front of the house. The existing woodlands, trees and hedgerows that surround the Auburn House estate, in particular the wooded area to the east of Auburn House which is evident on Taylor's 1816 map of Dublin, the tree lined driveway, walled gardens and the mature tree belt along Malahide Road, greatly contributes to the historical character and landscape setting of the study site. The Abington residential development is located to west, north and north east of the study site. To the east of the study site are large detached dwellings which are accessed off Malahide Road and the Clairville Lodge residential development, accessed off Carey's Lane, is located to the south of the study lands.

Figure 11.4: Boundary analysis of the study site (Source: Landscape Development Report, 2022)

(1) Hedgerow with mature trees and railing between Abington and Auburn
(2) Tree lines ditch with fence
(3) Tree row between fence line and railing, between Abington and Auburn
(4) Belt of evergreen trees
(5) Tree lined stream, diving the field (historical field boundary)
(6) Mature trees along Malahide Road
(7) Tree lined drive up to Auburn House
(8) Walled gardens – folly, tree and shrub planting
(9) Wall and fence between Clairville Lodge and Auburn
(10) Electric fence with low planting
(11) Mature trees, stone wall and ditch
(12) Tree and hedge planting along gravel track with ditch and fence
(13) Ditch with mature tree planting

11.3.2 Planning Policy Context

The two main texts that were referred to in the compilation of this report were:

- Fingal Development Plan (FDP) 2017-2023
- Streamstown Local Area Plan 2009 *(now expired)*

Within the Fingal Development Plan (FDP) 2017-2023 the study site is located within lands zoned as "RA" Residential Area, which is defined as:

"Zoning Objective "RA" Residential Area: Provide for new residential communities study to the provision of the necessary social and physical infrastructure."

The FDP 2017-2023 also states that the study site is located within lands referred to as "Masterplan Area 9A" which corresponds with the FDP:

"Objective Malahide 11: Prepare and/or implement the following Masterplans during the lifetime of this Plan: Streamstown Masterplan (see Map Sheet 9, MP 9.A)".

The CDP further outlines the main points that need to be addressed within this masterplan:

- "Facilitate low density residential development reflective of the character of the area.
- Protect and preserve trees, woodlands and hedgerows within the Masterplan area.
- Preserve the tree lined approach to Malahide along the Dublin Road.
- Facilitate high quality sustainable development that protects and enhances the sensitive historic and natural setting of Auburn House and integrates new development with the conservation and preservation of the Protected Structure, its curtilage and protected trees.
- Retain visual corridors to/from Auburn House through the establishment of a visual buffer to the east of Auburn House.
- The area for development north of Auburn House is considered a sensitive development zone, whereby a maximum ridge height of 6m should be applied.
- Provide for a pedestrian / cycle route along the Auburn House Avenue to Malahide Road.
- Ensure pedestrian connectivity between Auburn House Avenue and Abington/Gaybrook/Castleheath.
- The lands will be the study of a detailed flood risk assessment."

The following Local Objectives make reference to the mature trees along the eastern boundary of the study site with the Malahide Road:

"Local Objective 55: Preserve the tree lined approach to Malahide.

Local Objective 57: New or widened entrances onto the Dublin Road between Streamstown Lane and the Swords Junction will be restricted, to ensure the protection of the mature tree-lined approach along the Dublin Road to Malahide."

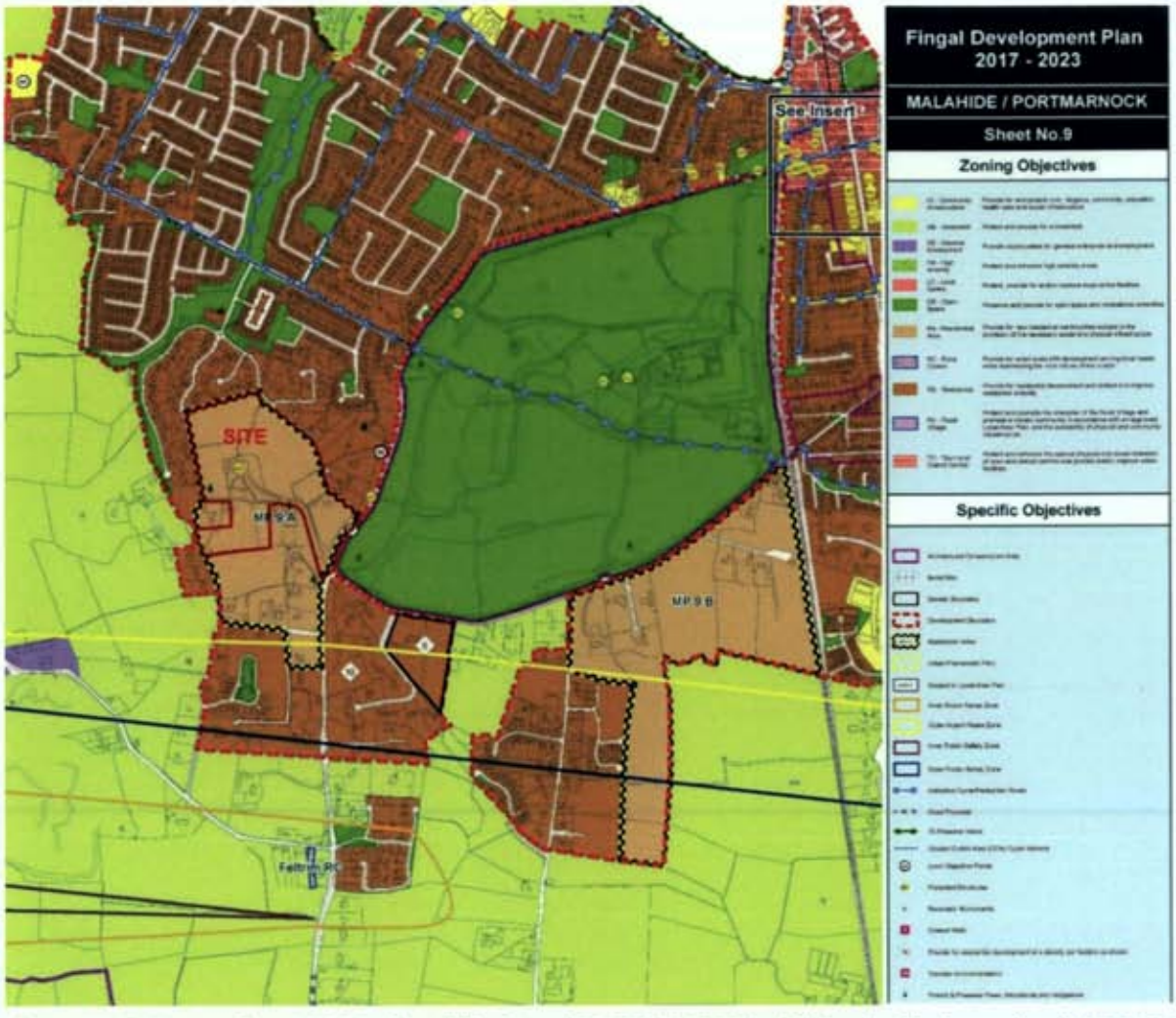

Figure 11.5: Extract from FCC Zoning Objectives (FDP 2017-2023) with Study Site Location (TBS, 2022)

11.3.3 Views & Prospects

11.3.3.1 Protected Views

The FDP 2017-2023 does not refer to any protected views to or from the study site, however the Streamstown LAP 2009 did identify the vista from Auburn House looking east towards Malahide Demesne (refer to Figure 11.6).

In relation to views the Streamstown LAP 2009 also stated that:

"There are no notable views from the site given the existing planting, the low lying nature of the land and existing properties, both within and adjacent to the site. As a result, the area is considered to have an enclosed character." (Source: Streamstown LAP 2009)

11.3.3.2 Visibility into the site

Due to the extensive areas of woodlands, tree belts and hedgerows that surround the study site and its low-lying character, views into the study site are limited and only up once you arrive at Auburn House itself.

There are limited filtered views into the study site through the mature tree belts along Malahide Rod, from the local roads within the Abington Development and Carey's Lane.

Feltrim Road that runs along the elevated land to south west of the study site, facilitates views into the south-western part of the study site, but is partially screened by the existing residential development (Clairville Lodge).

Figure 11.6: Extract for Streamstown LAP (2009) indicating the vista/ visual corridor from Auburn House

11.3.3.3 Views from the site

Generally, views from within the study site are limited due to its enclosed, created by the mature woodlands, tree belts and hedgerows that surround it.

Auburn house was constructed on slightly elevated land to capture the vista with views orientated north-eastwards towards Malahide Castle and framed with mature trees and field hedgerows.

This visual connection is identified within the Streamstown LAP as being of historical significance and of sufficient cultural importance to require it's long term retention.

The woodland block to the rear of the dwelling was planted on the highest part of the study site providing shelter for Auburn House and also preventing views in and out of the site to the west.

11.3.3.4 Protected Structures or Recorded Monuments

Recorded Monuments are structures that are protected under the National Monuments (Amendment) Act, 1994 and Protected Structures are structures that are considered to be of special architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

Auburn House (including the out-offices and the pigeon loft) is listed as a protected structure listed as RPS No. 448 – 'Late 18th or early 19th century house, outbuildings and walled garden'.

The Protected Structures or Recorded Monuments referred to in Tables 11.2 and 11.3 are in close proximity to the study site are:

Table 111.2: Recorded Monuments (Source: FDP 2017-2023)

Reference	Townland	Description	Direction from site
DU012-030	Malahide Demesne	Castle - tower house	east
DU012-031001 - 031006	Malahide Demesne	Church. Graveyard. Sheela-na-gigs. Architectural fragments.	east

(Source: FDP 2017-2023)

Table 111.3: Record of Protected Structures

RPS Ref.	Address	Description	Direction from site
0383	Malahide Castle Back Road, Malahide Demesne, Malahide, Co. Dublin	Medieval castle and later additions (including within the demesne four gate lodges, stone outbuilding complex, entrance gates & piers)	east
0384	Within grounds of Malahide Castle, Malahide Demesne, Malahide, Co. Dublin	Malahide Abbey (in ruins)	east

(Source: FDP 2017-2023)

Architectural Conservation Area (ACA): a place, area, group of structures or townscape that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of protected structures.

There are four ACA's within Malahide:

Table 111.4: Architectural Conservation Area within the vicinity of the study site

Name & Location	Direction from site
Malahide Castle Demesne	east
Malahide Historic Core	North-east
The Bawn, Parnell Cottages & St. Sylvesters Villas, Malahide	north
The Rise, Malahide	north

11.3.4 Statutory Designations

There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Natural Heritage Areas (NHA) within the study site.

11.3.5 Landscape Character Assessment & Historic Landscape Characterisation

11.3.5.1 Landscape Character

The area in which the study site is located has a semi-rural landscape character, with low lying agricultural fields bounded by hedgerows, extensive amenity lands and woodlands associated with Malahide Demesne, mature tree lined roads with largely low-density detached dwellings. The estate in addition to Auburn House and stable block, comprises several fields laid out for agricultural use (grazing), woodland, walled garden and ancillary structures previously converted to residential use.

Auburn House was constructed in c. 1779 and the location and setting of the house historically appears to have been a pastoral parkland landscape context, typical of the English landscape garden principles at that time. The estate lands while relatively small in size by the standards of that period, still contain similar features to that of larger estates. These features include woodland, a walled garden and orchard and ancillary structures relating to the walled garden previously converted to residential use. It is likely that the front field contained a number of loose tree groupings to provide a pleasant vista from the front of the house, framing the vista towards Malahide Castle. This view is deliberately observed from the house only. In addition, the lands to the immediate west of the house are indicated in the 1837 layout as having pathways and were likely laid out as woodland walkways to allow the owners and visitors to take pleasant walks close to the house. The combination of pastoral open lands and structured woodland assisted in reinforcing the parkland character. The philosophy behind the English landscape garden was Naturalism, favouring curved lines, gentle slopes, lakes and woodlands, moving away from the strict formal geometric gardens of the Baroque period. These gardens were designed to look natural and be a place for meditation and relaxation.

The woodland setting was both a functional and aesthetic feature in the landscape. The trees served the aesthetic function of framing views from the house and creating a scenic backdrop to the house. The existing woodland around Auburn House varies in age and condition. The original woodland is the most imposing element of the English landscape garden within the Auburn estate. The original woodland would have comprised Oak, Beech Horse Chestnut, Sweet Chestnut and Lime which are now over mature and in decline, with increasing losses over the last 20 years from winter storms. This has resulted in the natural re-generation of primarily Ash and Sycamore replacing the planted woodland and creating an increased proportion of the woodland today. A small coniferous plantation of sitka spruce and lawson cypress is present north and south of the house. These trees are c. 20 yrs old and appear to have been planted to replace a gap in the existing woodland.

11.3.5.2 Landscape Character Assessment

The Landscape Character Assessment within the FDP 2017-2023 divides the County into 6 Landscape Character types, with each type given a value through the consideration of such elements as aesthetics, ecology, historical, cultural, religious or mythological.

The landscape character of the area within and around the study lands is identified as 'Low Lying Agriculture Character Type' within the FDP 2107-2023 (refer to Figure 11.7).

This type is "characterised by a mix of pasture and arable farming on low lying land with few protected views or prospects. The Low Lying Character Type has an open character combined with large field patterns, few tree belts and low roadside hedges. This low lying area is dominated by agriculture and a number of settlements. The area is categorised as having a modest value. It contains pockets of important value areas requiring particular attention such as important archaeological monuments and demesnes."

Figure 11.7: Landscape Character Types (extracted from FDP 2107-2023 with study site

In relation to landscape character the Streamstown LAP 2009 notes that:

"Streamstown is characterised by low-lying, medium-sized fields in agricultural use with low-density detached dwellings. Field boundaries comprise largely self-seeded hedgerows. The local road network is rural in character, with Carey's Lane and Streamstown Lane being bounded by a grass verge, low stone walls and hedgerows.

The site has a semi-rural character, being bounded to the west by Green Belt zoned lands and to the east by a significant area of Open Space in the form of Malahide Castle demesne." (Source: Streamstown LAP 2009)

11.3.5.3 Landscape Character Types – Sensitivity

This character type is identified as a 'low sensitivity' meaning that *"these landscapes can absorb a certain amount of development once the scale and forms are kept simple and surrounded by adequate screen boundaries and appropriate landscaping to reduce impact on the rural character of the surrounding roads. The protection of views and riparian corridors from inappropriate development is of paramount importance in these areas.*

Principles for Development

- *The skyline should be protected.*
- *Existing tree belts should be retained and managed and older stands of trees restocked. Roadside hedging should be retained and managed. Proposals necessitating the removal of extensive field and roadside hedgerows or trees should not be permitted. Strong planting schemes using native species, to integrate development into these open landscapes, will be required.*
- *Establish riparian corridors free from new development along all significant watercourses in the County. Ensure a 10 to 15 metre wide riparian buffer strip measured from top of bank either side of all watercourses, except in respect of the Liffey, Tolka, Pinkeen, Mayne, Sluice,*
- *Ward, Broadmeadow, Corduff, Matt and Delvin where a 30m wide riparian buffer strip from top of bank to either side of all watercourses outside urban centres is required.*
- *Sites with natural boundaries should be chosen, rather than open parts of larger fields.*
- *Clustering with existing farmhouse and/or farm buildings is generally preferable to standalone locations."*

  (Source: FDP 2107-2023)

11.3.5.4 Historic Landscape Characterisation

The FCDP 2017-2023 states that Historic Landscape Characterisation (HLC) seeks to identify and to understand the historic development of today's landscape by placing emphasis on the contribution that past historic processes make to the character of the landscape as a whole, not just selected 'special sites'. In relation to HLCs the FDP 2017-2023 has the following objectives:

"Objective NH41: Ensure that the results of the Historic Landscape Character studies undertaken in the County are taken into account in the development of plans and in the assessment of projects on an ongoing basis.

Objective NH42: Ensure development reflects and reinforces the distinctiveness and sense of place of identified historic landscape character types, including the retention of important features or characteristics, taking into account the results of the historic landscape characterisations carried out in the County."

Fingal County Council has not carried out a HLC study for this area.

Refer to Historical Landscape Report carried out by The Big Space as part of this application.

11.3.6 Existing Trees and Hedgerows

11.3.6.1 Development and Local Area Plans

In relation to trees and hedgerows an Objective NH27 of FDP 2017-2023 states:

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

"Objective Malahide 11: Prepare and/or implement the following Masterplans during the lifetime of this Plan: Streamstown Masterplan (see Map Sheet 9, MP 9.A)":

- Protect and preserve trees, woodlands and hedgerows within the Masterplan area.
- Preserve the tree lined approach to Malahide along the Dublin

11.3.6.2 Site Tree & Hedgerow Survey

A comprehensive arboricultural survey was carried out by The Tree File Ltd. which should be read in conjunction with this report.

