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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) Volume 1

Proposed Residential Development

on Lands at Auburn House and Little Auburn, Off Malahide Road and Carey's Lane, Streamstown, Malahide, Co. Dublin

October 2022

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1.0 INTRODUCTION

1.1 Purpose of This Report

This Environmental Impact Assessment Report (EIAR) has been prepared in parallel with the preparation and formulation of 3 no. planning applications relating to proposed residential developments on lands at Auburn House and Little Auburn, off Malahide Road and Carey's Lane, Streamstown, Malahide, Co. Dublin.

The combined subject lands extend to approximately 13.28 hectares and are located on the western side of the Malahide Road to the south of Malahide. The lands are bounded by the existing Abington Estate to the north and west, the Malahide Road and rear gardens to the east and undeveloped lands to the south. Access to the site is currently from the existing driveway to Auburn House, which is accessed off the Malahide Road.

1.2 Nature and Extent of Proposed Development

This EIAR assesses the cumulative impact of 3 no. concurrent planning applications that are being lodged to Fingal County Council. The 3 no. applications are on lands identified as 'Streamstown', 'Little Auburn' and 'Auburn Park' and all are within the overall landholding of Auburn. The applications are described in detail below.

Summary Description of Development

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

Fig. 1.1 – Outline of overall proposed development, excluding underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

The full extent of the works is indicated on the drawing below, which includes the proposed underground rising main that is to run along Back Road and Kinsealy Lane.

For full details of the proposed development, please refer to chapter 2 of this EIAR.

Fig. 1.2 – Outline of Site Boundary, including underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

1.3 EIA Process

The EIA requirements are governed by Directive 2014/52/EU, which amends the previous EIA Directive (Directive 2011/92/EU). Ensuring that projects that are likely to have significant effects on the environment are subjected to an assessment of their likely impacts is the primary purpose of EIA. The EIA process itself helps to form part of the planning consent process and is carried out by the Competent Authority (An Bord Pleanála in this instance).

An EIAR is prepared by and on behalf of an applicant/developer in respect of a project proposal that is seeking planning consent/permission. Therefore, the EIAR becomes a central element that informs the Competent Authority's EIA.

The 2014 Directive has introduced strict new requirements in respect of the competency of experts responsible for the preparation of the EIAR. It is possible to summarise the EIA process as follows:

1. Screening - Is EIA required?
2. Scoping - If EIA is required, what aspects of the Environment should be considered?
3. Preparation of EIAR.
4. EIAR informs EIA (as part of the consent process).

1.4 The Need for an Environmental Impact Assessment Report

The EIA Directive was transposed into Irish Planning legislation on 1st September 2018. Section 172(1) of the Planning and Development Act 2000 (as amended) sets out the requirement for EIA. This current proposed project has been screened for EIA in accordance with the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018).

The EIA Directives list those projects for which an EIA is mandatory (Annex I) and those projects for which an EIA may be required (Annex II). Annex I projects are listed in Part 1 of Schedule 5 of the Planning and Development Regulations 2001-2020 ("the Regulations"). The Project is not listed within Part 1 of Schedule 5 of the Regulations and therefore mandatory EIA is not required under Annex 1. With respect to Part 2 of Schedule 5 (Annex II) Projects, the relevant thresholds relating to the subject proposal are outlined below:

Class 10(b)(i) "Construction of more than 500 dwelling units."

This project comprises a combined residential development including the provision of 259 no. new residential dwelling units. Therefore, the Project falls below the stated threshold, and an EIA is not required in this context.

Class 10(b)(ii): "Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of a development."

The Project does not include a car park providing 400 no. spaces or more. Furthermore, all car parking being provided within the project is incidental to the primary purpose of the residential development. Therefore, the car parking element of the project does not fall within this Class of Regulations.

Class 10(b)(iv): "Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere".

In this instance, the cumulative application site extends to c. 13.28 hectares in area (incl. the road works to R725, and foul treatment works to R742 and R772) within what can be considered a built-up area, an EIA is required, and an Environmental Impact Assessment Report has been prepared to accompany the planning application.

This EIAR has been prepared in accordance with the requirements of the following statutory documents:

- *The European Community Directive on Environmental Impact Assessment (No 85/337/EEC);*
- *The European Community Directive (97/11/EC) amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment;*
- *The Planning and Development Act, 2000 (as amended) and the Planning and Development Regulations 2000-2015;*
- *European Commission, Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (May 1999);*
- *European Commission, Guidance on EIA Screening (June 2001);*
- *European Commission, Guidance on EIA Scoping (June 2001);*
- *Environmental Protection Agency (EPA), Guidelines on the information to be contained in Environmental Impact Statements (March 2002);*
- *EPA, Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (September 2003);*
- *EPA, Guidelines on the Information to be contained in Environmental Impact Assessment Reports (August 2017);*
- *EPA, Advice notes for preparing Environmental Impact Statements Draft (September 2015);*
- *European Commission, Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (April 2013)*
- *Circular Letter PI 1/2017: Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive)*
- *The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018); and,*
- *The Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment.*

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of the 2014 EIA Directive into Irish Planning Law. On 1st September 2018, the provisions of the Regulations came into effect. This EIAR has been prepared in light of these new EIAR Regulations and has also had regard to the recently published *'Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment'* which were published in August 2018.

1.5 Scope of Environmental Impact Assessment Report

The scope of this EIAR has had regard to the following:

- *Guidelines on the recommended information to be contained in EIAR, which have been published by the EPA;*
- *The requirements of Part X of the Planning and Development Act, 2000 (as amended) and also Part 10 of the Planning and Development Regulations, 2001 (as amended);*
- *The requirements of the Fingal County Council Development Plan 2017-2023;*
- *The location, scale and nature of the proposed development;*
- *The receiving environment and any vulnerable or sensitive local features and current uses;*
- *Previous planning applications that have been submitted on adjoining lands;*
- *The likely and significant impacts of the proposed development on the environment; and,*
- *Available mitigation measures for reducing or eliminating any potential undesirable impacts.*

Other assessments made pursuant to EU legislation have been considered for this EIAR, however these have been ruled out as irrelevant for this chapter, for example the Environmental Noise Directive (2002/49/EC) and the Strategic Environmental Assessment Directive (2001/42/EC).

1.6 Structure of Environmental Impact Assessment Report

An EIAR is a process of examining and assessing the environment in tandem with a proposed development in a series of loops and flow systems to ensure that all potential environmental impacts are documented and taken into the consideration of the overall formulation of the proposed development inter alia through the design process.

This process allows for the creation of a series of steps in the assessment of potential impacts on various elements of the environment.

The overall structuring of this EIAR has regard to the information requirements of the Directives and Irish Statutory Regulations. In accordance with the statutory regulations, a Non-Technical Summary has been prepared and is included as part of this EIAR. The structure use in this report is a grouped format structure in the form of chapters which examine the broadened scope of environmental considered introduced by the 2014 Directive.

The structure of this EIAR is based on the requirement to provide a detailed and systematic analysis of the environment at the subject lands at; potential impacts of the development; proposed mitigation measures and future monitoring of environmental indicators.

1.7 The EIAR Study Team

This EIAR has been prepared by a team of consultants led by Downey. The Table below provides information on the members of the EIAR study team and their respective inputs within the report.

Table 1-1. The EIAR Study Team

Name	Role
Downey Planning (John Downey, Planning Consultant, BA (Hons), MRUP, MBA, MIPI, MRTPI & Donal Duffy, Planning Consultant, Dip. Environmental Resources Management, BSc. Spatial Planning, MSc Energy Management, MIPI)	EIAR Project Managers, Planning Consultants Preparation of following EIAR chapter: • Introduction • Description of Development & Alternatives Considered • Planning and Development Context • Population & Human Health • Material Assets (Built Environment) • Interactions • Compilation of EIAR
CCK Architects (Michael Crowe MRIAI)	Architects and Masterplanners Preparation of following EIAR chapters: • Description of Development & Alternatives Considered
Waterman Moylan Consulting Engineers (Mark Duignan, Associate Engineer, MA BAI CEng MIEI)	Preparation of following EIAR chapters: • Transportation • Water • Land, Soil & Geology • Waste
The Big Space Landscape Architects (Dan Egan MILI)	Preparation of following EIAR chapter: • Landscape and Visual Impact Assessment
Courtney Deery Heritage Consultancy Ltd. (Dr Clare Crowley Cultural Heritage Consultant)	Preparation of following EIAR chapter: • Material Assets, Cultural & Archaeological Heritage
Openfield Ecological Services (Padraic Fogarty, Ecologist, MSc in EcIA)	Preparation of following EIAR chapter: • Biodiversity

Name	Role
Gerard Van Deventer DKP International Ltd C.ENG., BE.(Mech)., H.Dip. CIOB., MCIBSE.	Preparation of following EIAR chapter's: • Air Quality • Noise & Vibration • Climate

The development is being proposed by Kinwest Limited, C/O Cooney Carey Consulting Limited, The Courtyard, Carmanhall Road, Sandyford, Dublin 18.

1.8 Impartiality

This EIAR has been prepared in reference to a standardised methodology that is accepted and acknowledged universally. Competently qualified and experienced specialists have been used throughout the EIA process in order to ensure that this document is robust, subjective and impartial.

1.9 Statement of Difficulties Encountered

No exceptional difficulties were experienced in compiling this EIAR. However, where difficulties may have been encountered by the study team, this shall be stated within the relevant section of the EIAR.

1.10 Errors

Every effort has been made to ensure that the EIAR is error free and accurate. However, there may be instances within the document where typographical errors or minor errors may occur. Any such cases are unlikely to have any material impact on the overall and final findings contained in the EIAR.

1.11 References

A reference list detailing the sources used for the descriptions and assessment has been included with each chapter, where necessary.

2.0 SITE LOCATION AND DESCRIPTION OF DEVELOPMENT

2.1 Site Location & Context

The subject site is located on the southwestern side of Malahide. The combined application site is bounded by the existing Abington Estate to the north and west, the Malahide Road and rear gardens to the east and undeveloped lands to the south. Access to the site is currently from the existing driveway to Auburn House, which is accessed off the Malahide Road. The lands at Auburn House extend cumulatively to approximately 13.28 hectares and are located on the western side of the Malahide/Dublin Road (R107) to the south of Malahide.

The surrounding land uses are generally residential, with Abington being on its northern and western boundary and Clairville to its south. Malahide Castle and Demesne is located on the opposite side of the Malahide Road and can be accessed via Back Road. Malahide village centre is located to the northeast of these lands. There is a Dublin Bus service that connects the city centre with Malahide that runs along the Malahide Road (R107), and it is noted that there is a bus stop adjacent to the entrance to Auburn House.

Figure 2.1: Site Location Map (subject site outlined in red)

2.2 Site Description

The cumulative site is made up of 13.28 hectares of land, located 2km southwest of Malahide Village and adjacent to the south-western entrance to Malahide Castle and Demesne, on the Malahide Road.

The site is made up of three consolidated plots; Little Auburn house and gardens, Auburn House with adjoining woodland and fields and former pastureland accessed off Carey's Lane.

The topography of the lands is broadly level, broken up by several drainage ditches. There is significant tree coverage on parts of the site, in particular the entrance lane and woodland backdrop to Auburn House. However, much of the woodland has not been managed and the quality of existing trees is mixed.

Auburn House is raised and overlooks the 'front field', a low-lying pasture. To the north is the 'back field'. Little Auburn has its own entrance from Malahide Road and is a modern house and gardens, of limited architectural interest.

There are currently three access points to the lands: Little Auburn gates on Malahide Road, Auburn House gates on Malahide Road and Streamstown gate on Carey's Lane.

The 5 development areas within the site are the fields to the north and east of Auburn House (Back Field and Front Field), 'Little Auburn' to the east of the driveway and fronting Malahide Road (The Avenue character area in proposed development), an area to the south of Auburn and west of the stables (proposed Streamstown character area), and sensitive additions to the stables of Auburn House.

The southern boundary of the site is characterised by quite dense mature woodland which borders both sides of the Malahide Road in this area. The existing entrance gates are located at the southern end of the site marking the entrance avenue to Auburn House. An entrance to Malahide demesne is located at the corner of the Back Road just offset to the south of the existing Auburn entrance gates.

A modern bungalow is located within Little Auburn to the southeast of the site. It is proposed to demolish this as part of the new development. The northern and eastern boundaries are characterised by existing hedgerows. The built context to the north and east are private two-storey residences with gardens. An access road within the neighbouring development of Abington to the northeast, built in 2000 aligns with the boundary to the Auburn site.

The western boundary is characterised by dense woodland within the site behind Auburn House while the northwest section of this boundary has hedgerow with existing housing facing a private access lane adjacent to the boundary. The southwest corner of the woodland has a gate allowing access to this laneway.

To the southwest of the site, the proposed "Streamstown" character area is defined by existing two-storey houses with private gardens between it and the Auburn woodland, a recently completed housing development to the southern boundary and the Auburn converted stables protected structures and curtilage to the east of the walled garden.

Auburn House is a three-storey residence and has been described as one of the finest residences built in the eighteenth century by Deaton Lysaght Architects who have been engaged in the house's restoration over many years. The house is located quite centrally within the development lands with

a vista over the proposed "Front Field". Views back to the house are curtailed somewhat by the line of the trees to the east of the lawn but the direct view of the house on axis is quite magnificent. The southern boundary of the "Front Field" is formed by a stream with hedgerow. The avenue winds up from the south to the side of Auburn House and the front of the house is orientated east.

The mature woodland to the rear of the house forms a significant amenity backdrop to the house. The makeup of this woodland varies from a diminishing number of large mature trees including Beech, horse chestnut, oak, sycamore and lime; to natural regeneration typically dominated by Sycamore, Ash and Wych Elm to a conifer plantation adjacent to the woodland path south of Auburn House.

Figure 2.2: Existing Site Context Map (subject site outlined in red, Source: CCK Architects & Urban Designers)

2.3 Description of Proposed Development

Summary of Cumulative Development

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance,

with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

Figure 2.3 – Outline of overall proposed development, excluding underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

Streamstown Description of Development

Kinwest Limited intend to apply for Planning permission Kinwest Limited for a development on lands at Auburn House (Protected Structure), Little Auburn and Streamstown off the R107 Malahide Road/Dublin Road and Carey's Lane (accessed via Streamstown Lane), Malahide, Co. Dublin. The lands are generally bound by the R107 road to the east, 'Beech Lodge' to the south, Clairville Lodge to the south (off Carey's Lane), by dwellings known as 'The Coop', 'Halstead' and 'Rockport House' to the south west (off Carey's Lane) and Abington to the west. The proposed development will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the conversion of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 69 no. residential units comprising 35 no. houses (1 no. single storey 2-bedroom house, 8 no. two storey 3-bedroom houses, and 26 no. two storey 4-bedroom houses) comprising detached, semi-detached and terraced type houses, all with associated surface level car parking, and 1 no. four storey apartment block (Block 1) consisting of 34 no. units (comprising 10 no. 1-bedroom units, 20 no. 2- bedroom units and 4 no. 3- bedroom units),

all provided with private balconies/terraces and associated surface level car parking and bicycle parking with refuse stores, bicycle store and plant at ground floor level; landscaping; the preservation of existing follies and walls associated with the existing Walled Garden with amendments to the existing Walled Garden proposed to accommodate the proposed development; boundary treatments; public lighting; 1 no. ESB unit substation; the construction of a new vehicular and pedestrian/cycle access from Carey's Lane (off Streamstown lane), which is to be created from the adaption of an existing vehicular entrance off Carey's Lane; a total of 110 no. car parking spaces; the proposed development will also be served by the utilisation of the existing Auburn House vehicular entrance access and road off the Malahide/Dublin Road (R107) for pedestrian and cycle route only and with the existing entrance to Auburn House from the R107 Malahide Road/Dublin Road to be maintained as a shared vehicular access to serve Auburn House and 'Bellmont', 'The Lodge', 'Bellview', and 'Elgin'; new boundary treatment to retain vehicular access to the existing dwellings 'The Coop', 'Halstead' and 'Rockport House'; the demolition of detached stable/shed building off Cary's Lane; and stable block at Little Auburn; all associated site infrastructure and engineering works necessary to facilitate the development including 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane.

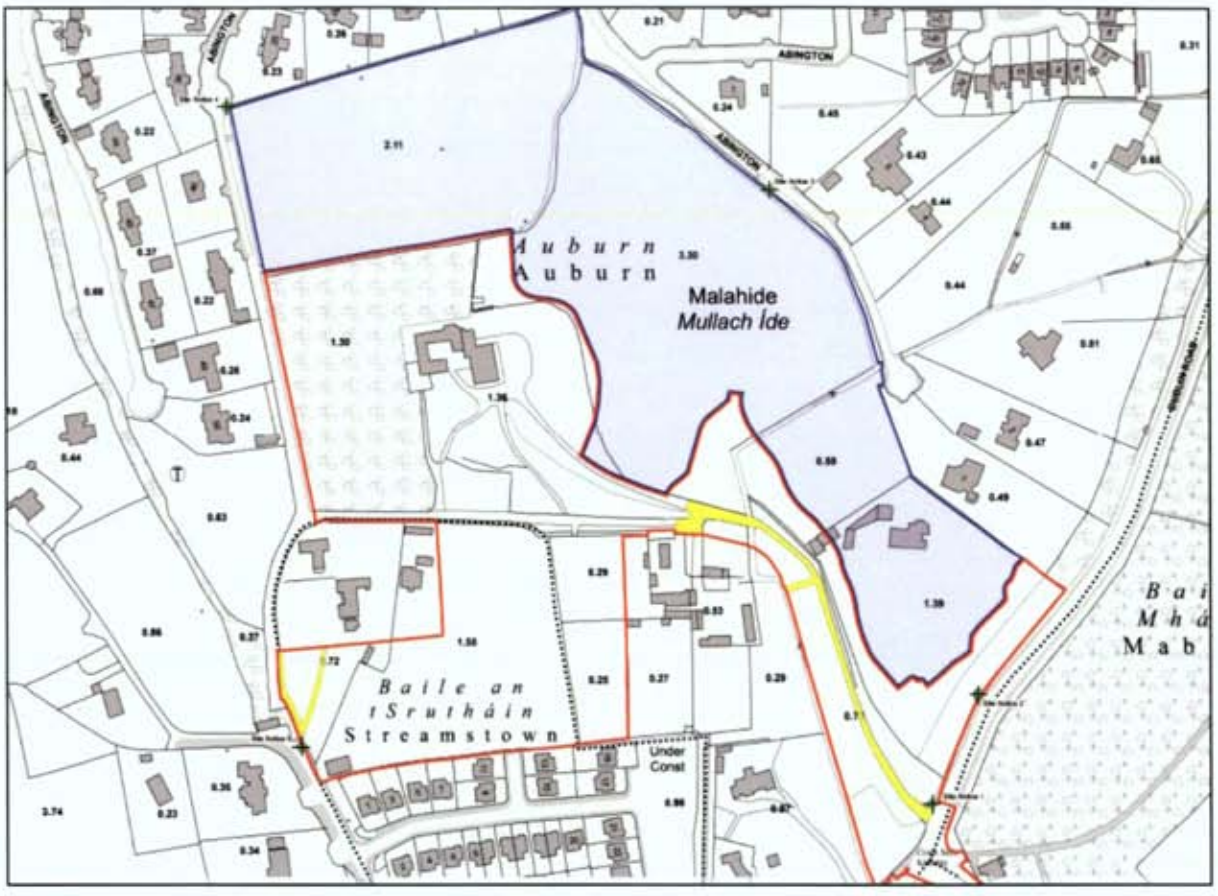

Figure 2.4 – Outline of Site Boundary, excluding underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

Little Auburn Description of Description

Planning permission is sought by Kinwest Limited for a development on lands at Auburn House (Protected Structure) and Little Auburn off the R107 Malahide Road/Dublin Road, Malahide, Co. Dublin. The lands are generally bound by the R107 road to the east, 'Beech Lodge', 'Bellmont', 'The Lodge', 'Bellview', and 'Elgin' to the south, and Abington to the east and west.

The proposed development will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the conversion of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 98 no. residential units (53 no. houses, 37 no. apartments and 8 no. duplex apartments) comprising 53 no. houses (5 no. two storey 2-bedroom houses, 13 no. two storey 3- bedroom houses, 1 no. 1.5 storey (dormer) 3-bedroom house, 33 no. two storey 4 - bedroom houses and 1 no. 2.5 storey (dormer) 4-bedroom house) comprising detached, semi-detached, terraced and courtyard type houses, all with associated car parking, and 1 no. three storey duplex apartment block (Duplex Apartment Block 1) consisting of 8 no. own-door duplex units (4 no. 1-bedroom units, 2 no. 2-bedroom units and 2 no. 3-bedroom units), and 2 no. four storey apartment blocks consisting of 37 no. units comprised of the following: Apartment Block 4 is a 4 storey block (4 no. 1-bedroom units and 15 no. 2-bedroom units), all provided with private balconies/terraces and refuse store, bicycle parking and plant at ground level, Apartment Block 5 is a 4 storey block (4 no. 1-bedroom units and 14 no. 2-bedroom units), all provided with private balconies/terraces and refuse store, bicycle parking

and plant at ground level; associated car parking and bicycle parking (with a total of 153 no. car parking spaces). The proposed development shall also provide landscaped public and communal open spaces, public lighting, 1 no. ESB unit substation; 1 no. new foul pumping station; proposed foul sewer works along Back Road and Kinsealy Lane, The demolition of the modern bungalow dwelling known as 'Little Auburn' and associated outbuildings and stables; Closing of the existing vehicular entrance at the R107 Malahide Road serving Little Auburn; and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new signalised entrance at the R107 Malahide Road/Dublin Road junction, with the existing entrance to Auburn House from the R107 Malahide Road/Dublin Road to be maintained as a shared vehicular access to serve Auburn House and 'Bellmont', 'The Lodge', 'Bellview', and 'Elgin'. An Environmental Impact Assessment Report and Natura Impact Statement have been prepared in respect of the proposed development.

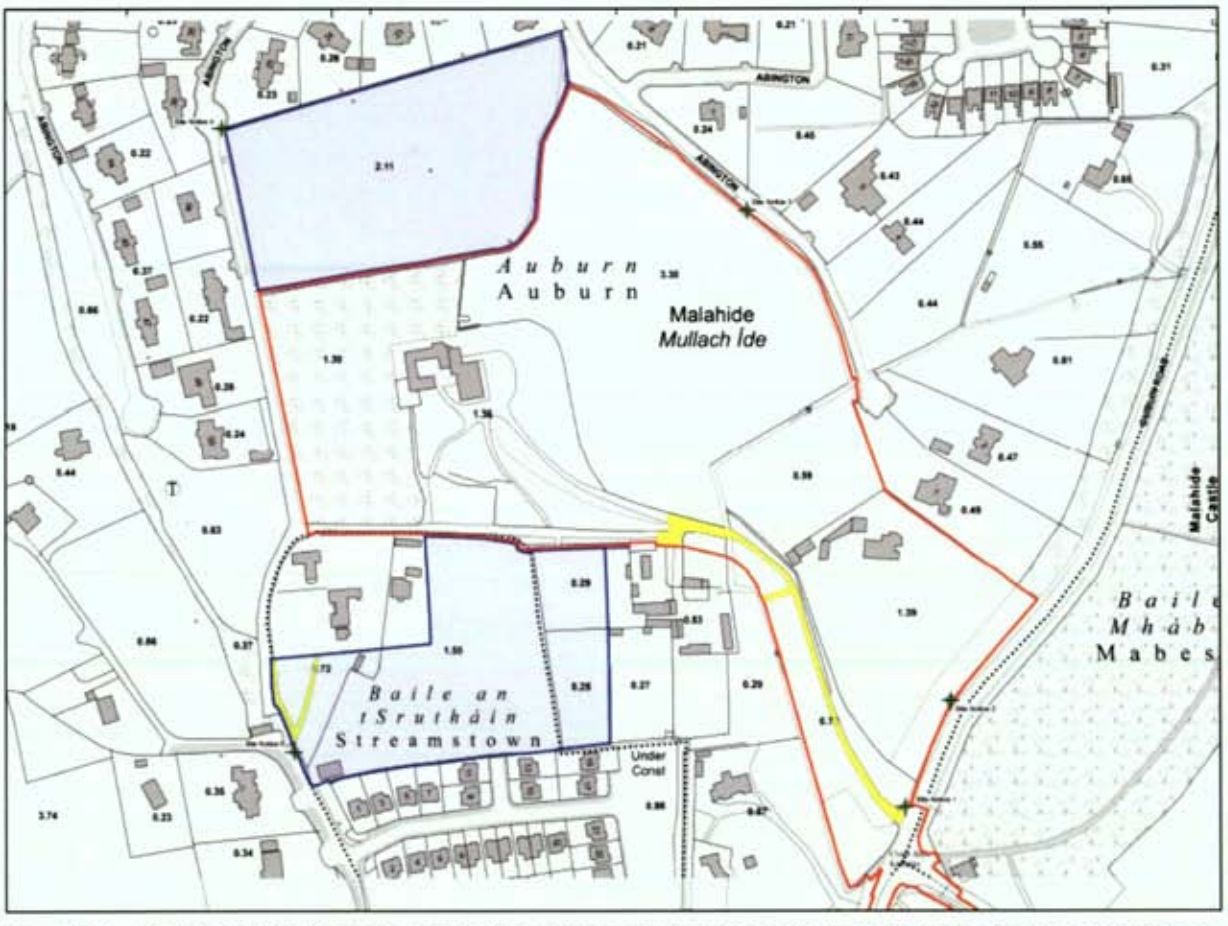

Figure 2.5 – Outline of Site Boundary excluding underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

Auburn Park Description of Development

Kinwest Limited intend to apply for planning permission for a development on lands at Auburn House (Protected Structure) and Little Auburn off the R107 Malahide Road/Dublin Road, Malahide, Co. Dublin. The lands are generally bound by the R107 road to the east, 'Beech Lodge', 'Bellmont', 'The Lodge', 'Bellview', and 'Elgin' to the south, and Abington to the north, east and west.

The proposed development will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the conversion of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 92 no. residential units (45 no. houses, 34 no. apartments and 13 no. duplex apartments) comprising 45 no. houses (3 no. two storey 2-bedroom houses, 17 no. two storey 3-bedroom houses, and 25 no. two storey 4-bedroom houses) comprising detached, semi-detached, terraced and courtyard type houses, and all with associated car parking; Apartment Block 2 comprising 1 no. four storey block consisting 17 no. units (4 no. 1-bedroom units and 12 no. 2-bedroom units and 1 no. 3-bedroom unit) all provided with private balconies/terraces and refuse store, bicycle parking and plant at ground level; Apartment Block 3 comprising 1 no. four storey block consisting 17 no. units (4 no. 1-bedroom units and 13 no. 2-bedroom units) all provided with private balconies/terraces and refuse store, bicycle parking and plant at ground level; Duplex Apartment Block 2 comprising a 3 storey block consisting of 6 no. units (3 no. 1 bedroom unit and 3 no. 3 bedroom units) with balconies/terraces and associated car parking and bicycle parking; Duplex Apartment Block 3 comprising a 3 storey block consisting of 6 no. units (3 no. 1 bedroom unit, 1 no. 2-bedroom unit and 2 no. 3 bedroom units) with balconies/terraces and associated car parking and bicycle parking; Duplex Apartment Block 4 comprising a 2 storey block consisting of 1 no. 2 bedroom unit above an undercroft car park with a balcony and associated car parking (with a total of 147 no. car parking spaces) and bicycle parking; the proposed development shall also provide landscaped public and communal open spaces, public lighting, 1 no. ESB unit substation; 1 no. new foul pumping station; proposed foul sewer works along Back Road and Kinsealy Lane, the part demolition of a stable block at Little Auburn; closing of the existing vehicular entrance at the R107 Malahide Road serving Little Auburn; and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new signalised entrance at the R107 Malahide Road/Dublin Road junction, with the existing entrance to Auburn House from the R107 Malahide Road/Dublin Road to be maintained as a shared vehicular access to serve Auburn House and 'Bellmont', 'The Lodge', 'Bellview', and 'Elgin'. An Environmental Impact Assessment Report and Natura Impact Statement have been prepared in respect of the proposed development. The Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) are available for inspection or purchase at a fee not exceeding the reasonable cost of making a copy during office hours at the Planning Authority.

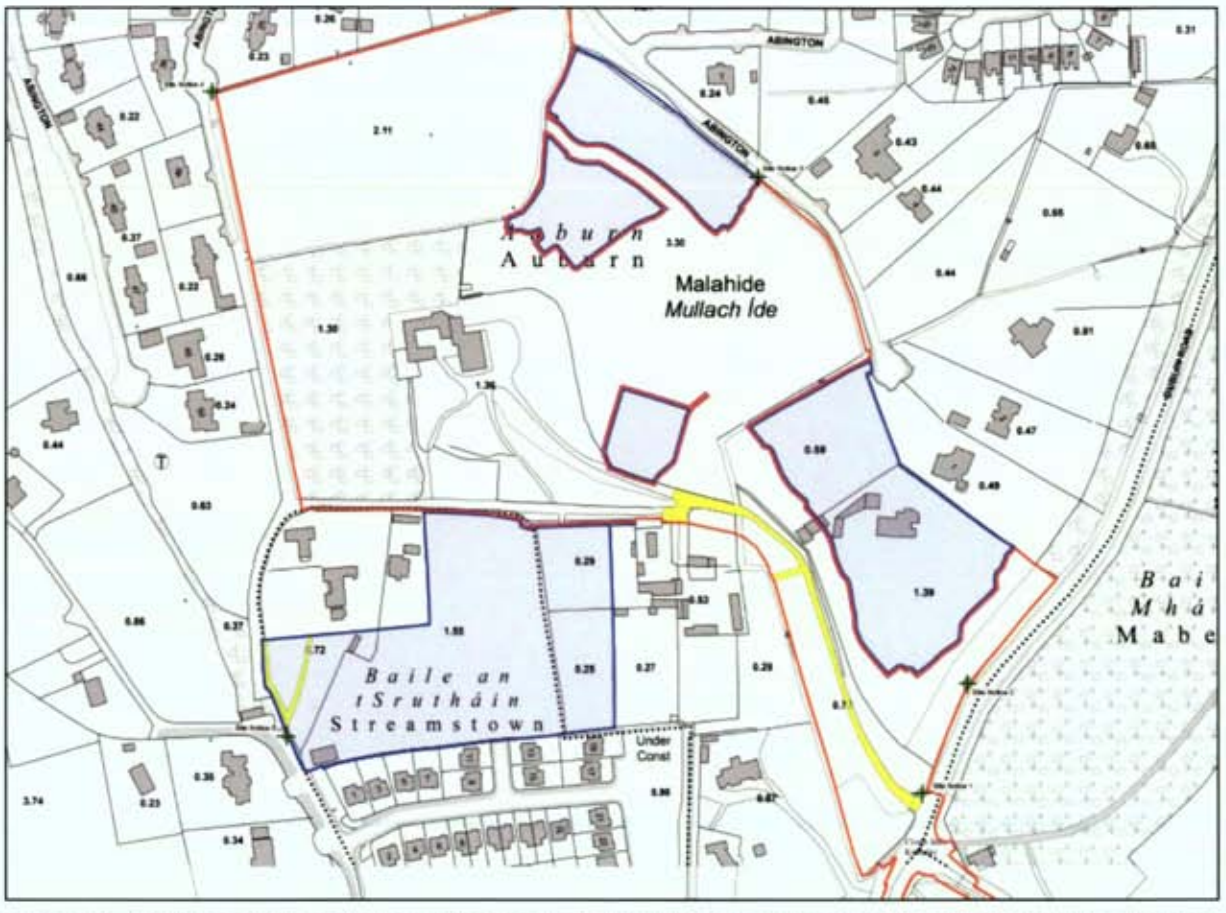

Figure 2.6 – Outline of Site Boundary excluding underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

The full extent of the works is indicated on the drawing below, which includes the proposed underground rising main that is to run along Back Road and Kinsealy Lane.

Figure 2.7 – Outline of Site Boundary, including underground rising main along Back Road and Kinsealy Lane (source: CCK Architects)

2.4 Characteristics of Proposed Development

2.4.1 Site Location

The proposed development is located on lands at Auburn House (Protected Structure), Little Auburn and Streamstown off the R107 Malahide Road/Dublin Road and Carey's Lane (accessed via Streamstown Lane), Malahide, Co. Dublin. The cumulative area of the subject lands is generally bound by the R107 road to the east, 'Beech Lodge' to the south, Clairville Lodge to the south (off Carey's Lane), by dwellings known as 'The Coop', 'Halstead' and 'Rockport House' to the south west (off Carey's Lane) and Abington to the west, north and north east. It is important to note that the development also provides for proposed foul sewer works along Back Road and Kinsealy Lane, which are outside of the main development site and will take place below roads that are under the charge of Fingal County Council.

2.4.2 Site Area

The cumulative subject site extends to an area of approximately 13.28 hectares (which excludes the works to the foul sewer along the Kinsealy Lane). The development site includes existing mature trees and woodlands, which are to be maintained in so far as possible (please refer to the Arborist's Report and Woodland Management Plan for full details).

2.4.3 Density of Development

As outlined above, the overall site area is 13.28 hectares. The development site includes existing mature trees and woodlands, which are to be maintained and thus a net development area of 9.879 hectares has been identified. This provides for a net density of approximately 35 units per hectare, which is considered appropriate for this location and the overall sensitivities associated with the site itself, including protected structures, woodlands and objectives. In light of the objectives and constraints associated with the development site that the density proposed represents an optimum design solution and an efficient use of the site.

Figure 2.4: Net Density Map (Source: CCK Architects)

2.4.4 Demolition Works

The proposed development will involve a certain amount of demolition works in order to facilitate the new residential development. This is outlined in more detail in the Preliminary Construction and Demolition Waste Management Plan, that accompanied each application and was prepared by Waterman-Moylan Consulting Engineers and is summarised below:

1. Demolition of the modern bungalow dwelling known as 'Little Auburn' and associated outbuildings (Little Auburn application only).
2. Demolition of part of stable building at Little Auburn (for Auburn Park application only).
3. The demolition of detached stable/shed building off Streamstown Lane (for Streamstown application only).

Figure 2.5: Proposed Cumulative Demolition Plan (Source: CCK Architects)

2.4.5 General Layout

The urban design response for the lands at Auburn aims to create unique residential quarters, which responds to the distinct character of its context within Auburn House and its mature woodland backdrop. Legibility and wayfinding have been carefully considered. A route hierarchy was established to distinguish each unique character area of the site. Strong edges have been emphasised along the primary routes and onto key open spaces. New pedestrian links are provided for residents within the site which wind their way through existing woodland, across streams and adjacent to old walls and orchard planting in the case of the walled garden. This will create a distinctive character to the site when it can be explored in different ways on foot by its residents. Desire lines through the trees can be followed rather than having to take the footpath adjacent to the road. There are also a number of pedestrian and cyclist friendly "home zone areas" within the site to reduce the dominance of motor vehicles. The design also aims to promote pedestrian links from outside the development by allowing access via the existing gates from the private laneway at the southwest corner of the woodland which would provide a more direct cycle and pedestrian route to Malahide Demesne to the southeast.

Vistas and views have been carefully considered, particularly within the immediate context of Auburn House. The large central public open space has been located to the east of Auburn House and is aligned with its front vista as was set out in the now expired Local Area Plan. Higher density apartment and duplex blocks are located along primary entrance routes and in areas that are screened from Auburn House itself and the main Malahide Road to protect these important views and historic fabric. The open space to the east of Auburn House is surrounded by lower density courtyard houses, which maximise privacy for residents.

