction and operational phases are considered.

With the exception of a proposed retail development located within the redline boundary of the application area, and which forms a separate planning application, there are no existing, permitted or proposed residential or commercial developments, or any additional large-scale infrastructure projects, within the immediate environment of proposed development area.

Construction phase cumulative effects are largely concerned with direct impacts on any unrecorded sub-surface archaeological features or artefacts which may exist within the area where it is proposed to construct the project. Since likely direct effects on the archaeological, architectural and cultural heritage resource have been assessed and mitigated (in respect of the subject project), cumulative direct effects will not occur during construction of the proposed development.

It is assessed that the proposed residential development and the proposed retail development will result in a cumulative imperceptible, permanent, visual effect on the architectural heritage features recorded within the 500m study area.

15.13 Landscape and Visual Impact (Chapter 14)

Interactions

The main interactions relating to this EIAR Chapter are Population and Human Health, Biodiversity and Cultural Heritage.

15.13.1 Landscape and Population and Human Health

Interactions between landscape and Population and Human Health have been considered. Landscape has the potential to impact greatly on human health by providing external spaces which provide for communities in various ways such as recreational use, visual enhancement of streets and external spaces, sports and play facilities and so on. The landscape mitigation measures include a significant amount of designed usable spaces for both future and existing residents which will have a long-term and moderate positive impact on Population and Human Health.

15.13.2 Landscape and Biodiversity

Interactions between landscape and biodiversity have been considered. An adverse impact to the biodiversity of the lands during either the construction or operational phases has the potential to negatively impact the landscape character. The landscape mitigation measures will ensure that where possible the existing trees on site are retained, and a new planting scheme is proposed that will improve and extend the area native planting area on the subject lands. Therefore, the measures proposed to mitigate impact on the landscape character will result in a positive impact on the biodiversity value of the lands. This impact would be considered moderate in magnitude and long-term in duration.

15.13.3 Landscape and Cultural Heritage

Interactions between landscape and cultural heritage have been considered. The proposed development has the potential to impact on cultural heritage in the local area. Landscape character, history and visual characteristics can be considered a part of cultural heritage. The proximity of the subject lands to historic landscape spaces, namely Malahide Castle and its associated parkland could be considered to have a potential impact on cultural heritage. Furthermore, the landscape mitigation measures include the retention of a number of local trees into the landscape scheme which will have a positive impact on cultural heritage.

Cumulative effects

The primary developments in the area which will combine with the proposed development to cause a cumulative impact are the existing residential developments to the south and south-east of the site. The proposed development will read as an extension of the existing developments 'Brookfield', 'Hazelbrook' and 'Ashwood Hall'. In regards to landscape character, the subject lands are located on a fringe area between emergent residential development, the edge of a major suburb and traditional farmland. The nature of the proposed development would be considered as consistent with emerging development trends and a continuation of residential development in the area.

Furthermore, there have been two recent applications in the local area for a proposed Retail development and application ref. F24A/0988E for 9 residential units on the sites in Ashwood Hall and Brookfield (previously intended for a neighbourhood centre and a creche), all of which demonstrates the level of emergent development in the surrounding area. This type of mixed development will begin to read as an extension of Malahide.

16.0 SUMMARY OF MITIGATION & MONITORING MEASURES

The sections provided below, contains the mitigation and monitoring measures proposed to ensure no significant residual, significant effects arise from the proposed development, which have been set out in Chapters 4.0 to 14.0 of the Environmental Impact Assessment Report to the various impacts referred to in the relevant Environmental Impact Assessment Regulations.

Listed below are the mitigation and monitoring measures proposed for the proposed development:

16.1 Population & Human Health

16.1.1 Mitigation

16.1.1.1 Construction Phase

Measures to mitigate potential impacts arising from the construction phase of the proposed development such as noise, traffic and air quality are set out in relevant chapters of this EIAR.

16.1.1.2 Operational Phase

No mitigation measures are required in respect of human health during the operational phase of the development.

16.1.2 Monitoring Measures

In terms of population and human health, measures to avoid negative impacts have been a key consideration in the design evolution of the buildings and overall layout of the proposed project. Conditions will be attached to any grant of planning permission to ensure compliance in this regard. Building Regulations will also be adhered to during the construction phase to ensure a fully compliant development is constructed.

Health & Safety requirements, which are site specific to the proposed project, will be carried out by the Project Manager on site.

Impacts from Air Quality, Noise and Vibration, Climate, and Traffic and Transport and monitoring measures in this regard are addressed in the relevant chapters of this EIAR.

16.2 Biodiversity

16.2.1 Mitigation by Avoidance

The principal mitigation that should be considered in any development is avoidance of impact. The site layout has been designed to avoid impacts on the boundary treelines and hedgerows surrounding the site.

16.2.2 Planting of Native Species

The landscape architects for the project KFLA set out the following in their landscape strategy for the site from the perspective of biodiversity:

'All of the various landscape spaces and typologies in this development have been designed to consider local biodiversity and ecology. Maintaining and creating natural habitats for native flora and fauna and creating ecological networks is an essential element of the landscape strategy.

Retaining and strengthening existing native vegetation, as well as proposing new native woodland, creates biodiversity rich, native habitats and ecological green corridors which run through the site and link with external landscape features. The majority of vegetation on site is that of a parkland landscape and can be found along the site boundaries and has been retained wherever possible. Where vegetation that is contributing to wildlife corridors and green infrastructure has been removed or fragmented, replacement planting as specified above has been proposed to compensate for any loss.

Hedgerow and woodland planting along site boundaries creates dense belts of native spaces which act as native habitat and similarly to the native hedgerows, form ecological corridors which connect with other landscape elements throughout the site. The retained boundary hedgerows are important in maintaining the ecological integrity of the site.

The introduction of wildflower meadow through certain open spaces within the site provides new habitats for local flora and fauna and helps to increase biodiversity in the local area. The strategies referenced above protect and enhance the character of the natural environment in the area and contribute to the scenic quality of the surrounding landscape. They also ensure that habitats and areas of high value biodiversity are protected'.