"The broader site comprises the lands originally associated with the Auburn estate; however some have become separated over time, with the current cumulate site area (blue line) now comprising most of the remaining Auburn estate, the adjoining site of Little Auburn and additional lands accessed off Streamstown and Cary's Lane.

The main Auburn site comprises a wooded corridor associated with the driveway access to the Malahide Road, a substantial wooded area to the north-west, west and south-west of the main house and open pasture to the north and east of the house. The various elements of the site are subdivided by various hedges, some historical and associated with the original site drainage layout, while others are associated with the earlier division of the original Auburn site."

".. the review area supports a total of 1344No. individual items, including either individual trees or tree groups (entities comprising multiple trees), including:

- *1 category "A" tree*
- *449No, category "B" trees/groups*
- *694No. category "C" trees/groups*
- *200No. category "U" trees/groups"*

(Source: Extract from Arboricultural Report, The Tree File Ltd, 2022)

Figure 11.8: Auburn House - Woodlands, tree belts & hedgerows

Historical Context of Woodland, Trees and Hedgerows:

The driveway at Auburn House begins with the entrance walls and piers (Malahide Road) and gently curves along its length enclosed by woodland, which restricts views out over the surrounding landscape. This design element enhances the impression of distance for the visitor and assists in creating drama and the sense of anticipation for the visitor. The drive crosses a stone bridge over a stream that identifies a deliberate change in landscape character as the lands open up towards the parkland landscape, providing glimpse views of the house in the distance. It is likely that the front field contained a number of loose tree groupings to provide a pleasant vista from the front of the house, framing the vista towards Malahide Castle. This view is deliberately observed from the house only.

The woodland setting was both a functional and aesthetic feature in the landscape. The trees served the aesthetic function of framing views from the house and creating a scenic backdrop to the house. The existing woodland around Auburn House varies in age and condition. The original woodland is the most imposing element of the English landscape garden within the Auburn estate. The original woodland would have comprised Oak, Beech Horse Chestnut, Sweet Chestnut and Lime which are now over mature and in decline, with increasing losses over the last 20 years from winter storms. This has resulted in the natural re-generation of primarily Ash and Sycamore replacing the planted woodland and creating an increased proportion of the woodland today.

A small coniferous plantation of Sitka spruce and Lawson cypress is present north and south of the house. These trees are c. 20 years old and appear to have been planted to replace a gap in the existing woodland. A number of ditches are located with the estate lands, which form field boundaries. These ditches remain predominantly dry and are used as part of the estate drainage system during periods of high rainfall. Today significant vegetation is located either side of the ditches.

11.4 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."

(Source: Downey Planning Consultants, 2022)

11.4.1 Landscape Proposals:

Full details describing the landscape proposals are discussed with the Landscape Development Reports and landscape drawings that accompany each application. The design approach to the external spaces within the proposed developments is to produce a scheme with a strong identity and distinctive sense of place, while not detracting or competing with existing character and setting of Auburn House. It is intended that this can be achieved through careful design considerations including:

- Retention of existing woodlands and trees as a priority
- Protection of the unique character and setting of Auburn House
- Sensitive approach to the design and planting of the open spaces, boundaries and management of the woodland areas, tree belts and hedgerows.
- Well defined and overlooked public/ communal spaces
- Usable spaces with varying character, dynamics and emphasis, without detracting from the setting and character of Auburn House.
- Provision of passive and active recreational opportunities for a variety of age groups and abilities
- Connectivity & Permeability: Provision of cycle/pedestrian access and routes within and through the scheme and linking to Malahide Road and Carey's Lane.

To create a legible environment for people to live within and move through, a hierarchy of materials such as paving and planting, will be employed to create different zones and provide visual cues to how people may move through or use these spaces. While different paving materials and textures will be used to demarcate changes in levels, verges, pedestrian priority zones and to guide the visually impaired, it is proposed that materials (e.g. paving), lighting and tree planting will be chosen from a limited palette to encourage visual cohesion within the scheme. Ground plane materials within the public spaces will be restrained and consist of bound gravel for the pedestrian walkways within the public spaces and brushed concrete for walkways adjacent to roads. Permeable paving will be used for driveways and car parking areas. Focal points, such as sculptural elements, specimen tree planting will also be incorporated at appropriate locations within the project to enhance this sense of place and to assist with way-finding through this scheme. The perimeter boundaries are limited to existing boundaries, which will be augmented where required. In order to create a highly legible and therefore self-regulating environment, signage and barriers will be kept to a minimum, thereby reducing physically intrusive measures, enhancing pedestrian and cyclist movement and creating a more attractive public realm. An objective of the landscape strategy is to provide opportunities for passive and active recreation, by way of natural play/ fitness trails, play facilities and pathways through the open spaces. These proposed pathways in addition to providing recreational opportunities will also promote connectivity within the overall scheme and adjoining areas, including Malahide Demesne to the east.

Road Hierarchy and Pedestrian & Cycling Approach:

A road/street hierarchy has been developed throughout the study lands to reinforce the public areas to encourage appropriate traffic speeds for cycling and pedestrians, as required (refer to engineer's drawings). The site layout identifies a meandering north-south road designed to encourage cycle/pedestrian accessibility to the proposed buildings and spaces within the estate lands.

Pedestrian & Cycling Priority Approach:

A number of traffic calming measures have been used throughout the scheme to encourage more pedestrian and cyclist traffic and create safer movement for all throughout the scheme. Some of these measures include:

- Horizontal deflections in the form of pinch points and on-street parking
- Change of surface materials to indicate pedestrian/ cyclist priority areas e.g. granite setts at transition areas
- Reduced corner radii to assist in reducing vehicular speed.

These measures are intended to create more pedestrian friendly areas that promotes more liveable roads and encourages greater pedestrian movement between the proposed residential areas and the adjacent opens spaces.

Figure 11.9: Overall Landscape Plan – Streamstown, Auburn Park & Little Auburn

Play and recreation opportunities:

Pathways have been proposed throughout the scheme to provide recreational opportunities for future residents and which will also promote connectivity within the overall scheme and the adjoining areas including Malahide Demesne. Within the study site it also proposed to include natural play elements and exercise stations, which are inclusive and suitable for a variety of ages and abilities in

locations that are appropriate for the setting. The layout of the scheme has been designed so that there will be the appropriate level of passive surveillance from the proposed dwellings overlooking the various open spaces. 'No-dig' (minimal impact on tree rootzones) pathways have been proposed through the existing woodlands to the rear of Auburn House, based off the existing historical walkways, which will provide passive recreational opportunities appropriate to the woodland setting. Open lawn and grassland meadows are also provided within the public spaces to provide space for informal play and passive recreation. Further details in relation to the play and recreation proposals within the proposed developments are indicated on drawings 1601_1_302 (Streamstown), 1601_2_304 (Auburn Park) and 1601_3_304 (Little Auburn).

Lighting:

The proposed lighting throughout the scheme will be to the required LUX levels that permits the safe use of pathways, cycleways and public open spaces, with more ambient, way finding lighting to the communal open spaces. Low bollard lights are proposed along the pedestrian/ cycling link to the Streamstown part of the study site, to minimise disturbance to the wildlife in the area. It is intended that there will not be any lighting within the woodland area to the west of Auburn House – to minimise disturbance to the existing trees rootzone to insure their successful retention within the scheme and due to wildlife in the area.

SuDS:

It is intended to utilise SuDS within the proposed scheme, stormwater attenuation areas are provided above ground within public spaces.

SuDS detention basins are proposed within the central open space to the east of Auburn House, north of Apartment Block 1 within the Streamstown application and north of the pumping station within the Little Auburn application (refer to engineer's drawings for further detail).

Permeable paving is also proposed as much as possible within the scheme, along with green roofs to the apartment buildings to assist in water attenuation.

11.4.2 Streamstown , Little Auburn & Auburn Park Development Areas:

Little Auburn :

Figure 11.10: : Landscape Plan – Little Auburn (south)

Tree lined approach to Malahide:

The mature tree lined road to Malahide, formed by the woodland within Malahide Demesne and in part by tree belt along the study land's south-eastern boundary, is a distinguishing feature of the approach to Malahide and contributes to the local character and landscape setting.

The FCDP (2017-2023) contains Local Objective's 55 and 57 which highlights the importance of protecting the tree lined approach to Malahide. It is intended that the trees located along the south-eastern boundary will be retained, apart from the trees highlighted in the arboricultural report and survey which are in such poor health/state of decline that it necessitates their removal. This tree belt will be further reinforced with additional mature tree planting where appropriate and with the recommended species as outlined in the Woodland Management Plan, as prepared by the arborist. The retention of these trees is crucial to protecting the landscape setting of the study site and to assist in screening the proposed development from Malahide Road.

Existing Entrance:
It is proposed that the existing entrance is to be retained, limiting it use for pedestrians and cyclists, with vehicular access retained solely for existing residential use. A new vehicular entrance is proposed immediately south of the existing entrance (arising from the Little Auburn and Auburn part developments only). The important aspects for consideration at this location, is to achieve balance in protecting the historical relationship and context of Auburn House's entrance, while ensuring the necessary safety requirements (including required sightlines), to allow for the safe access/egress to Malahide Road.

Existing Driveway approach to Auburn House - 'Conceal and Reveal':
The existing driveway that provides access to Auburn House off Malahide Road was designed to conceal views towards the house until visitors arrived at the front of the dwelling. This was achieved by the careful curving of the driveway and strategic tree planting that prevented views towards the house but provided glimpsed views of the surrounding landscape. It is proposed to maintain the existing driveway in it's current form to ensure that the existing character of the drive is retained and enhanced through the provision of replacement woodland tree planting. The drive will form part of the perimeter walk around the estate lands including the woodland, walled garden, stream and central park.

New access road:
The new access road has been designed to minimise the negative impact on the existing trees that bound the existing drive to Auburn House, while facilitating the safe movement of vehicles through the development. Additional tree planting and strategic ground modelling is proposed to screen views of the proposed road from the existing drive and from Auburn House.
It is proposed that the majority of the trees that form the boundary between the study site and Malahide Road will be retained, unless they are in very poor health or need to be removed to facilitate the construction of the new entrance road (works to be carried out in accordance with arboriculturist's report and drawings).

Little Auburn - Proposed southern residential area & open spaces:

The landscape strategy within this part of the proposed development is to:

- Maintain sufficient distance from Malahide Road to prevent any encroachment into the existing mature tree belt
- Re-planting the existing tree belt to assist in screening the proposed development and to maintain the tree lined approach to Malahide

- Maintain existing trees along the eastern boundary to protect the off-site residential amenity of dwellings adjoining the study lands
- Retain the woodland setting of the existing drive
- Provide pedestrian and cycle route through the scheme to link with Malahide Road
- Provide attractive communal open spaces for future residents to relax, move and/ or socialise within.
- Extensive lawn areas for passive recreation
- Play/recreation area that will provide active recreational opportunities for future residents
- SuDS - green roofs to the apartment buildings to assist in water attenuation.

Existing Stream/ historical field boundary:
The small stream that flows east to west across the southern part of the site and the associated tree belt is to be retained within the proposed development as it forms an important boundary as identified on historical maps and plays a considered role in the integration of the proposed development into the existing landscape.

<u>The Frontfield, Auburn House & The Woodland</u>

Figure 11.11: Landscape Plan – Auburn House, The Woodland & The Frontfield

Auburn House and curtilage:
It is proposed that Auburn House will be retained as a single dwelling as part of the development and that additional planting and a seating area are to be provided to the south of the house, to enhance the private amenity space of the dwelling.

Woodland to rear of Auburn House:
The existing woodland around Auburn House varies in age and condition. The original woodland is the most imposing element of the English landscape garden within the Auburn estate and is evident on Taylor's 1816 map of Dublin. The original woodland would have comprised Oak, Beech Horse Chestnut, Sweet Chestnut and Lime which are now over mature and in decline, with increasing losses

over the last 20 years from winter storms. This has resulted in the natural re-generation of primarily Ash and Sycamore replacing the planted woodland and creating an increased proportion of the woodland today.

The existing pathways through the woodland will be maintained and re-dressed for pedestrian use, providing an attractive pedestrian route around the estate, while minimising any negative impact on the existing trees.

The Woodland Management Plan prepared by the arborist, will provide guidance and a strategy by which the site's existing and future tree population and woodland areas can be managed, maintained, restored and improved in a sustainable manner to accommodate the requirements of the planning authority and all stakeholders.

In accordance with the project ecologist recommendations bat boxes are proposed within the woodlands to provide a variety of suitable roost sites (refer to ecology report for further details).

Front field:

The front field, located to the east of Auburn House, was likely designed to create an open, pastoral vista towards Malahide Demesne.

A key objective of the landscape strategy is to retain this important vista and to frame views from Auburn House, by way of a well-considered tree planting scheme.

The proposed central space will provide a quality recreational area and will also form part of an attractive pedestrian route around the estate lands which will be overlooked from the north and south by housing units.

This space also contains a SuDS detention basin within a gently undulating landscape containing a mix of native and ornamental parkland trees, that are appropriate to the setting ,within ground modelling, open lawn and wildflower meadow. The planting approach within this space, is to reinforce and maintain the existing vista, create visual interest and to create a sense of place, resulting in restful and inviting spaces to encourage use by future residents.

It is also proposed to remove the more recently added circular pool to the front of the house.

Little Auburn – clustered courtyard development:

Clustered courtyard dwellings are proposed within this part of the development, north and south of the central open space:

- Permit a controlled and cohesive approach to the interface between dwellings and parkland space
- Hedge type planting to 'soften' the edges of the proposed dwellings and boundary walls
- Ornamental planting within the courtyard cluster of dwellings to provide an attractive space for future residents
- Reinforced grass as a surface treatment to permit occasional vehicular access
- Subtle ground modelling with mature tree planting will assist in mitigating the visual impact from Auburn House but
- Pedestrian pathway to provide passive recreational opportunities and permeability through the study site.

<u>Auburn Park:</u>

A key objective in this part of the site is to protect the existing field boundaries as far as possible to:

- Maintain the setting and landscape character of Auburn House

- Retain the historical field boundary and mature trees as much as possible between the Auburn Park development and the northern courtyard buildings (within the Little Auburn development) and reinforce the field boundary with additional tree planting where necessary.
- Retain the residential amenity of the surrounding dwellings that adjoin the study site and provide an attractive setting for future residents.
- Assist in screening the proposed development from the adjoining lands.

Figure 11.12: Landscape Plan – Auburn Park

The proposed treatment to the rear of the dwellings within the north-east part of the site includes a set-back boundary to extend the distance of proposed the development to the existing trees and hedgerows.

Communal open spaces are provided around the proposed apartment blocks to provide:

- Amenity grass areas for people to relax, socialise and play within.
- Specimen tree planting and ground modelling with shrub/wildflower meadow and multi-stem tree planting to define and create interest within the spaces and to provide pleasant human scale spaces.
- Provide play and recreational opportunities

SuDS - Green roofs proposed to the apartment building to assist in rainwater attenuation.

Streamstown Development:

Figure 11.13: Landscape Plan – Streamstown

Walled Gardens:

Walled gardens were a common feature of historic houses of the past and were once known as the 'kitchen garden' as vegetable and fruit trees were grown to keep the family kitchen well stocked. Auburn was no exception and historical mapping identified an orchard within the walled garden.

The walled garden remains largely intact, although the majority of the original space is not included within the study application. The area contained within the application area is enclosed with limestone coursed walls and has become overgrown with a number of re-generated trees/scrub (hazel, holly, sycamore and ash). The intention is to retain the large specimen London Plane located in the north-eastern corner of the walled garden. The re-generated scrub material will be removed to allow for the re-planting of new orchard trees to re-create the original design intent.

The existing openings through to the adjacent garden will be respected and marked with pathways although they will not extend fully to the existing accesses. The small pet cemetery with the two headstones within the garden will be relocated and retained. Seating and a natural play area are proposed within the northern part of the walled garden, which will benefit from maturity of the existing trees and the safety provided by the enclosed nature of the space. A communal open space enclosed by hedge planting, is proposed within the central part of the walled garden, for the future residents of Apartment Block 1.