All new public open spaces within the development are overlooked by surrounding homes so that safety of residents is paramount. Within the mature woodland, a pedestrian and running route for residents will be created in tandem with the woodland management plan which will provide a significant new local amenity.

The proposed mix of dwelling types with houses, duplexes and apartments facilitates a variety of future residents ranging from families to young professionals to older people who would like to downsize to an apartment close to the village of Malahide.

Heights within the development and the context of Auburn House and woodland have also been carefully considered and are reduced from that proposed within the previous SHD application (ABP Ref. 313360-22 refers). The apartment blocks in Auburn Park are at 3-4 storeys and will be largely hidden from view by the existing mature woodland behind Auburn House. Predominantly two storey housing has been located to the western, northern and eastern edges of the development and heights step towards the centre. Single storey houses are proposed at sensitive points. Distinct Character Areas have also been defined by and are set out in detail within CCK's Architects Design Report and helped to inform how each of the planning applications were to be prepared.

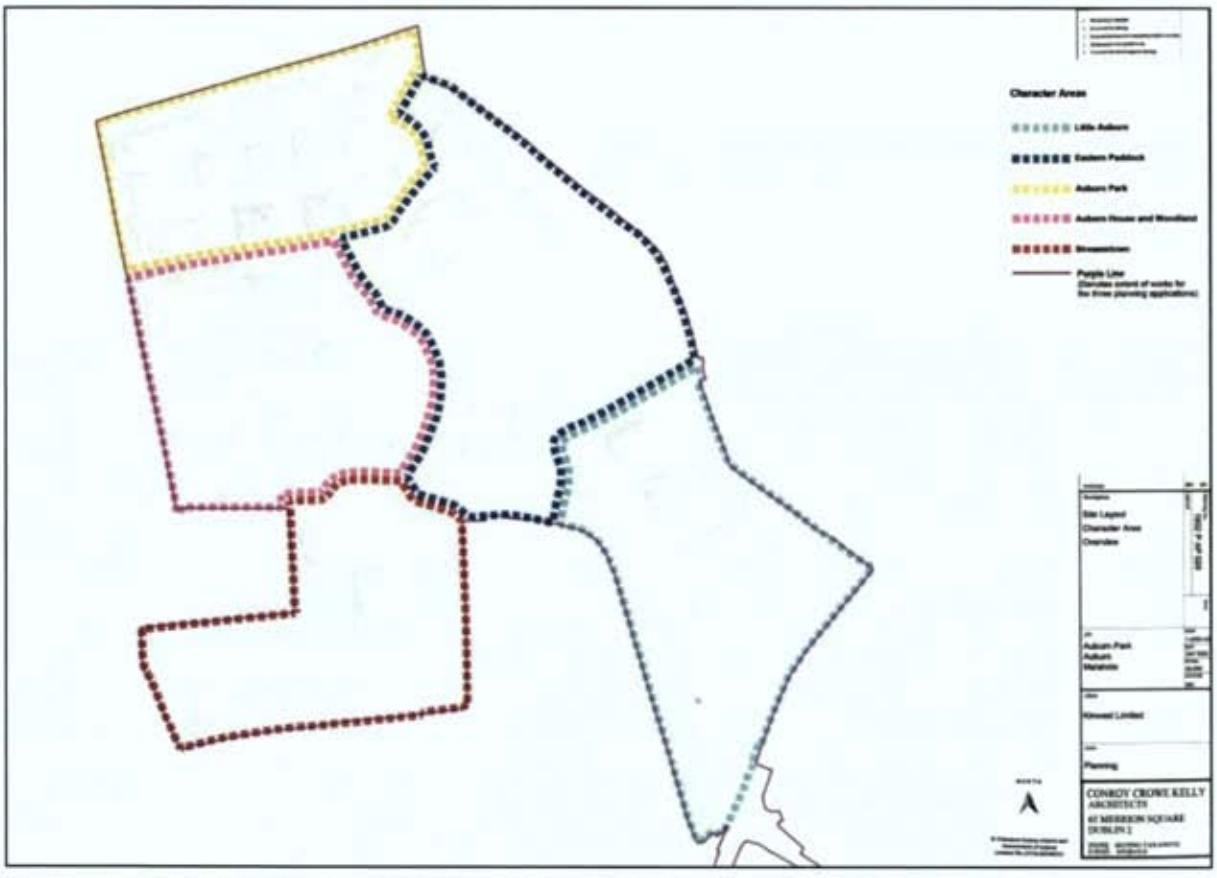

Figure 2.6: Proposed Character Areas (Source: CCK Architects)

2.4.6 Building Height and Form

The height of the proposed development will range from single storey to 4 storeys, with the variation in height being supported by the variation in housing types and the different character areas. The house types will also include for significant variety, including detached, semi-detached, terraced and courtyard style housing typologies. The multi-unit blocks will be a mix of duplex units and apartments.

The designers have also utilised the existing characteristics of the site to determine the appropriate buildings heights and form. The heights being proposed are consistent with local and national planning guidelines, and the Landscape and Visual Impact Assessment, prepared by TBS Landscape Architects confirms that the proposed development will not result in a significant negative visual impact on the existing environment.

2.4.7 Communal & Public Open Space

There is a range of communal open space areas provided throughout the application sites, which shall provide for a total of 922 sq.m. of communal open space provided. These are coloured red in Fig. 2.8 below.

A total of 1.8202 hectares of public open space (discounting attenuation areas) is also being provided, which exceeds the 1.66 hectares required under Objective DMS 57 of the Development Plan. These are coloured dark green in Fig. 2.8 below.

There is a total of 5 no. communal open space courtyards provided throughout the scheme with a total area of 6,167 sq.m. of communal open space, which exceeds the minimum required set out in the Development Plan (the minimum required is 1,709 sq.m for the proposed scheme). The proposed amenity spaces also benefit from passive surveillance from the proposed residential units yet are carefully screened to permit visual transparency between the buildings while maintaining security for residents.

In addition to the above, each residential unit benefits from the provision of adequately sized private open space in the form of gardens, balconies or patios/terraces (designed in accordance with quantitative and qualitative standards required in the Development Plan and/or Guidelines), with the units at ground floor level provided with appropriate boundary treatments to ensure privacy and security whilst also providing visual interest and distinction between spaces. Appropriate separation distances have been provided between buildings to ensure privacy without compromising internal residential amenity of the apartments.

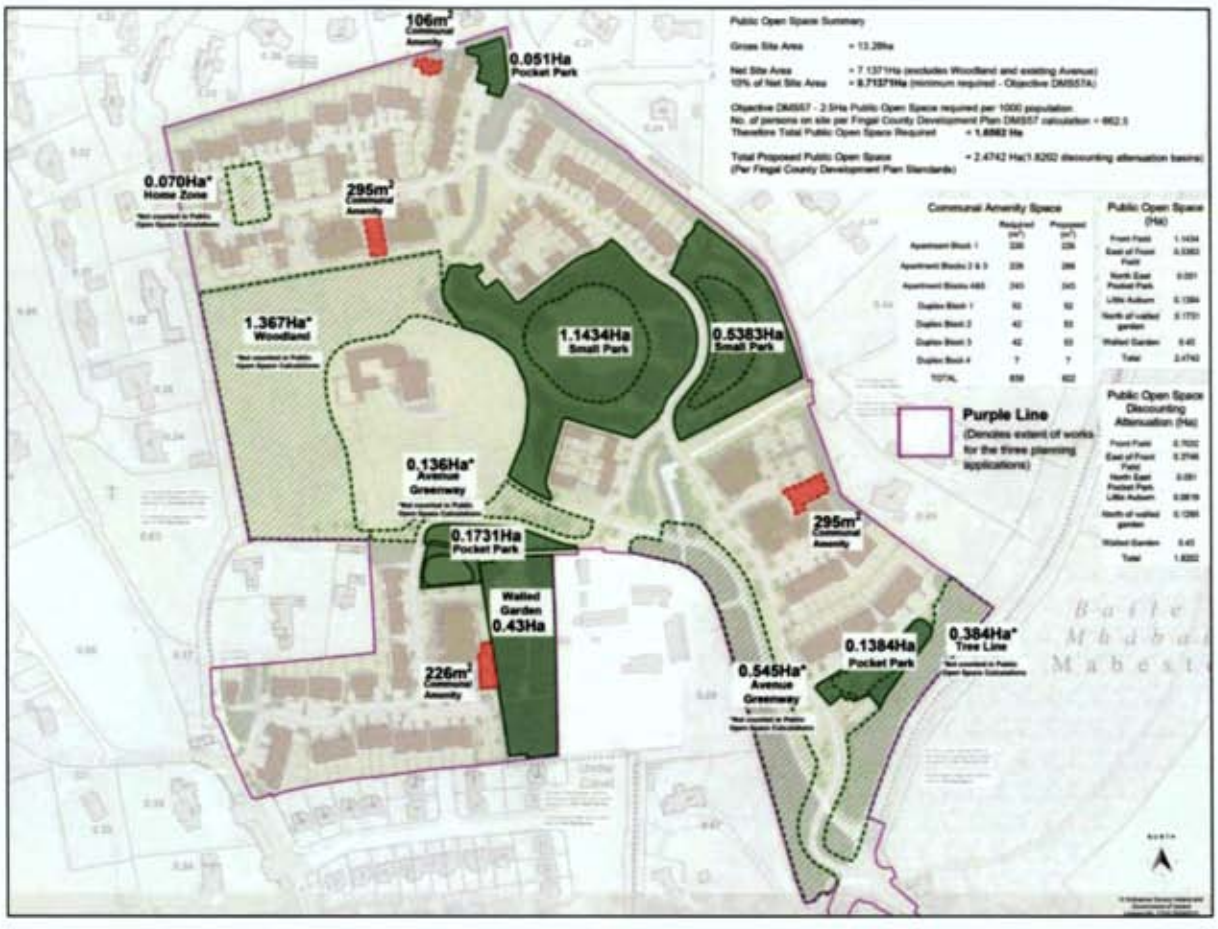

Figure 2.7: Open Space Layout (Source: CCK Architects)

2.4.8 Car Parking

It is proposed to provide for a total of 405 no. car parking spaces, across basement, undercroft and surface level, to serve the overall development (i.e., residents, visitors and drop-off). This is below the Development Plan requirement of 468 no. spaces but in line with the requirements of the Design Standards for New Apartments (2020).

Further details of parking travel plan can be found in the TTA and Travel Plan prepared by Waterman-Moylan Consulting Engineers as well as within the Transport chapter of this EIAR.

Description	Car Parking Norm	No. of Units Proposed	Car Parking Requirement	Car Parking Proposed
House – Urban / Suburban (1 or 2 bedrooms)	1-2 within curtilage	6	12 spaces	
House – Urban / Suburban (3 or more bedrooms)	2 spaces within the curtilage	127	254 spaces	

Apartment / Townhouse (1 bedroom)	1 Space per unit plus 1 visitor space per 5 units	36	36 spaces and 7 visitor spaces	
Apartment / Townhouse (2 bedrooms)	1.5 spaces per unit plus 1 visitor space per 5 units	77	116 spaces and 15 visitor spaces	
Apartment / Townhouse (3 bedrooms)	2 spaces per unit plus 1 visitor space per 5 units	13	26 spaces and visitor space	
Total	-	**259**	444 spaces and 24 visitor spaces	**405 spaces**

Table 2.1 Car Parking Provision (Source: Table 13.11 of Transportation Chapter of EIAR)

2.4.9 Drainage Infrastructure

Proposed Foul Water

It is proposed to drain wastewater in a south-easterly direction through a series of 150mm and 225mm sewers to a proposed new pumping station near the site entrance, as shown on Waterman Moylan drawings 19-020-P200 to P203. The wastewater pumping station will have a 24-hour storage tank (115.4m^3 of storage for 259 units) and will be designed in accordance with Irish Water requirements. In order to minimise the risk of odour, noise and vibration nuisance, a buffer zone of 35m is proposed between the pumping station and the nearest property, in accordance with Fingal County Council's Development Plan, Objective WT12. There are no existing buildings proposed within this 35m buffer zone.

Wastewater will be pumped from the development site via Back Road and Kinsealy Lane to outfall via a stand-off manhole to the new gravity sewer, where it will drain by gravity to the new Chapel Road pumping station and ultimately to the North Fringe Interceptor Sewer, as shown on the accompanying Waterman Moylan foul water layout drawings.

It was agreed with Irish Water that the proposed rising main along Kinsealy Lane would be designed and constructed to allow the future Castleway Pumping Station to utilise the rising main and therefore avoid multiple rising mains along Kinsealy Lane. This proposed rising main is designed to accommodate flows from the Kinsealy Lane Pumping Station and to ensure that there are no septicity issues arising. The detailed rising main design will form part of the Connection Agreement with Irish Water for the Auburn Pumping Station prior to any construction on site.

A Pre-Connection Enquiry was submitted to Irish Water as part of the Strategic Housing Development submitted for the subject lands. A Confirmation of Feasibility Letter was issued by Irish Water on 13 September 2021, stating that connection to the Irish Water network is feasible via a new rising main from the Auburn site to the new gravity sewer at Floraville Pumping Station in Kinsealy, which in turn drains to the new Chapel Road pumping station – refer to the letter included in Appendix 7.1 of this report.

Irish Water subsequently issued a letter to An Bord Pleanála, dated 23 May 2022, reiterating their position as set out above.

Proposed Surface Water

It is proposed to drain surface water from the development via a series of drains ranging from 150mm to 450mm diameter to three separate outfalls to the existing Hazelbrook Stream: one near the centre of the site from the detention basin north of the ditch, one from the Streamstown site, and one at the south of the site near the entrance. A new headwall is to be constructed at each of the outfalls.

The proposed development incorporates a Storm Water Management Plan through the use of various SuDS techniques. Treatment and storage of surface water at source will intercept and slow down the rate of runoff from the site to the existing surface water sewer system.

Based on three key elements, Water Quantity, Water Quality and Amenity, the targets of the SuDS train concept have been implemented in the design. The SuDS devices proposed around the site include permeable paving, filter drains, green roofing, grasscrete, dry detention basins, flow control devices and petrol interceptors.

Attenuation storage is provided to limit the discharge rate from the site into the public network. As per the GDSDS, the required attenuation volume is calculated assuming 100% runoff from paved areas, and has been calculated for the 1-year, 30-year and 100-year return periods, identifying the critical storm for each. To achieve the required attenuation volume, the site has been divided into several separate sub-catchments. The Auburn Park site and the northern portion of the Little Auburn site will be attenuated in a proposed dry detention basin in the open space at the centre of the site. The southern portion of the Little Auburn site will be attenuated in a proposed dry detention basin at the south of the site near the site entrance.

The Streamstown site is divided into two sub-catchments – the main portion of the site will be attenuated in a dry detention basin near the Hazelbrook Stream, and the proposed apartment block will have a separate below ground Stormtech (or similar approved) attenuation chamber.

The entrance road will drain via kerb openings into the existing forested area between the road and the existing ditch. To ensure infiltration and treatment of the surface water runoff from the road, a permeable buffer comprising filter stone will be laid adjacent to the kerb.

Surface water runoff from each catchment will be restricted via a hydro-brake or similar approved flow control device, limited to the greenfield equivalent runoff rate for each catchment.

Potable Water

It is proposed to connect to the 12" (c.300mm) watermain in the Malahide Road. The proposed network consists of a 200mm watermain running along the Main Access Road, with a series of 150mm and 100mm branches. As previously stated, A Confirmation of Feasibility and Statement of Design Acceptance have been received from Irish Water for this development and are included in the appendices of Waterman-Moylan's Engineering Assessment Reports.

2.4.10 Construction & Phasing

Post demolition and site preparation, it is proposed to develop the site across 3 no. phases as outlined in Fig. 2.9 below with the necessary infrastructure being included within Phase 1. It is estimated that it may take up to 48 months to complete the development.

Figure 2.8: Phasing of Cumulative Development (Source: CCK Architects)

2.4.11 Emissions & Waste

Please refer to Chapters 6.0 and 7.0 of this Environmental Impact Assessment Report for a full assessment of the impact of the proposed development on emissions and waste arising in relation to air and water quality, and climate.

All spoil and waste material will be removed to an approved location and storage of construction materials in public areas will be minimised. Excavated material may be temporarily stored onsite, with excess material to be removed off-site. All oil/diesel stored on site will be in suitable containers which will be located in a purpose built bunded area, which will provide containment in the event of accidental spills. Such waste will be handled and/or off appropriately in line with Waste Legislation. As per the findings included within Chapters 6.0 and 7.0, the area currently has good air and water quality, which shall not be affected by the proposed development.

Demolition figures from the proposed development are not quantified at this point but it is important to note that the demolition works relate to a small number of buildings, comprising 1 no. dwelling (Little Auburn) and some sheds/outbuildings. All waste arising shall be recorded and disposed of under

the supervision of a C&D Waste Manager and in accordance with relevant licenses (details contained within Waterman-Moylan's Preliminary Construction, Demolition & Waste Management Plan that were submitted with each of the applications).

2.4.12 Description of Reasonable Alternatives

This section of the EIAR focuses on alternatives that were considered during the preparation of this EIAR and planning application. It has been carried out in accordance with the Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment (2018). In this regard, the Guidelines state the following:

"The Directive requires that information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by the developer. These are reasonable alternatives, which are relevant to the project and its specific characteristics. The developer must also indicate the main reasons for the option chosen taking into account the effects of the project on the environment.

Reasonable alternatives may relate to matters such as project design, technology, location, size and scale."

This section of the EIAR sets out an outline of the main alternatives that have been examined through the design and consultation stages of the planning process with the following headings:

- Alternative Locations
- Do-Nothing Scenario
- Alternative Uses
- Alternative Processes
- Alternative Designs/Layouts

Alternative Locations

Having regard to locations, it is established that the considerations of alternatives in a significant number of cases have already been addressed and decided at strategic planning level during the preparation and adoption of the relevant developments plan pertaining to a specific area (i.e., Fingal County Development Plan 2017-2023). Furthermore, these plans will have been subject to Strategic Environmental Assessment which take into account the environmental considerations associated with, for example, the cumulative impact of an area zoned for industry on a sensitive landscape. The EIA Guidelines also state that the statutory development plans can establish project-level objectives or other mitigation that a subsequent site project and its EIAR should be cognisant of.

Having regard to the above, Downey Planning note that the lands subject to this application and EIAR are located within the Fingal County Council administrative area and the subject site is zoned 'Objective 'RA' – Residential Area, which seeks "*"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure."*

As this site is zoned for residential development within an established urban area, it was not considered necessary to consider other sites. Furthermore, this is the only site within the control of the applicant and as such no alternative site was available to them for this development.

Do-Nothing Scenario

A 'Do Nothing' scenario would not be consistent with the RA land use zoning pertaining to the lands and the objectives of the County Development Plan to facilitate a new residential development on the subject lands as part of a wider development of the Streamstown area. Given the subject site's location within Malahide as well as access to public transport and mobility, failure to these lands would significantly impair the quality of the urban landscape and viability for a mix of sustainable uses and amenities for existing and future residents. As such, it is considered that the 'Do Nothing' scenario is not a suitable alternative option for the subject lands.

Furthermore, to not development these zoned and serviced lands would not be consistent with national planning policy as set out in the National Planning Framework, Regional Spatial Economic Strategy and Urban Development and Building Height Guidelines.

Alternative Uses

As previously stated, the subject site is located within the functional area of Fingal County Council. As such, the development of the site is informed by the policies and objectives of the Fingal County Council Development Plan 2017-2023. Under the current County Development Plan, the subject site is zoned 'Objective 'RA' – Residential Area, which seeks "*"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure."*

The location of the subject lands within this zoning objective is such that the proposed development is considered permitted in principle uses under the pertaining zoning objective.

An alternative use, such retail or commercial development was not considered in accordance with the land use zoning pertaining to the lands and as such was not considered to be a suitable or reasonable alternative.

Alternative Process

An alternative process to that currently proposed would be to submit a single application under the new Large Scale Residential Development process. However, it is considered that the form of the developments being proposed can be developed independently of each other and as such the current process is considered the best approach.

Alternative Designs & Layouts

It must be noted that given the extensive ownership of the applicant of the entire landholding, subject to this project, the existing and planned infrastructure in place, and the zoning of the lands, there were no major alternative uses or processes that were considered reasonable. The alternatives to the proposed development considered during the course of the preparation of this EIAR were related to the overall layout, access arrangement and internal roads pertaining to the proposed scheme.

The design of the proposed project has evolved throughout the pre-application consultation process, and assessment of the decision on the previous application on the site, resulting in alterations to the proposal. The main environmental issues that have most informed the chosen design relate to impact on trees and woodlands, the setting of the protected structure and architectural heritage as well as visual impact. This shall be set out below:

Alternative 1: Layout from Previous Planning Application (309907-21)

The previous application on the subject site (ABP Ref. 309907-21), was refused permission by An Bord Pleanála on 15th July 2022, for 2 no. reasons. Prior to lodging that application, the applicant and design team prepared numerous design options for the site before deciding upon that, which was submitted to An Bord Pleanála for consideration. Those options were set out within the previous EIAR submitted within that application and can be considered as alternatives, which were not brought forward for this application, noting the decision from An Bord Pleanála under ABP Ref. 309907-21.

Figure 2.9: Previously Proposed Site Plan ABP Ref. 309907-21

Alternative 2: Layout for Section 247 Pre-Planning Meeting with Fingal County Council for ABP Ref. 313360-22

The proposal that was submitted for the Section 247 Pre-Planning Meeting had sought to address the reasons for refusal from the previous application (309907-21) and to improve the overall quality of the development. It sought reduced impact on trees and hedgerows as well as removed the previously proposed community use building from the Walled Garden. Furthermore, an apartment block was omitted from the woodland and there were less houses in the front field to the front of Auburn House.

However, this layout, while a significant improvement on the previous proposal, still needed further consideration and design input and so was amended, particularly to assess the access options to the site.

Figure 2.10: Site Layout Plan presented to the Planning Authority as part of the 247 Pre-Application Consultation meeting (24th September 2021)

Alternative 3: Proposed Layout for Tripartite Pre-Application Consultation An Bord Pleanala under ABP Ref. 313360-22

This alternative had the benefit of further technical consultation with the design team and the Planning Authority to reduce environmental impacts, such as on conservation/built heritage and ecologically sensitive areas. While it was similar to the layout proposed at the Section 247 meeting, it was subject to subtle improvements, such as detailed design of materials and finishes and distances to features and trees. Furthermore, a detailed analysis of the various access options was carried out and submitted to the Board in a stand-alone report and formed part of the alternatives being considered. This proposal was not considered to represent the optimum design solution for the site with the following issues of particular concern:

- Proximity of duplex block to the walled garden.
- Layout of the drop-off for the childcare facility.
- Quantum of trees being retained.
- Finish to Proposed Block 4 at main entrance.

Figure 2.11: Site Layout Plan presented to An Bord Pleanala for Tripartite Pre-Application Consultation

Justification for Selecting Chosen Layout and Design

This EIAR has set out the evolution of the design of the scheme and alternatives, which has informed the chosen planning application.

- The chosen application layout represents an efficient use of appropriately zoned and serviced land that is easily accessible in the centre of Malahide and within the metropolitan area of Dublin.
- A high-quality residential development that meets the necessary provision of open spaces and residential amenity has been achieved.
- The layout provides for a variety of housing types and demographic needs that will create a sustainable community.
- It helps to protect the existing tree lined approach to Malahide along the Malahide Road.
- Appropriate building heights have been chosen to protect existing amenities with heights stepping down close to existing residential areas, with apartment blocks 1-3 being reduced from the previous application, ensuring no visual impact on Auburn House.
- The viewshed from the expired LAP has been retained with no buildings being proposed within it.

- The provision of a mix of uses and residential amenity facilities will help to provide for a sustainable community.
- The layout provides for good permeability and legibility.
- The access route chosen has the least impact on the character and setting of the site and is the safest from a traffic and pedestrian perspective – a detailed access report has been prepared under separate cover as part of this application.
- It does not give rise to any significant environmental impacts.
- The chosen layout will provide for a high-quality development that will help to add housing supply in the Malahide and Fingal area.

2.5 Consideration of Cumulative Effects with Other Projects

The assessment in each EIAR Chapter has considered the cumulative impacts of construction and operational phases of the proposed project, in conjunction with surrounding developments completed, under construction and those to be commenced.

As it stands, there are no significant planning permissions granted in the immediate adjoining areas to the subject site. There are some larger developments permitted further afield, such as on Back Road and Kinsealy Lane to the east of the site. The aforementioned applications have been taken into consideration as part of this EIAR.

We note that there are other planning applications currently being assessed by An Bord Pleanála, such as Broomfield SHD and Backroad SHD, but no decision was made on these at the time of this EIAR being prepared.

Additional planning applications in the wider vicinity of the lands include revisions and alterations to existing buildings or proposals or have since expired. Such applications have no material consideration to the proposed development noting the minor nature of same.

2.6 Risk of Major Accidents and/or Disasters

The surrounding environment of the proposed project consists of a mix of residential, recreational and commercial development. There are no SEVESO II Directive sites (96/82/EC & 2003/105/EC) within 1km of the proposed project and therefore there is no risk of a major accident or disaster in relation to a major chemical accident.

In terms of the risk of a major accident and disaster, the vulnerability of the scheme is considered to be low given the location of the proposed scheme and the existing built environment surrounding the site. Therefore, the potential risk posed by a major accident and or disaster have been considered based on a low vulnerability of same. The overall risk is considered to be low.

3.0 PLANNING CONTEXT

3.1 Site Location & Context

The subject site is located within the administrative area of Fingal County Council, for which the statutory Development Plan is the Fingal County Council Development Plan 2017-2023.

The subject lands are subject to national, regional and local objectives and planning policies. The foregoing represents the relevant plans, guidelines, frameworks and legislation for the Assessment in line with recital 32 and Article 4(4) of the EIA Directive and Article 299(1)(b)(ii)(II)(C) of the Planning and Development Regulations 2001 (as amended).

- Project Ireland 2040: National Planning Framework (2018)
- Project Ireland 2040: National Development Plan 2018-2027
- Rebuilding Ireland, An Action Plan for Housing and Homelessness (2016)
- Sustainable Residential Development in Urban Areas and Best Practice Urban Design Manual Guidelines (2009)
- Delivering Homes, Sustaining Communities: Statement on Housing Policy (2007)
- Sustainable Urban Housing: Design Standards for New Apartments (December 2020)
- Childcare Facilities: Guidelines for Planning Authorities (2001)
- Design Manual for Urban Roads and Streets (DMURS) 2019
- Urban Development and Building Heights: Guidelines for Planning Authorities (December 2018)
- Smarter Travel: A Sustainable Transport Future
- EIA Directive
- Birds and Habitats Directive – Appropriate Assessment
- The Planning System and Flood Risk Guidelines (2009)
- National Adaptation Framework: Planning for a Climate Resilient Ireland
- Climate Action Plan 2021
- Regional Planning Guidelines for the Greater Dublin Area 2010-2022
- Regional Spatial and Economic Strategy (2019)
- Transport Strategy for the Greater Dublin Area 2016-2035
- Fingal County Council Development Plan 2017-2023

This chapter outlines the planning and development context for the proposed development with reference to the aforementioned principal planning policy documents. This chapter also sets out the development context and the planning history within which the proposed development should be considered and provides the policies, principles and objectives within which the proposed development should be assessed. It is important to note that a full Supporting Planning Statement has been prepared by Downey Planning and is submitted under separate cover as part of each of the individual planning applications to which this EIAR is assessing. Those report sets out a detailed analysis of the project's consistency with the relevant planning objectives as they pertain to the area and project.

3.1.1 Proposed Development

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

3.2 National Planning Context

3.2.1 Project Ireland 2040: National Planning Framework

The National Planning Framework is *"the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040"*. It is a Framework to guide public and private investment, to create and promote opportunities for our people, and to protect and enhance our environment—from our villages to our cities and everything in between. It replaces the previous National Spatial Strategy (NSS) as the primary national policy framework. The NPF is designed to improve the effectiveness of public investment in infrastructure and other relevant services around the county, including the enhancement of regional and international connectivity.

It is stated within the National Planning Framework that there will be an ongoing shift in population and jobs to the east, and to the counties around Dublin in particular. The NPF will support the future growth and success of Dublin as Ireland's leading global city of scale, by better managing Dublin's growth to ensure that more of it can be accommodated within and close to the city.

Sustainable development is *"development which meets the needs of the present without compromising the ability of future generations to meet their own needs"*, and as such it is aimed at promoting wellbeing of citizens now and in the future. For this vision to be achieved, it is required to create a sustainable and efficient economy respecting the main pillars of sustainability which relate to the environment, the economy, and society.

The NPF has recognised that in order to develop sustainable communities it is important to improve its residents' quality of life. This complex challenge involves taking into consideration spatial planning and the quality in the built environment including measures that would promote social inclusion. Therefore, it is considered that the proposed development is in accordance with this framework.

In relation to the NPF, it is important to note that national policy takes primacy over local policy, such as local county development plans.

3.2.2 Housing for All: A New Housing Plan for Ireland

The Housing for All: A New Housing Plan for Ireland states that Ireland's housing system is not meeting the needs of enough of our people, and therefore, it needs to increase new housing supply to an average of at least 33,000 new units per year over the next decade. This will include over 10,000 social homes each year over the next five years, with 9,500 of these being new-builds, and an average of 6,000 affordable homes for purchase or rent. As per, Housing for All provides four pathways to achieving four overarching objectives:

- *Supporting Homeownership and Increasing Affordability.*
- *Eradicating Homelessness, Increasing Social Housing Delivery and Supporting Social Inclusion.*
- *Increasing New Housing Supply; and*
- *Addressing Vacancy and Efficient Use of Existing Stock.*

Outlined in the Plan, the State must act decisively to increase supply of both private and public housing. An average of 33,000 homes must be provided every year between now and 2030. Increased housing output is needed in all sectors - private, affordable, and social - to meet the needs of people in a wide variety of circumstances.

It is submitted that provision of 259 no. new residential units on the subject site will help the Government to achieve the objectives of the Housing for All Plan. Therefore, it is considered that the proposed development is consistent with the development framework in this regard.

3.2.3 Project Ireland 2040: National Development Plan 2021-2030

Project Ireland 2040 National Planning Framework (NPF), which sets the overarching spatial strategy for the next twenty years, includes the National Development Plan, which sets out the ten-year investment strategy. The recent Review of the NDP was led by the National Investment Office in the Department of Public Expenditure and Reform and was structured in two phases with associated outputs. The review was founded upon a strongly evidence-based approach, building upon the extensive data and analyses that have been produced by the NIO and by the work of IGEES and other policy units across other Government Departments and agencies, including other newly commissioned and targeted research. The NDP sets out funding to underpin key Government priorities. Specifically, allocations will support the realisation of critical goals laid out in Housing for All and will enable a step-change in investment to ameliorate the effects of climate change.

Outlined in the NDP, the key achievements of NPF over 2018-2021 and in relation to housing includes delivery of over 63,000 homes and 26,256 new social housing homes. To underpin NPF population targets, a detailed assessment of structural housing demand identifies demand for almost 400,000 new homes in Ireland between 2020 and 2031, or 33,000 new homes per annum. At city and county level, this is broken down to form a Housing Supply Target (HST) for each local authority area, to guide planning for future development.

The NPF housing supply target has been refined to reflect recent (2020) ESRI research based on NPF population growth, taking into account both existing demand and a legacy of undersupply to date. There is now a need to accommodate around 600,000 new households by 2040, with the Department

of Housing planning to deliver an average of 33,000 homes per annum to 2030 including an average of 10,000 new social homes each year and an average of 6,000 affordable homes each year.

Set out in the NDP, public capital investment must, as a top priority, support the delivery and location of the homes that society will need over the next decade and beyond, while also ensuring that in the future the pattern of housing development underpins the development of more compact higher-density cities, towns and other areas. It is also a priority to enable infill development, with up to 50% of future housing in our cities and major urban centres and 30% elsewhere to be provided within existing built-up areas serviced by existing facilities and along high-capacity public transport corridors.

The proposed development will provide for a medium density, sustainable residential development, thus promoting compact urban growth and good quality of life. The attractiveness of the subject site to live in is further supported by the provision of high quality physical and social infrastructure both within the site and in the surrounding area, such as Malahide Castle and the town centre itself.

In light of the above, it is submitted that the proposed development is consistent with the National Development Plan.

3.2.4 Rebuilding Ireland, An Action Plan for Housing and Homelessness (2016)

Rebuilding Ireland, an Action Plan for Housing and Homelessness, provides a multi-stranded, action-oriented approach to achieving many of the Government's key housing objectives. The overarching aim of this Action Plan is to ramp up delivery of housing from its current undersupply across all tenures to help individuals and families meet their housing needs, and to help those who are currently housed to remain in their homes or be provided with appropriate options of alternative accommodation, especially those families in emergency accommodation.

The Action Plan comprises five pillars of concerted actions right across Government – addressing homelessness, accelerating social housing, building more homes, improving the rental sector and utilising existing housing. This Plan sets ambitious targets to double the annual level of residential construction to 25,000 homes and deliver 47,000 units of social housing in the period to 2021, while at the same time making the best use of the existing housing stock and laying the foundations for a more vibrant and responsive private rented sector.

Achieving the aim of accelerated delivery will contribute to the following core objectives:

- Addressing the unacceptable level of households, particularly families, in emergency accommodation.
- Moderating rental and purchase price inflation, particularly in urban areas;
- Addressing a growing affordability gap for many households wishing to purchase their own homes;
- Maturing the rental sector so that tenants see it as one that offers security, quality and choice of tenure in the right locations and providers see it as one they can invest in with certainty;
- Ensuring housing's contribution to the national economy is steady and supportive of sustainable economic growth; and

- Delivering housing in a way that meets current needs while contributing to wider objectives such as the need to support sustainable urban and rural development and communities and maximise the contribution of the built environment to addressing climate change.

The provision of 259 no. new residential dwellings at this site will help the Government achieve the objectives of this Housing Action Plan. As well as this, 10% of the total units within the proposed scheme are proposed for social & affordable housing in compliance with Section 96 of Part V of the Planning and Development Act, 2000 (as amended) on the provision of social housing.

3.2.5 Sustainable Residential Development in Urban Areas and Best Practice Urban Design Guidelines (2009)

The aim of the Sustainable Residential Development in Urban Areas document, which reviews and updates the Residential Density Guidelines (1999), is to assist both planning authorities and developers in meeting certain standards in the design of residential development. The main objective of the Sustainable Residential Development in Urban Areas Guidelines is to produce high-quality sustainable development through providing: *"quality homes and neighbourhoods; places where people actually want to live, to work and to raise families; and, places that work—and will continue to work—not just for us, but for our children and our children's children."*

The Guidelines state that sustainability is about the integration of schools, community facilities, employment, transport and amenities with the housing development process in a timely, cost-effective way.

The proposed development part of this application includes ancillary residential facilities, community facilities and a childcare facility to serve the future resident population.

The design of the proposed development has placed considerable emphasis on the context of the site and location as well as the surrounding built environment. The proposed development successfully incorporates the criteria of the 'Urban Design Manual – A Best Practice Guide' and its 12 criteria, including *Context, Connections, Inclusivity, Variety, Efficiency, Distinctiveness, Layout, Public Realm, Adaptability, Privacy/Amenity, Parking*, and *Detailed Design*, of which Planning Authorities are recommended to assess planning applications. It is evident that the form, layout, architectural and landscaping design of the proposed development have been informed by the development's place and time. Well-designed high quality housing supply in the right locations are fundamental to building strong, sustainable communities, thus ensuring the country's continued success in attracting and generating investment and improving the quality of life for residents.