Native species appropriate to the area (such as hawthorn, elder, ash, alder, holly, hazel, willows, oak, dog rose, gorse and bramble) have been used within the landscaping plans for the development.

These will, as they mature, provide a food source, shelter and habitat for foraging bats, nesting habitat for birds and a food source for pollinators. All species used will be of certified native origin and sourced locally to ensure genetic provenance to the area – certified material is available from the forestry nurseries who supply the native woodland scheme.

All planting within gardens and public spaces within the scheme will be pollinator friendly as per the All Ireland Pollinator Plan.

16.2.3 Protective Measures for Retained Treelines, Hedgerows & the Drainage Ditch

The hedgerows and treelines, which form the existing site boundaries to the east and west, are to be retained. The drainage ditch along the southern boundary of the site will also be retained.

These retained treelines, hedgerows, and associated drainage ditches will be given protection from accidental damage by machinery during site works prior to any works commencing in the development and as set out in the arboricultural impact statement. **These areas will be clearly delineated by fencing or other measures. Fences will be erected outside the drip-line or canopy of each tree in accordance with BS 5837 (2012) – Trees in Relation to Construction.** Please refer to the arboricultural tree protection drawings (**Figures 5.16** and **5.17** below).

Figure 5.16. Tree Protection Drawing (Mc Corkell (2024)).

Figure 5.17. Tree protection Drawing (Mc Corkell (2024)).

16.2.4 Invasive Species

The primary species of concern is Japanese knotweed as this is listed under the Third Schedule of the Communities Birds and Natural Habitats Regulations 2011. An invasive species management plan has been prepared to deal with the Japanese knotweed stands as shown on **Figure 5.5** above. The most recent surveys indicate that the treatment has been successful with no evidence of above ground growth of the species and no spread however a precautionary approach to the possibility for viable rhizomes to remain below the soil has been taken.

A detailed plan for the excavation and screening of soil into a container/large skips and disposal off site has been developed (ESC 2024).

The other populations of non-native invasive species within the site (Butterfly bush, Snowberry bush and Canadian fleabane) will be clearly demarcated prior to works commencing, removed and disposed off site to landfill.

There is also potential for Japanese knotweed and other invasive species to spread/become established within the development site through poor site management or the import of contaminated topsoil so any material brought to site must be certified that it is free of invasive species.

16.2.5 Mitigation Measures for Badgers

An inactive badger sett is located at the southern end of the eastern boundary treeline (adjoining Ashwood Hall) within the site in the vicinity of O 22265 44683 and a disused sett is located in the treeline north of the rugby club building as shown on **Figure 5.6** above.

Both of these setts have been the subject of regular examination to determine their use by badgers and whilst they have not been used for many years there is a possibility that they could be again. Furthermore some time may have passed between this application and works commencing if planning permission is granted.

Badgers and their setts are protected under the provisions of the Wildlife Act, 1976, and the Wildlife Amendment Act, 2000. It is an offence to intentionally kill or injure a protected species or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal. Exclusion of badgers should only be considered where a development would unavoidably destroy a badger sett (or any part of its underground tunnel and chamber system), or its immediate surroundings, making it unsuitable for continued occupancy.

Construction works such as those proposed within the Broomfield LRD lands, which occur within the vicinity of a sett (albeit inactive/disused) may require a licence should the setts become active. It should be noted that all activity related to badger surveys, evacuation procedures and sett destruction should only be undertaken by personnel with recognised expertise in badger ecology.

Monitoring

Given that some time may have lapsed between approval of planning permission and commencement of construction the activity at these setts will be the subject of ongoing monitoring in order to determine if a licence could become a requirement.

Southern Sett

The former badger sett (at the southern end of the eastern boundary treeline (adjoining Ashwood Hall)) will not be directly impacted by the proposed Broomfield LRD and both it and the treeline in which it is located will be retained as part of the scheme. The proposed housing layout and internal access roads were redesigned during Phase 1 to ensure that these parts of the lands were retained as part of a wildlife corridor through the property and the sett was not directly impacted.

Both this treeline and inactive badger sett will be afforded protection as set out in the arborist's report and accompanying drawing (see **Figure 5.18** below) to ensure that the retained trees, vegetation and sett are not damaged by the construction works. Any fencing measures deployed must incorporate access for mammals at the base – this should be a gap no smaller than 300mm high by 225mm wide. This will be inspected and signed off by the ecological clerk of works.

Figure 5.18. Badger protection zone – southern sett.

Badgers and other wildlife will continue to use established paths across a site even when construction work has started. Therefore during construction, any open trenches/excavations will incorporate facilities for badgers (and other wildlife, such as rabbits, foxes, hedgehogs etc.) to escape, by means of the following:

1. Gently sloping earth incline to be left at the end of each day's operation – at each end of open excavations/trenches.
2. Timber escape planks should be provided at c. 50m intervals along any deep excavations/trenches and these should be left in place at the end of each day's operations; these should usually be placed at right-angles to the excavation/trench.

3. Any temporarily exposed open pipe system should be capped in such a way as to prevent badgers gaining access as may happen when contractors are off site.

Northern Sett

The potential sett located to the north of the rugby club building has been the subject of monitoring to determine activity and the results of these surveys would indicate that a license is not required and that the potential sett remains inactive. Ongoing monitoring will take place in order to determine if a licence could become a requirement.

Scrub Clearance

The area of scrub south of the rugby club building could not be fully surveyed for mammal activity and site clearance in this area will be supervised by an ecologist to ensure protection of same.

16.2.6 Mitigation Measures for Bats

16.2.6.1 Rugby Club Building Demolition

The rugby club building was confirmed in 2018 as a roost for 2-3 common pipistrelle and soprano pipistrelle bats and a bat derogation licence was previously provided for the proposed demolition by National Parks and Wildlife Service. The building no longer supports roosting bats and is unlikely to do so given the damage inflicted by the fire and subsequent dereliction so a bat derogation licence is no longer required.