Carey's Lane: Access and residential development

- Retaining existing trees where it is feasible and in accordance with the arboriculturist's recommendations
- Proposed tree planting to assist in screening the proposed dwellings and infrastructure
- Use of limited palette of high quality materials that is respectful of the historical setting

11.5 Identification of Likely Significant Impacts

11.5.1 Impact on Existing Trees and Hedgerows

The retention of the existing woodlands, trees and hedgerows are a priority of the landscape strategy as they strongly contribute to semi-rural and mature setting of the development and will assist in screening the proposed structures from the adjoining lands and road, as well as providing visual amenity and biodiversity benefits. The design of the development has where possible followed the pattern of exiting field boundaries to ensure retention of existing woodland and mature hedgerows where possible and to retain the historical patterns of the landscape. The existing hedgerows that are to be retained will be pruned, tidied and replanted with native species where the hedgerow is of poorer quality. Within the Arboricultural Report (The Tree File Ltd, 2022) it is stated that

"Notwithstanding some tree losses, many individual trees, tree lines and tree groups will be retained. These will include the major woodland and tree features associated with the Auburn demesne, including the main woodland to the rear of Auburn House, the belt associated with the entrance drive and much of the belt associated with the Dublin Road boundary of the site, will be retained. These will be subject to a "Woodland Management Plan".

"The tree loss breakdown for the proposed developments will be:

Streamstown Development:

- *28 Category "B" items*
- *19 category "C" items*
- *40 category "U" trees*

.. an expected loss of 87no. items."

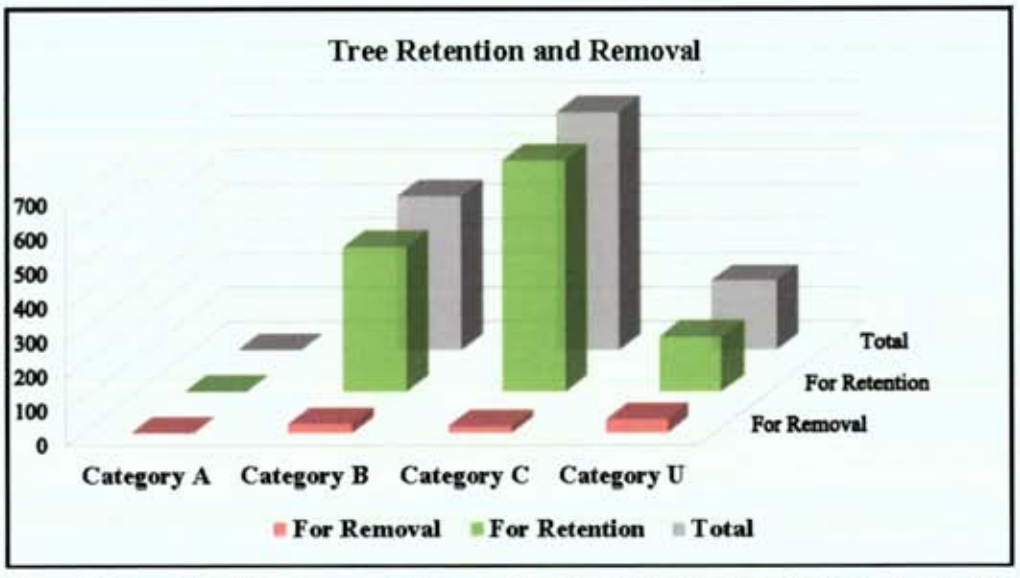

Figure 11.14: Graphic Representation of Tree Loss/ Retention – Streamstown (Source: The Tree File, 2022)

Little Auburn:

- *30 Category "B" items*
- *26 category "C" items*
- *68 category "U" trees*

.. an expected loss of 121no. items."

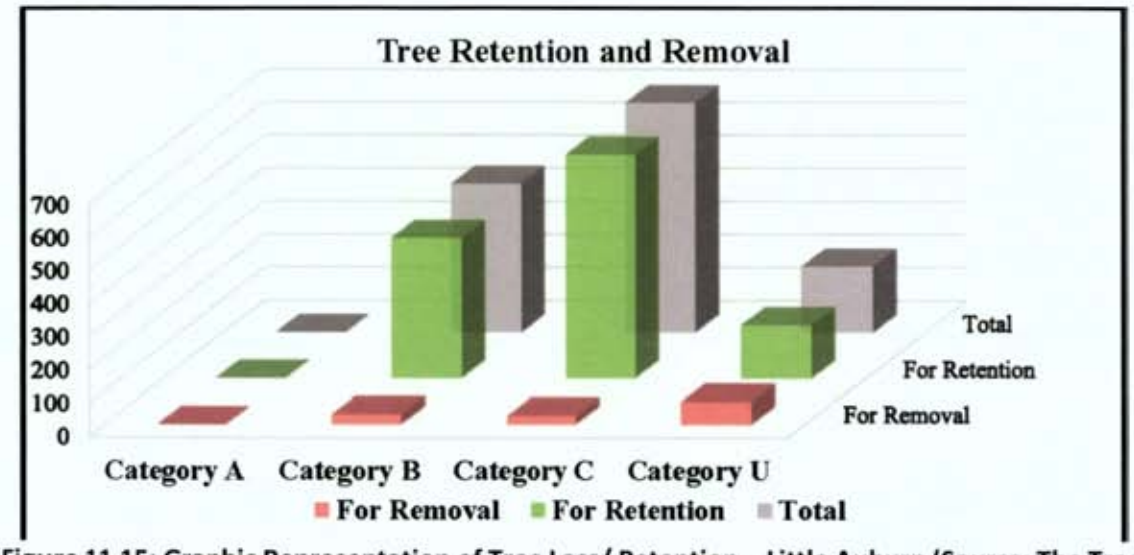

Figure 11.15: Graphic Representation of Tree Loss/ Retention – Little Auburn (Source: The Tree File, 2022)

Auburn Park:

- 17 Category "B" items
- 26 category "C" items
- 57 category "U" trees

.. an expected loss of 102no. items."

(Source: The Tree File Ltd., 2022)

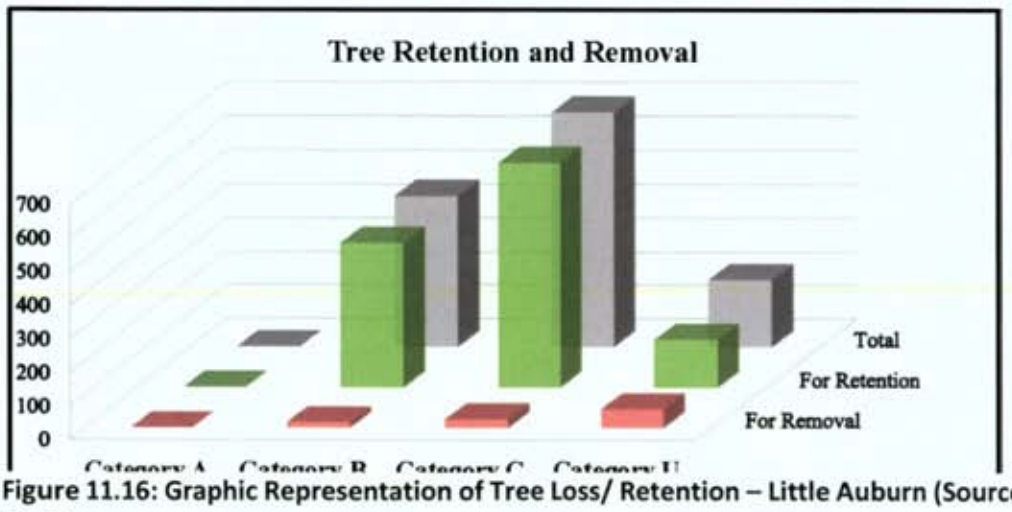

Figure 11.16: Graphic Representation of Tree Loss/ Retention – Little Auburn (Source: The Tree File, 2022)

During the construction phase the existing trees and hedgerows that are to be retained will be protected from construction traffic, material storage, ground level changes and any other disturbances, in accordance with the recommendations set out in BS5837: 2012 and detailed in the arborist's report.

The overall impact on the existing trees and hedgerows will be **slight/moderate and negative** during the construction phase, prior to the establishment of proposed trees and supplementary hedge planting throughout the site.

During the operational phase, and with consideration for the proposed planting measures and the implementation of the woodland management plan recommendations (refer to Arboricultural Report), it is anticipated that the proposed development will have a **slight and negative** impact on the short term, reducing to **not significant and negative** impact on trees and hedgerows in the long term.

11.5.2 Impact on Landscape Character

These lands are within the land use zoning objective 'RA' that states: *"Provide for new residential communities study to the provision of the necessary social and physical infrastructure"* within the Fingal Development Plan 2017-2023. The conversion of the recreational/agricultural land into a residential development will mean that this area will experience an intensification of use.

This may be perceived during the construction phase, due to the presence of construction cranes, lighting and other visual disturbances caused by construction, as a **significant and negative** impact on the character of this landscape when viewed from within the study site and overall **slight and negative** when appreciated from outside of the study site, such as from public roads and adjoining residential areas.

However the land is zoned for a development of this scale and its impact will lessen once the scheme is operational, the woodland management plan has been implemented and the planting mitigation measures such as, along the site boundaries and within the open spaces, establish and mature. In this context the operational phase of the proposed development will have a **moderate and negative** impact on the landscape character when assessed from within the study site and **slight and negative** when considered externally of the study site (public roads and adjoining residential areas), in the long term.

11.5.3 Impact on Views

11.5.3.1 General Impacts

Construction Phase:

During the construction phase, the following elements of the proposed development have the potential to cause visual impacts, they will however be short to medium term in duration:

- Two road entrances into the proposed development
- Temporary site works – hoarding, lighting, cranes, car parking, storage areas
- Construction traffic – dust and emissions
- Tree and vegetation clearance
- Groundworks – cut and fill excavations
- Laying of foundations and site services

Operational Phase:

The principal elements which are likely to give rise to landscape and visual impact visual impact in the long term are:

- Removal of some existing trees and hedgerows
- Height of proposed buildings
- New structures, roads, lighting and pathways
- Change of character due to intensification of use, from arable farmland to the residential development
- Proposed tree and shrub planting

11.5.3.2 Impacts on Protected Views

The FDP 2017-2023 does not refer to any protected views to or from the study site, however the Streamstown LAP 2009 does identify the vista from Auburn House looking east towards Malahide Demesne (refer to Figure 11.6). At various times during the construction phase of the development the presence of construction cranes, site hoarding, site lighting and construction traffic would be anticipated, it may result in a **moderate/ significant and negative** impact on this vista. In the operational phase it is anticipated that the impact on this view will be reduced to **slight/ moderate and negative** due to:

- It is intended that the upper canopies of the tree belt and woodland will still visible due to limiting the heights of the proposed residential buildings to the east of Auburn House.
- The mitigation measures, including ground modelling and large specimen tree planting become established
- Consideration that the study site is zoned for residential development

11.5.3.3 Impact on Visibility into the site

For this visual impact assessment, viewpoints were selected to represent the likely visual impact 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 adjacent residential areas and from the amenity pathways within Malahide Demesne. Photomontages were compiled from the viewpoints shown in Figures 11.14 and 11.15 (the visual analysis section below should be read in conjunction with the baseline and proposed visuals produced by 3DDB).

Figure 111.14: Viewpoint Location Map – Long Range Views (Source: 3DDB, 2022)

Figure 111.15: Viewpoint Location Map – Short Range Views (Source: 3DDB, 2022)

Visual 1: From Feltrim Road, looking north-east

Existing View:

From this viewpoint a low boundary wall to an agricultural field with tree and hedgerow perimeter planting is visible in the foreground. The Streamstown Wood residential development is visible to the east and the Clairville Lodge residential development is visible in the central, middle-ground. The woodland and tree belts associated with Auburn House, Malahide Road and Malahide Demesne form a backdrop to these residential areas.

Proposed Changes and Visual Impact:

It is anticipated that the existing developments and woodlands will generally prevent views of the proposed development from this location, however the roofs of the some of the proposed two storey dwellings and the apartment building that are proposed within the Streamstown part of the study site will be visible behind the Clairville Lodge development. It is also anticipated that there will be partial views of the Apartment Block 4 within the Little Auburn part of the study site.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight and negative** and as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that the visual impact will lessen in the long term. The development does not break the treeline/ skyline from this viewpoint and is consistent with existing and emerging development of land in this area, such as the Clairville Lodge residential development, that is also visible from this viewpoint.

Visual 2: From Feltrim Road, looking north-east

Existing View:

From this location along Feltrim Road , the view is composed of a small agricultural field with a variable field boundary, including hedge and tree planting. In the middleground the buildings and commercial premises and their associated structures, work yard and parking, that are accessed off Streamstown Lane and Carey's Lane. The southern and western elevations of the dwellings within the Clairville Lodge development and the woodland and tree belts within and along the study site's boundaries are visible in the background.

Proposed Changes and Visual Impact:

While it is likely that the majority of proposed development will not be visible from this location, due to the presence of the existing residential buildings, woodlands and tree belts, it is anticipated that

the roof and upper floor of the proposed two-storey dwellings and apartment buildings in the Streamstown part of the site may be visible from this viewpoint. It is also anticipated that there will be partial views of the Apartment Blocks 4 and 5 within the Little Auburn part of the study site from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight and negative** and as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that the visual impact will lessen in the long term.

The development is consistent with existing and emerging development of land in this area, such as the Clairville Lodge residential development, that is visible from this viewpoint.

The development does not break the treeline/ skyline from this viewpoint and is consistent with existing and emerging development of land in this area, such as the Clairville Lodge residential development, that is also visible from this viewpoint.

Visual 3: From Feltrim Road, looking east

Existing View:

From this location along Feltrim Road the view is composed of the variable field boundary with some hedge planting in places. Arable fields dominate the view between this road and the properties that are accessed off Carey's Lane and within Auburn Grove. The trees within the field boundaries such as those that border the Abington development, the woodland and trees within the study site are visible in the background.

Proposed Changes and Visual Impact:

It is anticipated that while the majority of the proposed development will be screened from this location, the upper floors of the apartment building within Streamstown and the Apartment Blocks 4 and 5 within the Little Auburn parts of the study site may be visible.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **slight and negative**, with much of the impacts screened by the existing vegetation.

Operational Phase:

When the study lands are in the operational phase it is anticipated that the impact on views from this location will be **slight and negative** in the short term, as while the existing and proposed planting will assist in screening views of the lower parts of the proposed development, parts of the apartment buildings will likely still be visible against the skyline, from this location in the short to medium term. It is anticipated that as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that the visual impact will lessen to **not significant and negative** in the long term.

Visual 4: From Kettles Lane, near junction with Feltrim Road, looking east

Existing View:

At this junction of Kettles Lane with Feltrim Road, an agricultural shed and timber post and rail fence that forms the boundary between the arable fields and Feltrim Road at this location, are visible. From this location there are also partial views of the dwellings accessed off Carey's Lane and within Auburn Grove. Trees that are located within the field boundary that runs along the access road within the western part of the Abington development and the woodland and trees along the boundaries of the study site, are also visible from this location.

Proposed Changes and Visual Impact:

Due to the topography (land slopes upwards within this field, before it slopes back down towards the study site from this location) and the existing woodlands and trees that are located within and adjacent to the study site, it is likely that the proposed development will not be visible from this location.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **slight and negative/neutral**, with much of the impacts screened by the existing vegetation.

Operational Phase:

It is anticipated that views of the proposed development will not be possible or very limited from this location and the visual impact will be **imperceptible and neutral**.

View 5: From Castle Downs Road, looking south-west

Existing View:

From this location on Castle Down Road, the view is dominated by the tree and hedge planting associated with this road and the residential developments of Castle Heath and Talbot Avenue.

Proposed Changes and Visual Impact:

It is anticipated that the proposed development will not be visible from this location, due to the local topography and the existing developments in the foreground. During the construction and operational phases, it is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

View 6: From the junction of Swords Road & Gaybrook Lawns, looking south-west

Existing View:

This location permits views of the two-storey dwellings in this area and the tree planting, road lighting, bollards and signage associated with the junction of Gaybrook Lawns and Swords Road.

Proposed Changes and Visual Impact:

It is anticipated that the proposed development will not be visible from this location, due to the local topography and the existing developments in the foreground.

During the construction and operational phases, it is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 7: From pedestrian entrance to Malahide Demesne, at junction between Malahide Road and Swords Road, looking south-west

Existing View:

The Castle Oaks apartment complex and its associated boundary railing, tree and hedge planting dominate the view from this location, at a pedestrian entrance to Malahide Demesne. Two dwellings that are accessed off the Malahide Road are also visible in the background from this location.

Proposed Changes and Visual Impact:

It is anticipated that the proposed development will not be visible from this location, due to the local topography and the existing developments in the foreground. During the construction and operational phases, it is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral**.

View 8: From amenity pathway with Malahide Castle Demesne, looking west

Existing View:

From this location to the front of Malahide Castle, the view is dominated by the open parkland and the extensive woodland planting along Malahide Road.

Proposed Changes and Visual Impact:

Due to the local topography and the existing woodlands on both sides of the Malahide Road, it is anticipated that the proposed development will not be visible from this location.