The proposed development has had regard to the surrounding environment and positively contributes to the character and identity of the surrounding neighbourhood and will promote the sustainable use of land in close proximity to existing public transport within Malahide. The proposed development also provides for a variety and mix of housing types, thus promoting housing for all.

3.2.6 Delivering Homes, Sustaining Communities: Statement on Housing Policy (2007)

The Department of the Environment, Heritage and Local Government's Statement 'Delivering Homes, Sustaining Communities' provides the overarching policy framework for an integrated approach to housing and planning. The statement notes that demographic factors will continue to underpin strong demand for housing, which in turn will present considerable challenges for the physical planning of new housing and the provision of associated services. The quality of the housing environment is recognised as being central to creating a sustainable community. Sustainable neighbourhoods are areas where an efficient use of land, high quality design and effective integration in the provision of physical and social infrastructure combine to create places people want to live in.

This 'Delivering Homes, Sustaining Communities' policy statement is accompanied by Best Practice Guidelines entitled 'Quality Housing for Sustainable Communities'. The aim of these Guidelines is to promote high standards in the design and construction and provision of residential and services in new housing developments. Best use of land is encouraged and optimal utilisation of services and infrastructure in the provision of new housing. The guidelines also aim to point the way to cost effective options for housing design that go beyond minimum codes and standards; promote higher standards of environmental performance and durability in housing construction; seek to ensure that residents of a new housing scheme enjoy the benefits of first-rate living conditions in a healthy, accessible and visually attractive environment; and provide homes and communities that may be easily managed and maintained.

The planning application is accompanied by a Housing Quality Assessment (HQA) prepared by CCK Architects & Urban Designers, which demonstrate the proposed development is compliant with the relevant standards in the Quality Housing for Sustainable Communities document and the Fingal County Council Development Plan 2017-2023.

3.2.7 Sustainable Urban Housing: Design Standards for New Apartments (December 2020)

The Sustainable Urban Housing: Design Standards for New Apartments build on the content of the 2015 and 2018 apartment guidance, much of which remains valid, particularly with regard to design quality safeguards such as internal space standards for apartments, internal storage and amenity space. The Guidelines state that, *"in the longer term to 2040, the Housing Agency has identified a need for at least 45,000 new homes in Ireland's five cities (Dublin, Cork, Limerick, Galway and Waterford), more than 30,000 of which are required in Dublin City and suburbs, which does not include additional pent-up demand arising from under-supply of new housing in recent years"*. It is also stated that it is *"critical to ensure that apartment living is an increasingly attractive and desirable housing option for a range of household types and tenures."*

Downey Planning are of the professional opinion that the proposed development complies with the requirements of the Sustainable Urban Housing: Design Standards for New Apartments. The application includes Housing Quality Assessments, a detailed daylight, sunlight and internal light analysis report, and Building Lifecycle Reports in accordance with Chapter 6 of the Guidelines. It is

submitted that the proposed development will help to meet the current demand for apartment type developments.

3.2.8 Childcare Facilities: Guidelines for Planning Authorities (2001)

These Guidelines for Planning Authorities on Childcare Facilities provide a framework to guide both local authorities in preparing development plans and assessing applications for planning permission, and developers and childcare providers in formulating development proposals. The Guidelines are also intended to ensure a consistency of approach throughout the country to the treatment of applications for planning permission for childcare facilities.

With the growing demand for childcare provision, there is a recognition that such provision must be of suitably high quality. Quality childcare can benefit children, their parent, employers and communities in general. Access to quality childcare services contributes to the social, emotional and educational development of children. Government policy on childcare is to increase the number of childcare places and facilities available and to improve the quality of childcare services for the community. In this regard, the proposed development is providing a childcare facility that is appropriate to the scale of the development and will cater for the influx of population arising from the proposed scheme.

In light of the above, it is submitted that the current provision of childcare facilities in the area, coupled with the new additional facility being proposed on adjoining lands to the south (Reg. Ref. F22A/0260), is consistent with the Childcare Facilities Guidelines. A stand-alone Childcare Demand Assessment Report has been prepared in support of each of the applications.

3.2.9 Design Manual for Urban Roads and Streets (DMURS)

The Design Manual for Urban Roads and Streets (DMURS) 2013 and as updated in 2019, sets out design guidance and standards for constructing new and reconfigured existing urban roads and streets. It also sets out practical design measures to encourage more sustainable travel patterns in urban areas. The transport drawings and documentation, including the DMURS Compliance Statement, prepared by Waterman-Moylan Consulting Engineers provide further details in respect of the compliance of the proposed development with the provision of DMURS.

3.2.10 Urban Development and Building Heights: Guidelines for Planning Authorities (December 2018)

The 'Urban Development and Building Heights: Guidelines for Planning Authorities' are intended to set out national planning policy guidelines on building heights in relation to urban areas, building from the strategic policy framework set out in the National Planning Framework (NPF). It is a key objective of the NPF to see that increased levels of residential development in our urban centres and significant increases in the building heights and overall density of development is not only facilitated but actively sought out and brought forward by our planning processes and particularly so at local authority and An Bord Pleanála levels.

Therefore, increasing prevailing building heights and density has a critical role to play in addressing the delivery of more compact growth in our urban areas, particularly our cities and large towns through enhancing both the scale and density of development.

The proposed development at Auburn is in accordance with national and regional policy which supports increased building height and increased density of development, and it is worth to mention that the physical and social infrastructure already in place can accommodate taller buildings. We note also that heights of up to 4 storeys would not be considered 'tall' within the Dublin area and are comparable to other developments under construction and consideration in the Malahide area.

3.2.11 Smarter Travel: A Sustainable Transport Future

The NTA's Transport Strategy for the Greater Dublin Area (GDA) provides a framework for the planning and delivery of transport infrastructure and services over the period 2016-2035, this includes road, rail, walking and cycling. The strategy seeks the integration of land use planning and transport planning, and it particularly seeks the consolidation of Dublin City. The five key goals of this transport policy are as follows:

- Improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport.
- Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks.
- Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions.
- Reduce overall travel demand and commuting distances travelled by the private car.
- Improve security of energy supply by reducing dependency on imported fossil fuels.

The proposal in this instance is consistent with this Transport Strategy providing for a consolidated approach to the provision of new housing in tandem with existing public transport and facilitating sustainable modes of transport.

3.2.12 Birds and Habitats Directive – Appropriate Assessment

The proposed development has been screened for Appropriate Assessment in accordance with the requirements of Article 6(3) of the EU Habitats Directive (92/32/EEC). OPENFIELD Ecological Services has prepared a report for Screening for Appropriate Assessment for the proposed development. This screening report has evaluated the proposed development to determine whether or not significant negative impacts on Natura 2000 sites are likely to arise by virtue of its construction and use.

Accordingly, a Natura Impact Statement (NIS) has been prepared by OPENFIELD Ecological Services for the proposed development. The NIS contains an analysis of the proposed project and its relationship with areas designated under the Habitats and Birds Directives. Pathways exist between the development site and two such areas and these have been described in detail. Following this analysis, it is concluded that significant effects to the Baldoyle Bay SAC could not be ruled out. Specifically, this may arise from the impact to intertidal habitats from pollution during the construction phase. Arising from this assessment, mitigation has been proposed. With the implementation of these measures,

adverse effects to the integrity of the SAC will not occur. This conclusion is based on best scientific knowledge.

3.2.13 The Planning System and Flood Risk Guidelines (2009)

These Guidelines require the planning system at all levels to avoid developments in areas at risk of flooding, particularly floodplains, except where there are no suitable alternative sites available in areas at lower risk that are consistent with the objectives of proper planning and sustainable development. Where such development has to take place, in the case of urban regeneration for example, the type of development has to be carefully considered and the risks should be mitigated and managed through location, layout and design of the development to reduce flood risk to an acceptable level.

The applications are supported by a site-specific Flood Risk Assessment, prepared by Waterman-Moylan Consulting Engineers and JBA Consulting. This confirms that the proposed development is in accordance with these Guidelines with the housing being constructed on lands designated as Flood Zone C only.

3.2.14 National Adaptation Framework: Planning for a Climate Resilient Ireland

In accordance with the 'Climate Action and Low Carbon Development Act 2015, as amended', this National Adaptation Framework (NAF) specifies the national strategy for the application of adaptation measures in different sectors and by local authorities in their administrative areas in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive effects that may occur. This NAF and its successors will set out the context to ensure local authorities, regions and key sectors can assess the key risks and vulnerabilities of climate change, implement climate resilience actions and ensure climate adaptation considerations are mainstreamed into all local, regional and national policy making.

The 'Built Environment and Spatial Planning' section within this Framework recognises that, "climate change considerations need to be taken into account as a matter of course in planning-related decision-making processes and that the deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment". Furthermore, "effective planning reduces vulnerability to the negative effects of climate change by integrating climate considerations into decision making in order to avoid inappropriate forms of development in vulnerable areas and promoting compact development in less vulnerable areas". It is important to mention that this Framework envisions 'flood resilience' and 'access to wildlife and green space' as no-regret benefits of effective adaptation which would continue to be worthwhile regardless of future climate scenarios.

The proposed development with access to high-quality green communal space and introduction of best practice energy efficiency measures as required to meet the Energy Strategy and Building Regulations and promoting a compact urban form for 'less vulnerable areas' is consistent with this national framework. An Energy Report has also been prepared by Waterman-Moylan Consulting Engineers as part of the applications.

3.2.15 Climate Action Plan 2021

Climate disruption is already having diverse and wide-ranging impacts on Ireland's environment, society, economic and natural resources. The Climate Action Plan 2021 sets out an ambitious course of action over the coming years to address this issue. The Plan clearly identifies the nature and scale of the challenge.

It outlines the current state of play across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and charts a course towards ambitious decarbonisation targets. The Plan sets out governance arrangements including carbon-proofing policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas.

The Plan clearly recognises that Ireland must significantly step up its commitments to tackle climate disruption. The leadership role both the Government and public bodies can play in taking early action on climate is fundamental to achieving our decarbonisation goals. The Plan notes that the built environment (residential and commercial) accounted for 12.7% of Ireland's greenhouse gases in 2018; an increase from 11.7% in 2017. It is important that we improve the energy efficiency of our buildings, including our homes, workplaces, and schools by meeting higher energy performance standards and by increasing retrofit activity. This will not only reduce Ireland's dependence on fossil fuels but will also improve our living standards by making our buildings more comfortable, healthier, safer, and less costly to heat.

Our buildings are 70% reliant on fossil fuels, including oil fired boilers; over 80% of our homes and other buildings assessed for their BER have a rating of C or worse; and the current annual retrofit activity for existing stock is far too limited (approximately 23,000, mainly shallow, retrofits). A hierarchy of the most cost-effective investments underpin this, in addition to those already committed to in the 2019 Climate Action Plan, including:

- Improving the fabric and energy efficiency of our existing buildings.
- Rolling out zero-carbon heating solutions, predominantly heat pumps and district heating networks
- Planning for the full phase out of fossil fuels in buildings by 2050
- Progressive strengthening of building standards for all types of buildings
- Promoting the use of lower carbon alternatives in construction.
- Promoting behavioural change in how households use energy.

A total of 18,400 home retrofits were completed in 2020. However, just 4,000 were to a B2 standard and 1,600 installed a heat pump. We need to greatly increase the depth and volume of retrofits as well as the number of heat pumps installed in order to deliver the required emissions reductions.

As such, the proposed development has taken into consideration the Climate Action Plan and measures have been included within the design of the development to reduce carbon emissions in line with the requirements of the Action Plan.

3.2.16 Architectural Heritage Protection Guidelines for Planning Authorities

These guidelines are issued under Section 28 and Section 52 of the Planning and Development Act 2000. Under Section 52 (1), the Minister is obliged to issue guidelines to planning authorities concerning development objectives: a) for protecting structures, or parts of structures, which are of special architectural, historical, archaeological, artistic, cultural, scientific, social, or technical interest, and b) for preserving the character of architectural conservation areas.

The Guidelines note that as indicated in the 2001 Regulations, a planning application for works to a protected structure or proposed protected structure must include (in addition to the normal requirements to supply maps and drawings) "such photographs, plans and other particulars as are necessary to show how the development would affect the character of the structure."

Auburn House is designated as Protected Structure No. 0448 and described as a late 18th or early 19th century house, outbuildings and walled garden.

In order to assist the Board and the Planning Authority in assessing the proposals to the Protected Structure, Sheehan & Barry Conservation Architects have prepared a comprehensive Architectural Assessment/ Conservation Report for each application, which includes an architectural assessment, impact assessment and conservation and Methodology assessment with a photographic survey and fully detailed existing and proposed drawings with regards to the preservation of the Main House as a single residential. Please refer to the documentation prepared by Sheehan & Barry Conservation Architects for further details. A report on the current condition, proposed repair and advice on conservation-based alterations for re-use the walled garden for Auburn House is also submitted as part of this planning application (please refer to the 'The Walled Garden Walls and Corner Bastions' report prepared by CORA Consulting Engineers). It is submitted that the proposed development has taken into consideration the requirements of the guidelines and has been designed to provide a long term sustainable and viable use for the Protected Structure with as minimal impact as possible on Auburn House.

3.3 Regional Planning Context

3.3.1 Regional Spatial and Economic Strategy (2019)

The Regional Spatial and Economic Strategy (RSES), published by the Eastern and Midland Regional Authority, outlines the long-term regional level strategic planning and economic framework in support of the National Planning Framework for the period 2019-2031. The RSES identifies regional assets, opportunities and pressures and provides a framework for investment to better manage spatial planning and economic development throughout the Region.

The RSES is tasked with the development of planning policy for future housing needs in the region upon consideration of the availability of land, resources, environment and infrastructure capacity, and as such the document states that:

> *"In preparing Core Strategies for development Plans, Local Authorities shall determine the hierarchy of settlements in accordance with the hierarchy, guiding principles and typology of settlements in the draft RSES, within the population projections set out in the National Planning Framework to ensure that towns grow at a sustainable and*

appropriate level, by setting out a rationale for land proposed to be zoned for residential, employment and mixed-use development across the Region."

It is submitted that the proposed development on existing zoned and serviced lands will adhere with the policies and objectives of the RSES for the Eastern and Midland Regional Assembly Area. Furthermore, the proposed development will contribute to the provision of additional housing units and employment opportunities within the Dublin City and Suburbs area.

3.3.2 Transport Strategy for the Greater Dublin Area 2016-2035

This National Transport Authority Strategy document provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) up to 2035. The Strategy presents the transport requirements for the GDA based on principles of efficient, effective and sustainable movement of people and goods.

The Core Strategy has a focus on providing a better integration of land use planning and transport planning, which can be achieved through the consolidation of development into higher order centres. In terms of the provision of housing, the strategy seeks to directly enable the sustainable development of strategically important residential sites, particularly in Metropolitan Dublin, where demand is highest.

The proposed development at Auburn, Malahide, within walking distance of existing public transport including Dublin Bus, train and DART, will facilitate the current demands and future growth of the area and is considered an appropriate form of development in the context of supporting the vision and objectives of the Transport Strategy for the Greater Dublin Area 2016-2035.

3.4 County Planning Context

3.4.1 Fingal County Council Development Plan 2017-2023

3.4.1.1 Core Strategy

Variation 2 of the County Development Plan designates Malahide as a self-sustaining growth town with the remaining capacity for residential units of 956 additional dwelling units. The key tenet of the overall Settlement Strategy is the continued promotion of sustainable development through positively encouraging consolidation and densification of the existing urban built form – and thereby maximising efficiencies from already established physical and social infrastructure. The proposed development in this instance, in tandem with other applications for the area, will be within the target set by Variation No. 2 for additional dwellings in Malahide.

3.4.1.2 Land-Use Zoning

Under the current Fingal County Council Development Plan, the subject site is zoned "RA – Residential Area" which seeks:

"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure."

The vision for the "RA – Residential Area" seeks to:

"Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities."

Under the RA zoning, the following uses are permitted in principle.

Uses Permitted in Principle under the RA Land Use Zoning
Amusement Arcade[9]; Bed and Breakfast; Betting Office[9]; Childcare Facilities; Community Facility; Education; Funeral Home/Mortuary[9]; Guest House; Health Centre; Health Practitioner; Hospital; Office Ancillary to Permitted Use; Office≤100sq.m.[9]; Office>100sq.m. and, 1,000sq.m.[11]; Open Space; Place of Worship; Public House[9]; Public Transport Station; Recreational Facility/Sports Club; Residential; Residential Care Home/Retirement Home; Restaurant/Cafe[9]; Retail-Local < 150 sq.m. nfa; Retail - Convenience≤ 500 sq.m. nfa[9]; Retail – Comparison ≤ 500 sq.m. nfa[9]; Retail – Supermarket ≤ 2,500 sq.m. nfa[9]; Retirement Village; Sheltered Accommodation; Sustainable Energy Installation; Taxi Office; Traveller Community Accommodation; Utility Installations; Veterinary Clinic.
[9] In a local centre only *[11] Only located in a local centre and of a scale appropriate to that centre*

Table 3.1 – Permitted Uses under the RA Land Use Zoning

Therefore, the proposed development of 368 no. new residential units and 1 no. childcare facility are permitted in principle under the zoning objectives pertaining to the subject lands.

Fig. 3.1: Fingal County Council Development Plan 2017-2023 zoning map, with the associated zoning objectives (application sites highlighted in red).

3.4.1.4 Site Specific Objectives

The Supporting Planning Statement, prepared by Downey, submitted with the applications indicate how the proposed development is consistent with the relevant site-specific objectives pertaining to the lands. Where there is any deviation from these objectives, this is justified in the Material Contravention Statement.

3.5 Planning History Context

Downey Planning have carried out an examination of the planning history of the subject site, via Fingal County Council's online planning search portal, which determined that there have been a number of planning applications made on the overall landholding. The most relevant planning history is as follows:

- **ABP Ref. 313360-22 (Reg. Ref SHD/017/21)**: A Strategic House Development application was lodged on 19th April 2022 for the preservation of Auburn House (a Protected Structure) and stables as 1 no. residential dwelling, conversion of stables to provide storage space for Auburn House, construction of 368 no. residential units (87 no. houses, 281 no. apartments), creche and associated site works 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. A decision on this application is currently pending from ABP.
- **ABP Ref. 309907-21** – By Order dated 15th July 2021, An Bord Pleanála refused permission to Kinwest Ltd for a Strategic Housing Development consisting of the demolition of 'Little Auburn' and associated outbuildings, construction of 411 no. residential units (102 no. houses including preservation of Auburn House and 309 no. apartments), childcare facilities and all other associated site works.
- **Reg. Ref. F18A/0445** – By Order dated 25th January 2019, Fingal County Council granted planning permission to Mary McEvaddy for the conversion of service entrance off main driveway to serve as new eastern entrance to dwelling house, erection of new gate posts and automated gates, entrance forecourt, new entrance canopy to east elevation, alteration to existing entrance doorway on west elevation and associated external works at "Belmont" part of courtyard housing (formerly outhouses) in the grounds of Auburn House (a protected structure), Malahide, Co Dublin.
- **FS5/035/11** – By Order dated 26th January 2012, Fingal County Council decided that the erection of slatted cattle shed with straw bedded area (190.6 sq. m) yard was not exempted development.
- **Reg. Ref. F09A/0065** – By Order dated 29th July 2009, Fingal County Council granted planning permission to Mary & Ulick McEvaddy for Demolition of existing shed and construction of new stable structure containing stables, tack room, shed and associated site works to the stable yard of Auburn House (a Protected Structure).
- **Reg. Ref. F08A/0685** – By Order dated 8th December 2008, Fingal County Council refused planning permission to Mary & Ulick McEvaddy for the demolition of existing shed and construction of new stable structure containing office, stables, stores, tack room, tractor shed, and shower facility and associated site works to the stable yard of Auburn House (a protected structure).

- **Reg. Ref. F06A/1775** – By Order dated 31st January 2007, Fingal County Council granted permission to Ulick and Mary McEvaddy for alterations to plans approved under register reference: F06A/0230 for demolition of derelict hay barn and erection of a two-storey, five-bedroom house, biocycle treatment system and associated site works. Alterations consist of the revised layout to ground and first floor level at the northwest end of the building and consequent alterations to elevations and site works at the stable yard of Auburn House (a protected structure).
- **Reg. Ref. F06A/0230** – By Order dated 15th September 2006, Fingal County Council granted permission to Ulick & Mary McEvaddy for the demolition of derelict hay barn and erection of a two storey, five-bedroom house, biocycle treatment system and associated site works at the stable yard of Auburn House (a protected structure).
- **Reg. Ref. F02B/0376** – By Order dated 12th August 2002, Fingal County Council granted planning permission to Mr & Mrs Ulick McEvaddy for a Single storey extension to side of the Gate Lodge, Auburn House, Malahide, Co. Dublin.
- **Reg. Ref. F99B/0094** – By Order dated 26th April 1999, Fingal County Council granted planning permission to Mr. & Mrs. U. McEvaddy for alterations and extension to gate lodge dwelling [LOCATION] Auburn House, Malahide, Co. Dublin.
- **Reg. Ref. F96B/0484** – By Order dated 3rd December 1966, Fingal County Council granted permission to Mr. & Mrs. U. McEvaddy for a conservatory extension to rear of Auburn House, Malahide Road, Co. Dublin.
- **Reg. Ref. F96A/0011** – By Order dated 29th February 1996, Fingal County Council granted planning permission to Peter & Patricia McCarthy to alter, extend and convert 2 no. existing stable buildings to 2 no. 2 storey houses within the walled gardens at Auburn House, Malahide Road, Malahide.
- **Reg. Ref. F95A/0460** – By Order dated 31st October 1995, Fingal County Council refused permission to Peter, Maura, Patricia & Eithne McCarthy for 4 new 2 storey houses within the walled gardens at Auburn House, Malahide Road. Downey Planning notes that a first party appeal was submitted to An Bord Pleanála and the Board upheld the decision of the Planning Authority.

Downey Planning understand that this represents the full extent of the planning history pertaining to the subject site.

4.0 POPULATION AND HUMAN HEALTH

4.1 Introduction

This section of the Environmental Impact Assessment Report assesses the impact of the proposed development on the population, human health, and human environment in the general area of the proposed project on lands at Auburn House and Little Auburn, off Malahide Road and Carey's Lane, Streamstown, Malahide, Co. Dublin. Specific aspects that will be examined include population levels, human health, residential amenity, impact on employment, commercial activity, land-use, community infrastructure and social facilities. Insofar as possible, this assessment has also considered impacts on the future residents, workers, and visitors to the subject lands.

4.2 Research Methodology

The following assessment of the predicted impacts on population and human health was undertaken based on local population information from the Central Statistics Office's Census of Population reports and databank, the Regional Spatial and Economic Strategy 2019-2031 and the Fingal County Council Development Plan 2017-2023. Given the nature and scale of the proposed development, it was reasonably considered that in terms of assessing the study area for the population and ED's, that the area within approximately 2km and which would have a reasonable connection with the proposed development. This approach was also taken with the Community and Social Infrastructure Audit and as such provides for greater consistency between that report and the EIAR.

Fig. 4.1 Proposed Study Catchment Area

A site visit and a community and social infrastructure audit was also undertaken to appraise the location, the existing infrastructure and services in the area and any likely and significant potential impact upon human receptors.

The employment context was set out drawing principally on the most recently available statistics for the total number of persons at work, unemployment levels and employment categorised according to social group. Therefore, information on the economic performance of the area and the wider Dublin region is derived primarily from the 2016 Census results and statistics obtained from the ESRI.

The following assessment of land-use was undertaken based on a site visit appraisal and a review of the zoning objectives from the Fingal County Council Development Plan 2017-2023.

The assessment was also carried out in accordance with the following guidance documents and aligned accordingly based on Downey Planning's professional experience and judgement.

- EPA (2017), *Guidelines on the Information to be Contained in Environmental Impact Statements.*
- EPA (2015), *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.*

4.3 Baseline Environment

The subject site is located on the south western side of Malahide. The lands are bounded by the existing Abington Estate to the north and west, the Malahide Road and rear gardens to the east and undeveloped lands to the south. Access to the site is currently from the existing driveway to Auburn House, which is accessed off the Malahide Road. The lands at Auburn House extend to approximately 13.28 hectares, and are located on the western side of the Malahide Road to the south of Malahide.

The surrounding land uses are generally residential, with Abington being on its northern and western boundary. Malahide Castle and Demesne is located on the opposite side of the Malahide Road and can be accessed via Back Road. Malahide village centre is located to the north east of these lands. There is a Dublin Bus service that connects the city centre with Malahide that runs along the Malahide Road, and it is noted that there is a bus stop adjacent to the entrance to Auburn House. The site is located approximately 2km from the Malahide train station, which is in the centre of Malahide. The surrounding built environment is characterised predominantly by residential and recreational land uses with retail, commercial, educational and health land uses located within the centre of Malahide.

4.4 Characteristics of the Proposed Development

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage,

internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

4.5 Population

The latest Census results (i.e., 2016) show that Ireland's population stood at 4,761,865 in April 2016, an increase of 173,613 (3.8%) since April 2011. This trend has been represented in the Leinster region, which has experienced a population increase of 5.3% in the 2011-2016 period. In particular, the population growth of Fingal has been strong with a population increase of 8.4% on 2011 levels, which is the highest of all of the Counties in the Greater Dublin Area.

Area	2011	2016	% Change 2011-2016
Fingal County	273,051	296,020	+8.4
Dublin City	525,383	554,554	+5.6
Dun Laoghaire-Rathdown	206,995	218,018	+5.3
South Dublin	265,174	278,767	+5.1
Dublin	1,270,603	1,347,359	+6.04
Co. Kildare	209,995	222,504	+6.0
Co. Wicklow	136,448	142,425	+4.4
Co. Meath	184,034	195,044	+6.0
Leinster	2,501,208	2,633,311	+5.3
State	4,581,269	4,761,865	+3.9

Table 4.1 Population Trends 2011-2016

The constituency of Howth-Malahide (LEA-7), within which the subject site is located, covering the areas of Howth, Baldoyle, Sutton, Portmarnock and Malahide, showed a population of 56,139 persons in the 2016 Census. It is noted that LEA-7 was established in 2019 and is a change from the previous

LEA-8, which also included land between the M1 motorway and Dublin Airport (including part of Swords) and had a population of 59,794 persons.

The proposed development is located within the Kinsaley ED. Table 5.2 below shows the population change within the District Electoral Divisions (DEDs) within the catchment area. In this regard, the 'catchment area' refers to the area surrounding the subject lands which bound the lands and may be affected by the proposed development. Coincidentally, the catchment area also refers to the population which will be served by the proposed scheme – it is worth noting that the proposed The DEDs chosen for the EIAR form the boundary of which the subject lands are located.

Area	Population		Percentage Change
	2011	2016	2011-2016
Swords-Seatown	6,539	7,003	+7.1
Malahide West	6,273	6,149	-1.8
Malahide East	6,879	7,429	+8.0
Kinsaley	8,475	9,621	+13.5
Catchment Area Total	*28,166*	*30,202*	*+7.2*

Table 4.2 Population within the Electoral Divisions (EDs) of the catchment study (Source: CSO)

Area	Average Age (years)		Average Change
	2011	2016	2011-2016
Swords-Seatown	32	34.1	+2.1
Malahide West	38.5	40.5	+2.0
Malahide East	38.5	39	+0.5
Kinsaley	31.3	32.2	+0.9
Catchment Area Total	*35.08*	*36.45*	*+1.37*

Table 4.3 Average age within the Study area (Source: CSO)

CSO 2016 statistics indicate that the average age for the study area has increased slightly since the last census period (2011). However, while the average age has increased, it is still lower than the national average of 37.4.

The factors outlined above have a knock-on implication on the provision of housing and its associated required facilities to cater for this increase in population within the local area. The factors above would indicate that with a relatively small household size and an average age in the house-buying age, that there would be a need for the proposed development within this area.

4.5.1 Potential Impact of the Proposed Development

4.5.1.1 Construction Phase

The construction phase of the proposed development should not have any direct impact on the population of the area or the subject lands. It is expected that the work force will generally travel to the development site rather than take up residence in the immediate vicinity. However, the construction of any project has the potential to give rise to an impact on health and safety of human beings if construction activities are not managed appropriately. Measures to address such health and safety considerations will be addressed in a Construction Management Plan for the development for implementation during the construction phase, in accordance with best practice.

4.5.1.2 Operational Phase

The operational phase of the proposed development will result in the provision of 259 no. new residential units. The average household size in Dublin is currently 2.48 persons, which is based on the 2016 census of population and for the development's catchment area it is 2.9 persons. Based on this figure, it is anticipated that the proposed development could accommodate between 642–751 persons.

4.5.2 Remedial and Reductive Measures

No remedial or reductive measures are proposed with reference to population.

4.5.3 Predicted Impact of the Proposed Development

4.5.3.1 Construction Phase

The construction phase of the development will have a negligible or neutral impact on population.

4.5.3.2 Operational Phase

The population analysis above suggests that the population of the area will continue to rise in the medium term. The population increase predicted as a result of the operational stage of the proposed development ties in with broader trends in the area and the development will provide for this increase, therefore resulting in a positive impact on population.

4.5.4 Monitoring

There is no requirement for population monitoring.

4.6 Employment

CSO 2016 Statistics noted the State employment level of 2,006,641 and an unemployment level of 297,396. The employment level is up 199,281 since 2011 and the unemployment level is down significantly from the previous figure of 424,843 people, this was mainly due to the impact of the recession on employment levels during the census period. Fingal, Dublin and Leinster as a whole experienced an increase in employment between the period of 2011-2016, although the immediate catchment area of this development saw a decrease in employment as per Census 2016 data seen below (Table 4.4).

Change in Employment Between 2011-2016		
Area	**2011**	**2016**
Catchment area	15,531 (70%)	14,420 (62%)
Fingal	106,534	133,971
Dublin	540,729	614,776
Leinster	1,009,942	1,138,817
State	1,807,360	2,006,641

Table 4.4 – Total Number of Persons 15+ at work in Fingal, Dublin, Leinster and the State 2011—2016 (Source: Census 2016)

The Labour Force Survey Q3 2021, which was published by the CSO in November 2021, contains the labour market statistics for Ireland. Due to the impact of COVID-19 in the global economy the CSO has compiled standard methodology and separate COVID-19 adjusted estimates (as stated in their Information Note on Implications of COVID-19 on the Labour Force Survey), which stated:

"As the Central Statistics Office (CSO) is obliged to follow standard definitions and methodology when calculating official estimates from the Labour Force Survey (LFS), it has been decided to compile the Quarter 1 2020 LFS Estimates in the usual way and provide separate COVID-19 Adjusted Estimates. This approach preserves the methodology of the LFS while at the same time providing transparency around the current impact of COVID-19 on the Labour Market within Ireland.

The CSO has produced a supplementary measure of Monthly Unemployment in parallel with the routine Monthly Unemployment Estimate methodology, which incorporates those in receipt of the Pandemic Unemployment Payment into the calculation to produce a COVID-19 Adjusted Measure of Monthly Unemployment. This new measure was published as part of the Monthly Unemployment Estimates (MUE) release for March 2020 and April 2020 and will continue to be made available for as long as deemed necessary by the CSO."

Accordingly, there were 2,471,200 people aged 15-89 years in employment in Q3 2021, giving an employment rate of 72.2% for those aged 15-64, based on the International Labour Organisation (ILO) criteria. The number of persons in employment was up 9.8% (221,200) from 2,250,000 over the year while the employment rate was up from 66.4% in Q3 2020.

The COVID-19 Adjusted Measure of Employment, or the lower bound for the number of employed persons aged 15-89 years, rose from 2,369,731 to 2,393,394 between the end of September 2021 and the end of October 2021. This was accompanied by an increase from 69.1% in September 2021 to 69.8% in October 2021 in the associated COVID-19 Adjusted Employment Rate for those aged 15-64.

	Standard LFS Methodology (ILO)	COVID-19 Adjusted Estimates September 2021
Indicator	**Q3 2021**	**end of Q3 2021**
Employed persons aged 15-89 years	2,471,200	2,369,731
Employment rate for those aged 15-64 years	72.2%	69.1%
Unemployed persons aged 15-74 years	149,100	232,866
Unemployment rate for those aged 15-74 years	5.7%	8.9%
In labour force	2,620,300	-
Not in labour force	1,407,700	-

Table 4.5 – Summary of Labour Force Survey Q3, 2021 (Source: CSO StatBank)

There were 149,100 unemployed persons aged 15-74 years in Q3 2021 based on ILO methodology. In Q3 2021, the unemployment rate was 5.7% for those aged 15-74 years with a rate of 12.1% for those aged 15-24 years, these rates are down from 7.4% and 20.9% respectively in Q3 2020. The COVID-19 Adjusted Measure of Monthly Unemployment published as part of the Monthly Unemployment release for October 2021, was 232,866 for September 2021 (end of Q3 2021), this estimate is an upper bound and adds all those on the Pandemic Unemployment Payment (PUP) to the standard Monthly Unemployment Estimate.

Furthermore, the COVID-19 Adjusted Measure of Unemployment fell to 205,246 in October 2021. The associated COVID-19 Adjusted Unemployment Rate fell from 8.9% in September 2021 to 7.9% in October 2021.

4.6.1 Potential Impact of the Proposed Development

4.6.1.1 Construction Phase

The proposed development will provide significant construction sector and related employment over the construction period of the development. It can be difficult to determine the exact numbers that may be employed directly on site during the construction phase as workers may only be employed on a temporary basis as sub-contractors and may also work on other sites during the period. Should planning permission be granted for this proposed development, then it will be constructed over a phased basis, in accordance with the indicative proposed construction phasing plan for the proposed project and in agreement with the Planning Authority. According to the preliminary Construction and Demolition Waste Management Plan, prepared by Waterman-Moylan Consulting Engineers submitted with the application, it is anticipated that between 150-240 people would be employed on the construction of the proposed development. Aside from the benefits of direct employment, it is anticipated that builder suppliers and other related services will indirectly benefit from the construction phase of the proposed development.

The construction phase will be beneficial to the local economy due to the additional income and expenditure that will arise. This is considered to be a positive impact arising from the development.

4.6.1.2 Operational Phase

The proposed development will attract visitors to the area on a temporary basis, possibly sustaining and increasing the demand for local services, including shops, public houses, restaurants, etc.

4.6.2 Remedial and Reductive Measures

No adverse impacts on employment are predicted during the construction or operational phase of the development. No remedial or mitigation measures are considered necessary.

4.6.3 Predicted Impact of the Proposed Development

The predicted impact of the proposed development will be the same as that set out for potential impacts.

4.6.4 Monitoring

There is no requirement for economic monitoring.

4.7 Land-Use

The subject lands are located in Malahide which is within the functional area of Fingal County Council. Under the current Fingal County Council Development Plan, the subject site is zoned "RA – Residential Area" which seeks:

> *"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure."*

The vision for the "RA – Residential Area" seeks to:

> *"Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities."*

Under the RA zoning, residential and childcare uses are permitted in principle. Therefore, the proposed development of 259 no. new residential units is permitted in principle under the zoning objectives pertaining to the subject lands.

Fig. 4.2: Fingal County Council Development Plan 2017-2023 zoning map, with the associated zoning objectives (site highlighted in red).

The surrounding built environment is characterised by mixed-use commercial and residential developments, and the wider area comprises of residential development with a mix of house types all of which have resulted in varying building heights and forms within the area.

According to the CSO census, the size of households within the catchment area averages at 2.9 persons, which is in line with Fingal as a whole. This has been stable between the inter-censal periods of 2011-2016. This is slightly higher than the national average, which was 2.7 persons in the 2016 census.