Building Resurvey

Given that some time may have lapsed between approval of planning permission and commencement of construction the rugby club building will be resurveyed for bats prior to any proposed demolition works. A precautionary approach to the demolition of the building can then be prepared whereby any remaining potential roosting location for bats are manually removed. This work will be supervised by a licensed bat specialist who can deal with any bats present and will be done during the winter months.

Provision of Bat Boxes

Fifteen bat boxes shall be erected on suitable buildings or trees (i.e. not illuminated and above 3 metres height and close to green areas) within the development. The most successful box types are "woodcrete" boxes made by Schwegler and available from www.alanaecology.com. Several designs are available including some of which can be incorporated into the walls and the surface fabric of new buildings.

16.2.6.2 Vegetation Retention and Protection

The other main protective measure for bats is the retention of the boundary hedgerows, treelines, and the drainage ditch along the southern boundary of the site and protective measures will be put in place for these features during the construction period. The use of native species in the landscaping proposals for the site will also assist in ensuring that bats continue to forage and remain in the area.

16.2.6.3 Lighting Design

Sensitivity in the provision of lighting is also important to ensure that bats continue to use the site. The retained hedgerows, treelines and drainage ditch and newly created areas of planted vegetation will be retained as dark zones and the amount of lighting shining on such areas limited.

Design recommendations for wildlife-friendly lighting include:

1. Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. Use only the minimum amount of light needed for safety. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light.
2. Eliminate any bare bulbs and any light pointing upwards. The spread of light should be kept near to or below the horizontal.
3. Use narrow spectrum bulbs to lower the range of species affected by lighting.
4. Use light sources that emit minimal ultra-violet light. Insects are attracted to light sources that emit ultra-violet radiation.
5. Reduce light-spill so that light reaches only areas needing illumination. Shielding or cutting light can be achieved through the design of the luminaire or with accessories, such as hoods, cowls, louvers and shields to direct the light.
6. Reduce the height of lighting columns. Light at a low level reduces ecological impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
7. For pedestrian lighting, use low level lighting that is directional as possible and below 3 lux at ground level.
8. Limit the times that lights are on to provide some dark periods for wildlife.
9. Use lighting design computer programs and professional lighting designers to predict where light spill will occur.
10. In general any lighting used in the development should not overspill onto adjoining trees, hedgerows, and the drainage ditch thereby ensuring that a dark corridor for foraging and commuting bats and movement for other wildlife is maintained.

In addition:

11. Luminaires will be dimmable LED (light emitting diode) fittings with High performance optics to provide high visual comfort.
12. Luminaires will be selected to ensure that when installed there shall be zero direct upward light emitted to the sky (all output shall be at or below 90º to the horizontal to help prevent sky glow from light pollution of the night sky).
13. Luminaires will be selected to ensure that there is no light spill from the proposed development onto the retained areas of linear vegetation and boundary features.
14. The light emitted from these fittings shall have no photo biological risk and shall be categorised as “Exempt Group” in relation to emissions of Blue light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.
15. All luminaires shall have a Luminous intensity Classification of between G4 and G6 to IS EN 13201-2:2003(E) / BS 5489-1:2013.

16. The recommendations of the Institution of Lighting Professionals and Bat Conservation Trust "Bats and Lighting in the UK" documentation and Bat Conversation Ireland Guidance Notes for planners, engineers, architects and developers December 2010 will be met.

Further detailed information on lighting design for bats and other wildlife is presented in the document prepared by the Bat Conservation Trust and the Institute of Lighting Professionals 'BCT (2018). Guidance Note 08/18 - Bats and artificial lighting in the UK. Bats and the Built Environment series and the EUROBATS Guidance available from:

https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229&focal=none and

https://cdn.bats.org.uk/pdf/Resources/EUROBATSguidelines8_lightpollution.pdf?mtime=20181113114256&focal=none

These guidelines have been implemented in the previous phases of the developments at Broomfield and in the project lighting design as set out in **Figure 5.19** below.

Figure 5.19. Project lighting design.

Plate 18. A dark corridor for foraging bats and other wildlife has been maintained along the shared boundary treeline with Ashwood Hall.

16.2.6.4 Felling of Potential Bat Roosts in trees

All trees proposed for removal will be subject to appropriate felling measures as detailed in NRA Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority 2006). The felling/clearance of trees will be scheduled for the autumn months of September/October when bats are less likely to be using trees. This also avoids the bird breeding season.

Prior to tree felling works the trees will be inspected by a licensed bat specialist in the presence of the tree surgeons and an appropriate felling methodology agreed.

The felling of those trees, which have been identified as potential bat roosts, must be supervised by a bat specialist holding a bat handling licence issued by the National Parks and Wildlife Service, (Department of Environment, Heritage and Local Government). If bats are encountered they should be removed by the licence holder to a bat box, to be sited on a nearby tree and the NPWS notified and a bat derogation licence sought.

Identified trees must be felled carefully. Specific advice in relation to individual trees will be given on site by a bat specialist. Gradual dismantling of some mature trees may be necessary to ensure the safety of any bats which may be roosting within significant sized boughs or in the trunk. The tree will be inspected by a bat specialist, and depending on the structure of the tree they may need to be left intact on the ground for 24 hours to allow any bats within them to escape prior to processing.

16.2.7 Mitigation Measures for Birds

As detailed in the arboricultural impact assessment (Mc Corkell, 2024) the proposed development will require the removal of 82 trees, 22 groups of trees/hedgerows, and the partial removal of 5 groups of trees/hedgerows. Of the 109 trees and groups to be removed or partially removed, 10 trees and 1 group are of moderate quality and value (B Category), 49 trees and 26 groups are of low quality and value (C Category), and 23 trees are of poor quality (U Category).

No clearance of vegetation shall be carried out from March 1st to August 31st (except in circumstances of immediate danger to the public). This will protect nesting birds, eggs and nestlings from injury or death. No clearance of vegetation suitable for nesting birds within the site (shrubs, bramble tangles, etc.) will take place during this period. Should such clearance be required than the area proposed for clearance should be inspected by an ecologist to ascertain if any nesting birds are present.