During the construction and operational phases, it is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 9: From amenity pathway with Malahide Demesne, looking west

Visual 10: From amenity pathway with Malahide Demesne, looking west

Existing View:

Visual 9 – the open parkland dominates the view from this position along the amenity pathway within Malahide Demesne. The extensive woodland planting along the Malahide Road prevents views towards the study site.

Visual 10 – from this location along the amenity pathway within Malahide Demesne, the exercise station, the woodland that forms the boundary with Malahide Road, effectively screens much of the views towards the study site.

Proposed Changes and Visual Impact:

Visual 9 and 10 – due to the local topography and the existing woodlands on both sides of the Malahide Road, it is anticipated that the proposed development will not be visible from these locations.

Construction Phase:

During the construction phase, it is likely that the construction machinery, cranes and lighting will be screened by the existing woodlands from this location, resulting in the visual impact being **imperceptible and neutral.**

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral**.

Visual 11: From local road within the Abington development, looking south

Visual 15: From local road within the Abington development, looking south-east

Existing View:

The view from this location is of the local road, street lights, low wall and railing and hedge planting boundary of the dwellings within the Abington development. The boundary to the study site, composed of low hedge, railing, tree and hedge planting, is also visible from this viewpoint. The occasional gaps in the hedgerow permits glimpsed views to the interior of the study site.

Proposed Changes and Visual Impact:

While the existing trees and hedgerow screen much of the views into the study site, partial views of the roof and upper floor of a number of the proposed dwellings within the Auburn Park and Little Auburn parts of the study site, along the eastern boundary may be possible. It is intended that infill planting will take place where there are gaps in the hedgerow or where it is in poor condition and this will also assist in screening views of the proposed development from this road.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight/moderate and negative visual** impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/ moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

Visual 12: From Malahide Road, looking south-west

Existing View:

From this viewpoint, the main feature is the tree lined road approaching Malahide, which largely prevents views into Malahide Demesne to the east and into the study site to the west.

Proposed Changes and Visual Impact:

Due to the existing topography and the mature tree belt, it is anticipated that the proposed development will not be visible from this location.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **imperceptible/ not significant and neutral**, with much of the impacts screened by the existing vegetation.

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 13: From cul-de-sac within the Abington development, looking south-east

Existing View:

From this viewpoint, on the local road within the Abington development, near the north-west corner of study site, the low boundary wall and railing with hedge planting that forms the boundary of the dwelling dominates the foreground. Also visible from this location are the narrow roads, light posts and the tree and hedge planting that forms the boundary of the study site.

Proposed Changes and Visual Impact:

It is anticipated that there will be limited partial views through the existing boundary trees and hedgerow of the upper floors of the proposed apartment block and the dwellings that are to be located within the Auburn Park area of the study site. The existing trees and hedgerows screen much of the views into the study site from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **not significant and negative** and as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that the visual impact will lessen in the long term

Visual 14: From Malahide Road (R107), looking south-west

Existing View:

At this gap in the tree belt along Malahide Road, looking across a small paddock, dwellings accessed off Malahide Road and with Gaybrook Lawns are visible. The mature tree planting along the boundaries of these properties with the Abington development prevents views of the interior of the study site.

Proposed Changes and Visual Impact:

Due to the position of the existing dwellings and the tree belts along the Malahide Road and along the properties boundaries, it is likely that the proposed development will not be visible from this location.

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **imperceptible/ not significant and neutral**, with much of the impacts screened by the existing vegetation and buildings.

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral**.

Visual 16: From local road within the Abington development, looking south-west

Existing View:

The view from this position on the local road within the Abington development consists of the low evergreen hedge, railing and tree and hedgerow that forms the boundary with the study site. The occasional gaps in the hedgerow permit limited views to the interior of the site.

Proposed Changes and Visual Impact:

Due to the retention of the existing tree and hedgerow along the boundary, it is anticipated that may be only glimpsed views of the roof and upper floor the proposed dwellings within the Little Auburn area of the study site. It is intended that infill planting will take place where there are gaps in the hedgerow or where it is in poor condition and this will also assist in screening views of the proposed development from this road.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight/moderate** and negative visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/ moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

Visual 17: From local road within the Abington development, looking south-east

Existing View:

The timber post and rails fences, street lights and the railing with tree and hedge planting that forms the boundary with the study site, frame the view along this road within the Abington development. The mature trees within the dwellings access off this road and the Malahide Road are visible in the background.

Proposed Changes and Visual Impact:

It is anticipated that due to the existing trees and hedgerows along this boundary and the dwellings within Abington, the proposed development will not be visible from this location.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **imperceptible/ not significant and neutral,** with much of the impacts screened by the existing vegetation.

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 18: From local road within the Abington development, looking west

Existing View:

This viewpoint permits of the low wall and railing and hedge planting boundary of the dwelling within this part of the Abington development and the railing with mature tree planting and hedge that forms the study site's boundary in this location. Limited views into the interior of the study site are possible in the small gaps between the boundary trees.

Proposed Changes and Visual Impact:

It is anticipated that there will be limited, filtered views through the existing trees and hedgerow of the eastern elevations of proposed Apartment Block 4 and the dwellings to the north of the stream, within the Little Auburn area of the study site. The proposed tree planting and infill hedge planting is intended to assist in further screening of the proposed dwellings from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight/moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/ moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

Visual 19: From Back Road, looking north-west

Existing View:

This location permits views of the following:

- the boundary hedgerow and woodland associated with Malahide Demesne to the north
- road signage at the junction of the Back Road with the Malahide Road
- the existing mature tree planting to the south of the entrance and along the driveway up to Auburn House

Proposed Changes and Visual Impact:

From this location the main changes that will be visible (arising from the Auburn Park and Little Auburn development sites, not applicable to the Streamstown development) are:

- the removal of the existing directional signage,
- the installation of traffic lights and road markings
- the new access road off Malahide Road, which will serve the proposed development
- the removal of the existing trees to facilitate the construction of the proposed entrance and access road,
- the installation the proposed entrance signage/ sculptural element,
- the proposed entrance and access road boundary treatment, comprising an estate railing with hedge planting.

It is anticipated that the woodland within Malahide Demesne and the existing trees within the study site will prevent views of the proposed dwellings within the study site from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, but there will be visual impacts caused by the installation of the new entrance, from this location, resulting in a **slight/moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **not significant/ slight and negative** and as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that the visual impact will lessen to **not significant and negative/ neutral** in the long term.

Visual 20: From Malahide Road, looking north-east

Existing View:

The tree lined Malahide Road dominates and frames the views from this location, including the boundary hedge planting of the dwelling to the west and the timber post and rail boundary fence of the property to the east. In the background the wing wall of the entrance into Auburn House is also visible.

Proposed Changes and Visual Impact:

It is anticipated that apart from the visible changes due to new entrance road into the study site and the removal of the trees to facilitate its construction (arising from the Auburn Park and Little Auburn development sites, not applicable to the Streamstown development), the proposed development will

effectively be screened from views from this location, due to the existing tree planting along the boundary with Malahide Road and along the driveway up to Auburn House.

Construction Phase:

During the construction phase, it is likely that the construction machinery, cranes and lighting will be screened by the existing woodlands from this location, but due to the additional construction traffic that will be utilising this entrance, the resulting visual impact may be **slight and negative**.

Operational Phase:

It is anticipated that the proposed development apart from the new entrance, will not be visible from this location and therefore the visual impact will be **imperceptible/ slight and neutral**.

Visual 21: From Malahide Road, looking north-east

Visual 22: From Back Road at junction with Malahide Road, looking north-west

Visual 23: From Back Road at junction with Malahide Road, looking north-west

Existing View:

The location of these visual affords views towards the study site, comprising of:

- the pedestrian entrance, boundary walls and woodland associated with Malahide Demesne to the north-east;
- road signage at the junction of the Back Road with the Malahide Road
- the entrance walls and gates into Auburn House
- the existing mature tree planting either side of the entrance and along the driveway up to Auburn House

Proposed Changes and Visual Impact:

From this location the main changes that will be visible (arising from the Auburn Park and Little Auburn development sites, not applicable to the Streamstown development) are:

- the removal of the existing directional signage,
- the installation of traffic lights, traffic island and road markings
- the installation the proposed entrance signage/ sculptural element,
- the proposed entrance and access road boundary treatment, comprising an estate railing with hedge planting,
- the new access road off Malahide Road, which will serve the proposed development and
- the necessary trees that will need to be removed to facilitate the construction of the proposed entrance and access road

While the existing tree belt along Malahide Road, the trees along the existing driveway and the proposed tree planting will screen much of the views into the study site, it is possible that there will limited partial views of the proposed structures in the Little Auburn part of the study site.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/ moderate and negative** in the short term, however as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term

Visual 24: From Back Road at junction with Malahide Road, looking north-west

Visual 25: From Malahide Road at entrance to Auburn House, looking north-west

Visual 26: From Malahide Road, looking north-west

Existing View:

This series of viewpoints permits views towards the study site centred on the existing entrance to Auburn House. The tree belt that forms the boundary between the study site and Malahide Road are a dominant feature in these views. The entrance to Auburn House composed of walls, piers, two pedestrian and one vehicular gate are particularly evident in Visuals 21 and 22. In Visual 22, the entrance planting, stone boundary wall and woodland associated with Malahide Demesne are visible in the foreground.

Proposed Changes and Visual Impact:

While it is anticipated that the existing tree belt along the study land's boundary with the Malahide Road will prevent the majority of views of the proposed development from these locations, it is likely that there will be partial views of the upper floors of buildings located in the Little Auburn part of the study site.

This is due to the small gaps in the tree belt and the necessary removal of trees along the southern boundary due to decay or concerns regarding their stability along a public road and footpath. In the long term as the proposed infill tree planting – continues to mature it will further screen the proposed development from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight/moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight and negative** in the short term, however as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **not significant and negative** in the long term.

View 27: From Malahide Road, looking north-east

Existing View:

The mature tree belt that forms the boundary between the study site and Malahide Road and the woodland associated with Malahide Demesne are the dominant features in this view. The existing entrance walls associated with Auburn House are also visible from this location.

Proposed Changes and Visual Impact:

It is anticipated that the existing tree belt along Malahide Road and the proposed tree planting and woodland planting will screen the majority of views of the development from this location.

Construction Phase:

During the construction phase it is likely that there will be limited views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **not significant and negative** in the short term, however as the existing trees continue to mature and the proposed tree and woodland planting becomes more established it is anticipated that this impact will lessen to **not significant and neutral** in the long term.

Visual 28: From Malahide Road, looking south-west

Visual 29: From Malahide Road, looking south-west

Existing View:

A series of views, moving south towards the entrance of the proposed scheme. Main feature is the tree lined road approaching Malahide, which largely prevents views into Malahide Demesne to the east and into the study site to the west. The low wall entrance into Little Auburn is also visible from these viewpoints.

Proposed Changes and Visual Impact:

Due to the existing topography and the mature tree belt it is anticipated that there will be very limited views of the proposed development from these viewpoints A notable change from these viewpoints is the removal of the entrance walls into Little Auburn and the proposals to reinstate the ditch and

hedge and supplementary tree planting, to replicate the land either side of the existing entrance (arising from the Auburn Park and Little Auburn development sites, not applicable to the Streamstown development).

As shown in Visual 28, it is likely that this location will permit views of the amenity area, tree planting wildflower meadow that is proposed between the existing tree belt and the new access road.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **imperceptible/ not significant and neutral**, with much of the impacts screened by the existing vegetation.

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 30: From Streamstown Lane, near junction with Carey's Lane, looking north-east

Existing View:

From this location along Streamstown Lane looking north-west towards the study site, the boundary wall and railing and the amenity open space within the Clairville Lodge dominate the fore- and middle-ground. There are also partial views of the mature trees in the background from this location.

Proposed Changes and Visual Impact:

Due to the local topography and the existing vegetation along the boundaries and within the study site, it is anticipated that the proposed development will not be visible from this location.

Construction Phase:

Throughout the construction phase of this development construction cranes, lighting and additional construction traffic will possibly have **slight, negative** impact on views from this location.

Operational Phase:

It is anticipated that the proposed development will not be visible from this location and therefore the visual impact will be **imperceptible and neutral.**

Visual 31: From access road within Clairville Lodge development (east), looking north-west

Existing View:

The dwellings, road, boundary wall and amenity/ water detention basin within Clairville Lodge dominate the view from this location. There are partial views of the dwellings to the north and east of

the walled gardens that adjoin the study site. The mature trees within the study site and within the adjoining lands screen much of the views into the site.

Proposed Changes and Visual Impact:

While the existing trees and dwellings screen much of the views into the study site, it is anticipated that there may be limited partial views of the apartment block that is proposed within the Streamstown part of the study site.

Construction Phase:

During the construction phase it is likely that construction cranes, lighting and additional construction traffic will possibly have a **slight, negative** impact on views from this location.

Operational Phase:

During the operational phase it is anticipated that due the retention of the existing vegetation and the proposed planting measures there will be limited views of the proposed development from this location and the impact will be **not significant and neutral**, as it is consistent with the existing development of land in this area.

Visual 32: From within Clairville Lodge development (north), looking north

Existing View:

From this location with the Clairville Lodge development the cul-de-sac, dwellings and boundary wall dominate the fore-ground and the mature woodland and trees within the study site are visible in the background.

Proposed Changes and Visual Impact:

The proposed two-storey dwellings located along the south-west boundary of the Streamstown part of the study site and a small section of the upper floor of the proposed apartment building will be visible from this location. The proposed street tree planting can be seen through the gaps in the proposed dwellings.

Construction Phase:

Due to the anticipated presence of construction machinery, site hoarding, construction cranes and lighting during the construction phase of the development, the impact on views from this location will likely be **significant and negative**.

Operational Phase:

In the short term it is anticipated that the visual impact from this viewpoint will be **moderate-significant and negative**. However, the development is consistent with existing development of land in this area and it is likely that the visual impact will decrease in time as the proposed planting continues to mature, to **moderate and negative** in the long term.

Visual 33: From Carey's Lane, near entrance to Clairville Lodge, looking north-west

Existing View:

The dwellings and boundary walls, along both sides of Carey's Lane and the storage shed within the study site, are visible from this location. The boundary trees and woodland within the study site are also visible from this viewpoint.

Proposed Changes and Visual Impact:

It is intended that the existing tree (Tree Nr 1256) and lower vegetation will need to be removed to facilitate the vehicular and pedestrian entrance into the scheme off Carey's Lane.

It is anticipated that there will be partial views of the dwellings that are proposed within the most western part of the Streamstown area of the study site, beyond the proposed planting and the boundary wall of the Clairville Lodge development but will be partially screened by the proposed tree planting, from this location.

Construction Phase:

Due to the anticipated presence of construction machinery, site hoarding, construction cranes and lighting during the construction phase of the development, the impact on views from this location will likely be **moderate and negative.**

Operational Phase:

In the short term it is anticipated that the visual impact from this viewpoint will be **moderate and negative**. However, the development is consistent with existing and emerging development of land in this area and it is likely that the visual impact will decrease in time as the existing and proposed tree planting continues to mature, to **slight and negative** in the long term.

Visual 34: From Auburn Grove, looking east

Existing View:

From this location along Auburn Grove, views of the entrance and boundary walls of the dwellings adjoining the study site are permitted. The existing vegetation along this road and along the boundaries of the study site are also visible from this viewpoint.

Proposed Changes and Visual Impact:

It is anticipated that there will be partial views of the entrance and the western elevation of the dwellings within the western part of the Streamstown area of the study site from this location.

The existing trees and hedgerows along the adjoining properties boundaries will likely screen views into much of the site.

Construction Phase:

During the construction phase it is anticipated that the impact on views from this area will possibly be **moderate and negative**, due to the anticipated increase in construction vehicles, the presence of site hoarding, construction cranes and lighting.

Operational Phase:

The development is consistent with existing and emerging development of land in this area and the visual impact will decrease in time as the proposed and existing vegetation continues to mature, to **slight and negative** in the long term.

View 35: From intersection of the existing avenue and the proposed access road, looking north-east

Existing View:

From this location along the avenue leading to Auburn House, the mature tree lined avenue and with lighting dominates the view, preventing further views into the study site and into Little Auburn.

Proposed Changes and Visual Impact:

It is anticipated that the main changes that will be visible from this location will be:

- The proposed access road and pathway at the intersection with the existing avenue.
- The proposed estate railing, tree, woodland and hedge planting
- The proposed wayfinding signage and lighting
- Filtered views of the southern elevations of the dwellings within the Little Auburn part of the study site, through the existing and proposed tree planting.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

In the short term it is anticipated that the visual impact from this location will be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 36: From the field to the south of Little Auburn, looking north-east

Existing View:

The location of this viewpoint to the east of the existing avenue leading to Auburn House, permits views of Little Auburn and the mature tree belts along the avenue, the eastern boundary and the field boundary between Little Auburn and the front field of Auburn House.