Area	Average Household Size		Change
	2011	2016	2011-2016
Swords-Seatown	3.1	3.1	0
Malahide West	2.9	2.9	0
Malahide East	2.7	2.7	0
Kinsaley	2.6	2.9	+0.3
Catchment Area Average	*2.8*	*2.9*	*+0.1*

Table 4.6 – Average Household Size (Source: CSO)

The proposed new buildings will provide new services for Malahide, most notably the provision of residential and childcare space. The subject lands are serviced by sufficient public transport and road capacity to accommodate the new community, which is in keeping with the land use zoning objective.

Therefore, it is submitted that the proposed Project would be appropriate for its context, ensuring there is sufficient population to sustain community and social infrastructure in the area.

4.7.1 Potential Impact of the Proposed Development

4.7.1.1 Construction Phase

The construction phase of the development involves a change in land-use of the majority of the site from a current greenfield site, which has no current activity (with the exception of the existing dwelling of 'Little Auburn', which is to be demolished), to use as a temporary active construction site. The site is considered suitable for construction activities to provide a development that will cater for a portion of Malahide's planned population growth through the provision of new homes.

With recommended construction mitigation measures in place as set out within this EIAR, the subject lands and surrounding area have the capacity to accommodate the construction of the proposed development without any significant risk of impact upon existing land-uses.

4.7.1.2 Operational Phase

The proposed development will result in a permanent change in land-use of the majority of the site from a current greenfield site, which has no current activity (with the exception of the existing dwelling of 'Little Auburn', which is to be demolished to residential development. The total proposed net development area comprises c.9.879 hectares. This is considered to be a permanent positive impact on an area of land that has no current active use.

The surrounding land-uses (primarily residential, recreation and commercial uses) will continue during the operational phase of the proposed development. The impact of the proposed site is negligible as the site will have a positive impact on the surrounding area through the provision of a new resident community.

Therefore, while the proposed development will result in a permanent change in land-use from predominantly undeveloped land to residential land-use, this change is consistent with the zoning objectives for the lands as per the Fingal County Council Development Plan 2017-2023.

4.7.2 Remedial and Reductive Measures

No remedial or reductive measures are proposed with reference to land-use.

4.7.3 Predicted Impact of the Proposed Development

4.7.3.1 Construction Phase

The predicted impacts of the construction phase of the development is the same as that set out under the potential impacts of the construction phase of the development and are not anticipated to be significant. Furthermore, all impacts will be temporary in nature.

4.7.3.2 Operational Phase

The predicted impact is the same as that set out under the potential impacts of the operational phase of the development.

4.7.4 Monitoring

There is no requirement for land-use monitoring.

4.8 Community Infrastructure and Social Facilities

Community infrastructure can generally be defined as infrastructure and facilities including community centres and halls, libraries and cultural facilities, religious buildings and burial grounds, sporting facilities, health facilities, childcare and educational facilities, and open space and recreational facilities. The current situation in relation to these facilities in the subject area is set out in the following sections and is also subject to a separate report prepared by Downey Planning, which forms part of the planning application documentation.

Community

There is a full range of community infrastructure in Malahide and the wider surrounding environs including schools, churches, library services and health services. The application site is located within 2km of the centre of Malahide, which represents the urban core of its surrounding area and is a central settlement in terms of density of population and density/mix of uses. The surrounding urban environment to the north and south of the lands is characterised by low density housing developments. A more commercial, retail, civic, and mixed-use district is located in the centre of Malahide itself. There is also a larger offering of facilities in the nearby County town of Swords.

Education

A large number of schools, including several national schools are situated within the catchment area of the application lands. There are seven primary schools and 2 secondary schools situated in within 2km of the subject lands.

Fig. 4.3 Location of Primary Schools in the Vicinity of the Subject Site (boundary outlined in red)

Fig. 4.4 Location of Secondary Schools in the Vicinity of the Subject Site (boundary outlined in red)

Recreation

There is a great range of indoor recreational facilities within the area surrounding the site, including gyms, a library, leisure and community centres with a variety of classes and sports courts. The closest park to the subject site is Malahide Castle, which is just east of the site and is easily accessible by foot, bicycle and car. The proposed development will also include areas of public open space that will serve

not only the future residential population of said proposed development but also the wider community as it will be accessible via new pedestrian and cycle connections.

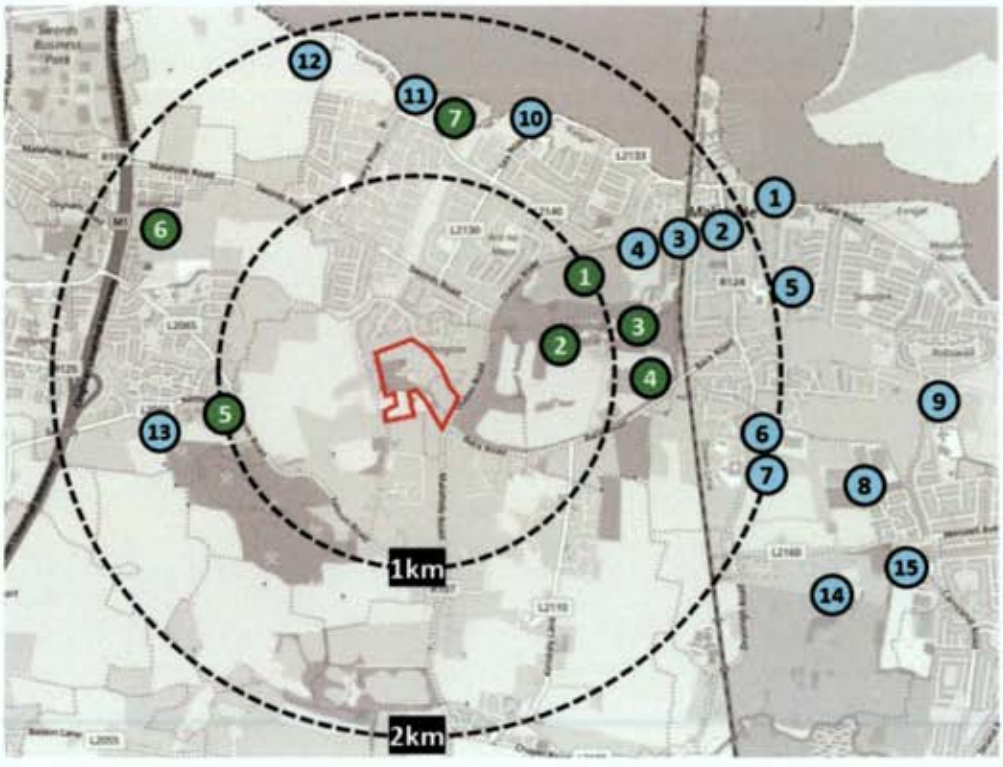

Fig 4.5 Location of Recreational Facilities in the Vicinity of the Subject Site (boundary outlined in red)

4.8.1 Potential Impact of the Proposed Development

4.8.1.1 Construction Phase

Construction impacts are expected to be short term, but some potential adverse local impacts can be expected due to the actual construction of the development. This is likely to be associated with construction traffic and any possible nuisance with such movements, for example an increase in daytime noise levels. The resident community in adjoining housing developments are most likely to be affected by these short-term temporary impacts. Corresponding mitigation measures are set out in Chapter 9 which will reduce these impacts to an insignificant level. Noting the inclusion of this mitigation plan, any further assessment in relation to noise impact was not considered relevant

The development may also have some positive impacts on passive recreational facilities within the area with additional revenue being derived from the use of these facilities by the construction workers. Impacts to the local population are considered to be neutral, imperceptible, temporary in nature and therefore not considered significant.

4.8.1.2 Operational Phase

The proposed development could have the following potential operational impacts:

1. An increase in traffic levels.
2. Additional demand on local community services.
3. An impact on the landscape and appearance in the area.

4. Increased demands on services infrastructure.

The predicted population increase arising from the proposed development will generate additional traffic loads in the Malahide area, although according to the Transportation Chapter of this EIAR, will be within the capacity of the road network. The impacts in this regard are set out in detail in Chapter 13.0 Transportation.

The resident community will benefit from the additional passive amenity areas, to be provided as part of the proposed development. There are several areas of open space being put forward as part of the proposed development, in particular areas of public open space containing play equipment for children that will be available for future residents and the wider community, which will add to recreational amenity of the area and will have a positive impact on health for the overall area.

4.8.2 Remedial and Reductive Measures

4.8.2.1 Construction Phase

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

4.8.2.2 Operational Phase

The proposed development will have a positive impact on the local community and will positively contribute to the vitality and viability of the local area, as well as passive amenity and open space provision.

4.8.3 Predicted Impact of the Proposed Development

4.8.3.1 Construction Phase

Through the implementation of remedial and reductive measures that have been set out above, the impacts of the construction phase of the development are not anticipated to be significant. Furthermore, all impacts will be temporary in nature.

4.8.3.2 Operational Phase

The predicted impact is the same as that set out under the potential impacts of the operation phase of the development.

4.8.4 Monitoring

There is no requirement for community monitoring.

4.9 Human Health

The subject lands are located at Auburn House, Little Auburn and adjoining lands, Malahide, Co. Dublin. The surrounding built environment is predominantly characterised by residential development with a mix of house types which have resulted in varying building heights and forms within the area. Malahide Castle is also located on the opposite side of Malahide Road to the subject site and offers significant recreational facilities. Given the sites proximity to Malahide's town centre, there is also commercial activity in the area. As a result, there is both a resident and working population in the immediate vicinity of the proposed Project. Human health is therefore a key consideration for assessment.

The proposed development will provide for the development of the subject lands and provide a residential development that will be integrated with the surrounding area. The proposed development will make a positive contribution to the existing community by creating new places and spaces that are accessible not only to the residents of the scheme, but also to members of the public. It is submitted that the completion of the proposed development Auburn will not have an adverse impact on human health including mental health or wellbeing. Furthermore, there will be no adverse impacts on social, economic or environmental living conditions as a result of the development.

4.9.1 Potential Impact of the Proposed Development

4.9.1.1 Construction Phase

Construction impacts are expected to be short term, but some potential adverse local impacts can be expected due to the actual construction of the development. These impacts are likely to be associated with construction traffic movements and any possible nuisance with such movements, for example an increase in daytime noise levels, migration of surface contaminants and dust. The resident community in adjoining housing estates are most likely to be affected by these short-term temporary impacts. Corresponding mitigation measures are set out in Chapter 8.0 which will reduce these impacts to an insignificant level. Noting the minor nature of these impacts, any further assessment in this regard was not considered relevant.

The development may also have some positive impacts on passive recreational facilities within the area with additional revenue being derived from the use of these facilities by the construction workers.

4.9.1.2 Operational Phase

The proposed development could have the following potential operational impacts as a result of an increase in population levels:

1. An increase in traffic levels.
2. Additional demand on local community services.
3. An impact on the landscape and appearance in the area.
4. Increased demands on services infrastructure.

The impacts in regard to additional traffic loads in the Malahide area generated by the predicted population increase are set out in detail in Transportation Chapter of this EIAR.

In relation to potential impacts on human health and safety during the operational phase are unlikely to result in any significant adverse impacts once the development is completed and operational. Environmental impacts of the proposed development and their relationship to human health is dealt with under the relevant noise and vibration, air and climate and traffic sections of the EIAR. There will not be significant impacts on human health as a result of the operation of the proposed development.

4.9.2 Remedial and Reductive Measures

4.9.2.1 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.

4.9.2.2 Operational Phase

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

4.9.3 Predicted Impact of the Proposed Development

4.9.3.1 Construction Phase

Through the implementation of remedial and reductive measures that have been set out above, the impacts of the construction phase of the development are not anticipated to be significant. Furthermore, all impacts will be temporary in nature.

4.9.3.2 Operational Phase

The proposed development will provide a development that will be integrated with the surrounding area and existing and future transport infrastructure, including green infrastructure. The proposed development will make a positive contribution to the existing community by creating new places and spaces as well as improved permeability that are accessible not only to the residents of the scheme, but also to members of the public.

It is submitted that the proposed development at Auburn will not have an adverse impact on human health including mental health or wellbeing. Furthermore, there will be no adverse impacts on social, economic or environmental living conditions as a result of the proposed development.

4.10 Monitoring

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.

4.11 Reinstatement

No reinstatement will be required specifically for population and human health.

4.12 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.

4.13 Difficulties Encountered in Compiling

Overall, no difficulties were encountered in compiling this chapter.

4.14 Cumulative Impacts

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 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 Malahide and surrounding environment.

4.15 'Do-Nothing' Impact

A 'do-nothing' scenario is not considered appropriate as the lands are currently zoned for residential development under the Fingal County Development Plan 2017-2023. However, if a do-nothing scenario were to occur, the lands would not be developed and therefore would be no adverse impacts to population and human health. In the event that the proposed Project does not proceed, the lands would remain in its current condition in the short-term or until alternative development proposals are granted planning permission.

4.16 References

- Central Statistics Office [CSO] (Census data results and analysis from 2011 and 2016)
- Economic and Social Research Institute [ESRI] (data results and analysis)
- Eastern & Regional Assembly (2019), *Regional Spatial and Economic Strategy 2019-2031*
- Fingal County Council, *Fingal County Council Development Plan 2017-2023*
- CSO (2021). *Quarterly Labour Force Survey Q3 2021.*

5.0 BIODIVERSITY

5.1 Introduction

Pádraic Fogarty of OPENFIELD Ecological Services has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EcIA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

Under Article 6(3) of the Habitats Directive an 'appropriate assessment' (AA) of projects must be carried out to determine if significant effects are likely to arise to Natura 2000 sites. This assessment is carried out by the competent authority, in this case An Bord Pleanála. It must first carry out a screening exercise to determine whether significant effects are likely to occur to these protected areas in light of their conservation objectives. An AA screening report is provided as a separate document in order to provide the Planning Authority with the necessary information to conduct this screening exercise. This concluded that significant effects to Natura 2000 sites could not be ruled out. Therefore, a separate Natura Impact Statement is provided to allow the planning authority to carry out the Appropriate Assessment, and which contains mitigation measures to ensure that negative impacts to the integrity of Natura 2000 sites do not arise.

5.2 Research Methodology

The assessment was carried out in accordance with the following best practice methodology: 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Chartered Institute of Ecology and Environmental Management (IEEM, 2018).

Site visits were carried out on the 15th of May and the 25th of June 2019, the 11th of February and 27th of August 2020, January 26th and October 5th 2022. The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000). The purpose of the site surveys was to identify and map habitats as well as identify the presence, or potential presence, or rare, threatened or protected species. Additional site surveys were carried out in 2021 and 2022 specifically for Badgers and bats.

The nomenclature for vascular plants is taken from The New Flora of the British Isles (Stace, 2010) and for mosses and liverworts A Checklist and Census Catalogue of British and Irish Bryophytes (Hill et al., 2009).

May, June and August lie within the optimal survey period for general habitat surveys (Smith et al., 2010). May and June are within the optimal period for surveying breeding birds. January, February and May lie within the optimal season for surveying mammals and amphibians. It was possible to classify all habitats on the site to Fossitt level 3. Separate studies were carried out for bats and Badgers during the optimal period by Brian Keeley of Wildlife Surveys Ireland. This is presented as a separate report.

5.3 Existing Receiving Environment

5.3.1 Zone of Influence

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. A slightly larger area than this is shown in figure 5.1 while the development site red line boundary is shown in figure 5.2.

Figure 5.1 – Approximate 2km radius of proposed site showing boundaries of areas designated for biodiversity conservation

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Wildfowl Sanctuary, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development Plan. There is no system in Ireland for the designation of sites at a local, or county level. Within the vicinity of the subject site there are a number of such areas: the Broadmeadow (Malahide) and Baldoyle Estuaries (covered by multiple designations), the Feltrim Hill pNHA and the Sluice River Marsh pNHA. The focus of this report is to look at the biodiversity of the proposed development site and impact on areas designated for nature conservation, while specific impacts on Natura 2000 sites is examined in the Screening Report for Appropriate Assessment and Natura Impact Statement.

Sluice River Marsh pNHA (site code: 1763).

According to the NPWS: "This site is located about 1 km west of Portmarnock village. The Sluice River flows into Baldoyle Estuary, less than 1 km away. The marsh backs onto the east side of the railway embankment.

[...] This site is of importance as a relatively intact freshwater marsh, a habitat that is now rare in County Dublin." (NPWS, 2006).

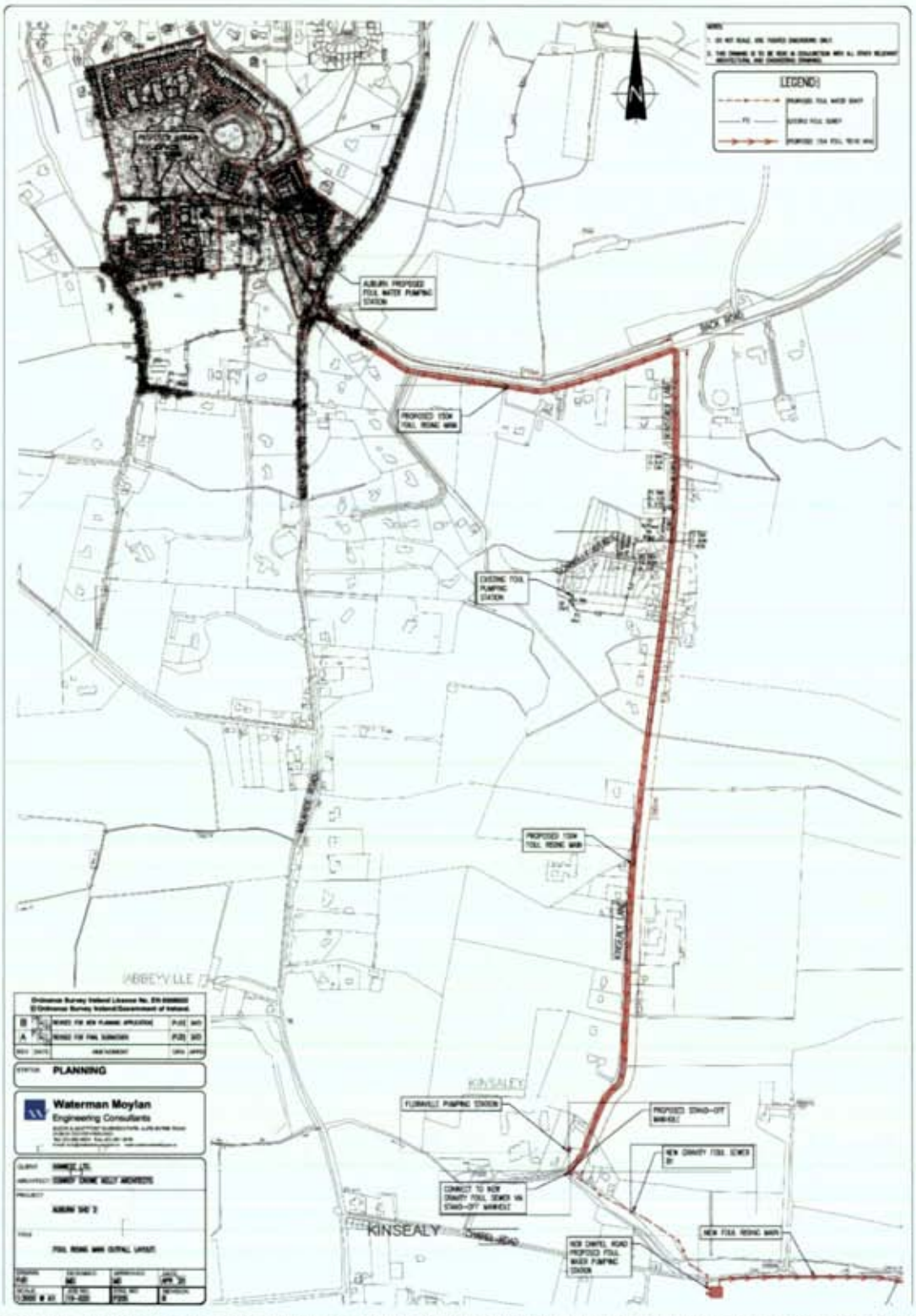

Figure 5.2 - Full extent of the development site red line boundary including new sewer line along Back Road and Kinsealy Lane

Feltrim Hill pNHA (site code: 1208)

This active quarry was identified as a pNHA due to its geological interest.

Malahide Estuary SAC/SPA/pNHA

The estuary is designated for its intertidal habitats and important wintering bird population. The area is within a Special Area of Conservation (site code: 0205) and Special Protection Area (site code: 4025) but is also a Ramsar site (Broadmeadow estuary no. 833) and a Marine Protected Area under the OSPAR Convention (site code: O-IE-0002967).

As such they are covered under Article 6 of the Habitats Directive which ensures that developments to not result in adverse effects when measured against their 'conservation objectives'. These issues are fully assessed in the screening report for Appropriate Assessment and Natura Impact Statement which are presented separately.

The qualifying interests for the SAC (the reasons why the site is of European value) are detailed in table 5.1 while the Special Conservation Interests (analogous to qualifying interests for SPAs) for the SPA are given in table 5.2.

Table 5.1 – Site qualifying interests for the Malahide estuary SAC

Aspect	Level of Protection	Status
Fixed coastal dunes with herbaceous vegetation (grey dunes) (code: 2130)	Habitats Directive Annex I priority habitat	Bad
Shifting dunes along the shoreline with Ammophila arenaria ('white dunes') (code: 2120)	Habitats Directive Annex I	Inadequate
Salicornia and other annuals colonizing mud and sand (code: 1310)		Inadequate
Mediterranean salt meadows (code: 1410)		Inadequate
Atlantic salt meadows (code: 1330)		Inadequate
Mudflats and sandflats not covered by seawater at low tide (code: 1140)		Inadequate

- Tidal mudflats (1140). This is an intertidal habitat characterised by fine silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- Salicornia mudflats (1310): This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependent upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass Spartina anglica. Erosion can be destructive but, in many cases, this is a natural process.

- Atlantic and Mediterranean salt meadows (1330 & 1410): these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.
- Shifting dunes along the shoreline with Ammophila arenaria (white dunes) (2120). These are the second stage in dune formation and depend upon the stabilising effects of Marram Grass. The presence of the grass traps additional sand, thus growing the dunes. They are threatened by erosion, climate change, coastal flooding and built development.
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130 – priority habitat). These are more stable dune systems, typically located on the landward side of the mobile dunes. They have a more or less permanent, and complete covering of vegetation, the quality of which depends on local hydrology and grazing regimes. They are the most endangered of the dune habitat types and are under pressure from built developments such as golf courses and caravan parks, over-grazing, under-grazing and invasive species.

Table 5.2 – Special Conservation Interests for Malahide Estuary SPA

Species	National Status[1]
Anas acuta Pintail	Amber (Wintering)
Branta bernicula hrota Light-bellied brent goose	Amber (Wintering)
Bucephala clangula Goldeneye	Red (Wintering)
Calidris alpina Dunlin	Red (Breeding & Wintering)
Calidris canutus Knot	Red (Wintering)
Haematopus ostralegus Oystercatcher	Red (Breeding & Wintering)
Limosa lapponica Bar-tailed godwit	Red (Wintering)
Limosa limosa Black-tailed godwit	Red (Wintering)
Mergus serrator Red-breasted Merganser	Amber (Breeding & Wintering)
Pluvialis apricaria Golden Plover	Red (Breeding & Wintering)
Pluvialis squatarola Grey Plover	Red (Wintering)

[1] Birds of Conservation Concern in Ireland. Gilbert et al., 2021

Podiceps cristatus Great-crested Grebe	Amber (Breeding & Wintering)
Tadorna tadorna Shelduck	Amber (Breeding & Wintering)
Tringa totanus Redshank	Red (Breeding & Wintering)
Wetlands & Waterbirds	

- Pintail. Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- Light-bellied Brent Goose. There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- Goldeneye. This duck wintering throughout Ireland on suitable coastal areas, river valleys and wetlands. There has been an 11% contraction in its Irish wintering range since the early 1980s and a 37% decline in abundance since the 1990s.
- Dunlin. Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- Knot. These small wading birds do not breed in Ireland but gather in coastal wetlands in winter. Their numbers have increased dramatically since the mid-1990s although the reasons for this are unclear.
- Oystercatcher. Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- Bar-tailed Godwit. These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- Black-tailed Godwit. Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- Red-breasted Merganser. A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inlands locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.
- Golden Plover. In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- Grey Plover. These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.

- Great-crested Grebe. These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have decline by over 30% since the 1990s.
- Shelduck. The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.
- Redshank. Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.

Baldoyle Bay SAC/SPA

This SAC is the estuary of the Sluice and the Mayne Rivers that is largely enclosed by a sand spit that stretches from Portmarnock to Howth. At low tide it has large areas of exposed mud and sediment that support rich invertebrate communities. There are a number of habitats here that are listed in the EU's Habitats Directive Annex I while there are two plants recorded from the Bay that are protected under the Flora Protection Order: Borrer's Saltmarsh-grass Puccinellia fasciculata and Meadow Barley Hordeum secalinum.

The reasons why the bay falls under the SAC designation are set out in the qualifying interests. They are either habitat types listed in Annex I or species listed in Annex II of the Habitats Directive. This information is provided by the National Parks and Wildlife Service (NPWS) and is shown in table 5.3 below. In this case the SAC is designated only for protected habitat types.

Table 5.3 – Qualifying interests for the Baldoyle Bay SAC (from NPWS)

Code	Habitats
1140	Mudflats and sandflats not covered by seawater at low tide
1310	Salicornia and other annuals colonizing mud and sand
1330	Atlantic salt meadows
1410	Mediterranean salt meadows

- Tidal mudflats (1140). This is an intertidal habitat characterised by fine silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- Salicornia mudflats (1310): This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependent upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass Spartina anglica. Erosion can be destructive but, in many cases, this is a natural process.
- Atlantic and Mediterranean salt meadows (1330 & 1410): these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of

erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native Spartina anglica and overgrazing by cattle and sheep.

Baldoyle Bay SPA (site codes: 4016)

Estuarine habitats are some of the most productive in the world and the nutrients that are deposited here fuel primary and secondary production (levels in the food chain) that in turn provide food for internationally significant numbers of wintering birds (Little, 2000). It had a mean of 5,780 birds between the winters of 2006/07 and 2010/11 (Crowe et al., 2012). Specifically, it has a number of species which are 'features of interest' of the SPA, along with 'wetlands and waterbirds'. Table 5.4 details these.

Table 5.4 – Features of Interest for the Baldoyle Bay SPA (from NPWS)

Species		Status2
Branta bernicula	Light-bellied brent goose	Amber (Wintering)
Charadrius hiaticula	Ringed plover	Amber (Breeding & Wintering)
Limosa lapponica	Bar-tailed godwit	Red (Wintering)
Pluvialis apricaria	Golden plover	Red (Breeding & Wintering)
Pluvialis squatarola	Grey plover	Red (Wintering)
Tadorna tadorna	Shelduck	Amber (Breeding & Wintering)
Wetlands & Waterbirds		

- Light-bellied Brent Goose. There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- Ringed Plover. This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- Bar-tailed Godwit. These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- Golden Plover. In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- Grey Plover. These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.

[2] Birds of Conservation Concern in Ireland. Gilbert et al., 2021

- Shelduck. The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.

The NPWS web site (**www.npws.ie**) contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The Auburn lands are located within the square O24 and 11 protected plants are recorded. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and/or protected species. Table 5.5 lists these and their known current status.

Table 5.5 – Known records of protected species from the O24 square (from www.npws.ie)

Species	Habitat[3] [4]	Current status[5]
Centaurium pulchellum Lesser Centaury	Sandhills, dune-slacks and margins of brackish lakes	Current
Clinopodium acinos Basil Thyme	Field margins and sandy or gravelly places	Non-native; Record pre-1970
Galeopsis angustifolia Red Hemp-nettle	Calcareous gravels	Records pre-1986
Hordeum secalinum Meadow Barley	Upper parts of brackish marshes, chiefly near the sea	Record pre-1970 (O14) Current (O24)
Hypericum hirsutum Hairy St. John's-wort	Woods and shady places	Current, record from Santry Court
Mertensia maritima Oysterplant	Shingle shores	Record pre-1970
Papaver hybridum Rough Poppy	Sandy fields	Non-native; Record pre-1986
Puccinellia fasciculata Borrer's Salt-marsh grass	Muddy inlets on the coast	Current
Saxifraga granulata Meadow saxifrage	Sandhills and pastures near the east coast	Record pre-1970
Scleranthus annus Annual Knawel	Waste places and roadsides on dry, sandy soils	Record pre-1970

[3] Parnell et al., 2012
[4] Hayden & Harrington, 2001
[5] Preston et al., 2002

Viola hirta Hairy Violet	Sand dunes, grasslands, limestone rocks	Current, records from Santry Demesne and Feltrim Hill

As can be seen there are four current records of protected plants in this 10km square.

Water quality in rivers is monitored on an on-going basis by the Environmental Protection Agency (EPA). The Auburn lands are not located within the catchment of any significant water course. Surface drainage pathways lead to Baldoyle Bay to the south via the Hazelbrook Stream. The status of Baldoyle Bay is not assigned under the Water Framework Directive period 2013-2018.

The inner Broadmeadow (Malahide) Estuary is assessed as 'poor' under the 2013-2018. Water Framework Directive reporting period while the outer estuary (Malahide Bay) is assessed as 'moderate'. This is unsatisfactory status and indicates pollution from point or diffuse sources. The Broadmeadow River is the principal source of freshwater entering this estuary.

Small streams in the vicinity of the development site (e.g. the Gaybrook Stream and Hazelbrook Stream) are not assessed under the WFD. Baldoyle Bay is not assessed. These data are taken from www.epa.ie.

5.3.2 Site Survey

The development site is located west of the R107 Dublin Road, just south of Malahide in north County Dublin. Habitats are shown as a habitat map in figure 5.2.

Figure 5.3 – Habitat map of the Auburn site

5.3.2.1 Flora

The site is centred on Auburn House with surrounding lands which are a combination of improved agricultural grassland – GA1 and broadleaved woodland – WD1. Grasslands are grazed by farm animals and are made up of grasses such as Timothy *Phleum pratense*, False Oat *Arrhenatherum elatius*, Sweet Vernal-grass *Anthoxanthum odoratum* and Annual Meadow-grass *Poa annua*. Broad-leaved species include Creeping Thistle *Cirsium arvense*, Mouse-ear *Cerastium fontanum*, Meadow Buttercup *Ranunculus acris* and Docks *Rumex sp*.

Field boundaries are a combination of hedgerows – WL1 and treelines – WL2. Hedgerows are native in origin with Hawthorn *Crataegus monogyna*, Elder *Sambusus nigra*, Holly *Ilex aquilinum*, and Ash *Fraxinus excelsior* along with Honeysuckle *Lonicera periclymenum*, Dog Violet *Viola riviniana*, Vetches *Vicia sp*. and Dog Rose *Rosa canina*. Due to their age, structure and species diversity those hedgerows in the northern part of the site are assessed as of 'higher significance'. Those bordering the field in the south-west are of 'lower significance' due to poor structure and low species diversity. Treelines are highly variable with some dominated by very low biodiversity value conifers, particularly Leyland Cypress *Cuprocyparis leylandii*, while other are mixed but predominantly non-native in composition, with Sitka Spruce *Picea stichensis*, Aspen *Populus tremula*, Beech *Fagus sylvatica*, Horse Chestnut *Aesculus hippocastanum* and Maple *Acer sp*. Patches of the non-native Spanish Bluebell *Hyacinthoides hispanica* and Three-cornered Garlic *Allium triquetrum* are found in these areas

and both of these plants are listed as alien invasive on Schedule 3 of SI No. 477 of 2011. Drainage ditches – FW4 accompany these field boundaries in two locations. These are very small water courses which are not accompanied by wetland flora.

A large area of woodland surrounds Auburn House (buildings and artificial surfaces – BL3). This extends in parallel with the entrance driveway and the roadside treeline boundary. The large trees are mostly non-native, with Beech and Horse Chestnut, and while Oak *Quercus sp.*, Elm *Ulmus glabra*, Holly and Yew *Taxus baccata* are also present, however these species form a relatively low component of the woodland overall. Cherry Laurel *Prunus lauroceracus* is also found while this is not listed as alien invasive in legislation, it is considered to be an invasive plant in a native woodland context. Other flora includes abundant Ivy *Hedera helix*, Herb-robert *Geranium robertianum*, Wood Avens *Geum urbanum*, Lords-and-ladies *Arum maculatum* and Wood Dock *Rumex sanguineus*. The woodland is not a semi-natural, native woodland type as described in Fossitt or Annex I of the Habitats Directive. It is predominantly composed of non-native species however broadleaved woodland is rare in Ireland and provides habitat for a range of species which may be important at a local or county level. This habitat is considered to be of high local value.

As well as the above habitats there are a number of scattered trees, particularly near buildings, which are composed of a range of non-native or ornamental species. While some of these have high aesthetic/landscape value, they are of relatively low value for native biodiversity.

The route of the new sewer line along Back Road and Kinsealy Lane is entirely composed of artificial surfaces and follows existing road routes.

5.3.2.2 Fauna

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 6 details those mammals that are protected under national or international legislation in Ireland. Cells are greyed out where suitable habitat is not present or species are outside the range of the study area.

Rabbits *Oryctolagus cuniculus* and Grey Squirrel *Sciurus carolinensis* were noted during a number of the surveys. Neither is a protected species while the Grey Squirrel is listed as alien invasive under Schedule 3 of SI No. 477 of 2011. There are no suitable habitats for Otter. No evidence of Irish Hare was found although they are recorded from the area and avail of a variety of habitats (Reid et al., 2007). There was no evidence of Badger activity on the lands however a burrow which may have been a sett was noted in the woodland to west of Auburn House There are no records of Badger from this location from the database of the National Biodiversity Data Centre.

Badger surveying was undertaken by Wildlife Surveys Ireland on the following dates: 31st July to 8th August, 8th October and 11th November 2019, October 6th-13th 2021, February 22nd 2022 and 29th of September to the 6th of October 2022. Surveying involved a number of visits and different levels of assessment. The initial assessment involved a visual examination of a potential sett close to the main avenue of Auburn House accompanied by a motion-activated camera assessment of the sett. This was followed up by a more complete evaluation of the site in October 2019 where the grounds were more thoroughly checked for Badger signs and setts. The final evaluation in November was undertaken to confirm that features noted during other ecological surveys were or were not badger setts and signs. Repeat surveys were undertaken in 2021 and 2022.

The Badger report concluded that:

A number of minor badger setts were noted close to Auburn House including close to the main driveway and within the woodland behind the house. Three possible setts were present close to the house. A possible sett monitored with a motion activated camera for any evidence of badger entry or emergence for one week in summer 2019 was deemed to be unused at this time. The sett (or burrow, if not established by badgers) was not active in 2021 based on an examination of the entrances for fresh digging, paw prints etc. There was no evidence of usage in February 2022 or September / October 2022.

There were a number of very minor badger setts within the woodland showing limited historical usage based on how overgrown the setts were and how undeveloped the entrances were. A larger sett was noted within the wood close to the northwestern corner. This sett is very close to a meeting place for night-time human activity and is likely to have been rendered inactive by this disturbance. All setts showed higher levels of abandonment in 2022 than in 2021 or in 2019 and it is probable that no setts were used in the intervening three years.

No setts were active within the grounds of Auburn House or Little Auburn in 2019 or 2021 up to the October 6th 2022. No badger latrines or dung pits were noted within the grounds. There was a relatively frsh badger dung on the edge of the field in front of Auburn House and close to the stream and two partial paw print impressions within a cow pat. There were some possible foraging signs, but these were not indisputable and could also be made by foxes or other mammals or birds. There was one Lilley badger snuffle hole close to the paw prints.