Provision of Bird Boxes

Forty bird boxes of varying designs will be erected on suitable buildings or trees within the development. Several designs are available including some which can be incorporated into the walls and the surface fabric of the new buildings. These include integrated designs for swift, house sparrow, swallows, starling, etc. Suitable locations for these will be agreed by the project ecologist with the architect and set out for the contractor on detailed drawings.

Drainage Ditch Restoration

It is proposed to naturalise the drainage ditch along the southern boundary of the site and to enhance it for wildlife through suitable planting.

Suitable species for planting along the drainage ditch have been specified by the project ecologist to the landscape designer.

Care should be taken when purchasing aquatic plants from nurseries as many species have the potential to become invasive. Attention is drawn to the invasive species listed under the Birds and Natural Habitats Regulations 2011.

16.2.8 Sediment Control

Sediment control practices are used on building sites to prevent sand, soil, cement and other building materials from reaching drainage ditches and watercourses such as the Hazelbrook Stream and water dependent habitats such as the reedbeds and saltmarshes in Baldoyle Bay downstream. Even a small amount of pollution from a site can cause significant environmental damage by killing aquatic life, silting up streams and blocking storm water pipes. Storm water can contain many pollutants which can enter our local drainage ditches, streams, rivers and marine systems, causing harm to native animals, plants, fish breeding habitats and recreational areas.

Soil erosion, sediment and litter from building sites can be major sources of storm water pollution, and can cause:

- significant harm to the environment e.g. loss of valuable foraging areas in adjoining mudflats for wintering birds

- weed infestation of waterways caused by sediment settling on the creek beds and transporting nutrients
- loss of valuable topsoil
- significant public safety problems when washed onto roads and intersections
- blocked drains creating flooding and increased maintenance costs
- damage to recreational and commercial fishing.

Sediment control usually requires little effort and results in:

- Cleaner waterways and healthier aquatic life.
- Improved site conditions.
- Improved wet weather working conditions.
- Reduced wet weather construction delays.
- Reduced losses from material stockpiles.
- Fewer mud and dust problems.

Good site management in relation to sediment control during the construction phase should prevent this from occurring and possible mitigation measures for consideration are outlined below. Other measures to be implemented on site include briefing of all site contractors regarding the sensitivity of the adjoining drainage ditches and the need for strict site management in relation to potential run off.

Minimising site disturbance:

Prevention is better than cure. Careful design and an efficient construction sequence will minimise disturbance to the site. This will save money and reduce environmental impact.

Design to avoid excessive cut and fill, unnecessary clearing of vegetation and to preserve existing site drainage patterns. Clear only those areas necessary for building work to occur. Preserve grassed areas and vegetation where possible. This helps filter sediment from storm water run off before it reaches drainage ditches and stops rain turning exposed soil into mud. Delay removing vegetation or commencing earthworks until just before building activities start. Avoid building activities that involve soil disturbance during periods of expected heavy or lengthy rainfall.

Implement sediment control:

Install sediment control measures before commencing any excavation or earth moving. Regularly maintain them until construction is complete and the site is stabilised.

Prevent sediment-contaminated water leaving the site

Use barriers to trap coarse sediment at all points where storm water leaves the site, before it can wash into drainage ditches and down to the Natura 2000 site downstream. Relocate sediment on site or dispose of it suitably. Remove accidental spills of soil or other material immediately. Maintain vegetation on the site in the vicinity of drainage ditches in a healthy state so it can function as an additional filter for sediment. Cut brick, tile or masonry on a pervious surface such as grass or loosened soil within the property boundary. The same applies when cleaning equipment. Waste concrete, paint and other solutions used on site should be properly disposed of so they do not contaminate storm water.

16.2.9 Protection Measures for Aquatic Habitats

Various measures will be required to ensure that there is no deterioration in water quality in the drainage ditch along the southern boundary of the site arising from the development as this will ultimately drain towards the Hazelbrook Stream and the Sluice River.

These measures relate mainly to the control of silt and sediment runoff during construction and the installation of hydrocarbon/petrol interceptors on surface water drainage systems leaving the development. There are no instream works proposed.

16.2.10 Contractor Briefing

All site contractors will be briefed by the ecological clerk of works regarding the biodiversity value of the retained drainage ditch, trees and vegetation to ensure that there are no accidental or unintentional actions conducted during the project construction that could lead to a reduction in water quality/damage to same. Such matters often arise through ignorance or by accident rather than as a result of an intentional action.

16.2.11 Soil Handling

Soil should be handled with care as it is a living entity. The topsoil and subsoil layers will be stripped, stored and maintained separately. Topsoil will be temporarily stored upon geotextile such as Terram 1000 (www.terram.com). The contractor should submit proposals for supplier and product, which should be a nonwoven geotextile manufactured from UV stabilised, high tenacity, virgin polypropylene fibres that have been both mechanically and thermally bonded with a minimum of 5 years lifespan in all soil conditions. Note that soil levels within the root spread of those trees that are to be retained should not be raised. From this temporary storage heap the topsoil should be distributed as required for landscaping purposes. In general the topsoil should not be firmed, consolidated or compacted when laying. Tipping and grading to approximate levels should be done in one operation with minimum of trafficking by plant.

The topsoil, which is to be retained and reused should not be mixed with: subsoil, stone, hardcore, rubbish or material from demolition work, or the other grades of topsoil, including those contaminated with non-native invasive species. The topsoil should be handled in the driest condition possible. Topsoil should not be handled during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.