Proposed Changes and Visual Impact:

The proposed development will require the demolition of the Little Auburn dwelling and the ornamental planting in the immediate vicinity of the building. It is anticipated that the main changes that will be visible from this location will be:

- The proposed access road, pathways and access to the pump station
- The proposed tree and woodland planting
- The proposed hedge planting to the pumping station
- Filtered views of the southern and western elevations of the dwellings within the Little Auburn part of the study site, through the proposed tree planting.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

In the short term it is anticipated that the visual impact from this location will be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 37: From the field to the south of Little Auburn, looking north

Existing View:

The location of this viewpoint to the east of the existing avenue leading to Auburn House, permits views of the Little Auburn dwelling and the mature trees along the avenue, the eastern boundary and the field boundary between Little Auburn and the front field of Auburn House.

Proposed Changes and Visual Impact:

The existing trees that line the avenue will be retained within the proposed development. It is anticipated that the main changes that will be noticeable from this location will be:

- The demolition of the Little Auburn dwelling and the ornamental planting in the immediate vicinity of the building, to facilitate the proposed development.
- The western elevations of the proposed Apartment Blocks 4 and 5 and the ornamental planting around the perimeter of the buildings, within the Little Auburn part of the study site..
- Boundary wall to the rear gardens of the dwellings within the Little Auburn part of the study site.
- The proposed parking bays and street tree planting along the access road.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

In the short term it is anticipated that the visual impact from this location will be **moderate and negative** in the short term, however as the proposed planting becomes more established it is anticipated that this impact will lessen to **slight-moderate and negative** in the long term.

View 38: From the field to the rear of Little Auburn, looking south-east

Existing View:

The location of this viewpoint to the south of the tree lined stream, affords views of the rear of the Little Auburn dwelling and the mature trees along the avenue.

Proposed Changes and Visual Impact:

The existing trees that line the avenue will be retained within the proposed development and it is anticipated that the main changes that will be noticeable from this location will be:

- The demolition of the Little Auburn dwelling and the ornamental planting in the immediate vicinity of the building, to facilitate the construction of the proposed development.
- The western elevations of the proposed Apartment Blocks 4 and 5 and the ornamental planting around the perimeter of the buildings within the Little Auburn part of the study site.
- Partial views of a proposed two storey dwelling within the southern part of the within the Little Auburn area of the study site.
- The proposed access road, pathway, lighting and street tree planting.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

In the short term it is anticipated that the visual impact from this location will be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight-moderate and negative** in the long term.

View 39: From within the study site – near the entrance gates along the existing avenue, looking north-west

Existing View:

From this location just inside the existing entrance to Auburn House the mature tree lined avenue and with lighting dominates the view, preventing further views into the study site and into Little Auburn.

Proposed Changes and Visual Impact:

It is anticipated that the main changes from this location will be:

- The new granite setts surface to the existing entrance and avenue (until just past the crossing the proposed access road)
- Removal of a several trees to facilitate the contraction of the proposed access road and services routes
- New access road, pathway and way-finding signage.
- Glimpsed views of the proposed structures within the within the Little Auburn part of the study site, in the background.
- Proposed tree and hedge planting

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

In the short term it is anticipated that the visual impact from this location will be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

Views 40 & 41: From within the study site – along the existing avenue looking north

Existing View:

From this location within the study site the mature tree lined avenue and lighting dominates the view preventing views into the adjoining fields and Little Auburn.

Proposed Changes and Visual Impact:

It is anticipated that the main visible changes from this location will be the resurfacing of the avenue and the entrance into the Belmont property. It is likely that there will be limited filtered views through the existing trees of the proposed Apartment Block 5 within the Little Auburn area of the study site.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **slight/moderate and negative** visual impact.

Operational Phase:

While it is likely that the majority of proposed development will not be visible from this location, due to the screening provided by the existing mature trees along the avenue and the proposed tree planting, it is likely that there will be glimpsed views of the proposed residential structures within the southern part of the study site. During the operational phase the impact on views from this location may be **slight and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **not significant/ slight and negative** in the long term.

View 42: From within the study site – at the bridge along the existing avenue, looking north-west

Existing View:

The view from this location along the existing avenue provides a view of bridge over the stream, the mature tree planting along the avenue and the stream and the boundary fence to the open field in the background.

Proposed Changes and Visual Impact:

In order to facilitate the construction of the access road to the southern courtyard buildings (within the Little Auburn part of the study site) and the additional flood attenuation area, it is anticipated that a number of trees and scrub vegetation will need to be removed in this area. It is likely that there will be views of these proposed courtyard buildings and access road from this location, through the existing trees that are to be retained and the specimen tree planting proposed for this area. The proposed railing and hedge planting to the south of these proposed dwellings will also be visible from this location.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 43: From existing avenue, near entrance to the Belmont property, looking north-west

Existing View:

From this location on the avenue, the entrance and buildings within the Belmont property, the tree lined approach to Auburn House and the fenced boundary to the front field are visible.

There are also glimpsed views of Auburn House through the trees in the background and the rooftops of a number of dwellings within the Abington residential development, to the north of the study site, are also visible in the distant background.

Proposed Changes and Visual Impact:

It is anticipated that the changes that will be most noticeable from this location will be:

- The removal of the existing trees and understory planting to facilitate the construction of the proposed pedestrian/ cycle route to the Streamstown part of the development.
- Glimpsed views of Auburn House will be screened by the proposed buildings within the Little Auburn part of the study site.
- Proposed hedge and tree planting along northern side of the avenue.
- Proposed tree and low planting along the southern side of the avenue.
- Filtered views through the proposed tree and hedge planting of the southern courtyard buildings within the Little Auburn part of the study site.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree and hedge planting becomes more established it is anticipated that this impact will lessen to **slight-moderate and negative** in the long term.

View 44: From the existing avenue, looking north-west

Existing View:

The view from this location along the existing avenue provides a view of the specimen tree planting along the avenue and to the front of Auburn House, which is also visible in the background. The field boundary fence, the front field and the eastern tree belt beyond are also visible from this location.

Proposed Changes and Visual Impact:

It is anticipated that the proposed estate railing that will divide the private lands associated with Auburn House from the rest of the development lands, will be visible from this location. It is likely that

this viewpoint will also afford glimpsed views through the existing and proposed tree planting of the boundary wall and the planting to the perimeter of the courtyard buildings proposed to the south of the front field (within the Little Auburn part of the study site).

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, and scaffolding, from this location, resulting in a **moderate and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 45: From the existing avenue, looking north

Existing View:

The location of this viewpoint along the existing avenue, affords views of Auburn House, the mature trees along the avenue and to the front of Auburn House and the field boundary fence.

Proposed Changes and Visual Impact:

It is anticipated that while the existing and proposed tree planting and ground modelling will screen the majority of views of the development from this location, there will likely be filtered views of courtyard buildings proposed to the north of the front field (within Little Auburn) and glimpsed views of the south-eastern elevation of Duplex Apartment Block 4 (within Auburn Park) and a number of dwellings along the access road (within Little Auburn).

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, cranes and scaffolding, resulting in a **slight/ moderate and negative** visual impact from this location.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 46: From south of Auburn House, looking north

Existing View:

The location of this viewpoint to the south of Auburn House, affords views of the house, the ornamental planting around the perimeter of the house, the access drive, the stable block located to the rear of the house and the mature trees within the woodland.

Proposed Changes and Visual Impact:

It is anticipated that due to the local topography, the existing structures and the trees located to the west and south of Auburn House, the proposed development will be screened from this viewpoint.

The proposed additional planting and seating area, to enhance the private external amenity space of the dwelling will be visible from this location.

Construction Phase:

During the construction phase, while it is likely that the majority of the construction machinery and lighting will not be visible from this location, portions of the cranes that will be required may be visible and therefore the impact may be **imperceptible/ not significant and neutral,** with much of the impacts screened by the existing vegetation.

Operational Phase:

It is anticipated that the visual impact will be **imperceptible and neutral** from this location.

View 47: From the front steps of Auburn House, looking north

Existing View:

The location of this viewpoint on the steps to the front of Auburn House, affords views of the eastern elevation of the house, the gravel area and ornamental planting to the front of the house and the woodland to the north of the house. The boundary fence that divides the main house from the pastoral fields is also visible in the background from this location.

Proposed Changes and Visual Impact:

It is anticipated that there will be filtered views through the existing and proposed trees, of the courtyard buildings proposed to the north of the front field(within Little Auburn). The proposed estate railing and amenity pathway linking the front field to the back field, where the Auburn Park development is proposed, will also be visible from this location. Due to the local topography and the existing mature woodland planting to the north of Auburn House, it is expected that the proposed structures within the Auburn Park of the study site, will not be visible from this location.

Construction Phase:

During the construction phase the impact on views from this area will be **moderate and negative**, due to the anticipated increase in construction vehicles, the presence of site hoarding, construction cranes, lighting and works.

Operational Phase:

During the operational phase the impact on views from this location may be **slight/moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 48: From the front steps of Auburn House, looking north-west

Existing View:

From this viewpoint on the steps to the front of Auburn House, the ornamental structures, gravel apron, lawn, planting and water feature are visible in the foreground.

The specimen tree planting, boundary fence that separates the lawn from the pastoral front field is visible in the middle-ground and the mature tree belt that forms the eastern boundary of the study site is a visible in the background.

Proposed Changes and Visual Impact:

The existing water feature has been removed to open up the view and restore to its original arrangement and the existing trees within the front lawn have been retained to frame the view from main entrance to Auburn House.

The estate railing and the amenity pathway that are proposed within the central open space will be visible from this location.

It is anticipated that there will be glimpsed views of the proposed courtyard dwellings to the north of the front field (within Little Auburn), however it intended that the proposed ground modelling and tree planting will assist in screening the majority of the views of the proposed access road and structures.

The tree planting and wildflower meadow areas that are proposed within the central open space and along the eastern boundary will also be visible from this location.

Construction Phase:

During the construction phase the impact on views from this area will be **significant and negative**, due to the anticipated increase in construction vehicles, the presence of site hoarding, construction cranes, lighting and works, including the installation of the detention basin in the central open space, which will be taking place onsite.

Operational Phase:

In the short term it is anticipated that the visual impact from this viewpoint will be **moderate and negative,** due to the intensification of land use, as it changes from pastoral and parkland to residential development and amenity areas and the filtered views of the proposed northern courtyard dwellings from this location.

However, the proposed grouping of large specimen trees and gently undulating landscape with wildflower meadow will assist in retaining the parkland character and framing the vista towards Malahide Demesne. When the study site is in the operational phase and the proposed vegetation matures, it is anticipated that the impact on views from this location would lessen to **slight and negative** in the long term.

View 49: From the front of Auburn House, looking north-west

Existing View:

The location of this viewpoint to the front of Auburn House, affords views of the eastern elevation of the billiard room/ ballroom attached to the northern part of the main house, the gravel apron and the ornamental planting to the front of the house and the woodland to the north and west of the house. The boundary fence that divides the main house from the pastoral fields is also visible from this location.

Proposed Changes and Visual Impact:

Due to the local topography and the existing mature woodland planting to the north of Auburn House, it is expected that the proposed structures within the Auburn Park development will not be visible from this location.

The proposed estate railing, wildflower meadow areas and the amenity pathways linking the front field to the proposed northern courtyard dwellings (Little Auburn) and the Auburn Park development, will be visible from this location.

Construction Phase:

During the construction phase the impact on views from this area will be **slight and negative**, due to the possible filtered views of construction vehicles, construction cranes, lighting and works.

Operational Phase:

During the operational phase the impact on views from this location may be **slight and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **not significant and negative** in the long term.

View 50: From within the study site – to the front of Auburn House, looking north-east

Existing View:

From this location at the front entrance of Auburn House looking north-west, the view is dominated by the existing gravelled entrance, lighting and the decorative elements to the steps and the water feature in the foreground. This location also permits views of the mature specimen trees and fencing to the front field, the woodland planting to the north of Auburn House and tree planting along the boundary of the study site, in the background.

Proposed Changes and Visual Impact:

It is anticipated that there will be filtered views through the existing mature trees and the proposed planting of the new northern courtyard buildings and the two-storey dwellings to the east of the new access road (Little Auburn development). From this location it is likely that the new estate railing, ground modelling, wildflower meadow and the specimen tree planting proposed for the front field will be visible.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding, lighting and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

Visual 51: From front of Auburn House, looking east

(Vista as identified within Streamstown LAP)

Existing View:

This location at the front entrance to Auburn House permits views of the front lawn, pathway, steps, ornamental features and water feature in the foreground.

The fence that separates the lawn from the grazing fields, the clusters of trees and specimen tree planting, are visible in the middle-ground.

The mature trees along the study site's boundary and the woodland within Malahide Demesne, form the backdrop to this viewpoint.

Proposed Changes and Visual Impact:

It is anticipated that there will be views of the proposed courtyard dwellings, north and south of the central open space and the dwellings to the east of the access road from this location (all within the Little Auburn development). It is intended that the proposed ground modelling and tree planting will assist in screening some of the views of the proposed access road and structures. The existing water feature has been removed to open up the view and restore to its original arrangement and the existing trees within the front lawn have been retained to frame the view from main entrance to Auburn House. It is also intended that there will be views of the tops of the boundary tree belt and woodland within Malahide Demesne, through the proposed public open space along the eastern boundary and behind the proposed structures from this viewpoint.

Construction Phase:

During the construction phase the impact on views from this area will be **significant and negative**, due to the anticipated increase in construction vehicles, the presence of site hoarding, construction cranes, lighting and works, including the installation of the detention basin in the central open space, which will be taking place onsite.

Operational Phase:

In the short term it is anticipated that the visual impact from this viewpoint will be **moderate and negative**, due to the following:

- Intensification of land use, as it changes from pastoral and parkland to residential development and amenity areas, the land is however zoned for residential development, so this will be an impact of any residential development within these lands.
- Filtered views of the proposed courtyard dwellings to the north and south of the front field and the two-storey dwellings along the access road, are anticipated from this location.
- The existing trees are visible in the foreground and the boundary trees and woodland to the east are still visible in the background.
- The proposed grouping of large specimen trees and gently undulating landscape with wildflower meadow will assist in retaining the parkland character and framing the vista towards the Malahide Demesne.

When the study site is in the operational phase and the proposed vegetation matures, it is anticipated that the impact on views from this location would lessen to **slight and negative** in the long term.

Visual 52: From front of Auburn House, looking south-east

Existing View:

Similar to Visual 6, but this viewpoint also permits views of the tree lined driveway up to Auburn House.

Proposed Changes and Visual Impact:

It is anticipated that there will be filtered views of the proposed courtyard dwellings (within Little Auburn development) to the south of the central open space from this location. It is intended that the proposed ground modelling with wildflower meadow and tree planting will assist in screening some

of the views of the proposed access road and structures. The existing water feature has been removed to open up the view and restore to its original arrangement and the existing trees within the front lawn have been retained to frame the view from main entrance to Auburn House. It is also intended that there will be views of the boundary tree belt and woodland within Malahide Demesne, behind the proposed structures and through the public open space along the eastern boundary, from this viewpoint. The trees along the driveway will also be retained as part of the proposed development.

Construction Phase:

During the construction phase the impact on views from this area will be **significant and negative**, due to the anticipated increase in construction vehicles, the presence of site hoarding, construction cranes, lighting and works, including the installation of the detention basin in the central open space, which will be taking place onsite.

Operational Phase:

In the short term it is anticipated that the visual impact from this viewpoint will be **moderate and negative,** due to the following:

- Intensification of land use, as it changes from pastoral and parkland to suburban development with amenity areas, clearly evident at this location, the land is however zoned for residential development, so this will be an impact of any residential development within these lands.
- Filtered views of the proposed courtyard dwellings from this location.
- The existing trees are visible in the foreground and the boundary trees and woodland to the east are still visible in the background.
- The proposed grouping of specimen trees and gently undulating landscape with wildflower meadow will assist in retaining the parkland character and framing the vista towards the Malahide Demesne.
- Retention of the narrow tree lined driveway up to Auburn House – retain character and provides screening.

When the study site is in the operational phase and the proposed vegetation matures, it is anticipated that the impact on views from this location would lessen to **slight and negative** in the long term.

View 53: From the field-gate between the back-field and the front-field, looking south-east

Existing View:

This location at the gate in the field boundary, which is composed of mature trees and hedgerow, affords views of the front field and mature trees that form the boundary between the study site and the Abington residential development. Filtered views of a number of dwellings within Abington are possible from this viewpoint.

Proposed Changes and Visual Impact:

It is anticipated that the changes that will be most noticeable from this location will be:

- The northern and western elevations of the northern courtyard buildings (Little Auburn).
- Glimpsed views of the proposed dwellings along the access road (Little Auburn) and the upper floor of the southern courtyard buildings in the background.
- Proposed ornamental planting around the perimeter of the courtyard buildings.
- Proposed amenity pathway linking the Auburn Park area of the development to the access road and the central open space.
- Proposed ground modelling and tree planting along to open spaces

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continue to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight-moderate and negative** in the long term.