There are a number of trails in the land surrounding the stream south of Auburn House that are occasionally used by badgers. There were no fresh indications of badgers in either 2019 or 2021 but very limited evidence of usage in autumn 2022.

The badger sett in the northwestern corner of the woods was clearly inactive in 2021 and early and late 2022 with a deep layer of leaves blocking the entrance and almost obscuring the sett entirely.

Badgers are present within the grounds of Malahide Castle, and it is probable that there would be movement between these two areas. There is some evidence of badger activity within the site. However, badgers are not in residence within the grounds of Auburn House at present.

No sett was active based on a lack of evidence of badger activity in the period July to November 2019 and August, October and December 2021 and February, September and October 2022. During night-time survey work, no badgers were seen or heard in May or June 2019, August 2021 or September 2022. The largest sett was in the northwestern area of the wood at Auburn House (1). One sett monitored by a camera close to the House and main driveway (2) was not occupied by badgers but was home to wasps in September 2022. The setts at (3) are undeveloped and were inactive (badger-wise) during the study in 2019, 2021 and 2022. One entrance was clear in December 2021 and February 2022, but this is possibly attributable to a fox which was recorded on the camera. Tracks in the area east of the lane and north of the stream were possibly badger tracks (with signs of cattle and donkeys disturbing these tracks) but there was no recent evidence of widespread feeding or commuting. There were two badger paw prints in a cow pat at the field in front of the house and close to the stream. There was a fresh badger dung in line with these prints. There was one snuffle hole in the

ground at the corner of this field A two-entrance sett was identified during fieldwork in September 2022. This sett was inactive at this time. All other signs were unclear and may have been digging undertaken by rooks. In short, no badger setts were active between 2019 and 2022 within Auburn House or Little Auburn grounds.

While limited data are available on the distribution of Hedgehog, Pygmy Shrew and Irish Stoat, they are considered widespread in the Irish countryside and suitable habitat is available for them (Hayden & Harrington, 2001). All three are protected under the Wildlife Act. Other, non-protected, mammals that are likely to be present include Fox *Vulpes vulpes*, Brown Rat *Rattus norvegicus*, House Mouse *Mus domesticus* and Wood Mouse *Apodemus sylvatica*.

Table 5.5 shows that there are records of, and/or suitable habitat for a variety of bat species within this region. Features on the site are considered to be suitable for roosting bats, particularly in buildings and large trees with obvious cracks etc. (Hundt, 2013). A detector-based bat survey was carried out on 29th May, 27th June, 8th October and 11th November 2019. Repeat surveys were carried out on August 10th and 25th 2021 and September 1st-3rd 2022. The following species of bat were noted:

Roosts within Auburn House and Little Auburn

There was one whiskered bat noted within the timbers of the stable building at roof level on 25th to 26th August 2021. A brown long-eared bat was noted returning to the stable buildings prior to sunrise on 11th and 26th August 2021. Common pipistrelle activity around the buildings suggest that this species is also roosting within the buildings, but none were seen to emerge or return during this assessment.

Two soprano pipistrelles were seen within the attic of Auburn House on August 10th, 2021, and a small number of soprano pipistrelles (no greater than three) were seen to return to the house on August 26th, 2021. There were therefore three species confirmed to roost in Auburn House or the stables and a potential for a fourth species (common pipistrelle).

There was a male Leisler's bat calling from a tree (beech tree 712) to the southeast of Auburn House on August 10th, 2021, in addition to calling in flight. This tree is close to the moat. A Leisler's bat was noted to call from trees to the rear of Auburn House along the western to northwestern edge on August 25th, 2021. The exact tree was difficult to pinpoint.

In 2022, a Leisler's bat was calling from beech tree 604 near the moat and metal bridge. This is a substantial tree close to the gate into the orchard area.

Examination of the outbuildings in the late autumn and winter months provided no obvious signs of resident bats. Hibernating individuals may enter deep into cavities and crevices in buildings and trees and are not easily discovered.

There are numerous roost options within the outbuildings including door frames, window frames, timber joists, wall crevices in addition to the identified roost sites within the attic of the house and in the stable roof where trusses and rafters meet and form tight spaces.

No bats were observed within the stables in September / October 2022 during the daytime examination. This was not a full evaluation of the stables as it did not involve any work at height or using fibrescopes. Bats may

have been tucked away in structures. No bats were visible within the roof trusses or joists from ground floor examinations. [...]

Species of bat noted in 2022

Common pipistrelle

This species was noted around Auburn House early in the night and it probable that it is roosting in the immediate area. In 2019, a summer roost was present in a neighbouring property but there is likely to be use of the stables and potentially the house itself.

Soprano pipistrelle

This species was present after sunset and prior to sunrise. It has a long-established roost in Auburn House and may also use buildings within the courtyard.

Leisler's bat

Leisler's bat activity was high within the site and included a bat calling in flight and a bat calling from a making perch (tree 604).

Myotis

Myotis signals were recorded close to the small metal bridge and around this area (where a second Leisler's mating perch was noted within tree 604, a substantial beech tree. This is the tree adjacent to the metal bridge at the moat).

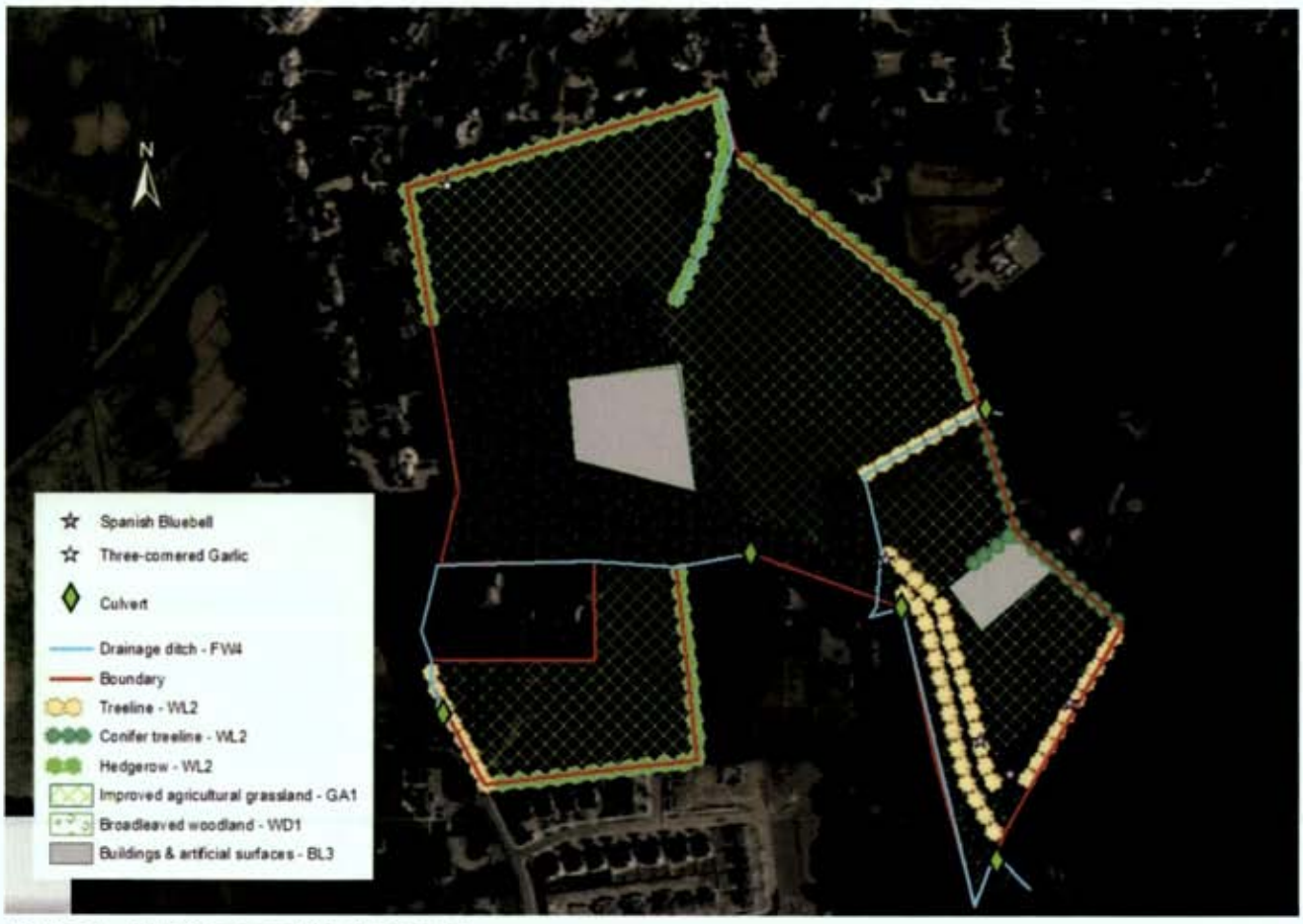

Figure 5.3 – Habitat map of the Auburn site

Table 5.6 – Protected mammals in Ireland and their known status within the zone of influence (Harris & Yalden, 2008)6 Those that are greyed out indicate either that suitable habitat is not present or that there are no records of the species from the National Biodiversity Date Centre.

Species	Level of Protection	Habitat7
Otter *Lutra lutra*	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers and wetlands
Lesser horseshoe bat *Rhinolophus hipposideros*		Disused, undisturbed old buildings, caves and mines
Grey seal *Halichoerus grypus*	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000	Coastal habitats
Common seal *Phocaena phocaena*		

[6] Excludes marine mammals
[7] Harris & Yalden, 2008

Whiskered bat *Myotis mystacinus*	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats
Natterer's bat *Myotis nattereri*		Woodland
Leisler's bat *Nyctalus leisleri*		Open areas roosting in attics
Brown long-eared bat *Plecotus auritus*		Woodland
Common pipistrelle *Pipistrellus pipistrellus*		Farmland, woodland and urban areas
Soprano pipistrelle *Pipistrellus pygmaeus*		Rivers, lakes & riparian woodland
Daubenton's bat *Myotis daubentonii*		Woodlands and bridges associated with open water
Nathusius' pipistrelle *Pipistrellus nathusii*		Parkland, mixed and pine forests, riparian habitats
Irish hare *Lepus timidus hibernicus*	Annex V Habitats Directive; Wildlife (Amendment) Act, 2000	Wide range of habitats
Pine Marten *Martes martes*		Broad-leaved and coniferous forest
Hedgehog *Erinaceus europaeus*	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows
Pygmy shrew *Sorex minutus*		Woodlands, heathland, and wetlands
Red squirrel *Sciurus vulgaris*		Woodlands
Irish stoat *Mustela erminea hibernica*		Wide range of habitats
Badger *Meles meles*		Farmland, woodland and urban areas

Red deer *Cervus elaphus*		Woodland and open moorland
Fallow deer *Dama dama*		Mixed woodland but feeding in open habitat
Sika deer *Cervus nippon*		Coniferous woodland and adjacent heaths

Breeding bird surveys were carried out and attempted to identify all birds nesting on the development site either through direct observation or proxy behaviour, i.e., singing/holding territory or carrying nesting or feeding material. Winter surveys similarly identified all species using the site.

Both May and June lie within the optimal bird breeding season and surveys were complete before midday. The following species were recorded across both surveys: Blackbird *Turdus merula*, Jackdaw *Corvus monedula*, Wood Pigeon *Columba palumbus*, Blue Tit *Parus caeruleus*, Great Tit *P. major*, Robin *Erithacus rubecula*, Treecreeper *Certhia familiaris*, Mistle Thrush *T. viscivorus*, Blackcap *Sylvia atricapilla*, Sparrowhawk *Accipiter nisus*, Buzzard *Buteo buteo* and Wren *Troglodytes troglodytes*. These species are all listed by BirdWatch Ireland as of 'low conservation concern'.

Of those species of high concern (red list) Meadow Pipit *Anthus pratensis*, Grey Wagtail *Motacilla cinerea* and Yellowhammer *Emberiza citrinella* were recorded as breeding in the Dublin area during the 2007-11 Bird Atlas project (Balmer et al., 2013). Grey Wagtail is a bird of riparian habitats and so will not be present on this site. Yellowhammer is strongly associated with arable fields where there is a supply of seeds and so, again, is unlikely to be present in this locality (the neighbouring filed is improved agricultural grassland). Suitable habitat for Meadow Pipit is confined to hedgerow habitats.

During the winter surveys (February 2020 and January 2022) a number of garden and woodland birds were noted. However, no wetland or wintering, wading birds were present. The habitats on the development site lands are not suitable for regularly occurring birds which may be associated with the Malahide Estuary or Baldoyle Bay Special Protection Areas. These birds are associated with intertidal habitats while some species (most notably the Light-bellied Brent Goose) are also associated with inland amenity grassland sites where they feed. The survey in October 2022 noted low bird activity with Wood Pigeon, Blue Tit and Buzzard recorded.

Common Frog *Rana temporaria* and Common Lizard *Lacerta vivipara* are protected under the Wildlife Act 1976. Drainage ditches may be suitable for spawning frogs while the Common Lizard is considered more or less widespread. No frog spawn was noted during any of the site surveys. Smooth Newts *Lissotriton vulgaris* are to be found in Dublin but there are no permanent ponds on this site in which they are likely to be breeding.

The development site does not drain to any river of significant fisheries value, i.e. salmonid status. Drainage ditches have been shown to lead to the Hazelbrook Stream which discharges to Baldoyle Bay. The ditches on the development site are of low fisheries significance and are culverted in a number of locations within the development site as well as under the main R107 Malahide Road. Where the ditches are open, they were

found to be slow flowing, with minimal aquatic or semi-aquatic vegetation and with substrates characterised by fine sediment. These habitats are highly modified and are of low value for aquatic biodiversity. They are not suitable for migratory or salmonid fish such as Atlantic Salmon *Salmo salar*, Trout *S. trutta*, Lamprey *Lampetra* sp. or European Eel *Anguilla anguilla*.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia*, and this is not to be found on intensive farmland or scrub habitats in this part of Dublin. Other protected invertebrates are confined to freshwater and wetland habitats and so will not be present on this site. Other protected invertebrates are not recorded from this 10km square (NPWS, 2013).

5.3.5 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

In summary it has been seen that the development site is not within any area that has been designated for nature conservation at a national or international level. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. It is within the catchment of Baldoyle Bay, an area of international significance for nature conservation. Spanish Bluebell and Three-cornered Garlic are present and both plants are listed as alien invasive species.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). These are reproduced in table 5.7. From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 5.8.

Table 5.7 Site evaluation scheme taken from NRA guidance 2009

Site Rating	Qualifying criteria
A - International importance	SAC, SPA or site qualifying as such. Sites containing 'best examples' of Annex I priority habitats (Habitats Directive). Resident or regularly occurring populations of species listed under Annex II (Habitats Directive); Annex I (Birds Directive); the Bonn or Berne Conventions. RAMSAR site; UNESCO biosphere reserve; Designated Salmonid water
B - National importance	NHA. Statutory Nature Reserves. Refuge for Flora and Fauna. National Park. Resident or regularly occurring populations of species listed in the Wildlife Act or Red Data List 'Viable' examples of habitats listed in Annex I of the Habitats Directive
C - County importance	Area of Special Amenity, Tree Protection Orders, high amenity (designated under a County Development Plan) Resident or regularly occurring populations (important at a county level, defined as >1% of the county population) of European, Wildlife Act or Red Data Book species Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the county

D - Local importance, higher value	Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
E - Local importance, lower value	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links.

Table 5.8 Evaluation of the importance of habitats and species on the Auburn site

Broadleaved woodland – WD1 Higher significance hedgerow – WL1	Local Importance (higher value)
Treelines – WL2 Lower significance hedgerow – WL1 Drainage ditches – FW4	Local Importance (lower value)
Buildings and artificial surfaces – BL3 Conifer treeline – WL2 Improved agricultural grassland – GA1	Negligible ecological value

5.4 Likely Characteristics of the Proposed Development

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

Foul wastewater is to be connected to a mains sewer while surface water will pass to an existing surface sewer. Post-construction the site will be landscaped with a variety of native and non-native trees.

Figure 5.4 – Proposed site layout and landscaping

5.5 Potential Impact of the Proposed Development

This section describes the likely impacts that can be expected during both the construction and operation phases.

5.5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase in the absence of mitigation:

1. Direct habitat loss

The construction phase of the three developments will involve the removal of improved agricultural grassland habitats. The broadleaved woodland to the west and south of Auburn House is to be retained and enhanced as part of this programme. Treeline boundaries to the south-east as well as the treelines along either side of the entrance avenue, and woodland areas to the west of this, are also to be retained. In total approximately 150m of hedgerow is to be removed and associated drainage ditches culverted. 200m of low value (conifer) treeline is also to be removed. Approximately 1km of existing hedgerow and approximately 500m of existing treeline are to be retained and reinforced.

Although no evidence of active Badger activity was recorded, it is important that movement corridors remain open for this species as it is known from the locality.

According to the arboricultural reports prepared by The Tree File, there are approximately 1,340 individual trees, Trees to be removed due to condition or conflict with the scheme design include approximately 50 Category 'B' trees, 55 Category 'C' trees and 120 Category 'U' tree. Note that not all Category 'U' trees are being removed, as is normally the case in developments of this nature. In woodland areas where these trees pose no health and safety risk, and where they provide an important ecological component for invertebrates and fungi, they are to be retained. Please refer to the reports from The Tree File for full details. Some of the relevant drawings are reproduced in figures 5.4-5.6.

Trees to be removed are predominantly non-native species, particularly Sycamore, Cypress *Cuprocyparis sp.* and other non-native conifers, Beech *Fagus sylvatica* and Horse Chestnut *Aesculus hippocastanum*. Relatively few are native species, among which Ash (many of which are affected by Ash Dieback) and Wych Elm (which are all affected by Dutch Elm Disease) form by far the greatest element.

The short-term loss of habitat will affect species which are common and widespread.

This impact is negative, moderate, likely and medium-term.

Figure 5.4 – Trees to be retained and trees to be removed: North East (Auburn Park)

Figure 5.5 – Trees to be retained and trees to be removed: East and South (Little Auburn)

Figure 5.6 – Trees to be retained and trees to be removed: South West (Streamstown)

As part of this proposal a Woodland Management Plan has been prepared by The Tree File. The purpose of this plan is to develop the woodland into an amenity and biodiversity feature. This will necessarily require a long-term programme of monitoring and review, with staggered replanting to ensure a varied age profile. The result however will be a more sustainable woodland with greater biodiversity value.

The overall impact of habitat loss on biodiversity is considered to be minor negative in the short-term, and neutral in the longer-term.

2. The direct mortality of species during land clearance.

This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. This will affect any areas trees or shrub vegetation to be removed.

Construction works may also affect roosting bats as there are a number of potential roost structures including trees and buildings to be demolished. All bat species and their roost sites are protected under national and EU legislation. The following is taken from the bat survey report:

- *Removal of trees may remove roosts and place roosting bats at risk*

Bats roost in trees, in addition to buildings, walls and other structures. Tree removal creates the potential for roost loss. This is more critical if bats are present at the time of felling. Felling may place a bat at risk if it has not sufficient opportunity to become active and vacate a tree. This is more likely to occur when temperatures are low (6oC, for example). Bats may be killed or injured by the felling process, by a chainsaw or by crushing when a limb or bark is moved as the tree moves prior to or during felling or when striking the ground.

A male Leisler's bat was calling from a mature beech (probably dead) tree close to the moat (number 712).

There is high potential that a mating perch would be removed (in removing the tree for safety considerations). This roost would potentially be lost through vegetation changes and lighting alterations within the site. This is a long-term moderate negative impact.

Trees are of high importance to bats for several reasons. They serve as roost sites. They provide shelter from wind and rain. They provide a substrate for the insect prey. They also provide protection from predation by allowing bats to fly close to branches.

Category U trees (either dead, dying, or dangerous, or those with a useful remaining amenity contribution of <10 years) provide ideal conditions for roosting bats but may be deemed a safety risk where there is an increased level of human activity or access within a site. Such trees are very typically rich in insect numbers and species diversity and are beneficial as a food store for bats in addition to the roost opportunities and shelter provided.

Removal of the trees has the potential to have a long-term to permanent moderate negative impact upon the local bat fauna. This would include any major tree surgery to old or sick trees and especially for the removal of such trees completely from the site.

- *Alterations to stable buildings would remove roosting opportunities and place bats at risk*

There are at least two bat species roosting within the stables; whiskered bat and brown long-eared bat. There is a likelihood of pipistrelle use of the buildings also. Renovation and partitioning of these buildings would

remove the existing roosts. If bats were present at the time of construction, this would pose a risk to their safety. This is a long-term moderate negative impact to bats as there would be a loss of a roost site to an uncommon species nationally and a very uncommon species for Dublin (whiskered bat).

- *House demolition may remove roost sites for individual bats*

While there were no bats evident in 2019 or 2021 in Little Auburn, there is potential for bats within the buildings proposed for removal as bats move in and out of buildings. Signs of bats are most obvious when there are large numbers of bats and individual bats may be overlooked without considerable effort (including tile / slate removal, examination of wall cavities etc.). This is a long-term slight negative impact.

This impact is negative, significant, likely and permanent.

3. Pollution of water courses through the ingress of silt, oils and other toxic substances.

Extensive ground works are anticipated as part of this project including the laying of a new sewer line along Back Road and Kinsealy Lane. The site is not within the catchment of any water body of fisheries significance. Nevertheless, there are sensitive habitats downstream of the land (Baldoyle Bay SAC) and so this effect is potentially significant. Construction pollution has the potential to impact directly upon aquatic life, e.g. though toxicity, or indirectly through the degradation of habitats.

This impact is negative, significant, likely and short-term.

4. Damage to hedgerows and trees to be retained.

The movement of machinery and the storage of materials and equipment close to the base of trees and hedgerows can lead to soil compaction, which in turn can lead to permanent tree damage.

This impact is negative, significant, likely and permanent.

Operational Phase

The following potential impacts are likely to occur during the operation phase in the absence of mitigation:

5. Pollution of water from foul wastewater arising from the development.

Foul effluent from the proposed development will be sent to the wastewater treatment plant at Ringsend in Dublin. The Ringsend plant is licenced to discharge treated effluent by the EPA (licence number D0034-01) and is managed by Irish Water. It treats effluent for a population equivalent (P.E.) on average of 1.65 million however weekly averages can spike at around 2.36 million. This variation is due to storm water inflows during periods of wet weather as this is not separated from the foul network for much of the older quarters of the city, including at the subject site. The Annual Environmental Report for 2020, the most recent available, indicated that there were a number of exceedances of the emission limit values set under the Urban Wastewater Treatment Directive and these can be traced to pulse inflows arising from wet weather. In April 2019 Irish Water was granted planning permission to upgrade the Ringsend plant. This will see improved treatment standards and will increase network capacity by 50%.

While the issues at Ringsend wastewater treatment plant are being dealt with in the medium term evidence suggests that some nutrient enrichment is benefiting wintering birds for which SPAs have been designated in Dublin Bay (Nairn & O'Hallaran eds, 2012). No negative impacts to Natura 2000 sites can arise from the additional loading arising from this development as there is no evidence that negative effects are occurring to high value conservation features from water quality.

This effect is neutral, imperceptible, unlikely and permanent.

6. Pollution of water from surface water run-off.

Surface water will pass to an existing surface water sewer. The drainage strategy will be fully compliant with the Greater Dublin Strategic Drainage Study and will include attenuation storage as well as SUDS measures to ensure that the quality and quantity of run-off remains at a 'greenfield' rate. These include permeable paving, filter drains, bio-retention, an open attention pond and sedum/green roofs on apartment buildings. Following attenuation, storm water will discharge at a controlled rate to existing drainage ditches leading to the Hazelbrook Stream. No negative effects will arise to water bodies as a result of these measures.

This effect is neutral, imperceptible, unlikely and permanent.

7. Lighting, noise and other disturbance impacts

This effect must be considered in the context of the existing environment, which is already close to residential areas and transport infrastructure. This brings with it noise and light pollution which will both increase with this development. Artificial lighting is known to have impacts on animal activity through both attractive and repellent forces. The effects are species and location specific, for instance some Bats are attracted to lights as prey items become concentrated around light sources (Rich & Longcore, 2006 eds). However other species may be deterred. The following is taken from the bat survey report:

Lighting may reduce value of area to light-sensitive bat species
Lighting is disruptive to all bat species if near or in a roost and will also affect feeding and commuting of light sensitive bat species. Whiskered bats, Natterer's bats and brown long-eared bats are the more light-sensitive species of the assemblage noted in this assessment while even pipistrelles and Leisler's bats avoid direct light.

There has been little study meanwhile on the effects of noise on terrestrial animals however it is believed that many species can adapt to elevated ambient noise levels.

The introduction of household pets, particularly cats, has been a cause of concern given the degree to which they prey on wild mammals and birds. There is no known research on this issue from Ireland. However the UK's Royal Society for the Protection of Birds states on its website that "despite the large numbers of birds

killed [estimated at up to 55 million per annum in the UK], there is no scientific evidence that predation by cats in gardens is having any impact on bird populations UK-wide."[8]

The Badger report states that: "There will be a greater level of human activity within the site and more traffic movement through the site. Given the low level of badger activity at present and the inactivity of all setts, this will not have an immediate impact upon badgers. However, given the presence of several setts, badgers have been in occupation here previously. The presence of activity, lighting and dogs may affect movement of badgers through the site, but this is at most a slight long-term / permanent negative impact."

This potential effect on bats is negative, significant, likely and permanent.

8. Spanish Bluebells and Three-cornered Garlic

Spanish Bluebells and Three-cornered Garlic are listed in legislation as an alien invasive species. There is consequently an onus on the developer to ensure that they do not spread. Mitigation will be required to eradicate these plants prior to the commencement of works.

This effect is negative, significant, likely and long-term.

9. Impacts to protected areas

There is no pathway from the development to the Sluice Marsh pNHA. There are consequently no effects which can occur to this area.

Surface water pathways ultimately lead to the Baldoyle Bay which is subject to a number of designations, including those within the Natura 2000 network. Wastewater pathways lead to Dublin Bay where there are also a number of Natura 2000 sites. A screening report for Appropriate Assessment is presented separately for each individual application as part of this planning application in accordance with the Planning and Development Act. This has concluded that significant effects to Baldoyle Bay SAC could not be ruled out due to the potential for construction pollution to be transported via the Hazelbrook Stream. Based on this assessment, a separate Natura Impact Statement has been prepared for each application and which outlines mitigation measures to be employed during the construction phase. These mitigation measures are mirrored in this report.

Impacts to Natura 2000 sites in Dublin Bay are not likely to occur. There are no pathways to any other area protected for nature conservation.

The NRA provides methodology for determining the significance of impacts for biodiversity. In this way it is possible to assign an impact significance in a transparent and objective way. Overall it can be seen that two potential moderate negative impacts may occur as a result of this project in the absence of mitigation.

[8] http://www.rspb.org.uk/advice/gardening/unwantedvisitors/cats/birddeclines.aspx

Table 5: Significance level of likely impacts in the absence of mitigation

Impact		Significance
Construction phase		
1	Habitat loss	negative, moderate, likely and medium-term
2	Mortality to animals during construction	negative, significant, likely and permanent
3	Pollution of water during construction phase	negative, significant, likely and short-term
4	Damage of trees to be retained	negative, significant, likely and permanent
Operation phase		
5	Wastewater pollution	neutral, imperceptible, unlikely and permanent
6	Surface water pollution	neutral, imperceptible, unlikely and permanent.
7	Lighting	negative, significant, likely and permanent
8	Spanish Bluebells and Three-cornered Garlic	negative, significant, likely and long-term
9	Impact to protected areas in the Broadmeadow estuary	negative, significant, likely and short-term

5.6 Avoidance, Remedial and Mitigation Measures

These measures include avoidance, reduction and constructive mitigation measures in accordance with best practice.

This report has identified a number of impacts that were assessed as 'moderate negative' and therefore mitigation is needed to reduce the severity of these potential effects, which are summarised below.

Construction Phase

1. Habitat loss
2. Mortality to animals during construction
3. Pollution to water courses (including impacts to protected areas)
4. Damage of hedgerow to be retained

Operation Phase

5. Lighting
6. Spanish Bluebells and Three-cornered Garlic

5.6.1 Mitigation Measures Proposed

The following recommendation are proposed for the development

Construction Phase

Mitigation 1: Habitat loss

The following is taken from the Badger survey report:

Planting along the perimeter of the development shall ensure that there is potential for movement of bats and badgers and other fauna through the site. This shall include shrubbery as well as trees. Trees of a variety of ages and species creates the best habitat compared to planting of trees of the same age and species.

Bats

Provision of access to all attics within the stable yard for bat following construction

Access shall be provided by means of suitable access slates, vents, or other means to allow bats to return to roofs following all construction work.

Provision of roosting features within attics

Timber rafters shall be provided that create suitable crevices for bats. This shall include similar features to those used within the existing stable buildings in addition to the provision of parallel timbers ("2 x 4" timbers (38 x 89 mm) spaced 15 to 18 mm apart i.e., at a slight angle creating a range of gaps from 15 mm to 18 mm).

New planting elsewhere will be consistent with the Woodland Management Plan so will enhance the overall biodiversity value of the site. The landscaping plan is showing in figure 5.3.

Checking of Trees for Bats Prior To / During Felling or Surgery where this is essential

Where there is no alternative to felling or removal of limbs of mature trees, an assessment for the presence of bats must be undertaken. Tree felling and surgery must avoid the summer months to protect nesting birds. At all other times, it should be possible to assess for bats provided that full access to any tree is available to the bat specialist.

If any buildings (walls etc.) are to be removed or modified, including re-pointing, a bat specialist shall ensure that bats are protected.

Bat boxes

Schwegler bat boxes (or equivalent) of varying design shall be erected within the remaining woodland to provide a variety of suitable roost sites. These boxes must be away from lighting and shall be no lower than 3 metres from ground level. All other measures to provide roosting opportunities within the stable buildings must also be implemented to make this effective. Locations for bat boxes shall be identified by a bat specialist.

All bat boxes shall be in place prior to any work within the stable yard.

Mitigation 2: Any clearance of vegetation (e.g. hedgerows or felling of individual trees) should only occur outside the prescribed nesting season, i.e. August to February inclusive. Where this is not possible the vegetation to be cleared must first be inspected for bird nesting activity. Where no nesting activity is recorded vegetation can be removed within 48 hours. Where nesting activity is recorded then vegetation clearance can only proceed under licence from the National Parks and Wildlife Service.

The following is taken from the bat survey report:

1. Acquisition of a Derogation to allow the removal of bat roosts within stable buildings

A derogation shall be required for disturbance to roost sites of bat species. This requires that a system of protection of bats is in place and that alternative roost sites or access to roosts is provided for bats.

The following measures are proposed to provide appropriate protection for bats:

2. Supervision of all roof level work within the stable yard by a bat specialist

3. Protection of any roosting bats during construction operations by a bat specialist.

This may require that bats are captured and cared for by the bat specialist until the work affecting the roost site is complete. Bats should be released into a bat box within another area within the grounds of Auburn and the original roost site re-examined prior to any further work that may affect bats.

Mitigation 3: Pollution during construction

Construction will follow guidance from Inland Fisheries Ireland (IFI, 2016) for the protection of fish habitat. This will include the erection of a robust silt curtain (or similar barrier) along open drainage ditches to prevent the ingress of silt to the Hazelbrook Stream. Water leaving the site will pass through an appropriately-sized silt trap or settlement pond so that only silt-free run-off will leave the site.

Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

In order to reduce the risk of defective or leaking foul sewers, the following remedial 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.

Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

A silt curtain or similar barrier will be erected along the drainage ditch to the east of the site and will remain in place for the duration of works.

The drainage ditch to the north is to be culverted as part of work and this will be done 'in the dry'. In other words, it will be dammed at either end so that works will be done with no scouring of silt or sediment. Water will be pumped around the works area where necessary.

The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of works, and a record of these inspections will be maintained.

These measures have been incorporated into a preliminary Construction Management Plan prepared by Waterman Moylan

Mitigation 4: Damage of trees to be retained

In particular this heading refers to the potential damage to the root structures of trees during the construction phase from the movement of machinery, the storage of heavy materials, the stripping of soil and the infilling of other areas with this soil.

Guidance from the National Roads Authority give the following equation for calculating the root protection area (RPA) (NRA, unknown year):

$$RPA(m2) = \pi(\text{stem diameter mm } 12)/1{,}000) \times 2$$

The RPA gives the area around which there should be no disturbance or compaction of soil. It is recommended that this be calculated for the largest tree within each treeline. Prior to construction this area should be clearly labelled 'sensitive ecological zone', fenced off with durable materials and instruction given to construction personnel not to disturb this buffer zone.

As a rule of thumb this buffer zone should extend at least to the canopy of the trees concerned.

Mitigation 5: Lighting

The following is taken from the bat survey report:

6. No lighting of the roof area of the stable yard or of Auburn House

No lighting shall be directed at the roof or eaves of either Auburn House or the stable yard buildings.

No ornamental lighting shall be attached to the buildings.

7. Dark corridor of movement for bats from the stable yard and Auburn House to the surrounding lands

No lighting shall illuminate the surrounding area of the stable yard or Auburn House to allow movement of bats through the site and to and from roost sites.

10. Lighting control

Lighting must be managed to ensure that mature trees are unlit, and that lighting does not overspill into green areas where it is unnecessary. Lighting should not exceed 3 lux away from areas where street and house lighting are essential. No lighting of tree canopies shall occur.

Lighting shall be used as a function and not as an ornament and shall be of a design that allows a high level of control and directability. LED allows for controls on timing, directionality and wavelength and should be the source of light.

- *Lighting shall be directed downwards away from the treetops and known bat roosts.*
- *Tree crowns shall remain unilluminated*
- *All luminaires shall lack UV elements when manufactured and shall be LED*
- *A warm white spectrum (ideally <2700 Kelvin but as low as Fingal County Council limitations allow) shall be adopted to reduce blue light component. The temperature achieved for this proposal is 2700 Kelvin.*

- *Luminaires shall feature peak wavelengths higher than 550 nm •*

- *Light levels shall be controlled by the use of sensor lighting for security.*

- *Lights must not be left on throughout the night.*

11. Evaluation of lighting following construction

A bat specialist shall examine the lighting and planting upon completion to ensure that lighting provides for access for bats to the woodland. Where there are no suitable access areas, measures to create easier movement of bats through the site shall be introduced through modifications to the lighting that may include cowls, planting, or other options.

Mitigation 6: Spanish Bluebells and Three-cornered Garlic

Spanish Bluebells and Three-cornered Garlic will be treated with standard herbicide by a suitably qualified professional during the growing season.

5.7 Cumulative effects

This development can be considered within the context of the broader urbanisation of lands that is accommodating the expansion of Dublin city and its hinterland. This is planned for under the Fingal County Development Plan 2017-2023. This type of urban expansion has been associated with a loss of habitat however the aforementioned plans envisage the preservation of 'green infrastructure' to preserve or augment local ecological features. A growing population is placing pressure on wastewater treatment facilities however a recent upgrade to the Swords wastewater treatment plant will provide for future development. A Strategic Environmental Assessment of the Fingal CDP 2017-2023 includes measures to monitor significant environmental effects of the adopted plan.

The cumulative effects of this urban growth can arise from replacing permeable ground with hard surfaces. This can result in increased risk of flooding and deterioration of water quality, primarily from the run-off of particulate matter and hydrocarbon residues (Mason, 1996). To combat this effect the Greater Dublin Strategic Drainage Study was finalised in 2005. This aims to ensure that new developments integrate sustainable drainage systems (SUDS) to maintain natural, or 'green field' rates of surface water run-off while also improving water quality in rivers. This development includes SUDS techniques that will maintain current levels of water quantity and quality.