Depending on how long the construction period is expected to last it might be necessary to seed the stored topsoil to prevent weed establishment. A recommended mixture is: 35% Chewings fescue, 35% Slender red fescue, 20% Smooth stalked meadow grass and 10% Brown top bent. This should be applied to the manufacturer's recommendations (min. 15g/m2) and the following wildflower mix @ 5g/m2 added:

- Native Origin Irish Wildflower Seed Mixture - Product Code/Name: MM12 Wild Flora for Raw Impoverished Sub Soil
- Supplier: Design by Nature www.wildflowers.ie
- Species List: Bird's-foot Trefoil, Black Medick, Corn Marigold, Corn Pansy, Corn Poppy, Corncockle, Cornflower, Cowslip, Devil's Bit Scabious, Eyebright, Meadow Buttercup, Fleabane, Greater Trefoil,

Lesser Knapweed, Scented Mayweed, Meadowsweet, Ox-eye Daisy, Purple Loosestrife, Ragged Robin, Red Rattle, Red Bartsia, Red Clover, Ribwort Plantain, Rough Hawksbit, Sorrel, St. John's-wort, White Campion, Wild Angelica, Wild Carrot, Yarrow, Yellow Rattle, Lady's Smock, Yellow Clover.

16.2.12 SUDS Measures

The drainage system has been designed with the aim of providing a sustainable drainage solution ensuring, in so far as feasible, that the development has a minimal impact on the existing public surface water sewer system. The proposed development has been designed to incorporate best drainage practice.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. This has been designed by Waterman Moylan Consulting engineers (see the Engineering Assessment Report).

Surface water from the site currently discharges into a series of boundary ditches on the perimeter of the site. Part of the site's drainage ditch network on the southern boundary is a static/dry ditch which falls towards the railway line which has a culvert connecting to a ditch on the east of the railway line. There is also a north-south ditch running along the west of the site which flows south westwards under a 1.5m x 2.1m box culvert under Brookfield Road and then via two 1050mm diameter culverts around the existing Brookfield residential development to a 450mm diameter culvert under Kinsealy Lane before connecting to the Hazelbrook Stream and ultimately the Sluice River.

It is proposed to construct a surface water drainage network that will service and attenuate the development internally before discharging at the current greenfield (or allowable) rates to the local natural ditch systems. Surface water drainage layout and attenuation strategy can be reviewed on Waterman Moylan drawing numbers 18-091-P3200, P3210 and P3211.

For storm water management purposes, the site is proposed to be divided into 5 no. separate catchments, each with their own attenuation basins, cascading to 2no. outfall headwalls, as shown in **Figure 5.20**.

Potential negative impacts could arise should untreated surface water enter the Hazelbrook Stream from the proposed development. These impacts have been addressed through careful consideration of the ground conditions within the site and the installation of silt traps and hydro-carbon traps as outlined in the Engineering Assessment Report and accompanying drawings prepared by Waterman Moylan Consulting Engineers, which will ensure that all surface water leaving the site is treated before it ultimately enters the Baldoyle Bay SAC/SPA.

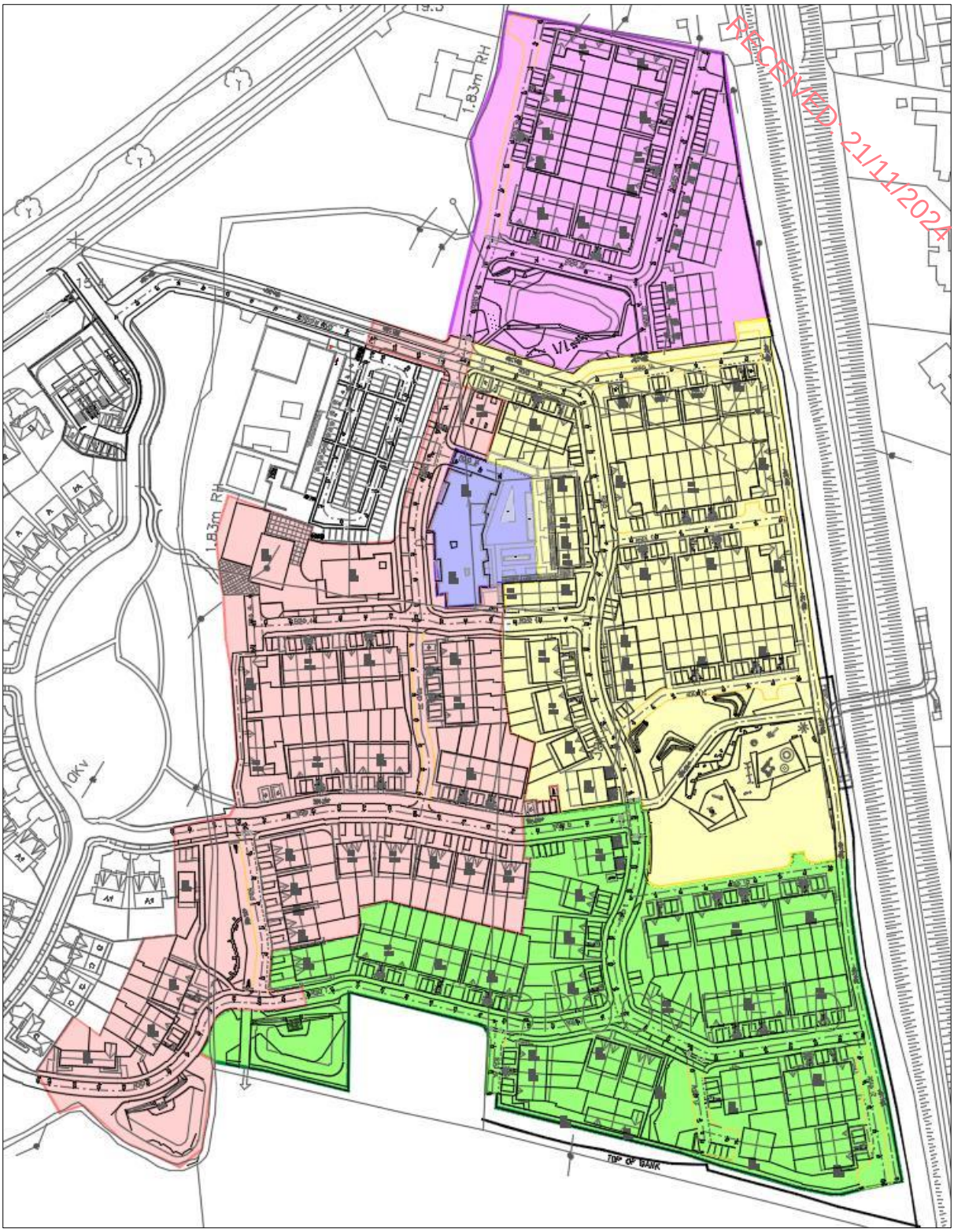

Figure 5.20 Indicative layout of the drainage network (Waterman Moylan, 2024).