View 54: From within the study site – near the proposed access road within the front field, looking west towards Auburn House

Existing View:

From this location within the field to the front of Auburn House, the existing house and associated entrance steps, decorative elements are visible, with the large specimen trees and the mature trees along the avenue to the foreground and the woodland to the rear of the house, in the background.

Proposed Changes and Visual Impact:

It is anticipated that Auburn House will remain the focal point of views from this location and the proposed estate railing, ground modelling, wildflower meadow and specimen tree planting will be visible in the fore-middle ground. It is likely that there will be filtered views of the courtyard buildings proposed to the north and south of the front field (Little Auburn), where it is intended that ground modelling and large specimen tree planting will assist in screening these structures. It is anticipated that the existing woodland to the north of Auburn House will screen the majority of the Auburn Park development from this location, apart from partial glimpsed views of the upper floor of Apartment Block 2 (Auburn Park).

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 55: From within front field of Auburn House, looking west

Existing View:

The view from this location within the field to the front of Auburn House provides a view of the existing house, the large specimen trees to the front of the house, the mature trees along the avenue and within the field boundaries and the woodland to the rear of the house, is visible in the background.

Proposed Changes and Visual Impact:

It is anticipated that Auburn House will remain the focal point of views from this location and the proposed ground modelling, wildflower meadow and specimen tree planting will be visible in the fore-middle ground. It is likely that there will be filtered views of the courtyard buildings proposed to the north and south of the front field and the dwellings along the access road (Little Auburn development), where it is intended that the ground modelling and specimen tree planting will assist in screening these structures. It is intended that the existing woodland to the north of Auburn House, the mature trees in the existing field boundary in combination with the proposed planting will screen the majority of the Auburn Park development. However there may be limited filtered views of the upper floor of duplex apartment blocks within the Auburn Park development in the background.

Apartment Block 1-3 from this location.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight and negative** in the long term.

View 56: From within the front field of Auburn House, looking west

Existing View:

The view from this location within the field to the front of Auburn House provides a view of the existing house, the large specimen trees to the front of the house, the mature trees along the avenue and within the field boundaries and the woodland to the rear of the house, is also visible in the background.

Proposed Changes and Visual Impact:

It is anticipated that Auburn House will remain the focal point of views from this location and the proposed ground modelling, wildflower meadow and specimen tree planting will also be visible. It is anticipated that there will be views of the eastern elevation of the southern courtyard buildings (Little Auburn). It is also likely that there will be filtered views through the proposed tree planting of the northern elevation of southern courtyard buildings and the southern elevation of the northern courtyard buildings (Little Auburn).

It is also anticipated that there will be partial views of the upper floors of Apartment Blocks 2 and 3 (Auburn Park) in the background, with the existing woodland to the north of Auburn House and the proposed specimen tree planting on the ground modelling assisting in screening views of these proposed structures.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight-moderate and negative** in the long term.

View 57: From within the front field of Auburn House, looking south-west

Existing View:

The location of this viewpoint within the front field, permits views of the tree belt that borders the stream, Auburn House and the woodland that surrounds the house.

Proposed Changes and Visual Impact:

It is intended that the existing mature trees that are located along the field boundary will be retained, except for those that are to be removed to allow for the construction of the access road. It is anticipated that the changes that will be most noticeable from this location will be:

- The proposed access road and amenity pathways.
- Views of the southern elevation and partial views of the proposed southern courtyard buildings (Little Auburn).
- The proposed ground modelling and tree planting.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a significant and negative visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate/ significant and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **moderate and negative** in the medium-long term.

View 58: From the front field within the study site – along the proposed amenity pathway, looking west

Existing View:

From this location within the field to the front of Auburn House, the existing house and the associated entrance steps and fencing, enclosed by the large specimen trees, the mature trees along the avenue and the woodland that surrounds the house are visible in the background.

Proposed Changes and Visual Impact:

From this location along the proposed amenity pathway within the front field it is anticipated that Auburn House will remain a focal point. It is anticipated that the proposed pathway, seating, ground modelling, wildflower meadow and specimen tree planting will dominate the fore-middle ground. It is likely that there will be filtered views of the courtyard buildings proposed to the north of the front field and the dwellings along the access road (Little Auburn), where it is intended that ground modelling, shrub and large specimen tree planting will assist in screening these structures. It is also anticipated that there will be partial views of the upper floors of Apartment Blocks 2 and 3 (Auburn Park) in the background, with the existing woodland to the north of Auburn House and the proposed specimen tree planting on ground modelling assisting in screening views of these proposed structures.

Construction Phase:

During the construction phase it is likely that there will be views of the construction machinery, lighting, scaffolding and cranes within the study site, from this location, resulting in a **significant and negative** visual impact.

Operational Phase:

During the operational phase the impact on views from this location may be **moderate/ significant and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **slight/ moderate and negative** in the medium-long term.

View 59: From the northern entrance to the walled garden, looking south

Existing View:

This location at the existing gate into walled garden permits views of the mature trees within the northern section of the walled garden.

Proposed Changes and Visual Impact:

It is anticipated that the main changes that will be noticeable from this location will be:

- The formalised pathway, that follows the existing informal pedestrian route through the walled garden.
- The play equipment and safety surface that are proposed within the northern section of the walled garden.
- Filtered views of the northern and eastern elevation of the Apartment Block 1 within the Streamstown development.

Construction Phase:

During the construction phase it is likely that there will be views of the construction activities required to deliver the playground and the amenity pathway within the walled garden and glimpsed views of the construction machinery, cranes and scaffolding associated with proposed Apartment Block 7, resulting in a **slight-moderate and negative** visual impact from this location.

Operational Phase:

During the operational phase the impact on views from this location may be **slight-moderate and negative** in the short term, however as the existing trees continues to mature and the proposed tree planting becomes more established it is anticipated that this impact will lessen to **not significant - slight and negative** in the long term.

11.5.4 Cumulative Impacts

There is an existing residential development (Clairville Lodge) located to the south west of the study site and the low density Abington development to the north and west of the study site. Cumulatively these developments together with the proposed developments (Streamstown, Auburn Park and Little Auburn), in the absence of any mitigation measures have the potential to have a **slight/moderate and negative** impact on the character and views of the landscape, particularly from the south west (including Carey's Lane and Streamstown Lane) due to the intensification of land use, as it changes from agricultural/ recreational to suburban development with its associated structures and infrastructural works. However, if the proposed mitigation measures proposed as part of this development, are fully implemented:

- The proposed planting will provide an attractive visual backdrop and assist in screening this development
- The Woodland Management Plan, if fully implemented will address the possible decline of the existing woodland and tree belts, through the necessary tree works, replacement and infill tree planting, which will secure the extensive tree cover in this area into the future.
- Reinstate historical field boundaries through replanting and strengthen existing hedgerows that are in poor condition

Due to the existing zoning objectives for these lands, infrastructural and residential development will take place within the study site and therefore there will be some degree of negative impact on the views towards these lands and on the landscape, as it changes from agricultural/ recreational to suburban in character. It is anticipated that once the mitigation measures that are proposed within this development are implemented, the cumulative impact on the landscape and views from the surrounding areas will be reduced to **slight and negative,** and their visual impact will continue to lessen as the planting proposals establish and mature.

11.5.5 Do Nothing Scenario

If this particular development is not undertaken it is likely that the land will continue in its current use, as private dwelling within recreational/ agricultural lands.

The lands within which the study site is located are zoned for residential development and it is likely that some form of residential development will take place on this site in the near future.

11.6 Mitigation Measures

Consideration was given to the avoidance of impacts wherever possible during the design of the proposed scheme. However, as with any development some degree of impact is inevitable and wherever possible measures have been proposed to mitigate the adverse nature of these impacts.

11.6.1 Construction Phase:

It is proposed that careful attention will be paid to avoiding any potentially adverse construction-related effects on the adjacent residences and the wildlife associated with the estuaries wetlands. Operating a well-managed, organised and planned construction site, with adequate control of construction traffic and working activity, is key to avoiding/minimising such impacts. In addition, any lighting required during the construction phase should be located sensitively to avoid unnecessary light spill into the surrounding residential areas and into the woodlands.

The construction works and the habitat protection measures will be carried out in accordance with measures outlined by the project ecologist and FCC.

11.6.2 Operational Phase:

The careful and considered approach to the layout of the proposed development is to minimise negative visual impact both locally and from the wider surrounding area. The landscape strategy below details the landscape proposals that will assist in mitigating the landscape and visual impacts of

the proposed development: refer to landscape drawings and Landscape Development Reports. The key objectives included:

- Retention and protection of the vegetation along existing field boundaries where possible.
    - This helps to retain a mature, established character to the site and provide a unifying, cohesive landscape framework that relates it to the surrounding landscape and its historical context, as well as being of ecological benefit.
    - Generally this will involve retention of mature good quality trees within the woodlands, tree belts and hedgerows, pruning and tiding of the retained hedgerow and replanting where the hedgerow is of poorer quality (as outlined in the Arboricultural Reports).
    - The design of the development has, where possible, followed the pattern of exiting field boundaries to ensure the retention of the vegetation where possible and to retain the historical patterns of the landscape.
- Integration of the development into the surrounding landscape, minimising landscape and visual impact in particular upon nearby residential dwellings, from Malahide Road and from Malahide Demesne.
    - This is largely to be achieved by an extensive planting programme within the site and along the site boundaries and working with the existing topography of the site as much as possible.
- Roadway lighting and lighting of cycle/ pedestrian walkways will be by means of high quality, modern standing fixtures. They will include full cut-off (FCO) and energy efficient lighting where practicable to reduce the impacts of light pollution on the surrounding area and sky.

Introduction of usable amenity spaces, as described within the Landscape Development Reports and indicated on landscape drawings and which will be planted with appropriate species as listed in the planting specifications within these reports. The planting proposals within the scheme will be employed to:

- assist in the successful integration of the proposed scheme into its landscape setting
- structured native tree planting is proposed within the spaces and along the new main central spine road which links into the amenity spaces.
- create visual interest and a sense of place
- act as a buffer and assist in partially screening and filtering views of the proposed development from the surrounding area e.g. adjoining residential areas, Malahide Road
- assist in defining areas and reinforcing the character of the various spaces
- provide visually attractive spaces for future residents and the local community to relax, move and/ or socialise within
- open lawn and grassland meadows are proposed throughout the public spaces which provide space for informal play and passive recreation.
- provide a sense of enclosure at the transitions between public areas to communal areas and the proposed buildings, while also permitting passive surveillance of the open space areas
- compensate for any loss/ enhance biodiversity benefits with an emphasis on pollinator friendly plant species.

11.7 Residual Impacts

Given the planning policy for the area, development of this site is inevitable, and it is likely that any proposed viable development will give rise to impacts of a similar nature. While none of the proposed measures, as discussed in the previous section, can fully mitigate against the intensification of land use, as it changes from recreational/ agricultural land into a residential development, the proposals will be of benefit both locally and to the wider surrounding area by:

- Future proofing the woodlands and tree belts thought the implementation of the woodland management plan as outlined within the Arboricultural Report.
- Providing recreational amenities for future residents and the public through the creation of the public open space and access to the existing woodlands.

Whilst it is inevitable that there will be some negative impacts arising from this development, it's considered that the benefits outweigh the negative aspects of the proposal, resulting in the potential for **slight and negative/neutral** residual impacts.

11.8 Monitoring

Monitoring, particularly during construction phase will be on an ongoing basis and will be crucial at certain stages such as:

- During site establishment stage– prior to any works taking place, clearly identify trees and hedgerows that are to be retained and protected – ensuring tree protection measures are then place. Clearly identify trees and hedgerows that are to be removed.
- During site excavation stage – ensure existing vegetation is being adequately protected and that topsoil is being correctly stripped and stored for landscape reinstatement
- During construction stage: ensure that landscape proposals are being implemented correctly
- Post-construction stage: periodic visits will be required to ensure that any defects that may occur are rectified, that the landscape proposals are successfully establishing and being correctly maintained.

11.9 References

The following documents were referred to in relation to planning policies, objectives, statutory designations, context and visualisation in respect of the proposed site and the surrounding area:

- Fingal Development Plan 2017-2023
- Draft Fingal Development Plan 2023-2029
- Streamstown Local Area Plan 2009
- Aerial photography
- Photomontages prepared by 3D Design Bureau
- Arboricultural Survey & Report carried out by The Tree File Ltd, 2022
- Historical Landscape Report prepared by The Big Space, 2022
- Conservation Report prepared by Sheehan & Barry, 2022
- 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)

12.0 MATERIAL ASSETS – BUILT ENVIRONMENT UTILITIES & WASTE

12.1 Introduction

This Chapter has been prepared by Downey Planning in conjunction with Waterman Moylan Consulting Engineers and describes the material assets – Utilities & Waste, that are potentially impacted by the proposed Project at Auburn. Material assets are resources that are valued and intrinsic to the site of the proposed Project and surrounding environs. Material assets may be of either natural or human origin and the value may arise for economic or cultural reasons.

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

The EPA Guidelines (Draft 2017) state that:

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

Given the importance of Archaeological and Cultural Heritage and noting established EIA best practice within Ireland, the Archaeological and Cultural Heritage has been comprehensively considered and assessed as a standalone chapter within this EIAR. It is also noted that an Architectural Impact Assessment has also been prepared by Sheehan and Barry Conservation Architects under a separate report submitted as part of this application. For further information in this regard, please refer to Chapter 14. In addition, water and road infrastructure have been assessed in Chapter 7 and Chapter 11 respectively by Waterman Moylan Consulting Engineers, whilst land/soils/geology have been assessed in Chapter 6 by Waterman Moylan Consulting Engineers.

A site-specific preliminary Construction and Demolition Waste Management Plan (C&DWMP) has been prepared by Waterman Moylan Consulting Engineers to deal with waste generation during the construction phase of each of the proposed Projects and is included as part of the application packs. This document was prepared in accordance with best practice guidelines. Operational waste management will be managed by the management companies on site and the appointed licenced waste contractor which will ensure the sustainable management of domestic and commercial waste arising from the development in accordance with legislative requirements and best practice standards.

12.2 Study Methodology

12.2.1 Desk Study

This chapter has been prepared in accordance with the requirements of the following statutory documents which were consulted in the course of the study:

- 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, Advice notes for preparing Environmental Impact Statements (September 2015);
- EPA, Guidelines on the Information to be contained in Environmental Impact Assessment Reports (August 2017)
- Circular Letter Pl 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)
- Waste Management Acts 1996 -2001 and associated Regulations
- Protection of the Environment Act 2003 (as amended)
- Litter Pollution Act 1997
- Eastern-Midlands Region (EMR) Waste Management Plan
- Waste Management: Changing Our Ways (1998)
- Preventing and Recycling Waste: Delivering Change (2002)
- Taking Stock & Moving Forward (2004)
- National Strategy on Biodegradable Waste Management (2006)
- A Resource Opportunity Waste Management Policy in Ireland (2012)

The study was also informed by numerous site visits over the course of topographical surveying of the application site, the sourcing of utility information/records from the relevant service providers, and an analysis of the resources consumed, and an estimation of waste generated by the proposed Project at both the construction and operational phases.

12.2.2 Rating of Impacts

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

12.3 Baseline Environment

12.3.1 Site Location and Context

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 cumulative 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. Clairveille Lodge to the 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 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.

12.3.2 Ownership and Access

The lands subject to the applications are within the ownership of the applicant, Kinwest Limited, with the exception of the public roads, which are under the control of Fingal County Council and who have provided the necessary letter of consent.

Access to the subject development is currently from The Dublin Road to the east. This road connects Malahide with Dublin City. Carey's Lane at the south west of the site also connects to the site.

A Traffic and Transport Assessment has been prepared by Waterman Moylan Consulting Engineers and is submitted as part of the planning application for the proposed Project while the Transportation chapter of this EIAR also deals with this area.

12.3.3 Electricity, Gas and Telecommunications

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

Based on the information received from ESB Networks (ESBN), the subject lands are serviced by existing ESB cables with overhead lines connecting into the existing properties via underground lines that are outside of the subject site. There are no supply issues envisaged.