The Water Framework Directive sets out to attain 'good ecological status' of all water bodies. A second River Basin Management Plan was published in 2018 which identifies 190 'priority areas for action' where resources are to be focussed over the 2018-2021 period. A third plan is in preparation with the aim of achieving 'good status' for all water bodies by 2027.

Specific projects which are under consideration by An Board Pleanála in this vicinity, or which may be coming before the Board, include:

- an SHD application (ref.: TC06F.310125) for 102 no. residential units (56 no. houses, 46 no. apartments), creche and associated site works at Lamorlaye, Back Road, Malahide, Co. Dublin.

- An SHD application (ref.: TC06F.308804) for 458 no. residential units (242 no. houses, 60 no. duplex units, 156 no. apartments), creche and all associated site works on lands at Back Road, Broomfield, Malahide, Co. Dublin

Both of these developments are within the catchment of the Hazelbrook Stream that leads to Baldoyle Bay.

In the event that this project is under construction at the same time as other projects there is a possibility that construction pollutants entering waterways leading to Baldoyle Bay SAC and SPA could act in combination to result in negative effects to invertebrate communities in the SAC and, by extension, birds which are qualifying interests of the SPA.

Other than during the construction phase, there are no projects or plans which could act in a cumulative manner with the current proposal to result in significant negative effects to biodiversity.

5.8 Conclusion, Residual Impacts and Monitoring

Habitats on this site have been found to range from negligible to high local biodiversity value while there is a hydrological link to both the Broadmeadow (Malahide) Estuary SAC/SPA/pNHA and Baldoyle Bay SAC/SPA/pNHA, areas designed as internationally important for nature conservation.

With the full implementation of all mitigation measures significant negative effects will not occur to biodiversity.

5.9 References

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6.0 LAND, SOILS AND GEOLOGY

6.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact that the proposed residential developments in lands around Auburn House in Malahide, Co. Dublin will have on the surrounding soil and geology in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational.

Note that three concurrent applications have been submitted to develop the lands. Although none of the developments reliant on any other, and can be constructed as standalone developments, to provide a robust assessment of the impact of developing these lands, the cumulative impact of all three concurrent applications have been considered together.

A full description of the proposed developments can be found in Chapter 1 of this EIAR.

This chapter was completed by Waterman Moylan Consulting Engineers.

6.2 Assessment Methodology

A desktop study to classify the geological features related to the lands was undertaken. Data from the Geological Survey of Ireland (GSI) was reviewed, including the following maps:

- Bedrock Geology Map
- Bedrock Aquifer Map
- Ground Water Vulnerability Map

This information was supplemented by geotechnical site investigations carried out by Site Investigations Ltd. in February 2020 within the Auburn site.

This comprehensive ground investigation assessed the soil, rock and groundwater conditions across the site and included trial pits with dynamic probes, soakaway tests and a suite of laboratory testing of selected soil and rock samples. Laboratory testing included moisture contents, Atterberg limits, particle size gradings, pH, sulphate and chloride content, Rilta Suite analysis and loss on ignition tests.

6.3 Receiving Environment

6.3.1 Site Location and Topography

The subject lands are located between the existing Abington residential development and the Malahide Road. The site has two entrances: one from the Malahide Road, adjacent to the Malahide Road/Back Road junction, and another from Carey's Lane, accessed from Streamstown Lane via Malahide Road and via Feltrim Road.

The subject lands form the western, northern, and eastern boundaries of Auburn House, an eighteenth century three-storey mansion located within a wooded demesne. Malahide Castle is approximately 900m north-east of the site.

A topographic survey of the area indicates that the site is very flat, with only local high points. The site lies generally at a level of between 9m and 11m OD Malin, with a local high point near the north-east of the site of 12.45m OD Malin (located within the Streamstown portion of the site).

There is an existing surface water drain along the northern and eastern boundary of the site (within the Abington development), which discharges to an existing culvert under the Malahide Road, close to the entrance to the site, at the junction with Back Road. This drain is very flat, at an estimated average gradient of 1/1,000 over its 700 metre length along the north-eastern boundary and through the lands to the entrance of the site. Surface water from the site currently discharges into a series of ditches on-site. The ditches drain eastwards and merge with the Hazelbrook Stream, east of the Malahide Road, which is a tributary of the Sluice River that ultimately outfalls to Baldoyle Bay at Portmarnock.

The location of the subject site is indicated on Figure 6.1, below:

Fig. 6.1 – Site Location (Source: Google Maps)

6.3.2 Desktop Study

Geological Survey Ireland (GSI) produces a wide range of datasets, including bedrock geology mapping, extracted below in Figure 6.2.

The map indicates that the subject site lies at the boundary between three formations: the northern portion of the site lies within the Malahide Formation, the southern portion of the site lies within the Tober Colleen Formation, and a portion of the site at the east lies above Waulsortian Limestones.

Malahide Formation:

The Malahide Formation is described as argillaceous bioclastic limestone and shale. The lower part of the formation is composed of calcareous shales, siltstones and sandstones, and occasional thin limestones at its base. These are followed by cyclical, peloidal and oncolitic, peloidal, occasionally nodular micrites and thin intraclastic, with a thickness of 300m to more than 1,200m.

Tober Colleen Formation:

The Tober Colleen Formation is described as calcareous shale and limestone conglomerate. The formation is comprised of dark-grey, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones, with a thickness of 50m to 250m.

Waulsortian Limestones:

Waulsortian Limestones are described as massive unbedded lime-mudstone (the name "Waulsortian Limestones" comes from rocks of similar lithology and age found in Belgium). The formation is dominantly pale-grey, crudely bedded or massive limestone. The Waulsortian Limestones are typically 300 - 500 m thick.

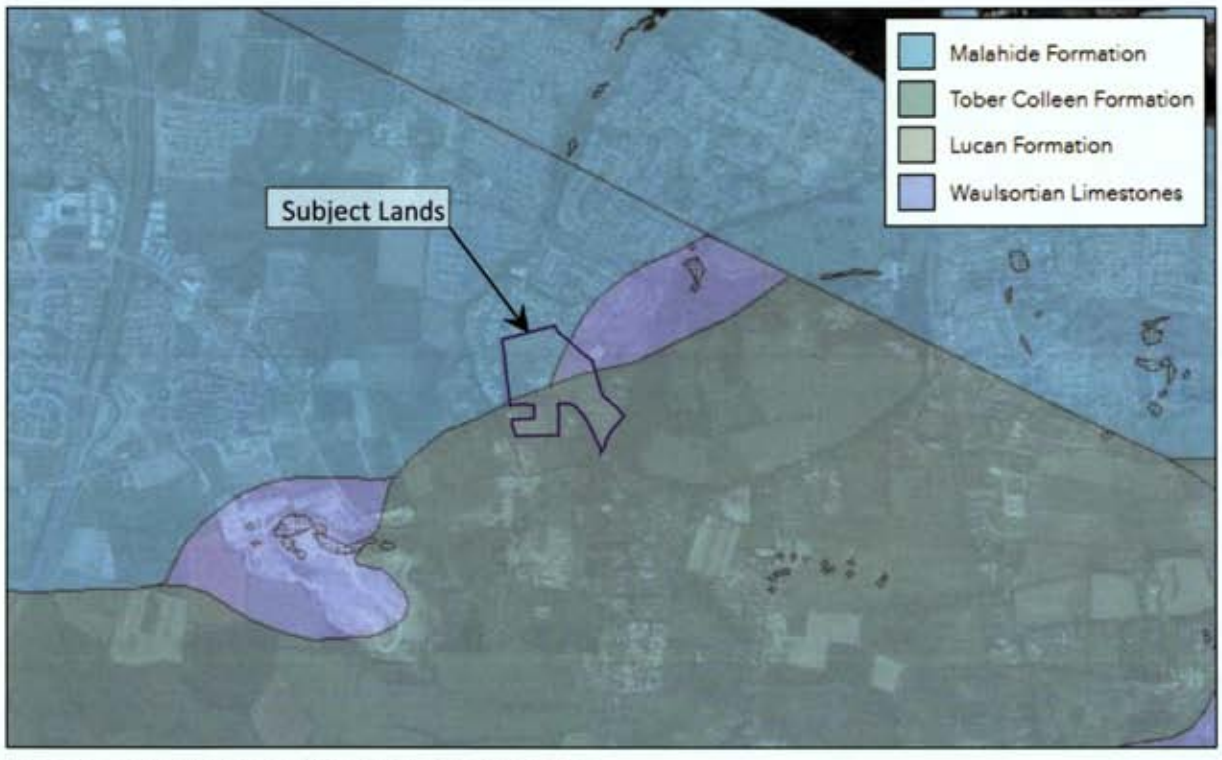

Fig. 6.2 – Extract from GSI Bedrock Geology Map

The National Aquifer Bedrock Map prepared by the Geological Survey of Ireland was consulted and is extracted below:

Fig. 6.3 – Extract from GSI Bedrock Geology Map

From this map, the portions of the site within the Malahide Formation and above Waulsortian Limestones are within the designation LI, which represents locally important moderately productive aquifer, while the portion of the site within the Tober Colleen Formation is within the designation PI, which represents bedrock which is generally unproductive except for local zones.

The groundwater vulnerability in the vicinity of the proposed site was also examined by referencing the Geological Survey of Ireland. From the GSI groundwater vulnerability map, extracted below, the site lies within an area with high to extreme groundwater vulnerability:

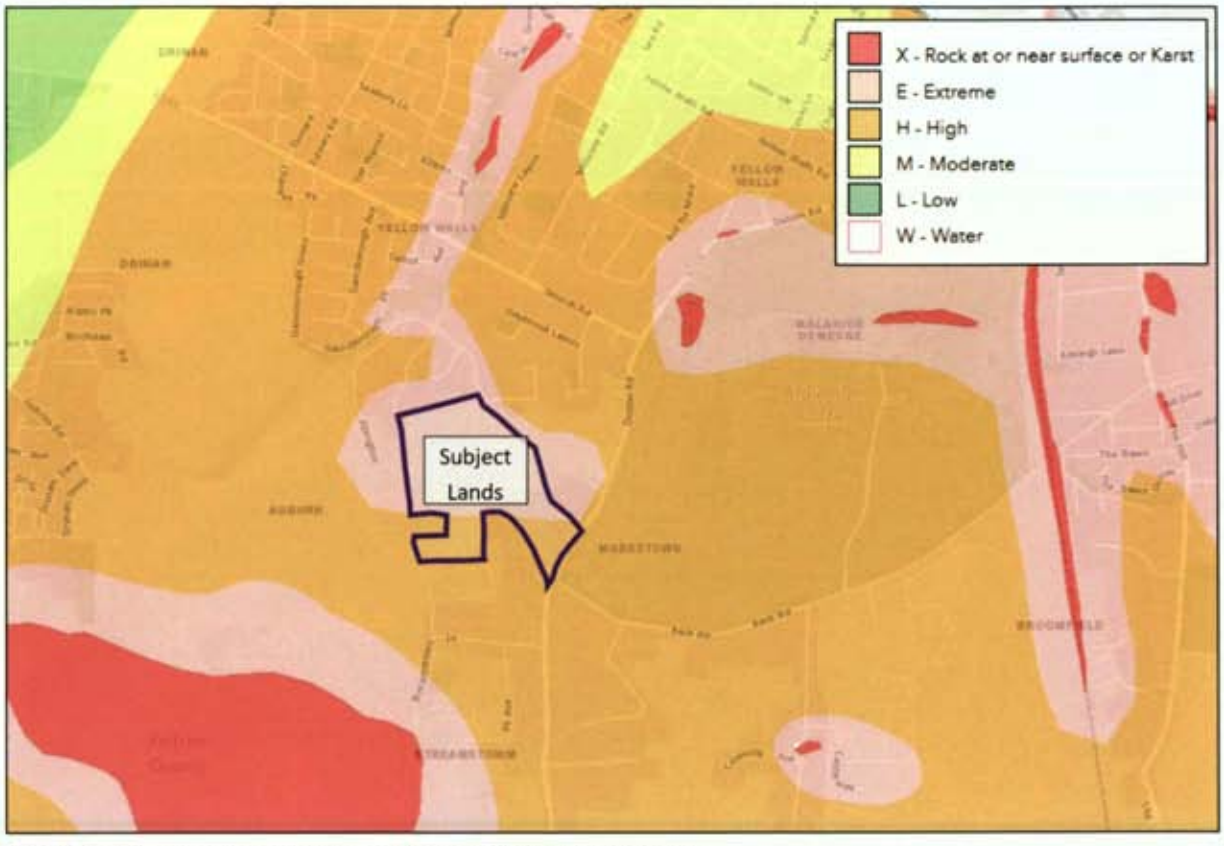

Fig. 6.4 – Extract from GSI Groundwater Vulnerability Map

6.3.3 Site Investigations

Site Investigations were carried out by Site Investigations Ltd. in February 2020. The fieldworks comprised a programme of 5 no. trial pits with dynamic probes and soakaway tests. The locations of the trial pits are indicated on the Figure below.

Trial pits were excavated using a wheeled excavator, and representative disturbed bulk samples were returned to the laboratory for geotechnical testing. Geotechnical laboratory testing was completed in accordance with BS 1377 (1990). The suite of testing included moisture contents, Atterberg limits particle size gradings, pH, sulphate and chloride content, Rilta Suite analysis and loss on ignition tests.

Dynamic probes were completed adjacent to the trial pits using a track mounted Competitor 130 machine. The configuration utilised a standard DPH (Heavy) probing method comprising a 50kg weight, 500mm drop height and a 50mm diameter (90°) cone.

Soakaway tests were scheduled at all five trial pit locations, but groundwater was encountered in three of the five trial pits. Therefore, these soils were determined to already be saturated and unsuitable as soakaway locations. Two soakaways were completed in accordance with BRE Special Digest 365.

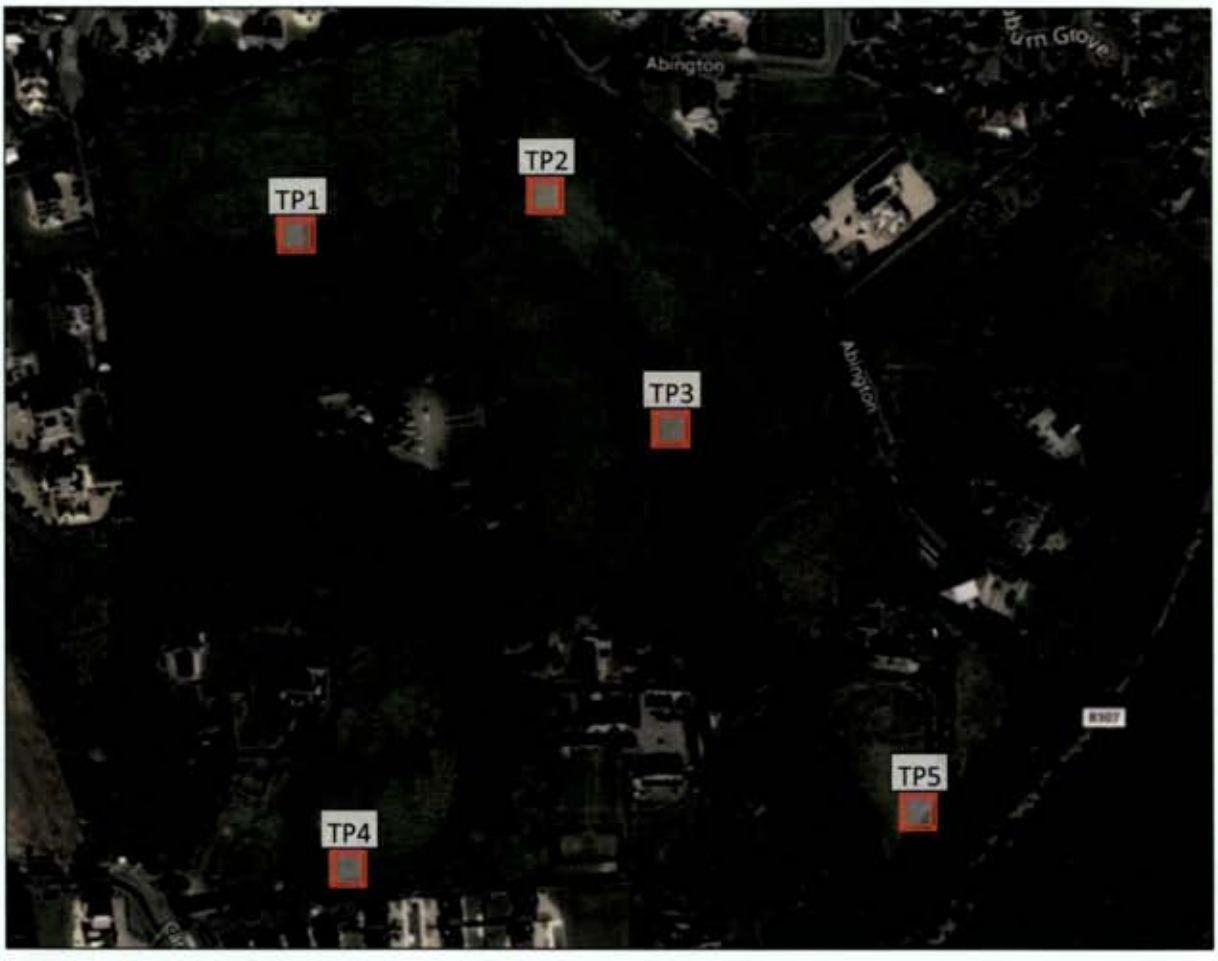

Fig. 6.5 – Trial Pit Locations

The results of the site investigations are summarised as follows:

The natural ground conditions vary slightly. At Trial Pits 1, 4 ad 5, cohesive brown grey clay soils were encountered until termination of the pits. Trial Pits 2 and 3 also recorded the cohesive clay soils, but this was underlain by a dark grey silty sandy gravel, with the boundary between the clay and gravel at 1.20m below ground level and 1.10m below ground level, respectively.

The laboratory tests of the cohesive soils confirm that clay soils dominate the site with low plasticity indexes of 10 to 14% recorded. The particle size distribution curves were poorly sorted straight-line curves with 21% to 47% fines content.

Groundwater ingresses were recorded in Trial Pits 1, 2 and 3 at 2.60m below ground level, 1.20m below ground level and 1.10m below ground level respectively. The ingresses in Trial Pits 2 and 3 correspond with the boundary with the gravel, with rapid ingress rates. The two soakaway tests completed failed the specification as the water level did not fall sufficiently enough to complete the tests. The unsuitability of the soils for soakaways is further suggested by the soil descriptions of the materials in this area of the site where the soakaway was completed, i.e. well compacted clay soils.

The CBR test results indicate CBR values ranging from 6.1% to 8.3%.

Leachate results were compared with the published waste acceptance limits from BS EN 12457-2, to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report shows that the material tested can be classified as non-hazardous material.

The chemical test results indicate a general pH value between 7.11 and 7.30, which is close to neutral and below the level of 9. Therefore, no special precautions are required.

The maximum value obtained for water soluble sulphate was 126mg/l as SO3. The BRE Special Digest 1:2005 – *'Concrete in Aggressive Ground'* guidelines require SO4 values. After conversion (SO4 = SO3 x1.2), the maximum value of 151mg/l shows Class 1 conditions and no special precautions are required.

6.4 Description of the Proposed Developments

6.4.1 General

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys.

The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

The proposed development, with respect to soils and geology, includes the following characteristics:

- Stripping of topsoil
- Excavation of foundations
- Excavation of roads, drainage sewers and utilities
- Minor regrading and landscaping
- Disposal of any surplus excavated soils including any contaminated material.

Efforts have been made to follow the existing topography of the site, in order to minimise the cut and fill requirements. All roads and Finished Floor Levels (FFLs) generally match existing levels throughout the site, so it is envisaged that all topsoil and subsoil arisings will be reused on site. Note that there are no basements proposed, though excavations will be required to facilitate the proposed wastewater pumping station.

6.4.2 Auburn Park

The proposed Auburn Park development is located in the northern portion of the lands, with vehicular access from Malahide Road. It will consist of 92 no. new residential dwelling units, comprising 45 no. houses, 13 no. duplexes and 34 no. apartments, as set out in the Schedule of Accommodation below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	3	17	25	45
Duplexes	6	1	6	-	13
Apartments	8	26	-	-	34
Total	**14**	**30**	**23**	**25**	**92**

Table 6.1 – Auburn Park Schedule of Accommodation

6.4.3 Little Auburn

The proposed Little Auburn development is located in the south-eastern portion of the lands, adjacent to Malahide Road. It will consist of 98 no. new residential dwelling units, comprising 53 no. houses, 8 no. duplexes and 34 no. apartments, as set out in the Schedule of Accommodation below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	5	14	34	53
Duplexes	4	2	2	-	8
Apartments	8	29	-	-	37
Total	**12**	**36**	**16**	**34**	**98**

Table 6.2 – Little Auburn Schedule of Accommodation

6.4.4 Streamstown

The proposed Streamstown development is located in the south-western portion of the lands, with vehicular access from Carey's Lane. It will consist of 69 no. new residential dwelling units, comprising 35 no. houses and 34 no. apartments, as set out in the Schedule of Accommodation below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	1	7	27	35
Apartments	10	20	4	-	34
Total	**10**	**21**	**11**	**27**	**69**

Table 6.3 – Streamstown Schedule of Accommodation

6.5 Potential Impact of the Proposed Development

6.5.1 Construction Phase

The removal of topsoil during earthworks and the construction of roads, services and buildings will expose subsoil to weathering and may result in the erosion of soils during adverse weather conditions.

Surface water runoff from the surface of the excavated areas may result in silt discharges to the Hazelbrook Stream, which is a tributary of the Sluice River. Excavations for foundations, roadworks and services will result in a surplus of subsoil. Surplus subsoil will be used in fill areas where applicable.

Additional imported fill will be required to achieve the proposed levels. This will require an Article 27 application and the soil to be imported must meet chemical and biological standards pre-transfer.

Dust from the site and from soil spillages on the existing road network around the site may be problematic, especially during dry conditions.

Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures.

6.5.2 Operational Phase

During the operational phase of the development, it is not envisaged that there will be any ongoing impacts on the underlying soil as a result of the proposed development. Any hydro-geological impacts are temporary and associated with the construction of the proposed development.

6.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

6.6.1 Construction Phase

To reduce the quantity of soil to be removed from or imported into 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 balance. The number of vehicle movements offsite will be minimised by this optimisation. Surplus subsoil and rock that may be required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. This is outlined in Waterman Moylan's Preliminary Construction Demolition & Waste Management Plan, which accompanies this submission, and which will need to be updated and implemented by the development's main contractor during the construction phase.

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 of soil not reused on site can be sold. 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, as any cross-contamination of the topsoil can render it useless for reuse.

It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres 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 moving around the site.

Records of topsoil storage, movements and transfer from site 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.

Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill.

The provision of wheel wash areas at the exit to the development as necessary will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis. All trucks on the public roads will carry up to a maximum of ten 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 area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

Soil samples taken from the site during the site investigations showed no evidence of contamination. However, any contaminated soil that may be uncovered on the site will be identified and disposed of to an appropriate waste disposal facility.

If groundwater is encountered during excavations, mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

On foot of Waterman Moylan's accompanying Preliminary Construction Demolition and Waste Management Plan, a Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction phase to control the above remedial measures.

6.6.2 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.

Part of the SuDS proposal for this site is also to encourage infiltration of surface water to the ground. This infiltration will assist with natural ground water replenishment which is currently occurring on the lands.

6.7 Predicted Impact of the Proposal

6.7.1 Construction Phase

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will not have significant adverse impacts, and no significant adverse impacts on the soils and geology of the subject lands are envisaged.

6.7.2 Operational Phase

On completion of the construction phase and following replacement of topsoil and implementation of a planting programme, no further impacts on the soil are envisaged.

SuDS measures, including permeable paving and infiltration drains, will assist with cleaning surface water runoff while replenishing the natural ground water table.

6.8 Monitoring

Monitoring during the construction phase will be required, in particular in relation to the following:

- 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 close to the boundaries of the site, when required due to unusually dry weather conditions.

During the operational phase, the surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation system) 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.

7.0 WATER

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact that the proposed residential developments in lands around Auburn House in Malahide, Co. Dublin will have on the surrounding water supply network, foul water drainage and surface water drainage in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational.

Note that three concurrent applications are being submitted to develop the lands. Although none of the developments are reliant on any other, and can be constructed as standalone developments, to provide a robust assessment of the impact of developing these lands, the cumulative impact of all three concurrent applications have been considered together.

A full description of the proposed developments can be found in Chapter 1 of this EIAR.

This chapter was completed by Waterman Moylan Consulting Engineers.

7.2 Assessment Methodology

7.2.1 Water Supply

Research for this section included a review of the existing watermain network maps from Irish Water / Fingal County Council records for the area.

7.2.2 Foul Water Drainage

Research for this section included a review of the existing foul water layout from Irish Water / Fingal County Council records for the area.

7.2.3 Surface Water Drainage

Research for this section included a review of Ordinance Survey and Topographical surveys of the subject site and surrounding area and a review of the existing surface water layout from Irish Water / Fingal County Council records for the area. A site walk/inspection of ditches and watercourses on and around the site was also carried out.

7.3 Receiving Environment

7.3.1 Water Supply

There are a number of existing interconnected water supply mains in the vicinity of the subject lands, including:

- A 12" (c. 300mm) diameter water supply main in the R107 Malahide Road.
- A 100mm water supply main in Carey's Lane to the south-west of the site serving the dwellings along the laneway and Auburn Grove.

7.3.2 Foul Water Drainage

There is no gravity sewer within the Malahide Road in front of the subject site. The closest gravity sewer is located in the Swords Road, approximately 670m north of the proposed access onto the Malahide Road. This gravity sewer drains to the Malahide Wastewater Treatment Plant.

There are three existing pumping stations in the vicinity of the site:

1. Connolly Avenue Pumping Station (Irish Water)

   This pumping station drains:

   a) Broomfield LAP and Kinsealy Lane developments

   b) Housing in Streamstown

   This pumping station also previously drained Kinsealy Village via a pumping station known as Floraville. However, the Floraville pumping station has recently been decommissioned following completion of a Local Network Reinforcement Project by Irish Water. This project comprised of a new pumping station on Chapel Road discharging via a new rising main to the existing North Fringe Interceptor Sewer. As part of the project, the Floraville pumping station was decommissioned and diverted by a new gravity sewer to the new Chapel Road pumping station.

2. Abington / Gaybrook Stream Pumping Stations

   a) Abington is drained via a private pumping station

   b) Gaybrook pumping station drains developments along the Swords Road

3. Clairville Lodge Pumping Station

   Draining the Carey's Lane development up the Malahide Road to the junction with the Swords Road known as McAlister's Garage.

Both the Abington and Clairville Lodge pumping stations are private and have not been designed for any significant additional development flows. Both the Abington and Clairville Lodge pumping stations discharge to the existing gravity sewer network on Swords Road, where Irish Water and Fingal County Council Water Services have confirmed there is no additional capacity.

Although the Local Network Reinforcement Project has reduced the flows discharging to the Connolly Avenue pumping station, Irish Water have advised that it still has capacity constraints and is not suitable for significant additional development.

In November 2021 Irish Water advised of a future new pumping station on Kinsealy Lane, which would pump wastewater south to the new Chapel Road Pumping Station. This is intended to relieve capacity constraints at Connolly Avenue Pumping Station and is referred to as the Castleway Pumping Station.

Refer to the Figure below, which shows the location of existing pumping stations, rising mains and the new gravity main from Floraville to the Chapel Road Pumping Station.

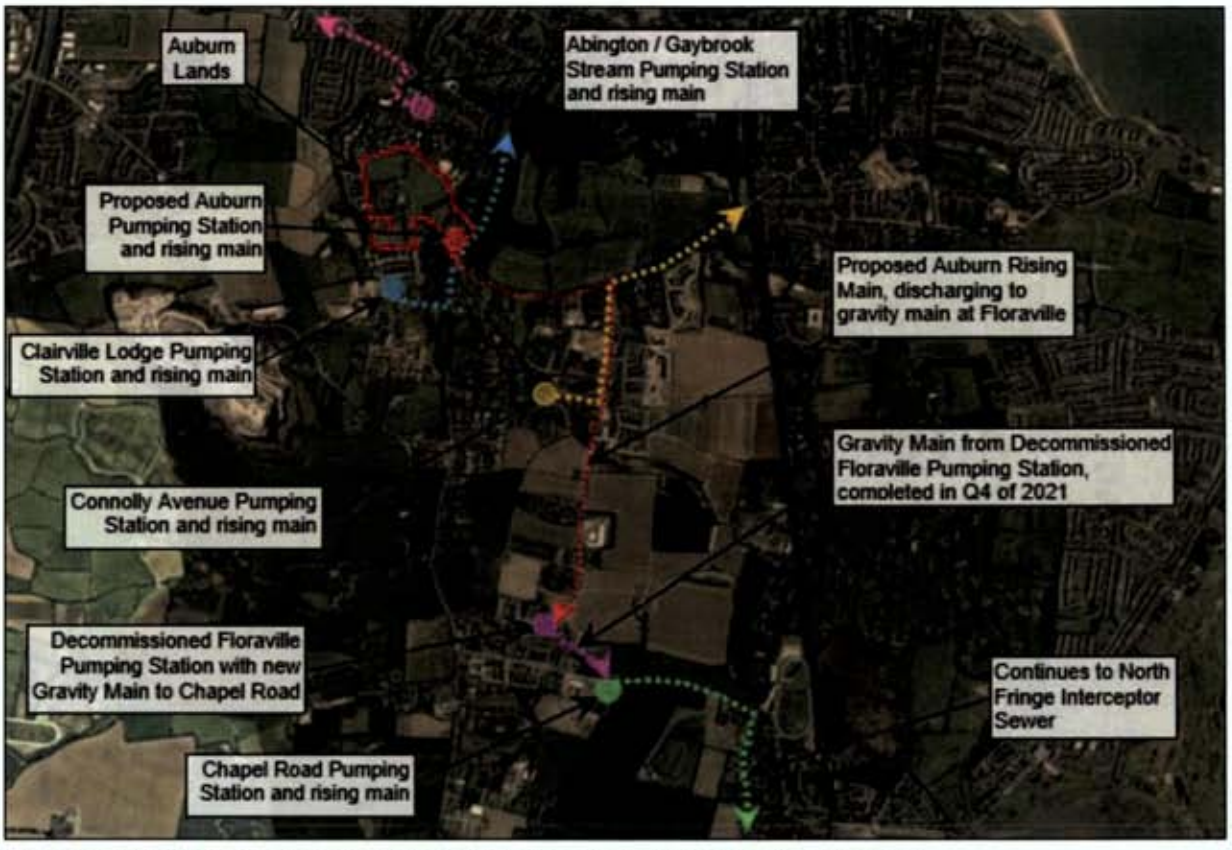

Fig. 7.1 – Existing Pumping Stations and Proposed Auburn Pumping Station

7.3.3 Surface Water Drainage

The subject site is generally flat with gentle slope from west to east. The existing drain along the northern and eastern boundary of the site (within the Abington development) discharges to an existing culvert under the Malahide Road close to the entrance to the site at the junction with Back Road. This drain is very flat at an estimated average gradient of 1/1000 over its 700-metre length along the north-eastern boundary and through the lands to the entrance of the site.

Surface water from the site discharges into a series of ditches on-site. The ditches drain eastwards and merge with the Hazelbrook Stream, east of the Malahide Road, which is a tributary of the Sluice River that ultimately outfalls to Baldoyle Bay at Portmarnock.

7.4 Description of the Proposed Developments

7.4.1 General

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys.

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internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

7.4.2 Auburn Park

The proposed Auburn Park development is located in the northern portion of the lands, with vehicular access from Malahide Road. It will consist of 92 no. new residential dwelling units, comprising 45 no. houses, 13 no. duplexes and 34 no. apartments, as set out in the Schedule of Accommodation below:

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Table 7.1 – Auburn Park Schedule of Accommodation

7.4.3 Little Auburn

The proposed Little Auburn development is located in the south-eastern portion of the lands, adjacent to Malahide Road. It will consist of 98 no. new residential dwelling units, comprising 53 no. houses, 8 no. duplexes and 34 no. apartments, as set out in the Schedule of Accommodation below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	5	14	34	53
Duplexes	4	2	2	-	8
Apartments	8	29	-	-	37
Total	**12**	**36**	**16**	**34**	**98**

Table 7.2 – Little Auburn Schedule of Accommodation

7.4.4 Streamstown

The proposed Streamstown development is located in the south-western portion of the lands, with vehicular access from Carey's Lane. It will consist of 69 no. new residential dwelling units, comprising 35 no. houses and 34 no. apartments, as set out in the Schedule of Accommodation below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	1	7	27	35
Apartments	10	20	4	-	34
Total	**10**	**21**	**11**	**27**	**69**

Table 7.3 – Streamstown Schedule of Accommodation

7.5 Characteristics of the Proposed Developments

7.5.1 Water Supply

It is proposed to supply water to the development via two connections to the existing watermain network, one to the 300mm watermain in the Malahide Road (as part of the Auburn Park and Little Auburn developments) and the other to the 100mm watermain in Carey's Lane (as part of the Streamstown development).

The proposed network consists of a 150mm diameter watermain running along the main roads through the sites, with 100mm branches, as shown on the accompanying Watermain Layout drawings.

An estimate of the water demand from the public water supply system for the subject development is shown in the Table below. The average domestic demand has been established based on an average occupancy ratio of 2.7 persons per dwelling with a daily domestic per capita consumption of 150 litres and with a 10% allowance factor. The average day/peak week demand has been taken as 1.25 times the average daily domestic demand, while the peak demand has been taken as 5 times the average day/peak week demand, as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure.

Description		Total Population	Water Demand	Average Demand	Average Peak Demand	Peak Demand
		No. People	*l/day*	*l/s*	*l/s*	*l/s*
Auburn Park	45 Houses	121.5	20,048	0.232	0.290	1.450
	13 Duplexes	35.1	5,792	0.067	0.084	0.419
	34 Apartments	91.8	15,147	0.175	0.219	1.096
Little Auburn	53 Houses	143.1	23,612	0.273	0.342	1.708
	8 Duplexes	21.6	3,564	0.041	0.052	0.258
	37 Apartments	99.9	16,484	0.191	0.238	1.192
Streams-town	35 Houses	94.5	15,593	0.180	0.226	1.128
	34 Apartments	91.8	15,147	0.175	0.219	1.096
Total		**699.3**	**115,385**	**1.335**	**1.669**	**8.347**

Table 7.4 – Calculation of Total Water Demand for the Developments

Based on these figures, the water demand that will be generated by the fully completed development is approximately 1.335l/s, or 115.4m^3 per day.

A Pre-Connection Enquiry was submitted to Irish Water as part of the Strategic Housing Development submitted for the subject lands. A Confirmation of Feasibility Letter was issued by Irish Water on 13 September 2021, confirming that connection to the existing water supply network is feasible without upgrades to the network. The Confirmation of Feasibility Letter is included in Appendix 7.1. Irish Water subsequently issued a letter to An Bord Pleanála, dated 23 May 2022, reconfirming that connection is feasible without upgrades to the network – refer to the letter included in Appendix 7.2 of this report.

Recent engagement with Irish Water regarding these three concurrent applications has concluded with the same proposal being put forward, subject to the same feasibility letter. Note, however, that the total development of the lands is now 259 units, compared to 369 units previously proposed as part of the SHD application.