16.2.13 Ecological Clerk of Works

An ecological clerk of works will be appointed to oversee the project and sign off on the above mitigation measures.

16.3 Land & Soils

16.3.1 Mitigation Measures

16.3.1.1 Construction Phase

A competent person/company will be assigned to pre-treat (kill-off) the Japanese Knotweed prior to excavation. It is generally recommended that a 3m depth of soil and an area encompassing a 7m offset distance are treated and excavated for disposal for this invasive species. The competent professional should also be present during excavation to ensure there are no living rhizomes (root structures) present when being excavated. The dead Japanese knotweed plant, root system and surrounding soil will need to be disposed of, by prior arrangement, to an authorised deep-fill landfill. These works are to be undertaken in accordance with the "Environmental Agency guidelines on Japanese Knotweed", Landfill operator permitting, and industry best practices & guidelines as appropriate.

Environmental Laboratory chemical analysis has indicated that the historic in-fill constituents are non-hazardous. Excavated material from this location should be continuously monitored/inspected for signs of hazardous material contamination during excavation. Should there be any indication of hazardous material contamination, it may be required to be further sampled and analysed to confirm its chemical properties and waste category classification.

To reduce the quantity of soil to be removed from or imported to the site, the finished floor levels of the proposed buildings and the road levels are designed to match existing levels and minimise the cut and fill volumetric balance. The number of vehicle movements will be minimised by this optimisation. For the area of historic in-fill, levels here have been designed based on the calculated ground levels post excavation and disposal of the historic in-fill material. Surplus subsoil and rock may be relocated to approved areas of the site that may require in-fill, or if required to be removed from site, will be deposited in approved fill areas off-site (Article 27 notification to the EPA required) or to an approved waste disposal facility.

In the case of topsoil careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus soil not used can be transferred elsewhere subject to submission of an Article 27 notification to the EPA. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly. It is therefore important that topsoil is kept completely separate from all other construction waste and stored material and heaped (stored) appropriately.

It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-tracks, delivery vehicle turning areas and site plant and vehicle storage areas. If topsoil is stored in piles of greater than 2m in height the soil matrix (internal structure) can be damaged beyond repair. It should also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess movements around the site.

Records of topsoil storage, movements and transfers will be kept by the C&D Waste Manager.

Silt traps, silt fences and tailing ponds will also need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction phase.

The provision of wheel wash areas at the exit to the development as necessary will minimise the amount of soil deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis. All trucks on the public road will carry a maximum of 10 cubic metres of material to prevent spillage and damage to the surrounding road network.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Appropriate storage and bunding measures will be implemented throughout the construction stage to prevent contamination of the soil and groundwater from oil and petrol leakage from site plant. Refuelling will be restricted to allocated re-fuelling areas. This is to be an impermeable bunded area, designed to contain 110% of the volume of fuel stored. Emergency fuel spill kits are to be stored on-site with designated staff familiar with their usage.

If groundwater is encountered during excavations, mechanical pumps will be required to remove that groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Waterman Moylan's accompanying Preliminary Construction Demolition and Waste Management Plan will be implemented by the contractor during the construction phase to mitigate and control the above remedial measures.

16.3.1.2 Operational Phase

On completion of the construction phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion.

SuDS and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. They will require periodic inspection and maintenance as per their installation manuals.

16.3.2 Monitoring

Monitoring during the construction phase is recommended, in particular to the following items:

- Excavation of area of Japanese Knotweed.
- Excavation of the historic in-fill material.
- Adequate protection of topsoil stockpiled for reuse.
- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to existing watercourses, ditches, and the existing surface water drainage system.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures, when required due to dry weather conditions.

During the operation phase, the surface water network (drains, gullies, manholes. AJs, SuDS Devices, attenuation systems etc.) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning should be incorporated into the safety file/maintenance manual for the development.

16.4 Water

16.4.1 Mitigation Measures

16.4.1.1 Construction Phase

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

- The contractor will appoint a suitably qualified person to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.
- To minimise the adverse effects, the prevailing weather conditions and time of year is to be taken into account when the site development manager is planning the stripping back of the site.
- Site stripping will be minimised as far as practicable.
- Settlement ponds/silt traps will be provided to prevent silt runoff into the existing sewers/watercourses during the drainage works.
- Regular testing of surface water discharges will be undertaken at the outfall from the subject lands. The location for testing and trigger levels for halting works will be agreed between the project ecologist and the site foreman at the commencement of works.
- Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.
- All fuels and chemicals will be bunded, and where applicable, stored within double skinned tanks/containers with the capacity to hold 110% of the volume of chemicals and fuels contents. Bunds will be located on flat ground a suitable distance from any watercourse or other water conducting features, including the cut off trenches.
- Foul and surface water pipes will be carefully laid so as to minimise the potential for cross connections which may result in contamination of receiving watercourses.
- Site personnel inductions are to be conducted such that all site personnel are made aware of the procedures the best practice in relation to the management of surface water runoff and ground water protection.
- Where possible, precast concrete units are to be used to avoid on-site “wet” mix concrete usage. In-situ concrete pours are to be managed in accordance with best practice to avoid overspills
- Concrete truck and wheel wash down facilities are to be provided in designated areas. Discharge from these areas is to be directed into the settlement ponds/silt traps.
- Topsoil for landscaping will be located in such a manner as to reduce the risk of washing away into local drainage or watercourses.
- A method statement setting out in detail the procedure to be used when working in the vicinity of existing watermains will be produced by the contractor for any construction works within the vicinity of watermains and for roads and or services crossing watermains.