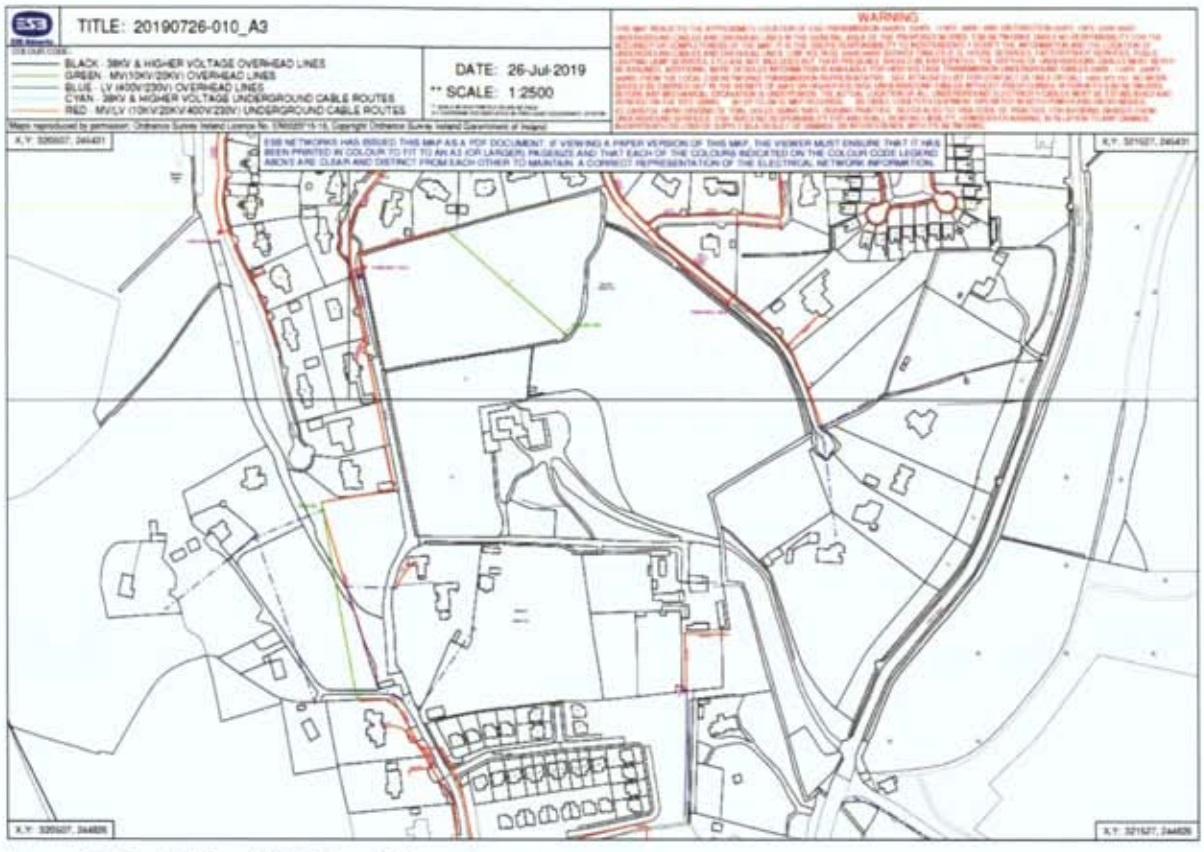

Figure. 12.1 – Existing ESB Network Layout

There is an existing Gas network in the Malahide Road to the east of the site as well as in Abington to the north.

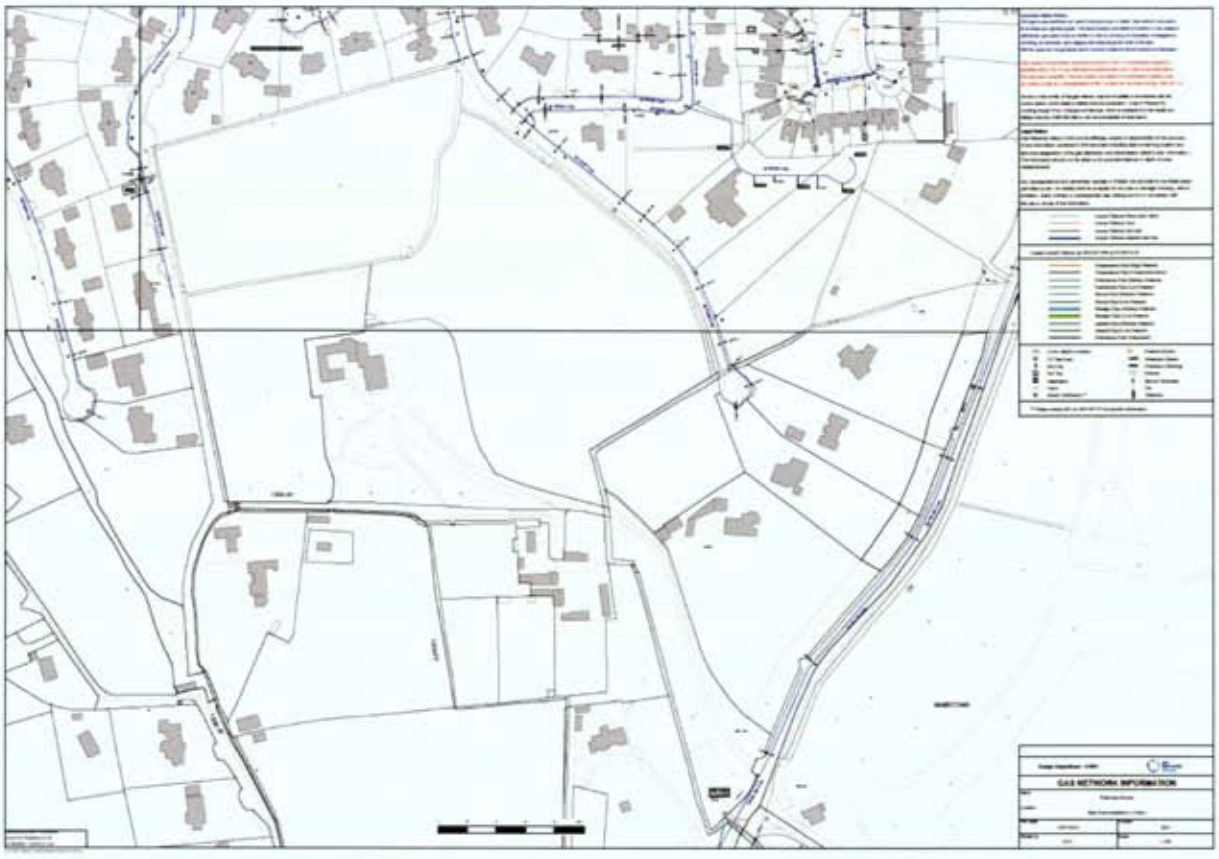

Figure 12.2 – Existing Gas Network Layout

In terms of telecommunications, it is known that Eir currently serves the site via the Malahide Road at the east and there is also a network in Abington to the north and also at Clairville to the south.

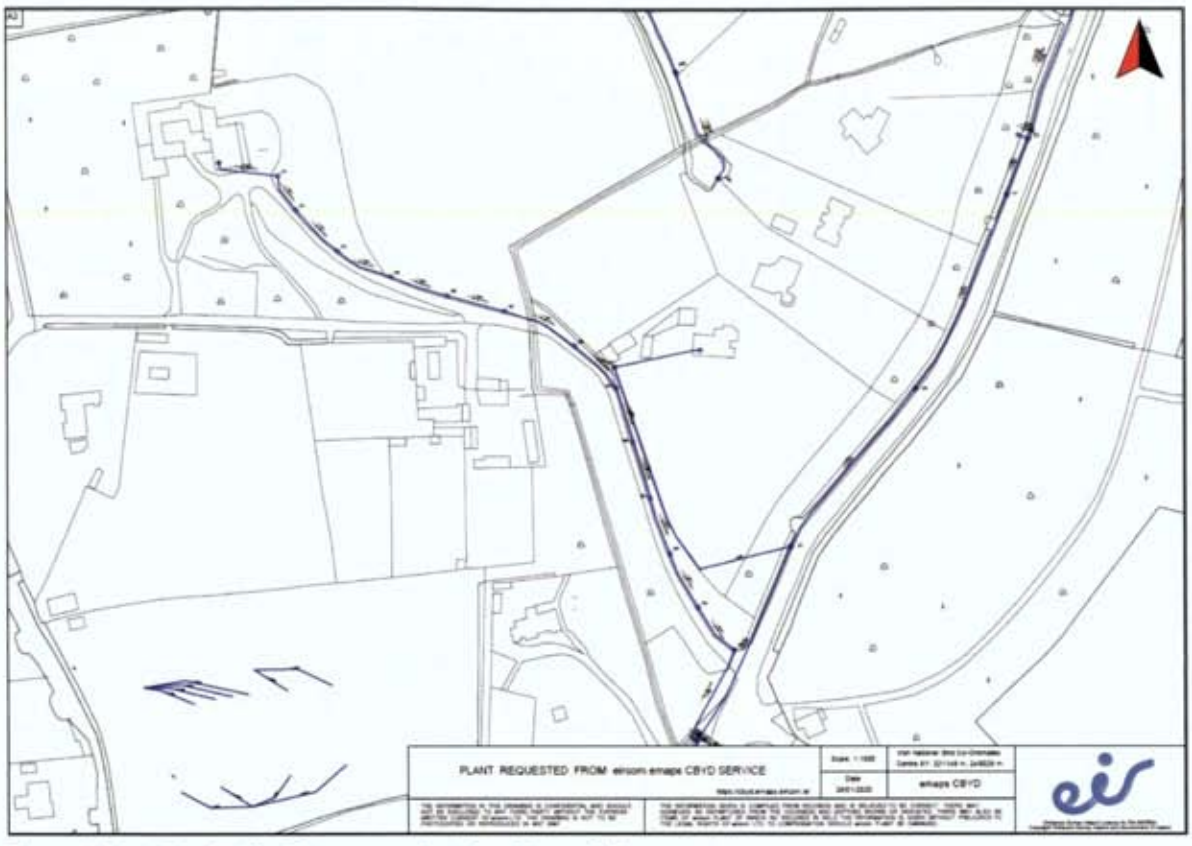

Figure 12.3 – Existing Eir Telecommunications Network Layout

12.3.5 Waste Management

In terms of waste management, the receiving environment is defined by Fingal County Council as the Local Authority with responsibility for setting standards and targets and for monitoring/regulating waste management activities in the area, as set out by the management plan for the region i.e., the EMRWMP 2015-2021. The Fingal County Development Plan 2017-2023 sets out these policies and objectives regarding waste management. In addition, waste operators already service the area as there are existing residential properties at the subject lands.

12.4 Potential Impact of the Proposed Project

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

12.4.1 Construction Phase

Site Location and Context

The Construction phase will likely have a temporary impact on the existing settlement in the vicinity of the subject lands. There may also be some slight and temporary impacts to the existing population which may arise during the construction phase, refer to Chapter 4 (population and human health), Chapter 8 (air quality), Chapter 9 (noise and vibration) and Chapter 10 (climate) for further information.

Ownership and Access

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

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

It is estimated that 75% of construction traffic will come from M50 / Swords and 25% from city centre / Baldoyle direction. Delivery trucks will be instructed to access the site via the Malahide Road. Flag men shall operate to ensure safe access and egress of HGV's. It is likely that construction will have a negligible impact on pedestrian and cycle infrastructure. It is proposed that a Construction Management Plan (CMP) would be prepared by the appointed contractor in order to minimise the potential impact of the construction phase of the proposed development on the safety and amenity of other users of the public road.

The proposal will also involve the provision of a new foul water line along Back Road and Kinsealy Lane, under the road, which is in the charge of Fingal County Council. This will involve a temporary dig of the road and result in some traffic restrictions on a temporary basis. The impact of this would be temporary and slight.

Electricity, Gas and Telecommunications

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

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

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

Waste Management

The proposed Project will generate a range of waste materials during the excavation and construction phase as outlined in Waterman Moylan's Construction and Demolition Waste Management Plan that

is prepared under separate cover as part of the planning application. Typical municipal waste will also be generated by construction works on sites such as food waste. Waste materials will be stored temporarily on site until such time as collection takes place by a licenced waste contractor. Dedicated, easily accessible locations for collection will be clearly identified across the construction sites.

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

12.4.2 Operational Phase

Site Location and Context

The proposed development will provide a total of 368 no. new dwellings (369 when including the existing Auburn House) along with ancillary residential facilities and 1 no. childcare facility. The development also includes car parking, bicycle parking, landscaping including playgrounds, and public open space parks. The proposed Project will deliver this mixed-use development on appropriately zoned lands in accordance with the pertaining land-use zoning designations.

Ownership and Access

The operational phase of the proposed Project will result in increased traffic volumes to the local road network, primarily the Malahide Road. A Traffic and Transport Assessment has been prepared by Waterman Moylan Consulting Engineers and is submitted as part of the planning application for the proposed Project. Please refer to Chapter 13 (transport) for further information in this regard.

Electricity, Gas and Telecommunications

Electricity will be required during the operational phase. In conjunction with the ESB, the provision of supply will be facilitated. The proposed Project has been designed in accordance with capacity calculations and loadings to meet the requirements of the development. This will result in increased demand for electricity in the area. The potential impact from the operational phase is likely to be slight and long term.

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

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

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

Waste Management

Given the nature of the proposed Project i.e., a residential development comprising 368 no. new residential units and 1 no. childcare facility, waste materials during the operational phase will be generated. As Malahide is an established suburb of Dublin City, an existing network of waste collection, treatment and disposal contractors and facilities serve the area.

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

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

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

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

12.5 Avoidance, Remedial & Mitigation Measures

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

The construction phase mitigation measures include, avoidance, reduction and remedy measures as set out within the Development Management Guidelines document. The design and construction of

the necessary service infrastructure will be in accordance with relevant codes of practice and guidelines. As a result, this is likely to mitigate any potential impacts during the operational phase of the proposed Project. However, routine maintenance of the site services will be required from time to time, as such any mitigation measures will be advised by the relevant service provider.

A site-specific Construction and Demolition Waste Management Plan (C&DWMP) has been prepared to deal with waste generation during the construction phase of the proposed Project and is included as part of the application packs. This document was prepared in accordance with best practice guidelines. Operational waste management will be managed by a designated management company on site and the appointed licenced waste contractor which will ensure the sustainable management of domestic and commercial waste arising from the development in accordance with legislative requirements and best practice standards.

12.6 Predicted Impacts

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

12.7 Monitoring

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

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

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

12.8 Reinstatement

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

12.9 Interactions

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

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

12.10 Difficulties Encountered in Compiling

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

12.11 Cumulative Impacts

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

Considering the minimal use of material assets during the construction phase, there is no likely impact.

Multiple sites under construction at the one time may result in cumulative impacts in terms of noise and vibration during the construction period. However, such impacts are short term and neutral.

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

12.12 'Do-Nothing' Impact

A 'do-nothing' scenario is not considered valid as the lands are currently zoned for development under the Fingal County Development Plan. However, if a do-nothing scenario were to occur, the lands would not be developed and therefore would be no adverse impacts to material assets. In the event that the proposed 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.

12.13 References

- Waterman Moylan Consulting Engineers drawings and documentation submitted as part of the planning applications.
- 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, Advice notes for preparing Environmental Impact Statements (September 2015).
- EPA, Guidelines on the Information to be contained in Environmental Impact Assessment Reports (August 2017).
- 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).
- Waste Management Acts 1996 -2001 and associated Regulations.
- Protection of the Environment Act 2003 (as amended).

- Litter Pollution Act 1997.
- Eastern-Midlands Region (EMR) Waste Management Plan.
- Fingal County Council Bye-Laws.
- Waste Management: Changing Our Ways (1998).
- Preventing and Recycling Waste: Delivering Change (2002).
- Taking Stock & Moving Forward (2004).
- National Strategy on Biodegradable Waste Management (2006).
- A Resource Opportunity Waste Management Policy in Ireland (2012).

13.0 TRAFFIC & TRANSPORTATION

13.1 Introduction/Methodology

This chapter of the EIAR assesses the likely traffic and transportation impacts on the receiving environment during the construction and operational phases of the three proposed developments on Auburn Lands, Malahide, Co. Dublin.

Note that each of the three concurrent applications can be constructed as standalone developments, with none of the developments reliant on another. However, to provide a robust assessment of the subject development and its impact on local infrastructure, the two other concurrent applications have been considered.

The existing and proposed transport infrastructure in the area is described, and an assessment of the current and the future traffic environment is made. The impact of the development in terms of public transportation, pedestrian and cycle is also assessed.

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

This Chapter was completed by Luke Byrne, BEng, MEng, Traffic Engineer, Waterman Moylan Consulting Engineers.

The following methodology has been adopted for this assessment:

- Review of relevant available information including, current Fingal County Development Plan 2017-2023, existing traffic information and other relevant studies;
- Site visit to gain an understanding of the site access and observe the existing traffic situation.
- Consultations with Fingal County Council Roads Department to agree the site access arrangements and determine the scope of the traffic analysis required to accompany a planning application.
- Detailed estimation of the transport demand that will be generated by the Proposed Development. The morning and evening peak times will be addressed as well as an estimation of under-construction and potential future developments in the surrounding area.
- Assessment of the impact of traffic on local junctions, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

Please refer to the accompanying TTAs for each concurrent planning application accompanying each package for further details.