7.5.2 Foul Water Drainage

It is proposed to drain wastewater in a through a series of 150mm and 225mm sewers to a proposed new pumping station near the Malahide Road site entrance.

The wastewater pumping station will have a 24-hour storage tank (c.115.4m3 of storage for 259 units) and will be designed in accordance with Irish Water requirements. In order to minimise the risk of odour, noise and vibration nuisance, a buffer zone of 35m is proposed between the pumping station and the nearest property, in accordance with Fingal County Council's Development Plan, Objective WT12. There are no existing or proposed buildings within this 35m buffer zone.

Wastewater will be pumped from the development site via Back Road and Kinsealy Lane to outfall via a stand-off manhole to the new gravity sewer, where it will drain by gravity to the new Chapel Road pumping station and ultimately to the North Fringe Interceptor Sewer, as shown on the accompanying Waterman Moylan foul water layout drawings.

It was agreed with Irish Water that the proposed rising main along Kinsealy Lane would be designed and constructed to allow the future Castleway Pumping Station to utilise the rising main and therefore avoid multiple rising mains along Kinsealy Lane. This proposed rising main is designed to accommodate flows from the Kinsealy Lane Pumping Station and to ensure that there are no septicity issues arising. The detailed rising main design will form part of the Connection Agreement with Irish Water for the Auburn Pumping Station prior to any construction on site.

A Pre-Connection Enquiry was submitted to Irish Water as part of the Strategic Housing Development submitted for the subject lands. A Confirmation of Feasibility Letter was issued by Irish Water on 13 September 2021, stating that connection to the Irish Water network is feasible via a new rising main from the Auburn site to the new gravity sewer at Floraville Pumping Station in Kinsealy, which in turn drains to the new Chapel Road pumping station – refer to the letter included in Appendix 7.1 of this report.

Irish Water subsequently issued a letter to An Bord Pleanála, dated 23 May 2022, reiterating their position as set out above – refer to the letter included in Appendix 7.2 of this report.

Recent engagement with Irish Water regarding these three concurrent applications has concluded with the same proposal being put forward, subject to the same feasibility letter. Note, however, that the total development of the lands is now 259 units, compared to 369 units previously proposed as part of the SHD application.

An estimate of the foul water discharge rate from the subject development to the public drainage network is shown in the Table below. Domestic wastewater loads have been calculated based on 2.7 persons per unit with a daily per capita wastewater flow of 150 litres with a 10% unit consumption

allowance, in line with Section 3.6 of the Irish Water Code of Practice for Wastewater Infrastructure. A peak flow multiplier of 6 has been used, as per Section 2.2.5 of Appendix B of the Code of Practice.

Description		Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
		No. People	*l/day*	*l/day*	*l/s*	*l/s*
Auburn Park	45 Houses	121.5	150	20,047.5	0.232	1.392
	13 Duplexes	35.1	150	5,791.5	0.067	0.402
	34 Apartments	91.8	150	15,147.0	0.175	1.052
Little Auburn	53 Houses	143.1	150	23,611.5	0.273	1.640
	8 Duplexes	21.6	150	3,564.0	0.041	0.248
	37 Apartments	99.9	150	16,483.5	0.191	1.145
Streams-town	35 Houses	94.5	150	15,592.5	0.180	1.083
	34 Apartments	91.8	150	15,147.0	0.175	1.052
Total		**699.3**	**-**	**115,384.5**	**1.335**	**8.013**

Table 7.5 – Calculation of Total Foul Water Flow from the Developments

The total dry weather flow from the development is 1.335l/s, with a peak flow of 8.013l/s.

7.5.3 Surface Water Drainage

It is proposed to drain surface water from the development via a series of drains ranging from 150mm to 450mm diameter to three separate outfalls to the existing Hazelbrook Stream: one near the centre of the site from the detention basin north of the ditch, one from the Streamstown site, and one at the south of the site near the entrance. A new headwall is to be constructed at each of the outfalls.

The proposed development incorporates a Storm Water Management Plan through the use of various SuDS techniques. Treatment and storage of surface water at source will intercept and slow down the rate of runoff from the site to the existing surface water sewer system.

Based on three key elements, Water Quantity, Water Quality and Amenity, the targets of the SuDS train concept have been implemented in the design. The SuDS devices proposed around the site include permeable paving, filter drains, green roofing, grasscrete, dry detention basins, flow control devices and petrol interceptors.

Attenuation storage is provided to limit the discharge rate from the site into the public network. As per the GDSDS, the required attenuation volume is calculated assuming 100% runoff from paved areas, and has been calculated for the 1-year, 30-year and 100-year return periods, identifying the critical storm for each. To achieve the required attenuation volume, the site has been divided into several separate sub-catchments. The Auburn Park site and the northern portion of the Little Auburn site will be attenuated in a proposed dry detention basin in the open space at the centre of the site. The southern portion of the Little Auburn site will be attenuated in a proposed dry detention basin at the south of the site near the site entrance.

The Streamstown site is divided into two sub-catchments – the main portion of the site will be attenuated in a dry detention basin near the Hazelbrook Stream, and the proposed apartment block will have a separate below ground Stormtech (or similar approved) attenuation chamber.

The entrance road will drain via kerb openings into the existing forested area between the road and the existing ditch. To ensure infiltration and treatment of the surface water runoff from the road, a permeable buffer comprising filter stone will be laid adjacent to the kerb.

Surface water runoff from each catchment will be restricted via a hydro-brake or similar approved flow control device, limited to the greenfield equivalent runoff rate for each catchment.

7.6 Potential Impact of the Proposed Development

7.6.1 Water Supply

Construction Phase:

No significant impact to the existing watermains is anticipated during the construction phase of the development, though there will be some minor water demand for site offices. There is a risk of contamination to the existing water supply during connection of the development's watermains to the public water supply.

Operational Phase:

During the operational phase of the development, there will be an increase in demand for water from the public water supply.

7.6.2 Foul Water Drainage

Construction Phase:

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

There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connections being made to live sewers.

Operational Phase:

As shown in the Table above, there will be a net peak foul water flow of 8.013l/s discharging to the foul water system serving the subject site and ultimately to the North Fringe Interceptor Sewer.

There is a possibility of surface water ingress into the foul water drainage system due to poor workmanship, which would increase the load on the existing sewers. There is also a possibility of leakage from sewers and drains within the development and along the route to the outfall sewer. Any foul water leakage would result in local contamination of soil and ground water in the area.

7.6.3 Surface Water Drainage

Construction Phase:

Pollution of groundwater / water courses including the Hazelbrook Stream, and ultimately the Sluice River, is possible by accidental spillage of oils / diesel from temporary storage areas or where maintaining construction equipment. During the construction works, rain could wash away silts to the stream.

The initial runoff from newly laid bitumen surfaces will contain some soluble extracts from the bitumen binder. These extracts will mostly consist of phenolic and hydrocarbon substances in low concentrations (circa 10 to 50 mg/l).

There is a risk of rainfall washing silts and sediments into the surface water system and ultimately the Sluice River during construction works.

Operational Phase:

The development will result in the increase of hard standing areas, and therefore an increase in the runoff of surface water to the Hazelbrook Stream and the Sluice River, which may result in downstream flooding.

The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts to the surface water system which might result in polluting of the Hazelbrook Stream and the Sluice River.

7.7 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

7.7.1 Water Supply

Construction Phase:

A method statement setting out in detail the procedures 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 and / or the Design Engineer.

Potential negative impacts during construction phase will be short term only.

Operational Phase:

Water meters will be installed at connection points, with locations to be agreed and approved by Irish Water, and these meters will be linked to Irish Water's monitoring system by telemetry. These meters will facilitate the early detection of unusual water usage in the network and identify potential leaks in the system.

All plumbing fixtures and fittings and sanitary wear to be installed throughout the development should be to the current best practice for water consumption to minimise future water usage.

It is not envisaged that any further remedial or reductive measures will be necessary upon completion.

7.7.2 Foul Water Drainage

Construction Phase:

In order to reduce the risk of defective or leaking foul sewers, the following remedial 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.

Operational Phase:

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

The proposed foul water network, including the proposed pumping station and rising main, will be constructed in accordance with Irish Water requirements and standard details. The proposed pumping station will be linked to Irish Water's monitoring system by telemetry. This will facilitate the early detection of unusual wastewater discharge to the network.

Otherwise, no remedial or reductive measures are deemed to be necessary after completion of the development, other than normal maintenance of the foul sewer system.

7.7.3 Surface Water Drainage

Construction Phase:

The contractor will prepare and implement a Construction Management Plan which will outline the requirements for the storage and handling of fuel, including the refuelling of vehicles in designated refuelling zones to minimise the risk of spillages, and the impact of spillages should they occur.

The Construction Management Plan will also utilise sedimentation controls, including silt traps, tailings ponds and silt fences during the construction period.

All private drainage will be inspected and signed off by the design Engineer in accordance with the Building Regulations Part H and BCAR requirements. This will reduce the possibility of any cross connections being constructed going forward in the proposed subject Blocks.

Operational Phase:

The increased runoff from the site will be attenuated, as described above, with the discharge rate to the Hazelbrook Stream limited to the greenfield equivalent runoff rate.

In addition, the significant SuDS devices proposed will significantly reduce and slow down the rate of surface water runoff from each catchment. This will therefore reduce the peak flows in the downstream system during major storm events. SuDS and attenuation devices, gullies and Hydrobrakes will be regularly maintained to avoid blockages.

The SuDS treatment train will also treat the surface water discharging to the Hazelbrook Stream, removing pollutants and hydrocarbons from the surface water runoff. Maintenance of these SuDS devices will be required to ensure that they continue to treat the surface water as designed.

7.8 Predicted Impact of the Proposed Development

7.8.1 Water Supply

Construction Phase:

Due to the proposed remedial measures outlined above no significant adverse impacts are expected to arise during the construction phase of the proposed development on the water supply network.

Operational Phase:

There will be a water demand for the proposed development of approximately 115.4m3 per day. Irish Water have confirmed in their Confirmation of Feasibility Letter that the existing network has sufficient capacity to cater for the development without the need for upgrades.

7.8.2 Foul Water Drainage

Construction Phase:

During the construction phase of this project some short term negative impacts as identified above may result. However, if the proposed remedial and reductive measures are implemented, the impact of the proposed development during the construction phase will be minimised and no significant long term impacts will result from the construction works.

Operational Phase:

The proposed development will result in an increase in the foul water flows in the existing drainage system. These increased flows will result in an additional peak flow of 8.013l/s discharging to the new Chapel Road Pumping Station. The Chapel Road Pumping Station will have capacity to cater for the subject development's flows.

Interactions and Cumulative Impacts:

The predicted impacts on the foul water are minor and do not inter-relate significantly with any other environmental topic in this EIAR. However, if the above mitigation measures are not implemented then there may be a possible impact on surface water, soil and flora and fauna.

7.8.3 Surface Water Drainage

Construction Phase:

During the construction phase of this project some short term negative impacts as identified above may result. However, due to the implementation of the proposed remedial and reductive measures, the impact of the proposed development during the construction stage will be minimised and no significant long term impacts will result from construction works.

Operational Phase:

With the implementation of the SuDS treatment train and attenuation, as outlined above, the surface water quality and quantity discharging to the Hazelbrook Stream, and ultimately the Sluice River, will be treated and attenuated to the greenfield runoff rate, in accordance with the requirements set out in the GDSDS. No significant adverse impacts are envisaged.

Interactions and Cumulative Impacts:

If the above mitigation measures are not implemented then there may be a possible impact on the soil, flora and fauna. However, with the above mitigation measures in place the predicted impacts on the surface water are minor and do not inter-relate significantly with any other environmental topic in this EIAR.

7.9 Monitoring

7.9.1 Water Supply

Water usage and potential leakage will be monitored by Irish Water using the water meters which will be installed on the supply pipes so that the development can be monitored in sections. The location of these meters will be agreed with Irish Water and the meters will be linked to Irish Water's monitoring system via telemetry.

7.9.2 Foul Water Drainage

Following completion of construction of the development there are no monitoring requirements envisaged other than normal monitoring and maintenance of the wastewater system by Irish Water. The proposed pumping station will be linked to Irish Water's monitoring system by telemetry.

7.9.3 Surface Water Drainage

The surface water network (drains, gullies, manholes, Access Junctions (AJs), SuDS devices, attenuation systems) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning shall be incorporated into the safety file/maintenance manual for the development.

Chapter 8 – Air Quality

8.1 Introduction

Chapter 8 of this Environmental Impact Assessment has been prepared by DKP Environmental (DKPEV) and assesses the air quality impacts associated with the proposed development at Auburn House, Malahide, Co. Dublin. The proposed residential development consists of residential apartment blocks, dwelling houses and social spaces.

This chapter examines the existing air quality in the vicinity of the development site and the potential impact of the proposed development during the construction phase and operational phase. The assessment includes recommended mitigation measures to control and minimise the impact that the development may have on local air quality. This assessment has been prepared in accordance with the EIA Directive 2014/52/EC and current Environmental Protection Agency (EPA) guidelines. This section should be read in conjunction with the site layout plans and project description sections of this EIAR.

8.2 Research Methodology

Research for this section included a review of the Air Quality Standards Regulations (S.I. 180 of 2011) and the EPA annual reports on air quality in Ireland. Predicted air quality emissions for the main traffic-derived pollutants have been modelled using the screening air quality assessment from the U.K Highway Agency Design Manual for Roads and Bridges (DMRB) and data from the transport Assessment undertaken for Auburn. Analysis for this chapter included a review of the following guidelines and recommendations:

- 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, 2017)
- Advice Note on Preparing Environmental Impact Statements – Draft (EPA, 2015)
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment 2013.
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018
- Guidance on the Assessment of Dust from Demolition and Construction Version 1.1 (Institute of Air Quality Management (IAQM), 2014)

8.2.1 Legislation and Guidelines

To reduce the risk of poor air quality impacts, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. EU directives set baseline standards for monitoring air quality and reducing emissions. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. These limits are for the protection of human health and are presented in Table 8.1. Air quality significance criteria are assessed on the basis of compliance with the standards.

Pollutant	Limit value objective	Averaging period	Value limit ($\mu g/m^3$)
Nitrogen Dioxide (NO_2)	Protection of human health	calendar year	40
		1 hour	200
Benzene	Protection of human health	calendar year	5
Carbon Monoxide (CO)	Protection of human health	calendar year	10,000
Lead	Protection of human health	calendar year	0.5
Sulphur Dioxide (SO_2)	Protection of human health	1 hour	350
		24 hours	125
Particulate Matter (PM_{10})	Protection of human health	24 hours	50
		calendar year	40
Particulate Matter ($PM_{2.5}$)	Protection of human health	calendar year	25

Table 8.1: Air quality standards regulations (S.I.180)

8.2.2 National air quality network

The EPA is the authority with responsibility for ambient air quality monitoring in Ireland and measures the levels of a number of atmospheric pollutants. Ambient air quality monitoring is carried out in accordance with the requirements of the CAFE Directive which has been transposed into Irish national legislation by the Air Quality Standards Regulations 2011. For the purposes of detailing ambient air quality in Ireland, it is divided into four zones: Zone A: Dublin, Zone B: Cork, Zone C: Other cities and large towns, Zone D: Rural Ireland. In Ireland, the network is managed by the EPA in partnership with Local Authorities and other public/semi-state bodies. A series of monitoring stations are located across the country, these stations collect air quality data for public information. The proposed development site is located within Zone A, Dublin. The EPA monitor at local sites and national sites. The nearest local EPA air quality monitoring station from the development site is Swords Council Depot, Co. Dublin. These local monitoring stations give people a rapid and up-to-date indication only, of air quality in their locality.

8.2.3 Dust deposition guidelines

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM10) and less than 2.5 microns (PM2.5) and the EU ambient air quality standards outlined in Table 9.1 have set ambient air quality limit values for PM10 and PM2.5. With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust. With regard to dust deposition, there are currently no national or European Union air quality standards with which levels of dust deposition can be compared. To measure dust deposition a figure of 350 mg/m2/day (as measured using Bergerhoff type dust deposit gauges as per German Standard Method for determination of dust deposition rate, VDI 2129)

can be applied to ensure that no nuisance effects will result. The IAQM guidelines outline an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts.

8.3 Receiving Environment at Auburn, Malahide

Malahide is a coastal area in Fingal, County Dublin, situated approximately 18 km north-east of Dublin city. The Auburn House project is a new development in the grounds of the existing Auburn House with the main entrance just of the Malahide Road and Back Road junction. The site is approximately 2km from the Malahide town centre. The development site has residential housing (Abington) to the north and Northeast. To the south it has residential housing (Streamtown & Clairville lodges). Overall the proposed development area is located within an area which includes sources of transportation related air emissions from roads, local residential estates and sources of domestic heating.

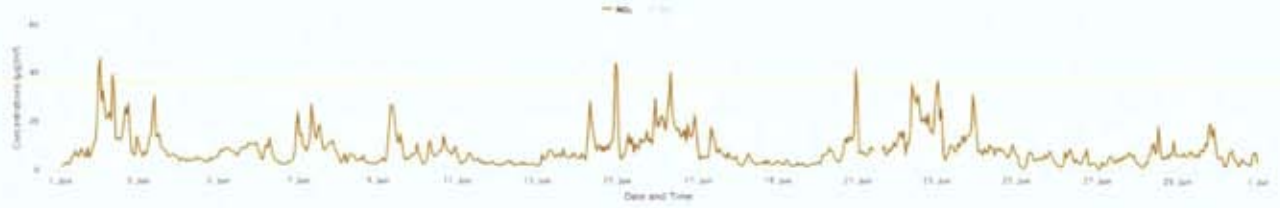
The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

8.3.1 EPA Air Quality Monitoring Results

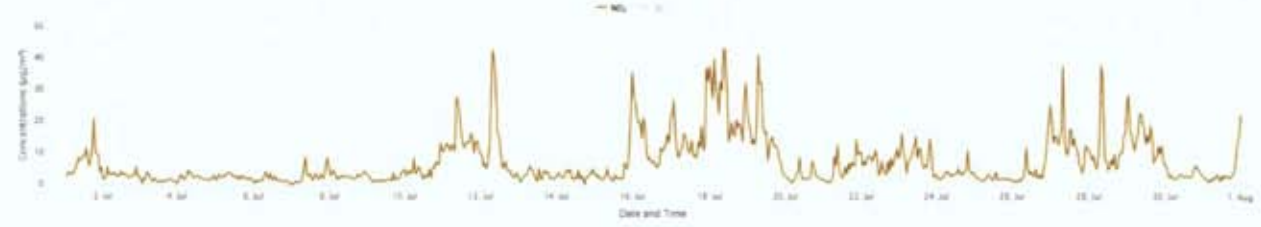
The EPA publish annual reports on air quality in Ireland. These reports can be accessed via the EPA website at www.epa.ie. The most current EPA report ' Air Quality in Ireland 2021' has been examined in order to describe the existing air quality conditions and to provide information on background concentrations. The ambient air quality data collected and reviewed for the purpose of this study focused on the principal substances (NO2 and PM emissions) which may be released from the site during the construction and operation phases, and which may exert an influence on local air quality. The proposed Auburn residential development site is located within Zone A, the Dublin conurbation.

The EPA publish official data only from the national monitoring station on a yearly basis. The nearest national and local EPA air quality monitoring station from the development site is Swords, Council Depot, Co. Dublin approximately 3.5km away. These local monitoring stations give people a rapid and up-to-date indication only, of air quality in their locality. Local monitoring data for NO2 can be obtained only up to a

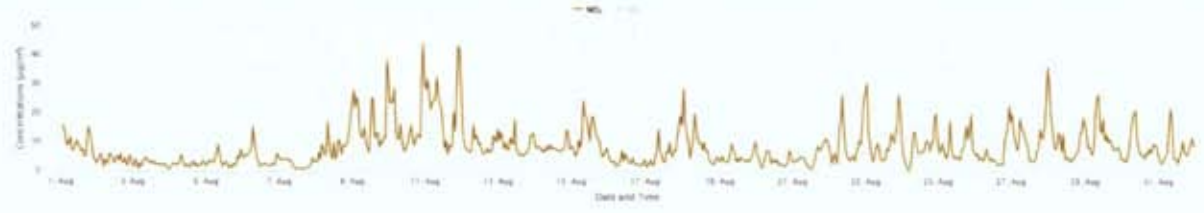
couple of months previous. The previous 4 months graphs for Swords NO2 emissions are illustrated below.



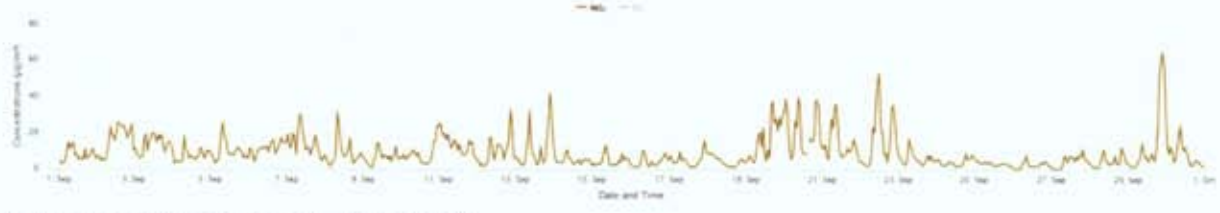
June 2022 monitoring data. Copyright EPA.



July 2022 monitoring data. Copyright EPA.



August 2022 monitoring data. Copyright EPA.



September 2022 monitoring data. Copyright EPA.

The EPA publish official data only from the national monitoring station on a yearly basis. Table 8.2 shows the annual mean value concentrations measured at Swords for 2021, 2020, 2019, 2018 and 2017.

Pollutant (mean concentration)	2021	2020	2019	2018	2017	5-year Average	Annual Limit for Protection of Human Health
	($\mu g/m^3$)						
Sulphur Dioxide (SO_2)	2.30 *	2.98 *	1.50 *	2.10 *	1.66 *	2.10	20
Particulate Matter (PM_{10})	12.0 *	13.10 *	14.5 *	14.10 *	12.40 *	13.10	40
Particulate Matter ($PM_{2.5}$)	7.65 *	7.60 *	9.20 *	8.55 *	7.50 *	7.65	20
Nitrogen Dioxide (NO_2)	11.4	11.0	15.0	16.0	14.2	14.20	40

Carbon Monoxide (CO) (mg/m³)	0.35 *	0.30 *	0.30 *	0.20 *	0.28 *	0.30	10
Benzene	0.35 *	0.52 *	0.16 *	0.30 *	0.92 *	0.35	5
Lead (Pb)	0.09 *	0.04 *	0.07 *	0.06 *	0.05 *	0.06	0.5
Ozone (O3)	51.9	53.0	53.0	54.0	51.7	53.0	120

Table 8.2: Summary of data from the EPA ambient air monitoring report 2021 - 2017.

* Swords, Council Depot monitoring station does not record all ambient air quality parameters outlined in the Directive. Therefore air quality in the receiving environment was assessed using the average annual mean value concentrations from all measured monitoring stations in Zone A.

8.3.2 Significance of EPA Results and Receptors

The national recorded levels of pollutants show the air quality parameters are all below the air quality limit values. It can be seen that the existing baseline air quality at the site locality can be characterised as being good with no extended exceedances of the National Air Quality Standards Regulations limit values.

8.3.3 Sensitive receptors

The principal local receptors, see image 8.1, that may be impacted by the development are existing residential dwellings to the north, north-west and east (Abington) located at distances between 19-55m from the proposed development. The closest dwelling (no. 21 Abington) is 16m from the proposed development. To the south it has residential housing Streamtown & Clairville and private dwellings Belmont. The closest dwelling (13 Clairville Lodge) is 13.5m from the proposed development. southwest of the proposed are 3 no. existing dwellings, the closest dwelling is 17m from the development.

Image 8.1: Principal local receptors

8.4 Impact Assessment

When considering a new development the impact on air quality must be considered for each distinct stage; construction phase and operational phase It is important that there are no unacceptable decreases in ambient air quality levels predicted during the phases.

The construction phase of the development has the potential to generate short term dust emissions. The majority of any dust produced during the construction phase may be deposited close to source. The movements of construction vehicles on the site could also generate dust emissions. The operational phase of the proposed development has the potential to result in an impact on local air quality primarily as a result of the increased traffic movements associated with the development. At the local scale the principal pollutants potentially are NO_2 and PM_{10}.

8.5 Predicted Impact of the Proposed Development

8.5.1 Construction Phase

The construction phase of the development has the potential to generate dust emissions and may have the potential to impact air quality in the short term. Dust emissions can lead to elevated PM10 and PM2.5 concentrations and may also cause dust soiling. It is not easy to accurately quantify dust emissions arising from construction activities. A semi-quantitative approach is recommended by the National Roads Authority (NRA) Guidelines to determine the likelihood of a significant impact. The construction assessment criteria reproduced from the NRA are set out in Table 8.3

While dust from construction activities tends to be deposited within 200m of a construction site, the majority of the deposition occurs within the first 50m. North of the proposed development, some of the residential dwellings in the Abington neighbourhood are located ~19 to 55m and the closest receptor is 16m. similarly south of the proposed development, some of the residential housing Streamtown & Clairville neighbourhood are located ~16 to 40m and the closest receptor is 13.5m. Where dust impacts are deemed likely, avoidance and mitigation measures will be put in place to reduce the impact levels such as, wind breaks, barriers and frequent cleaning and watering of the construction site roads, detailed mitigation measures are outlined in section 8.6. Provided the dust minimisation measures outlined in the plan are adhered to, the air quality impacts during the construction phase will not be significant.

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large Construction sites, with high use of haul routes.	100m	25m	25m
Moderate	Moderate Construction sites, with moderate use of haul routes.	50m	15m	15m
Minor	Minor Construction sites, with minor use of haul routes.	25m	10m	10m

Table 8.3: Assessment criteria for the impact of dust from construction activities with standard mitigation in place (NRA 2011)

Vehicles such as HGV's travelling to and from the site during the construction phase have the potential to cause an increase to pollutant concentrations at nearby receptors. Small increases in levels to PM and pollutants related to increased traffic can be predicted however relative to baseline levels, the impact of the proposed development during construction will not have an adverse impact in concentrations above the limit of regulation values.

8.5.2 Operational Phase

The design and construction of buildings in accordance with National Building Regulations, The Irish Building Regulations Technical Guidance Document L, Conservation of Fuel & Energy, will ensure that modern building materials are used and that they are designed to be thermally efficient resulting in a reduction in the volume of fossil fuels required to heat the buildings. In order to counteract the impact of the development on the existing and future air quality the design of the proposed development has considered a number of sustainable and energy saving features. The operational phase of the proposed

development also has the potential to result in an impact on local air quality primarily as a result of the increased traffic movements associated with the development. Continued encouragement of public transport usage will significantly reduce the number of private vehicles exiting and entering the development. The DMRB screening air dispersion model from the U.K Highway Agency Design Manual for Roads and Bridges Air Quality Assessment, was used to assess the impact of increased traffic movements associated with the development. Projected transport figures from a recent traffic assessment were used to predict the concentrations of traffic-derived pollutants in future years. The model then combined background concentrations of pollutants, sourced from the EPA reports (5-year average values were used). Results were generated using an average speed of 30 km/h assuming congested traffic conditions. 2 no. receptors (entrance locations) were chosen, see receptor A and B on image 8.2 for their location.

Image 8.2: receptor locations, A and B.

Using the DMRB screening air dispersion model, pollutant concentrations in 2030 were predicted at the receptor locations. In order to quantify the magnitude of change in pollutant concentrations, the descriptors in table 8.4. were used. To describe the significance of the impact, table 8.5 was then used. These descriptor tables are from the Transport Infrastructure Ireland Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes which detail a methodology for determining air quality impact significance criteria for road schemes and has been adopted for this assessment. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, in order to determine the degree of impact.

Magnitude of Change	Annual Mean NO_2 ($\mu g/m^3$)	No. of Days with PM_{10} concentration greater than 50 $\mu g/m^3$	Annual Mean PM ($\mu g/m^3$)
Large	Increase/decrease ≥4	Increase/decrease >4 days	Increase/decrease ≥2.5
Medium	Increase/decrease 2 - <4	Increase/decrease 3 or 4 days	Increase/decrease 1.25 - <2.5
Small	Increase/decrease 0.4 - <2	Increase/decrease 1 or 2 days	Increase/decrease 0.25 - <1.25
Imperceptible	Increase/decrease <0.4	Increase/decrease <1 day	Increase/decrease <0.25

Table 8.4: Definition of impact magnitude for changes in ambient air pollutant concentrations.

Absolute Concentration in Relation to Objective /Limit Value	Changes in Concentration		
	Small	Medium	Large
Increase with Scheme			
Above Limit Value with Scheme (≥40$\mu g/m^3$ of NO_2 or PM_{10}) (≥25$\mu g/m^3$ of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Limit Value with Scheme (36-<40$\mu g/m^3$ of NO_2 or PM_{10}) (22.5-<25$\mu g/m^3$ of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Limit Value with Scheme (30-<36$\mu g/m^3$ of NO_2 or PM_{10}) (18.75-<22.5$\mu g/m^3$ of $PM_{2.5}$)	Negligible	Slight Adverse	Slight Adverse
Well Below Limit Value with Scheme (<30$\mu g/m^3$ of NO_2 or PM_{10}) (<18.75$\mu g/m^3$ of $PM_{2.5}$)	Negligible	Negligible	Slight Adverse

Table 8.5: Air quality impact descriptors for changes in annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations.

The results of the impact assessment at Receptor A and B arising from increased transport are presented in Table 8.6 and 8.7. The results predict the 2030 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 ($\mu g/m^3$)Benzene	Annual Average CO ($\mu g/m^3$)
Background	14.20	13.10	0.35	0.30
Limits	40	40	5	10
Do Nothing (2030)	15.04	13.72	0.38	0.33
Increase	+0.84	+0.62	+0.03	+0.03
Magnitude	small	Small	imperceptible	imperceptible
Description	negligible	negligible	negligible	negligible
Do Something (2030)	16.12	14.94	0.43	0.39
Increase	+1.92	+1.84	+0.08	+0.09
Magnitude	Small	medium	imperceptible	imperceptible
Description	negligible	negligible	negligible	negligible

Table 8.6: Modelled results for receptor A

Receptor B	Annual Average NO_2 ($\mu g/m^3$)	Annual Average PM_{10} ($\mu g/m^3$)	Annual Average ($\mu g/m^3$)Benzene	Annual Average CO ($\mu g/m^3$)

Background	14.20	13.10	0.35	0.30
Limits	40	40	5	10
Do Nothing (2030)	14.76	13.54	0.38	0.32
Increase	+0.56	+0.44	+0.03	0.02
Magnitude	small	small	imperceptible	imperceptible
Description	negligible	negligible	negligible	negligible
Do Something (2030)	15.75	14.49	0.42	0.37
Increase	+1.65	+1.39	+0.07	+0.07
Magnitude	small	small	imperceptible	imperceptible
Description	negligible	negligible	negligible	negligible

Table 8.7: Modelled results for receptor B

Summary of modelling assessment: Levels of traffic-derived air pollutants for the development at receptor A and B show an expected increase in annual NO2, PM10, benzene and CO. The impact equates to a 'small' increase (based on the NRA criteria) in annual average NO_2. Using the NRA significance criteria, it results in a 'negligible' impact in terms of local impact as a result of increased traffic. The predicted PM_{10} impact equates to a 'medium/small' increase in annual average PM_{10}. A small increase in annual average PM_{10} results in a 'negligible' impact in terms of local impact as a result of increased traffic. In summary, the modelled results do show an increase in annual NO_2 and PM_{10} but each remain well below the limit values for EU regulations. This predicted increase above the existing situation results in a negligible impact and would not result in a perceptible change in the existing local air quality environment.

8.6 Mitigation Measures

8.6.1 Remedial and Reductive Measures

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 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 A. 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.

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. the Travel Plan (chapter 13) aims to promote sustainability by enhancing public transport with regular and ongoing increases in the public transport capacity and 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.

8.6.2 Monitoring

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.
Operational phase: There is no monitoring recommended for the operational phase of the development as impacts to air quality are predicted to be negligible.

8.6.3 Difficulties encountered in compiling the chapter

There were no difficulties met when conducting this assessment.

8.6.4 References

- EPA. Air Quality Monitoring Report 2019 (and previous annual reports)
- EPA. Ireland's Provisional Greenhouse Gas Emissions 1990 – 2019
- EPA Air Quality Index for health. AirQuality.ie
- Met Eireann (2021). Met Eireann website: www.met.ie
- TII (2011). Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes
- UK Highways Agency (2019b). UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate
- Transport Infrastructure Ireland (TII) 2011 Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes Revision 1.

- The Irish Building Regulations Technical Guidance Document L 'Conservation of Fuel & Energy Dwellings'

8.7 Air Quality Impact Summary

The assessment focused firstly on identifying the existing baseline levels in the area of the proposed development by an evaluation of EPA monitoring data. The EPA data of current and previous years establish air quality parameters are all well below national and EU ambient air quality standards. The existing baseline air quality at the site locality can be characterised as being good with no exceedances of the National Air Quality Standards Regulations limit values. The air quality impact was considered for each distinct stage, construction phase and operational phase. The impact during the construction phase on air quality at potential neighbouring receptors was determined by an assessment of dust soiling. Standard mitigation measures outlined in Section 8.6 along with the dust management plan outlined in Appendix A would be implemented to control emissions during construction. With mitigation measures in place impacts of the proposed development on air quality for the construction phase is likely to be short-term and negligible. The impact of the development during the operational phase on air quality was determined by an assessment using the DMRB screening model predicting pollutant concentrations at 2 no receptors. Modelled impact results showed an expected small increase in annual NO2, PM10, benzene and CO but each parameter would still remain well below the limit values for EU regulations. In the context of significance outlined in relevant guidelines, the impacts have been defined as negligible and would not result in a perceptible change in the existing local air quality environment.

Appendix A - Dust Management Plan

Site management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies. At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions. As the prevailing wind is predominantly south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors. The Principal Contractor or equivalent must ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised.

- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary. A complaints register will be kept on site detailing all sources of complaints received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.
- Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site if necessary.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover or fence stockpiles to prevent wind whipping.

Site roads and operating vehicles / machinery

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads.
- Access gates to the site shall be located at least 10m from sensitive receptors where possible.
- Bowsers or suitable watering equipment will be available during periods of dry weather. Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist.
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- Ensure all vehicles switch off engines when stationary.

- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

Site traffic on public roads

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin at all times.
- At the main construction traffic exit, a wheel wash facility shall be installed. All trucks leaving the site must pass through the wheel wash. The wheel wash will be located sufficiently far from the exit to allow trucks to 'drip off' prior to exit. In addition, public roads outside the site shall be regularly inspected for cleanliness and cleaned as necessary.
- Vehicles onsite shall turn off engines when not in use to prevent idling emissions.

Onsite operations

- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays.
- Ensure an adequate water supply on the site for effective dust / particulate matter suppression.
- Use enclosed chutes and conveyors and covered skips.
- Avoid dry sweeping of large areas.
- Minimise drop heights from conveyors and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event.

Waste management

- Avoid bonfires and burning of waste materials.

Demolition activities

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Earthwork's activities

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser or similar will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Construction activities

- Ensure aggregates are stored in bunded areas and are not allowed to dry out unless this is required for a particular process.

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately.
- During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided.

Chapter 9 – Noise and Vibration

9.1 Introduction

This chapter of this Environmental Impact Assessment has been prepared by DKP Environmental (DKP_{EV}) and assesses noise and vibration impacts associated with the proposed development at Auburn House, Malahide. The proposed residential development consists of residential apartment blocks, dwelling houses and social spaces.