- All watermains will be cleaned and tested in accordance with Irish Water guidelines prior to connection to the public watermain.
- All connections to the public watermain will be carried out and tested by or under the supervision of Irish Water or the design engineer.
- Details for the construction methods of the outfall head walls to mitigate against pollution of the natural surface water networks are set out in the Preliminary Construction Demolition & Waste Management Plan.

In order to reduce the risk of defective or leaking foul sewers, the following measures will be implemented:

- All new foul sewers will be tested by means of an approved air test during the construction phase in accordance with Irish Waters Code of Practice and Standard Details.
- All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements.
- Foul sewers will be surveyed by CCTV to identify possible physical defects.
- The connection of the new foul sewers to the public sewer will be carried out under the supervision of Irish Water and will be checked prior to commissioning.
- Prior to commencement of excavations in public areas, all utilities and public services will be identified and checked, to ensure that adequate protection measures are implemented during the construction phase.

Potential negative impacts during construction phase will be short term only.

16.4.1.2 Operational Phase

The implementation of the following operation stage mitigation measures will minimise the impact on the hydrology and hydrogeology aspects of the development lands.

- The surface water drainage network has been designed in accordance with the CIRIA SUDS Manual and the Greater Dublin Strategic Drainage Scheme. The appropriate interception mechanisms and treatment train process has been incorporated into the design.
- Surface water outflow will be restricted to the equivalent greenfield runoff rate from the proposed attenuation tanks.
- Flow restrictors with attenuation storage will be used to slowdown and store surface water runoff from discharging above green field rates to the local ditches/Hazelbrook Stream.
- Sustainable urban drainage measures, including green roofs, permeable paving, and filter strips/swales will be provided to improve water quality.
- A petrol interceptor will be installed to prevent hydrocarbons entering the local drainage system at all outfalls.
- Regular inspection and maintenance of the drainage network, including petrol interceptors.
- Water metering via district meters will be installed to Irish Water requirements. Monitoring of the telemetry data will indicate any excessive water usage which may indicate the potential for a leak in the watermain network. Early identification of potential leaks will lead a faster response in determining the exact location of leaks and completion of remedial works.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

16.4.2 Monitoring

16.4.2.1 Construction Phase

Implementation of the Construction Management Plan is required to protect the hydrology and groundwater elements of the subject lands during construction stage. Maintenance of the mitigation measures and monitoring of the management processed is required to ensure best practice.

The monitoring measures to be implemented include:

- Monitoring of the management and storage of dangerous chemicals and fuel.
- Monitoring and maintenance of the wheel wash facilities.
- Regular maintenance and monitoring of the sediment control measures.
- Monitoring and maintenance of the SUDS features, road gullies and, attenuation ponds during the construction phase of the development.

16.4.2.2 Operational Stage

Monitoring and maintenance of the foul water pumping station water metering telemetry, SUDS features, road gullies, attenuation and flow control devices are imperative during the operation phase of the development.

16.5 Air

16.5.1 Mitigation Measures

Remedial and reductive measures are discussed for the construction and operational phase.

16.5.1.1 Construction Phase

In order to mitigate dust emissions and minimise air quality impacts during the construction phase, placing activities which are a potential source of dust away from boundaries with sensitive receptors as best possible would minimise the possibility of exposure. Standard mitigation measures would be implemented onsite to control emissions during construction, Full details of the dust management plan can be found in Appendix 1. Summary of mitigation measures include:

Any required demolition works to be undertaken in a phased and controlled manner.

The dampening down of potential dust generating activities.

Avoid unnecessary vehicle movements and limit speeds on site so as to minimise the generation of airborne dust.

Site roads shall be regularly cleaned and maintained as appropriate while any unsurfaced roads shall be restricted to essential site traffic only.

location of temporary storage of dusty materials and material transfer operations as far from the nearest sensitive receptors as practicable.

Exhaust emissions from vehicles operating within the construction site or other plant equipment, will be controlled by ensuring that emissions from vehicles are minimised by routine servicing of vehicles along with the avoidance of engines running unnecessarily.

All vehicles which present a risk of spillage of materials, while either delivering or removing materials, will be loaded in such a way as to prevent spillage.

Where drilling or pavement cutting, grinding or similar types of operations are taking place, measures to control dust emissions will be used by the erection of wind breaks or barriers.

A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.

16.5.1.2 Operational Phase

As outlined in the impact assessment no mitigation measures are required as the operational phase of the proposed development as it is predicted the operational phase will not generate air emissions that would have an adverse impact on local ambient air quality. Promoting sustainability by enhancing where possible the use of public transport to reduce dependency on the use of the private car. The inclusion of electric car charging points to encourage electric vehicle ownership is also a measure to help minimise the impact of the development on air quality.

16.5.2 Monitoring

16.5.2.1 Construction Phase

If the construction contractor adheres to good working practices and the mitigation measures are in place, the levels of emissions generated are assessed to be minimal and are unlikely to cause an impact on air quality during the construction phase, there is no monitoring recommended.

16.5.2.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality are predicted to be negligible.

16.6 Noise & Vibration

16.6.1 Mitigation Measures

DKP_{EV} do not anticipate the requirement of any remedial measures but list the following recommendations mainly for the construction sites;

- Ensure that the local authority guidelines or planning directives to noise levels and operational times are adhered too.
- Prepare a construction phase operational plan with regards to limiting noise nuisance.
- Ensure all construction vehicles and plant are regularly maintained including any noise
- control measures such as attenuators, filters etc.
- Limit any construction noise spreading to neighbouring site by erecting temporary noise barriers (site boundary hoarding).
- Schedule particular high-level noise activities for times when increased noise levels are less sensitive or notify neighbouring residents or any sensitive sites.