This chapter will identify and assess the impact of the proposed development in terms of noise and vibration during the construction phase and operational use with particular attention to the nearby residential units. Increased traffic volumes associated with the subject site is likely to be the main impact source. Traffic volumes for the proposed scheme have been projected in Chapter 13 and therefore the noise impact assessment for the operational phase of the subject site will consider the cumulative impact of the existing and new predicted volumes.

This assessment was prepared in accordance with the EIA Directive 2014/52/EC and current EPA guidelines. This section should be read in conjunction with any guidance documents for the site and project description sections of this EIAR.

9.2 Research Methodology

9.2.1 Construction Noise Criteria.

The level of environmental noise generated during the construction phase of any development is determined primarily by the exact construction methods employed. The level of the noise impact of these methods will arise from the specific sound power levels generated by the plant and machinery used, the duration of each particular construction activity, as well as the time and location in which the equipment is used. The potential sources of environmental noise during the construction phase of the development will primarily arise from increased traffic on the surrounding roads (from construction workers and delivery of plant and materials) and actual on-site works where plant and machinery will be deployed.

As at this point of time we do not have an any actual specific construction plan to outline details of plant and machinery to be used, materials, construction phasing and working hours) it is not possible to accurately model construction noise levels using the recommended standard ISO 9613:1996 Acoustics - Attenuation of sound during propagation outdoors however a basic analysis of worst case noise levels has been calculated. This basic calculation was based on the current construction methods applied on site to complete the works and assessed noise impacts for the anticipated construction equipment.

As we do not have any published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project however local authorities normally control construction activities by imposing limits on the hours of operation with certain noise

limits at their discretion. For this report we applied the British Standard BS 5228-1:2009+A1: 2014 - Code of practice for noise and vibration control on construction and open sites.

BS 5228-1:2009+A1: 2014 sets out a method of calculating the propagation of sound towards a receiver from the use of certain construction plant and machinery on a construction site. The standard describes single octave sound power level data for a range of standardised plant and machinery as would be expected to be the norm on construction sites.

9.2.2 Construction Vibration Criteria

During the construction phase of a development certain aspects of the site work may result in increased levels of vibration in the vicinity of the site. BS 5228-2:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites: - Part 2: Vibration, outlines a number of calculation methods for predicting peak particle velocity (PPV) resulting from construction works on open sites.

The prediction methods require specific information relating to the soil composition and compaction levels within the propagation path between the construction area and nearest receiver, as well as highly detailed information regarding the type and location of plant and machinery. As such specific data is not available a quantitative impact of vibration will not be undertaken as part of this assessment. Construction practices employed should have regard to best practice as recommended in the following standards and guidance:

BS 6472-1 (2008) Guide to evaluation of Human Exposure to Vibration in Buildings - Vibration sources other than Blasting.

- BS 7385-1 (1990) Evaluation and Measurement for Vibration in Buildings - Guide for Measurement of Vibration and evaluation of their effects on buildings.
- BS 7385-2 (1993) Evaluation and Measurement for Vibration in Buildings - Guide to damage levels from Ground borne Vibration.
- BS 5228-2:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

9.2.3 Operational Noise Criteria

As we do not have any statutory limits, it is therefore necessary to reference appropriate best practice guidance and standards in order to determine the impact of the subject site on the noise climate in the surrounding area during the operational phase. It is important to note that the primary potential source of noise arising during the operational phase is that of road traffic associated with the increased population of the area.

For the calculation and assessment of road it has generally been best practice to assess road traffic noise on the basis of the LA10 18hour parameter as outlined in the CRTN document. Transport Infrastructure Ireland (formerly the National Roads Authority (NRA)) have produced guidelines for

national road schemes however in this development we do not have any national primary road hence this standard would not apply.

The World Health Organisation propose guideline values for the prevention of moderate and serious nuisance in outdoor areas as 50dB LAeq (16 hour) and 55dB LAeq(16 hour) respectively although a more appropriate criteria for assessing disturbance or annoyance from noise arising from the site would be related to the significance of changes in noise levels as perceptible to human beings.

The information in the table below is taken from the 'Guidelines for Noise Impact Assessment' produced by the Institute of Environmental Management and Assessment (IEMA). This document replaces the draft guidelines published by the Institute of Acoustics (IOA) and IEMA in April 2002 and shows an appropriate impact.

Change in Noise Level	Subjective Reaction	Impact Guidelines for Noise Impact assessment significance	Impact Guidelines on the Information to be contained in EIAR's (EPA)
0 dB	No change	None	Imperceptible
0.1 to 2.9 dB	Barely perceptible	Minor	Slight
3.0 to 4.9 dB	Noticeable	Moderate	Moderate
5.0 to 9.9 dB	Up to a doubling or halving of loudness	Substantial	Significant
10 dB or more	More than a doubling or halving of loudness	Major	Profound

Table 9.1: Noise impact assessment guidelines

The following tasks were carried out in order to assess the noise impacts of the subject site on identified NSRs, during the operational phase of the scheme:

- A survey has been conducted to establish baseline noise levels or back ground noise levels at the nearest noise sensitive receptor surrounding the site.
- A calculation of anticipated noise levels arising at the nearest noise sensitive receptors due to current and forecast increases in traffic arising from the subject site as per basis of the LA10 18hour parameter as outlined in the CRTN document.
- An assessment of the cumulative calculated anticipated noise levels and potential impact upon noise sensitive receptors was carried out with reference to best practice guidelines in the assessment of environmental noise.

9.2.4 Vibration Assessment Criteria

There are generally accepted criteria for vibration levels that would be likely to lead to complaints and vibration levels that would be likely to lead to structural damage. These levels are outlined in the guidance documents BS6472: 1992 Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz), and BS7385: Part 2 1990: Evaluation and measurement for vibration in buildings - Guide to damage levels from ground-borne vibration.

9.2.5 Operational Vibration Criteria

Traffic 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. Currently no major sources of vibration exist on the site. It would therefore be appropriate to assume that negligible vibration impacts will occur during the operation of the subject site and no further assessment is deemed to be required.

9.3 Receptor Location Identification

In this chapter an assessment was made on receptor location having due regard to several considerations including:

- Determining the most exposed or closest NSR to potential sources of environmental noise related to current and future increases in traffic volumes.
- Ensuring that the number of receptors assessed would allow for sufficient baseline data to be obtained in the allocated back ground measurement period but also that the spatial spread of receptor locations was such that all locations in and around the subject site were assessed.

The table below represents the background noise monitoring locations chosen.

Measurement Location	Location	Measurement Type	Justification
Station 1	R107 – Junction Back Road	Manual	To determine back ground noise levels
Station 2	R107 – Junction Stream town Lane	Manual	To determine back ground noise levels

Table 9.2: Survey station location.

9.3.1 Calculated Noise levels

For the anticipated road traffic noise levels and cumulative noise levels the measured noise level data was applied and calculated on the basis of the LA10 18hour parameter as outlined in the CRTN document issued by Transport Infrastructure Ireland (formerly the National Roads Authority (NRA)). Using the Chapter 13 traffic report for the increased volume of traffic has been based on Malahide Road (Dublin road) being the current main artery road in the general vicinity taking traffic in and out of the new proposed development.

9.3.2 Receiving Environment

Malahide is a coastal area in Fingal, County Dublin, situated approximately 18 km north-east of Dublin city. The Auburn House project is a new development in the grounds of the existing Auburn House with the main entrance just of the Malahide Road and Back Road junction. The site is approximately

2km from the Malahide town centre. The development site has residential housing (Abington) to the north and North East. To the south it has residential housing (Streamtown) and to the South-East it has residential housing (Clairville). To the east and South-East across the Malahide road it has agricultural lands.

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

9.3.3 Back-ground Noise Survey

To assess the surrounding back ground noise levels, a daytime back ground noise survey was carried out on September 28st and 29th 2022. During the survey the 2 attended stations were monitored and at each station three consecutive 15-minute measurements were recorded during a 24hr period from 07:00 to 7:00. The measurements taken are deemed to be representative of typical noise levels on the Malahide Road area. The measurements have been performed using a Bruel & Kjaer Type 2260 sound level meter and Bruel & Kjaer 4231 sound level calibrator.

All measurements were carried out in accordance with ISO 1996: 'Acoustics-Description and measurement of environmental noise'. Weather conditions during the survey were in line with the conditions described within ISO 1996, Acoustics 'Description and Measurements of Environmental Noise'. Weather conditions were rainy and cool with a moderate wind.

The following environmental noise parameters were measured which are defined below.
LAeq is the A-weighted equivalent continuous steady sound level during the measurement period and effectively represents an average ambient noise value.
LAmax is the maximum A-weighted sound level measured during the measurement period.
LAmin is the minimum A-weighted sound level measured during the measurement period.
LA10 is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter is typically used to quantify traffic noise.

LA90 is the A-weighted sound level that is exceeded for 90% of the sample period; this parameter is typically used to quantify background noise.

Typical ranges of noise levels are presented in table 2 below comparing against the baseline noise levels measured:

Sound levels in decibels dB (A)	Description of Activity
0	Absolute silence
25	Very Quiet
35	Rural night time
55	Suburban roadway 0.5km away
70	Busy Restaurant
85	Very busy pub, voice is raised to be heard
100	Rock concert
120	Uncomfortably loud, conversation impossible
140	Noise causes pain in ears

Table 9.3: Noise levels of typical activities/areas

9.3.5 Background Noise Survey Data

The following 2 no. tables are the measured and calculated (average) background noise levels from the 2 no monitoring locations.

Station 1						R107 – Junction Back Road
Time	LAeq	LAmax	LAmin	LA10	LA90	Comments
3	51.7	50.2	55.0	55.8	53.3	Main artery road
5	52.3	53.7	57.9	59.3	56.8	Mainly general traffic noise
7	62.3	71.6	57.9	69.8	59.2	with occasional lorry for construction site
9	69.2	82.4	66.1	79.5	65.1	
11	66.0	75.9	63.7	73.3	58.0	Laeq Avg 23.00 hr : 7.00 hr = 52.3 dB
13	71.6	79.5	64.9	74.0	66.3	Laeq Avg 7.00 hr : 23.00 hr = 65.7 dB
17	71.0	81.0	65.5	73.3	65.7	Laeq Avg = 64.1 dB
21	63.5	64.5	59.1	67.7	60.4	
23	56.1	62.3	56.8	64.9	56.8	
1	53.0	55.9	55.6	61.4	53.3	
Avg	64.1	71.6	61.2	70.5	60.6	

Table 9.4: Survey station 1 monitoring data.

Station 2	Careys Lane

Time	LAeq	LAmax	LAmin	LA10	LA90	Comments
3	52.6	50.4	48.3	56.1	53.5	Main artery road
5	53.2	54.0	48.2	59.6	57.1	Mainly general traffic noise
7	62.6	70.0	58.2	64.1	59.5	with occasional lorry for construction site
9	69.5	72.8	60.4	62.9	64.4	
11	66.4	67.3	60.0	63.6	58.3	Laeq Avg 23.00 hr : 7.00 hr = 51.2 dB
13	72.0	69.9	62.2	65.3	64.6	Laeq Avg 7.00 hr : 23.00 hr = 63.0 dB
17	71.4	71.3	63.8	63.6	64.0	Laeq Avg = 60.5 dB
21	63.9	57.8	55.4	62.0	60.7	
23	56.3	52.6	52.1	61.2	57.1	
1	53.8	50.2	50.9	60.7	53.5	
Avg	64.5	62.0	51.5	65.6	58.9	

Table 9.5: Survey station 2 monitoring data.

9.3.6 Basic Noise Measurement Overview

During daytime periods average ambient noise levels across the 2 no survey locations were +/- 66dB LAeq and night time background noise levels were +/- 53dB LAeq typically used to describe traffic noise indicating that most of the measured noise levels would have arisen from traffic noise.

9.3.7 Back-ground Vibration Survey

Only minor vibration was observed during the noise measurements and therefore it has not been considered necessary to undertake baseline vibration monitoring as there is no evidence to suggest that existing receptors are currently affected by appreciable environmental vibration.

9.4 Characteristics of the Proposed Development

The proposed development is for residential use and consists of 3 particular sections; Streamstowm with 35 houses & 34 apartments, Little Auburn with 53 houses, 8 duplexes and 37 apartments, Auburn park with 45 houses, 13 duplexes and 34 apartments. Total no. units is 259.

Illustration 9.1: General site layout and back ground noise level survey point locations.

9.5 Potential Impact of the Proposed Development

The anticipated noise impacts on the surrounding environment must be considered for both the short-term impact of the construction phase and the operational phase.

9.5.1 Construction Phase

Short-term noise impacts are only to occur during the construction phase of the development due to the requirement to use plant and machinery on and to the construction site(s). In the absence of specific construction information regarding the construction stage, construction noise impacts cannot be fully quantified at this point, therefore sample calculations have been provided. Minor short-term vibration impacts may occur during the construction phase as a result of the use of heavy plant and

machinery; however these impacts will be unlikely to propagate beyond the construction site boundary.

9.5.2 Operational Phase

As per measured noise level data the main potential noise source that would be evident during the operational phase of the development would be that of increased road traffic noise associated with the subject site. In general, this can be categorised as:

- Residents small vehicular traffic in and out of the Auburn site.
- Delivery and service vehicles servicing the dwelling houses.
- General activities, landscape maintenance, cleaning, energy producing equipment etc. Vibration is not anticipated to be a contributing factor in the operational phase.

9.6 Predicted Impact of the Proposed Development

9.6.1 Construction Noise impact

Using the method outlined in BS5228, a worst case LAeq value at potential NSRs at distances of 100m, 150m, 200m and 250m have been calculated for a range of construction plant. The following plant has been applied to give an example of the potential construction noise levels:

- Heavy delivery trucks.
- Ground works excavators.
- Noisy construction plant (mixers, vibrators).

We have used BS 5228-1:2009+A1: 2014 to anticipate/calculate the construction noise levels in the proposed development. This methodology relates to the method for construction vehicles/plant in a defined construction area. The prediction of the LAeq from construction plant operating over a small area or on site can be used for other activities when items of construction plant are operating in close proximity to the reception point, taking into account the adjustment of the predicted LAeq for standing and idling time of the plant. It is assumed that over a 1-hour period, all construction plant will be operational for 80% of the time. The results of these calculations are presented in the tables below.

Noise Source	Sound Power LWA dB
Heavy delivery truck	102
Ground works excavator	100
Noisy construction plant (mixers, vibrators)	106

Table 9.6: Sound power of typical construction equipment..

Distance of Potential NSR from construction site	Predicted Noise levels at NSR LAeq dB	BS5228-1 (2009)	
		Monday-Friday (07.00–19.00)	Saturday (07.00–13.00)

100m	59	70	65
150m	56		
200m	53		
250m	51		

Table 9.7: Predicted noise levels at certain distances versus maximum noise level guidelines.

As most of the construction sites will generally be within 100m of an occupied building the results of the indicative construction calculations shows that the resultant LAeq (1 hour) values of using such construction plant and vehicles would be in the region of 59db LAeq and below the maximum allowable day time ambient level of 70dB LAeq. BS5228-1 (2009) +A1: 2014 specifies that a daytime limit of 70dB LAeq shall apply on weekdays and a daytime limit of 65dB LAeq shall apply on Saturday. The ambient noise levels at the nearest noise measurement location with construction noise (NSR2) are comfortably below the BS5228-1 limits and also will be short-term in duration. The construction phase generally has no noticeable change on the noise environment in the longer term.

9.6.2 Construction Vibration impact

We only anticipate minor temporary ground borne vibration events during the construction phase but the exact impact of these vibration impacts cannot accurately be quantified.

9.6.3 Operational Noise impact

The anticipated noise impacts from the overall development during its operational phase will mainly be as a result of increased small vehicle traffic flows from the 259 no residential units along the incoming and outgoing routes into the Auburn site. It is anticipated that the additional road traffic noise attributable to the development (cumulatively with existing Malahide Road traffic) will result in an increase in the baseline noise environment by 1.0 to 1.5 dB(A) at the Auburn House development entrance (Junction of Malahide Road and Back Road) and by 0.5 to 1.0 dB(A) at the Malahide Road and Streamtown Lane junction. 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. The table below details the impact/category.

Change in Noise Level	Subjective Reaction	Impact Guidelines For Noise Impact significance	Impact Guidelines on the Information for contained in EIAR's
0 dB	No change	None	Imperceptible
0.1 to 2.9 dB	Barely perceptible	Minor	Slight
3.0 to 4.9 dB	Noticeable	Moderate	Moderate
5.0 to 9.9 dB	Up to a doubling or halving of loudness	Substantial	Significant
10 dB or more	More than a doubling or halving of loudness	Major	Profound

Copy of table 9.1: Impact guidelines for any change in background noise levels.

Based on the table above and the anticipated increase in noise levels we deem the operational noise impact to be categorised as 'Slight' at the worst case. The increase in traffic associated with the proposed development scheme 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 replaced by quieter electric vehicles eventually leading to less operational noise.

9.6.4 Operational Vibration impact

Operational vibration is deemed not to have any noticeable impacts on the development.

9.7 Remedial and Reductive 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.

9.8 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.

9.9 Summary

The impact or increase in noise levels, mainly by increased traffic noise at the Malahide Road and Careys lane areas (survey points) are at worse case deemed a 'slight' impact based on the predicted calculation methodology of BS 5228-1:2009+A1: 2014 and are in line with general noise impacts of new developments.

However, in actual terms when the new government's climate action plan 2030 is implemented, the noise levels including the new proposed development will reduce over the current background noise levels due to the fact that petrol & diesel cars will be phased out and replaced by more quite electrical cars over the next decade during which the development will be constructed. It is anticipated that

construction vibration levels will only have minor temporary increases and that any increase in operational vibration due to the new development is deemed not to have any noticeable impacts on the overall development.

CHAPTER 10 – 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 (CO_2) emissions effecting the current climatic conditions. The proposed development at Auburn House, Malahide, Co. Dublin consists of residential apartment blocks, dwelling houses and social spaces. This section will identify and assess the impact of the proposed development in terms of Carbon dioxide (CO_2) emissions during the construction phase and when in full operational use.

We note that although the construction phase contributes to CO_2 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

CO_2 is the largest and most important contributor to climate change. Methane, nitrous oxide, other gases and ozone are also important greenhouse gases. CO_2 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. As a consequence, CO_2 is accumulating in the atmosphere, where it is the key driver of global climate change. It is difficult to accurately apportion any increase in CO_2 emissions as a result of the proposed development at Auburn House 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 CO_2 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'.

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 CO_2 emissions of at least 80% compared to 1990 levels by 2050 across the construction and transport section relative to this planning application.

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 CO_2 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 2017 for non-residential units and Part L 2019 for residential units) and increased use of renewable energy.

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

The Auburn House project is a new development in the grounds of the existing Auburn House with the main entrance just of the Malahide Road and Back Road junction. The site is approximately 2km from the Malahide town centre. The development site has residential housing (Abington) to the north and North East. To the south it has residential housing (Streamstown) and to the South-East it has residential housing (Clairville). To the east and South-East across the MalahideRoad it has agricultural lands. The development consists of a total of 369 residential units. For this chapter we have taken the average size of the residential units at 82.8m2 with average glazed area, façade/floor/roof exposure and orientation.

The proposed development, which is proposed within 3 no. planning applications, will consist of the preservation and protection of the existing Protected Structure of Auburn House and its stables as 1 no. residential dwelling; the use of the existing stables of Auburn House to provide for storage space for the main Auburn House and the construction of 259 no. new residential dwelling units, comprising 133 no. houses, 105 no. apartments & 21 no. duplex units, ranging in height from single storey to four

storeys. The proposed development shall also provide landscaped public open space, car parking and all associated ancillary site development infrastructure including foul and surface water drainage, internal roads, cycle paths and footpaths, and boundary walls and fences. Vehicular access to the proposed development is to be via a new entrance at the R107 Malahide Road/Dublin Road entrance, with the existing entrance to Auburn House acting as a pedestrian/cyclist entrance and access to existing properties outside the application site, there will be a vehicular entrance comprising modifications of the existing vehicular entrance off Carey's Lane to serve the Streamstown development only, the closure of the existing vehicular entrance to Little Auburn, the provision of 3 no. ESB substations, 1 no. new foul pumping station, public lighting; proposed foul sewer works along Back Road and Kinsealy Lane and all associated engineering and site works necessary to facilitate the development.

10.4 Potential CO_2 Emission Effect

The CO_2 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 CO_2 emissions to a minimum.

10.4.1 Construction Phase

The construction phase of buildings has 2 no typical CO2 emission sources: Transport and embodied carbon dioxide of building materials. The most obvious emissions are from transport i.e., vehicles, equipment etc during the construction phase but carbon dioxide is also accounted for as a result of the type of materials used. Each material carries an element of CO_2 known as embodied carbon dioxide which represents the total amount of CO_2 attributed to a material over the lifetime (60 years) of a building. Embodied CO_2 represents the CO_2 attributed to the material including the exploration, manufacturing, transportation to site, the use during the life cycle of the dwelling and finally the removal or recycling. Local materials like wood or stone have relative low CO_2 factors, manufactured materials like Portland cement, steel, aluminium have very high CO_2 factors and their use should be minimised where possible. The university of Bath have an elaborate list of building material with their embodied carbon dioxide factor listed for each material. The embodied CO_2 quantity is normally generated using the bill of quantities for a building however in this chapter we have applied the data from a typical $90m^2$ residential unit. The construction phase of the scheme only emits CO_2 and other possible greenhouse gasses in the relative short term.

10.4.1.1 The Construction Phase Base Line

The base line construction transport CO_2 data is based on an average 4,500km of vehicular movement of HGV's (50%) , LGV's (35%) and private cars (15%) with a combined average carbon output of 255 gr/km/CO_2 taken from the Irish Construction Federation statistics resulting in emission totalling +/- 1100 kg CO_2 for the construction period.

The base line embodied CO_2 data is taken from the data base available from the university of Bath CO_2 embodied carbon dioxide tables with a typical average residential unit ($90m^2$) to embody +/- 23,000 kg CO_2 using typical traditional building materials.

Construction phase base line CO_2 emissions	CO_2 emission rate $kgCO_2/m2$	Single unit 90m2 ton-CO_2 / yr
	baseline	baseline
Construction transport	12	1.1
Construction embodied CO_2	256	23.0
Total impact	268	24.1

Table 10.1: Construction phase base line CO2 emissions

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 CO_2 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 CO_2 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.CO_2 emissions from energy supplies to buildings is the more significant part of the overall operational development operational contribution. The main energy supply CO_2 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 by the use of 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 CO_2 emissions over the life cycle period of the building.

10.4.2.1 Operational Phase Base Line

The base line construction transport CO_2 data for residential vehicular movement CO_2 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/CO_2/year or 1.75 ton-CO2/year.

The base line CO_2 emissions from energy supplies to buildings is the more significant part of the overall development's operational phase contribution. Using the national software for CO_2 emissions attributed to energy supplies for a typical 90m2 residential unit the emissions of a standard reference unit 5150 kg/CO_2/year or 5.15 ton-CO_2/year.

Operational phase base line CO_2 emissions.	CO_2 emission rate kgCO_2/m2	Single unit 90m2 ton-CO_2 / yr
		baseline
Transport	19.4	1.75
Energy (heat & hot water)	57.2	5.15
Total impact	76.7	6.90

Table 10.2: Operational phase base line CO2 emissions.

Transport emissions personal and delivery vehicles are being reduced through EU and national initiatives and regulation on a continuous basis. CO_2 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 CO_2 per km in 2022 compared to the current average vehicular emission rate of 175 gr/km.

10.5 Minimising CO_2 Emissions

The following sections are reduction measures implemented in the project's CO_2 emission calculations to illustrate the effects of such reductions on the environment.

10.5.1 Construction Phase Transport

CO_2 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 CO_2

Embodied CO_2 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 CO_2 is attributed to all materials to be used on site and by minimising or avoiding certain materials the impact on CO_2 emissions can be reduced by:

- Increasing the use of locally available recycled materials.
- Reducing the use of materials with a high embodied CO_2 element.
- Increasing the use of "green" concrete (Granulated Blast Furnace Slag to replace Portland cements as the latter has significant embodied CO_2.)
- Reducing the use of metals. Metals generally contain the highest embodied CO_2 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. CO_2 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 CO_2 per km in 2022. The following is applied to lower CO_2 emissions as a result of transport:

- Encourage the use of electric cars.
- Encourage the use of new low CO_2 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 CO_2 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% CO_2 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 <= 2.75 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, -4 effects the construction phase emissions for a single unit and for the total combined number residential units as follows:

Construction phase base line CO2 emissions and effects of reductions	CO_2 emission rate $kgCO_2/m2$		Single unit emissions ton-CO_2		259 units emissions ton-CO_2	
	baseline	reduced	baseline	reduced	baseline	reduced
Construction transport	12	11	1.1	1.0	285	249
Construction embodied CO2	256	211	23.0	19.0	5957	4915
Total impact	268	222	24.1	19.9	6242	5164
Difference		46		4.2		1078

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

We note the reduction of 12.5% on transport and 17.5% on embodied CO2 to result in a reduction of 4.2 ton-CO2 for a single unit. Total construction phase CO2 emissions for the 259 units has been lowered from 6,242 ton-CO2 to 5,164 ton-CO2 or a saving of -1,078 ton-CO2 and represents an overall reduction of 17.3%

Operational phase base line CO2 emissions and effects of reductions.	CO_2 emission rate $kgCO_2/m2$		Single unit 1 year ton-CO_2		259 units 1 year ton-CO_2		90m2 unit 60 year ton-CO_2		259 units 60 year ton-CO_2	
	baseline	reduced	baseline	baseline	baseline	reduced	reduced	reduced	baseline	reduced
Transport	19.4	16.9	1.75	1.52	453	394	105	91	27195	23660
Energy (heat & hotwater)	57.2	16.0	5.15	1.44	1334	373	309	87	80031	22409
Total impact	76.7	32.9	6.90	2.96	1787	768	414	178	107226	46068
Difference		-44		-3.9		1019		236		61158

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

We note the reduction of 13.0% on transport and 72.0% on energy CO2 to result in a reduction of 3.9 ton-CO2 per year a single unit or 1,019 tonCO2 per year for 259 units. Over the 60 year life cycle of the building this represents a reduction of 236.1 ton-CO2 for a single unit and a total of 61,158 ton-CO2 for the 259 units representing an overall combined reduction of 57.0%

10.7 National 2022 and 2030 CO_2 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.

EPA CO_2 emission data	National emissions Mt-CO_2/year
2022 emissions	60.00000
2030 emissions	58.00000
2030 emission with additional measures	47.50000

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

10.7.1 Proposed Development CO_2 Emissions.

Using the data from tables 10.3 and 10.4 we have calculated to CO2 emissions using the same unit (Mt-CO_2/year) as the National CO_2 emission table (10.5) to get a better idea of the actual impacts. For this chapter for now we assumed the emissions of the construction phase to be executed in one year.

Total project CO2 emissions	259 units construction Mt-CO_2 /year	259 units operational Mt-CO_2 /year	259 units combined Mt-CO_2 /year
Year 2022	0.005164	0.000768	0.005932
Year 2030	0.000000	0.000768	0.000768

Table 10.6: Proposed project CO2 emissions in 2022 and 2030.

10.7.2 Effects of the Proposed Project CO_2 Emissions on the National Emissions

Using the data from tables 10.5 and 10.6 we have calculated to CO_2 emissions from the proposed project and compare these with the National (EPA) listed emissions for 2022 and 2030.

Project CO2 emission impact on National emissions	National emissions Mt-CO_2 /year	259 units emissions Mt-CO_2 /year	fraction %
2022	60.00000	0.005932	0.009886
2030	58.00000	0.000768	0.001324
2030 with additional measures	47.50000	0.000768	0.001616

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

The national impact;

The combined construction and operational phase emissions of the 259 unit development totalling 0.005932 Mt-CO2 represents an increase of 0.009886% on Ireland's 2022 overall carbon emission of 60 Mt-CO2 and been categorised as very minimal. Likewise the operational phase emissions of the

259 unit development totalling 0.000768 Mt-CO2 represents an increase of 0.001324% on Ireland's 2030 overall carbon emission of 58 Mt-CO2

Based on the above findings we note the impacts on the national CO_2 emission at worse to be very fractional. CO_2 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 CO_2 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 Mitigation Measures

There are no particular mitigation measures noted. All the recommended reduction measures at design stage and as applied in the CO_2 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 non-compliance i.e., mitigation occurs.

10.9 Climate summary.

Any new development, until we manage to construct at zero emissions, will add to CO2 / greenhouse gas emissions to some degree however it is key that for any new development we need to lower the impact to a bare minimum. To achieve this numerous CO2 emission reduction measures are applied across several elements of the construction phase and operational phase. The construction phase is short and its effect on CO2 emissions over the life cycle of a building (60 years) is very limited. Reduction measures on the operational phase are very effective as a result of the 60 year life cycle which are made up of CO2 emissions from transport and building energy (space heating & hot-water heating). Significant CO2 reductions (72%) on the space heating and hot-water energy element together with CO2 reductions (13%) on transport have been are achieved in the operational phase by implementing the reduction measures lowering the impacts to a bare minimum. Comparing the overall project's total combined general annual CO2 emissions of 0.000768 Mt-CO2 with our National (EPA) CO2 emission target of 58.00000 Mt-CO2/year in 2030 represents an increase of 0.001324% which would be near imperceptible.

11.0 LANDSCAPE AND VISUAL ASSESSMENT

11.1 Introduction

The landscape and visual impact assessment was conducted by The Big Space landscape architects to assess the potential impacts of the proposed development on the surrounding landscape. The landscape and visual impact assessment examines and evaluates the implications of the proposed scheme in terms of landscape character and visual alterations arising from the scheme. The assessment also describes outline landscape treatment proposals to mitigate and attempt to achieve a longer-term integration of the proposed development with its surrounding landscape area.

11.2 Assessment Methodology

The procedure used for the landscape and visual assessment entailed:

- A desk top study of the site in relation to its overall context both locally and regionally.
- Visiting the site and its environs to assess the following:
    - Quality and type of views of the area
    - The character and quality of the site area and the surrounding landscape

The overall development of Auburn consists of three planning applications and this Landscape and Visual Assessment chapter examines this wider area - Streamstown, Auburn Park and Little Auburn applications, which are referred as the 'study site' in this chapter.

11.2.1 Guidelines

The structure for assessing the landscape impact of the proposed development is based upon the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, May, 2022)
- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute & I.E.M.A., UK 2013)

The criteria for describing the significance, quality and duration of the effects of the proposed development are outlined in Table 11.1 below:

Table 11.1: Landscape – Visual Assessment Criteria (as per Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA)

Significance of Effects	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.

Significance of Effects	Criteria
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.
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
Quality of Effects	**Criteria**
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Duration and Frequency of Effects	**Criteria**
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration

A series of photomontages were prepared by the 3D Design Bureau to represent, as accurately as possible, the physical and visual characteristics of the proposed development from a variety of distances and direction around the site. Priority was given to views from the public domain, such as main roads and to views from potentially sensitive locations such as historical vistas and amenity pathways. The location of all views is shown on Figures 11.14 and 11.15. For each of the visuals, an existing and a proposed view is presented and where the proposed development is not visible in the view the elements of the development will be shown as a red outline.

11.3 Receiving Environment

11.3.1 Landscape Context & Site Description

The study site is located approximately 2 km south-west of Malahide Village, within the townland known as Streamstown and covers an area of. approximately 13.28 hectares. The lands are located 12km north of Dublin City Centre and 6km north of Dublin Airport. The M1/ R125 motorway interchange is located approximately 3km to the west of the study site and Malahide train station is located 2km from the site and is served by the Northern Commuter and DART systems. The study site is accessed off Malahide Road and a tree lined driveway provides access to Auburn House.

Figure 11.1: Location of study site

While there seems to have been some type of settlement on this site since the 1700's, as indicated on Rocque's 1760 survey of Co. Dublin, the current configuration of Auburn House was constructed in c.1779. The driveway, Auburn House and the woodland to the north, west and south of the house are represented on Taylor's 1816 map of Dublin. On the 1843 map, Auburn House and its stable yard are shown in more detail, along with the walled garden and orchards, the large open field to the east of the house, a well-established woodland to the rear of the dwelling with pathways and tree lined field boundaries.

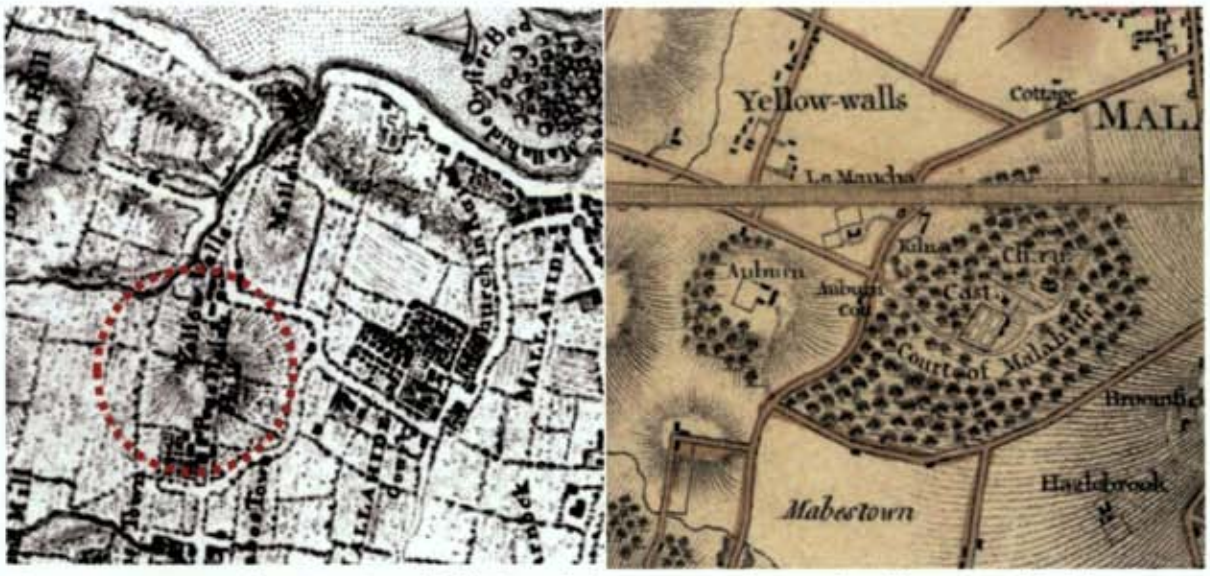


Figure 11.2: Rocque's 1760 survey (left) & Taylor's map - Environs of Dublin – 1816 (right)

Figure 11.3: Extract from 1829-42 Survey of Dublin (left) & Six-inch OS map - 1935-38 (right)

The ground level rises from +9m OD along the eastern and south-eastern boundaries of the site, up to +10.45m OD at the north-west corner of the study site and to +14.00m OD at western boundary at Carey's Lane. In the field to the north of the house there is a hillock that reaches +12.28m OD and another in the wooded area to the west of the house that reaches +14.49m OD.

A mature tree belt that runs along Malahide Road, forms the south eastern boundary of the study site and there are established wooded areas located to the west, south-west and north-west of the house. To the east of the house is a large open field that provides views to the boundary tree belts and to the wooded areas within Malahide Demesne beyond. A tree lined stream divides the main part of the study site from Little Auburn to the south. Mature trees and hedgerows with ditches, forms the boundaries with the adjoining lands and separates the northern part of the site, from the field to the