16.6.2 Monitoring

No noise monitoring is deemed necessary for the operational phase however noise monitoring will most likely be a requirement as directed by the local authority for the construction phase based on

the local authorities imposed limits on the hours of operation and noise limits. No vibration monitoring is deemed necessary for both the operational and construction phase.

16.7 Climate

16.7.1 Mitigation Measures

There are no particular mitigation measures noted. All the recommended reduction measures at design stage and as applied in the CO2 reduction tables are for the greater part mandatory to comply to the relevant regulations and standards. As each development/building can only be certified for compliance under the Building Control Amendment Regulations (BCaR) if the minimum criteria set at design stage is met in full it is very unlikely that noncompliance i.e., mitigation occurs.

16.7.2 Monitoring

16.7.2.1 Construction Phase

No CO2 monitoring is deemed necessary for the construction phase as the CO2 output / emission is relatively small and the duration of the construction phase is short-term.

16.7.2.2 Operational Phase

No CO2 monitoring is deemed necessary for the operational phase as the current and future mandatory CO2 reduction requirement (BER) are a secure process to ensure compliance.

16.8 Material Assets – Traffic & Transport

16.8.1 Mitigation Measures

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.

16.8.1.1 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

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.

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 an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CMP and TMP, 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.

16.8.1.2 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 method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport.

16.8.2 Monitoring

16.8.2.1 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

16.8.2.2 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.

16.9 Material Assets – Built Services & Waste Management

16.9.1 Mitigation Measures

All possible precautions shall be taken to avoid unplanned disruptions to any services or utilities during the construction phase of the proposed development. It should be noted that a number of mitigation measures proposed in other EIAR chapters are also of relevance to Material Assets and should be referred to when reading this EIAR.

The construction phase mitigation measures include, avoidance, reduction and remedy measures as set out within the Development Management Guidelines document. The design and construction of the necessary service infrastructure will be in accordance with relevant codes of practice and guidelines. As a result, this is likely to avoid any potential negative impacts during the operational phase of the proposed development. However, routine maintenance of the site services will be required from time to time, as such any mitigation measures will be advised by the relevant service provider. A site-specific Construction and Demolition Waste Management Plan (C&DWMP) has been prepared to deal with waste generation during the construction phase of the proposed development and is included as part of the application packs. This document was prepared in accordance with best practice guidelines.

An Operational waste management plan (OWMP) has been prepared to ensure that the management of waste during the operational phase of the Proposed Development is undertaken in accordance with current legal and industry standards development and is included as part of the application packs. OWMP aims to provide a detailed plan for the storage, handling, collection, and transport of the wastes generated at the development in a manner that does not present a risk to human health or the environment, or a risk of common waste related nuisance such as litter or odour. A designated management company and an appointed licenced waste contractor will ensure the sustainable management of domestic and commercial waste arising from the development is in accordance with legislative requirements and best practice standards.

16.9.2 Monitoring

Prior to the operational phase of the proposed development, all services/utility connections will be tested by a suitably qualified professional under the supervision of the service provider.

Any monitoring of the built services required during the operational phase of the proposed development will be as advised by the relevant service provider.

The management of waste during the construction and operational phases of the proposed development should be monitored to ensure compliance with best practice and relevant legislative requirements.

16.10 Cultural Heritage

16.10.1 Mitigation Measures

It is recommended that the four archaeological features (a pit; a hearth/burnt pit; and two possible enclosure ditches) revealed during the test trenching programmes be fully excavated and recorded well in advance of groundworks commencing on site. Excavation would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Copies of the final excavation report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

It is recommended that monitoring of all groundworks be carried out. Monitoring would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Provision would be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. On completion of monitoring of groundworks, and any excavations arising, copies of the final monitoring report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

It is recommended that written and photographic records be created, well in advance of groundworks commencing on site, where the proposed access roads and footpaths will truncate the townland and parish boundary. It is recommended that archaeological monitoring of all interventions through the townland and parish boundary be carried out. Monitoring would be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland and to the satisfaction of Fingal County Council. Provision would be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring. On completion of monitoring of groundworks, and any excavations arising, copies of the final monitoring report would be submitted to the Planning Authority, the Department of Housing, Local Government and Heritage and the National Museum of Ireland.

There are no mitigation measures available to offset the imperceptible, permanent, visual effect on the architectural heritage features recorded within the 500m study area.

16.10.2 Monitoring

With the exception of the mitigation measures outlined in **Section 13.10 Avoidance, Remedial & Mitigation Measures**, there are no future monitoring requirements.

16.11 Landscape & Visual Impact

16.11.1 Mitigation Measures

This section of the report will discuss mitigation measures to reduce the impact of the proposed development on the surrounding water environments during the construction and operation phase.

16.11.1.1 Incorporated Design Mitigation

- Retention and enhancement of a number of moderate-quality existing trees and incorporation into the landscape design
- Significant level of proposed perimeter planting including native woodland, hedgerow, copses of native trees and formal hedging
- Significant level of proposed street, parkland and ornamental trees within the subject lands
- Significant level of proposed woodland planting

16.11.1.2 Construction Phase Mitigation

- The protection of existing trees and other vegetation to be retained to BS 5837:2012 standards with the Root Protection Area (RPA) securely protected by fencing for the duration of the construction process.
- Implementation and monitoring of a well-managed and organised construction site, with control of construction activity, traffic, materials storage and lighting with due consideration for neighbouring residences

16.11.1.3 Operational Phase Mitigation

- Implementation and monitoring of a landscape management plan for the full duration of the defects liability period to ensure successful establishment of all proposed trees and vegetation.
- Periodic tree surveys and implementation of a tree management plan for the mature trees on site to ensure their continuing sustainability.

16.11.2 Monitoring

Contracts will ensure good working practices to reduce any negative impacts arising from construction to the lowest possible level and to ensure that all machinery operates within clearly defined construction area. Storage areas will be so located to avoid impacting on sensitive views, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to at the end of the construction contract. The works will also have continuous monitoring to ensure adequate protection of areas outside of the construction works.