13.2 Modelling Background

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

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

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

Typically, a junction is said to be working satisfactorily when the DOS% or RFC of each link does not exceed 85%/0.85. Acceptable DOS% or RFC values are considered to be in the range of 85%/0.85 to 100%/1.0 with higher values indicating restrained movements.

13.3 The Receiving Environment

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

Site location

The subject site is located in the Auburn Lands. The existing site entrance is from the Malahide Road, adjacent to the Malahide Road/Back Road junction.

Auburn House is located near the centre of the site, as indicated in the Figure below. Auburn House is 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 much of the site is relatively flat, generally at a level of between 9m and 11m OD Malin. However, levels rise in the Streamstown portion of the site towards Carey's Lane, at the south-west of the lands, with a local high point of 14.17m OD Malin.

Fig. 13.1. Site Location (Source: Google Maps).

Local road network

Roads

Main vehicular access to the proposed development will be provided from south-east via a new access at the R107 Malahide Road / Back Road priority-controlled T-junction, which is proposed to be upgraded to a four-armed signalised junction with the western arm forming the Site Access Road. A secondary vehicular access is proposed off Carey's Lane to the west which will be accessed via Streamstown Lane.

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

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

Carey's Lane is a local road running north-south for approximately 230m from the south-western boundary of the site through to a priority junction with Streamstown Lane. This road, which will provide vehicular access to the site, currently comprises a carriageway of approximately 5.50m with footpaths running along the eastern side.

Streamstown Lane is a single carriageway road located to the south of the subject site. This road is approximately 780m in length from the priority junction with R107 through to a priority junction with Feltrim Road. Along Streamstown Lane, an unconnected network of footpaths is provided with no pedestrian crossing points available. No cycle lanes are provided.

Feltrim Road is a single carriageway road located to the south of the subject site. This road is approximately 2.6km in length from the priority junction with R107 through to a three-way Roundabout connecting to Mountgory Way. The speed limit along Feltrim Road is 60kph. The road is c. 7.5m wide single carriageway with footpath on the north side of the road for the majority of its length and a narrow path on both sides of the road at some sections.

Junctions

The primary junctions on the road network surrounding the subject development site are:

- **Junction A (Existing Priority-controlled T-junction)**: R107 Malahide Road / Back Road;
- **Junction B (Existing Priority-controlled T-Junction)**: R107 Malahide Road / Streamstown Lane
- **Junction C (Existing Priority-controlled T-Junction)**: Streamstown Lane / Carey's Lane
- **Junction D (Existing Priority-controlled T-junction)**: Feltrim Road / Streamstown Lane.

An upgraded layout for Junction A - which will provide direct access to the proposed development site, is proposed under the subject application of the Auburn Park Development and Little Auburn Development The existing road layout in the area surrounding the proposed development site is illustrated in Figure 13.2.

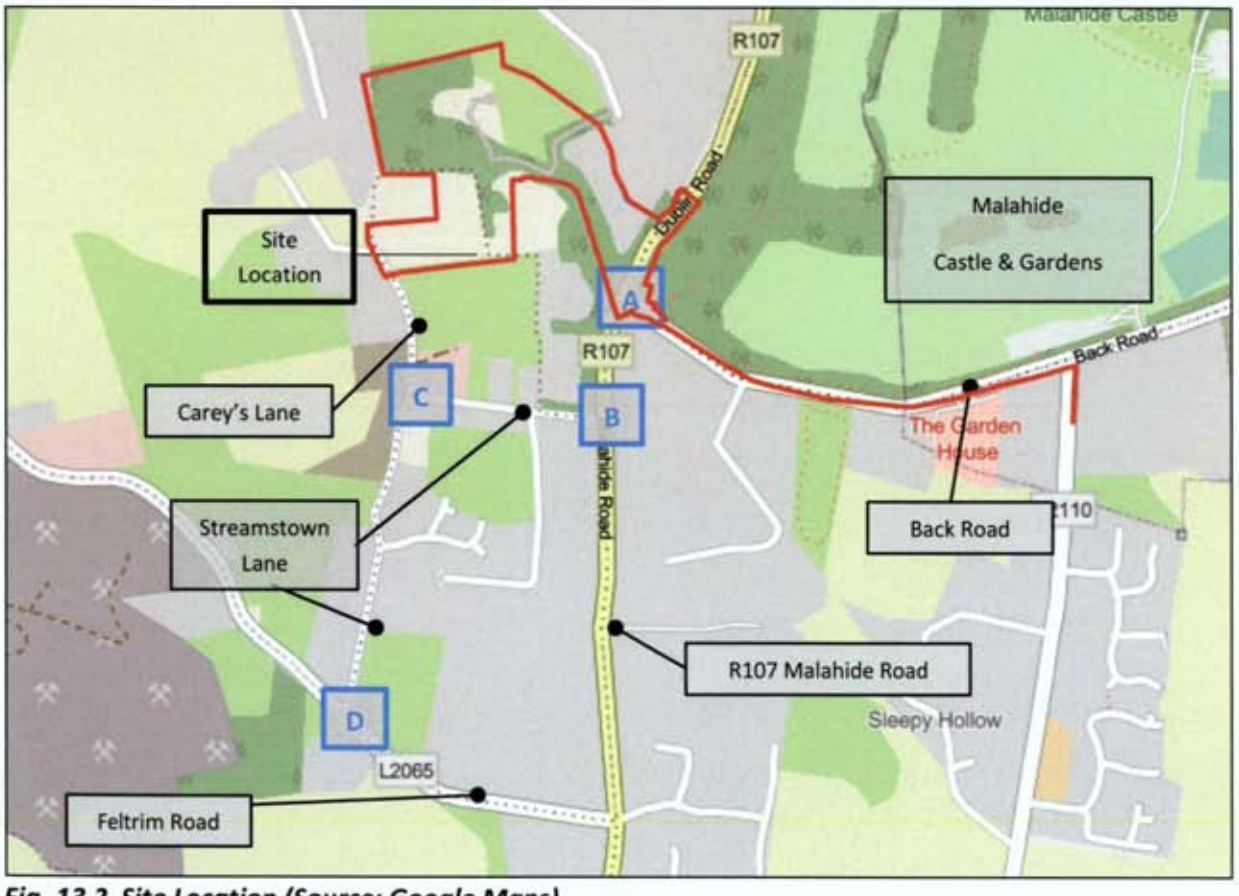

Fig. 13.2. Site Location (Source: Google Maps).

Public transport facilities

Existing Bus

The subject site is directly served by public bus services. The closest bus stops are located on R107 Malahide Road just to the north of the junction with Back Road, being Bus Stops No. 3579 (Northbound) and No. 3645 (Southbound). The subject bus stops are served by the Bus Routes 42. This route is operated by Dublin Bus and connects Talbot Street in Dublin City Centre to Sand's Hotel on Portmarnock. There is an additional Bus Route, the 102C which operates twice a day between Balgriffin Cottages and Sutton Park School. The 102C operates using the two Bus Stops outside the proposed development.

Along Feltrim Road there are two additional bus stops, these are Bus Stops No. 3649 (Northbound) and No. 3650 (Southbound). These bus stops serve the 43 Bus Route which is operated by Dublin Bus and connects Talbot Street in Dublin City Centre to Swords Business Park.

A summary of Dublin Bus Route 42 frequency is presented in Table 13-1. The location of the subject bus stops in relation to the proposed development site is illustrated in Figure 13.3.

Table 13-1. Bus Route Frequency

Route No.	From	To	Weekday Frequency	Saturday Frequency	Sunday Frequency
42	Talbot Street	Sand's Hotel (Portmarnock)	Every 15 to 30 minutes	Every 15 to 30 minutes	Every 30 to 60 minutes
42	Sand's Hotel (Portmarnock)	Talbot Street	Every 20 to 25 minutes	Every 15 to 30 minutes	Every 30 to 60 minutes
102C	Balgriffin Cottages	Sutton Park School	Once at 07:32 AM	-	-
102C	Sutton Park School	Balgriffin Cottages	Once at 03:40 PM	-	-
43	Talbot Street	Swords Business Park	Every 20 to 25 minutes	Every 50 to 60 minutes	Every 50 to 60 minutes
43	Swords Business Park	Talbot Street	Every 20 to 25 minutes	Every 50 to 60 minutes	Every 50 to 60 minutes

Tavel time form the subject bus stop on R107 Malahide Road (Southbound) to Talbot Street in Dublin City Centre is approximately 32-minutes. On the opposite direction, the travel time from the subject bus stop on R107 Malahide Road (Northbound) to Malahide Centre is approximately 11 minutes, and to Sand's Hotel in Portmarnock is approximately 22 minutes.

The proposed internal layout includes pathways and pedestrian crossings throughout the site leading to the subject bus stops just outside the site. The existing Auburn House driveway will be upgraded to a 4.0m shared footpath/cycle path linking the proposed Streamstown Development directly to R107

Malahide Road and the associated bus stops. From the centre point of the site, it is approximately 400m (5-minute walk) to these bus stops. Figure 13.3 below shows the location for Bus Stops No. 3649 and No. 3650. It is approximately 1.9km (c. 23-minute walk) to Bus Stop No. 3649 and 2.3km (c. 29-minute walk) to Bus Stop No. 3650 from the north of the site.

The internal layout of the proposed development will provide pedestrian pathways on both sides of the road. All footpaths for the proposed development will be provided in accordance with Section 4.3.1 of the DMURS which suggests that a minimum 2m footpath should be provided.

Fig. 13.3. **Location of Bus Stops along Feltrim Road**

BusConnects

The BusConnects project currently being promoted by the National Transport Authority aims to deliver a much-enhanced bus service to the Greater Dublin Area (GDA). The proposed route which will directly serve the subject development via R107 Malahide Road is the Secondary Radial Routes 20 – See Figure 12. A summary of the frequency of this proposed route is presented in Table 3.

In addition to the above-mentioned route, the surrounding area will also be served by the Secondary Radial Route 21 and the Peak Times Route X78. The closest bus stops served by these routes will be located on R106 Swords Road to the north of the site and Feltrim Road to the south. A summary of the frequency of these routes is shown in Table 13-2.

The H Spine bus route launched in June 2022 and replaced the old bus routes 29a, 21 and 31. In relation to the proposed development the H2 bus route travels from Malahide Town Centre to the City Centre along the coast road and through Raheny. Figure 13.4 below shows the route for the H2 Bus. It is a 32-minute walk from the centre of the proposed development to Malahide Town.

Table 13-2 - Bus Connects Routes 20, 21, X78 and H2 - AM and PM Weekday Frequency.

Route No.	From	To	AM Weekday Frequency (07:00 to 09:00)	PM Weekday Frequency (17:00 to 19:00)
20	Malahide	City Centre	Every 30 minutes	Every 30 minutes
21	Swords Business Park	City Centre	Every 30 minutes	Every 30 minutes
X78	Malahide	UCD	2 Buses at 07:00	1 Bus at 16:00 1 Bus at 17:00
H2	Malahide	Abbey Street Lower	Every 30 minutes	Every 30 minutes

For routes 20 and 21, the frequency of buses on weekends is 30-minutes except for hours between 06:00 – 08:00 which have a 60-minute frequency.

The nearest bus stops for Bus Route 20 are located just outside the Malahide Road site access point. As illustrated in Figure 13.2 previously, these stops are c. 5-minute walk from the centre of the proposed development site.

Fig. 13.4. BusConnects Map

Rail

The train station (Malahide) is located off R106 Dublin Road approximately 2.4km (32-minute walk/8-minute cycling) northeast of the existing site access off R107 Malahide Road – Refer to Figures 13.5 and 13.6. It is approximately an 8-minute walk/2-minute cycle from the back (northwest) of the site to the Malahide pedestrian/cycle access point. Walking access from the subject site access to the Malahide Station is via R107 Malahide Road and R106 Dublin Road. Along the route to the station, a narrow footpath, directly adjacent to the carriageway, is provided on the western side of R107 Malahide Road. On the R106 Dublin Road, a wider footpath is provided along the western side of the carriageway and on both sides of the road from Yellow Walls Road up until the Malahide Station. No cycle lanes are provided along the route.

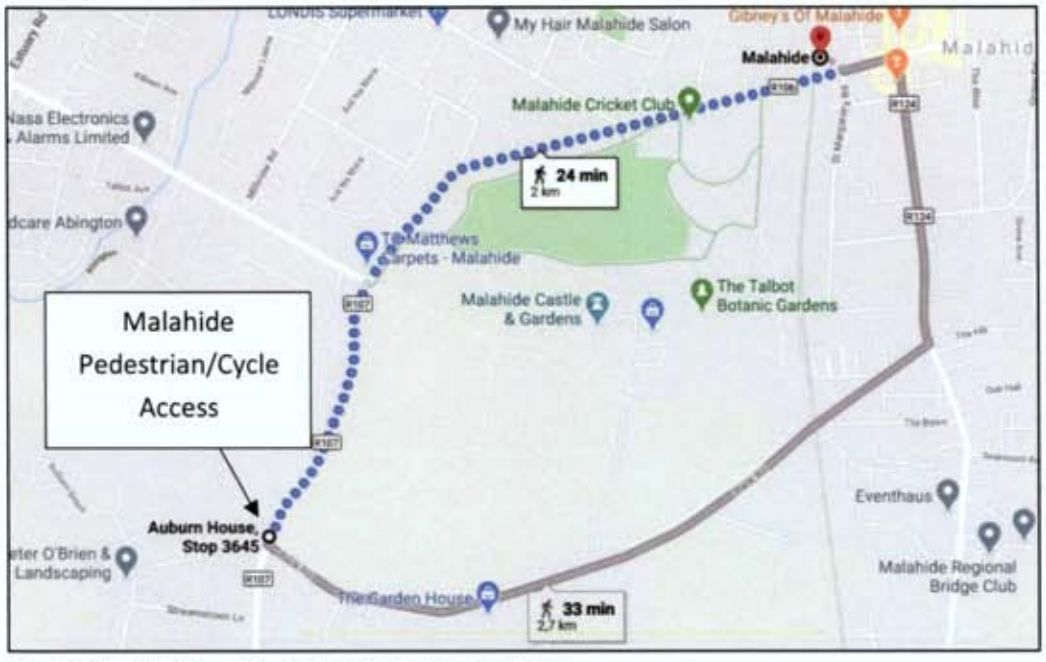

Fig. 13.5. **Walking Route to Malahide Station.**

Dart Expansion Porgramme

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

As part of the programme, the rail service between Drogheda and Dublin City Centre (via Malahide) is planned to be electrified with higher frequency. New rail frequency on Malahide has not been confirmed at the time of writing, however, significant increase in capacity is expected by purchase of new rolling stock. Improvements to the northern route are expected to be in place before 2031, with the new rolling stock expected to come into service by late 2022.

The Malahide Station is part of the Dart+ Coastal North project and plans to increase the overall capacity from 20 trains to 30 trains during the 3-hour AM peak period for northbound and southbound services to/from the city centre. This will increase passenger capacity from 23,300 to 33,800.

***Fig. 13.6.* Cycling Route to Malahide Station.**

The Malahide Station is served by Commuter Rail and DART services.

The Commuter Rail service through Malahide Station serves all stations from Dundalk through Dublin City Centre to Gorey. The service operates at 3 – 4 services per hour in both direction on weekdays.

The DART service through Malahide Station serves all station from Malahide through Dublin City Centre to Bray and Greystones. On weekdays, this service operates at a 20-minute frequency in both directions and at 40-to-60-minute frequency in both directions on weekends.

GoCar

The closest GoCar vehicles are located at Malahide Centre and at Ard Na Mara off Yellow Walls Road. One vehicle is provided at each GoCar station, except for the Bridgefield Car Park Station which provides two.

***Fig. 13.6.* Location of GoCar Stations (Source: www.gocar.ie)**

Waterman Moylan have engaged with GoCar, one of the leading car share services in Ireland, about the possibility of introducing car share vehicles within the development. Waterman Moylan is awaiting an updated Letter of Intent from GoCar so therefore Appendix 13.1 includes the GoCar Letter of the previous SHD application submitted (Reg. Ref. no. ABP-313360-22) as a reference of what GoCar intend to offer for the Auburn area.

Based on the cumulative schedule of accommodation for the three concurrent sites, GoCar have indicated that they anticipate demand for 3 to 4 car share vehicles if all three applications are granted permission and constructed, with fewer spaces required if only one or two of the three proposed developments proceed. The intention is for GoCar to introduce vehicles to the fleet within the Auburn lands as the development is built out and occupied to meet demand. While it is expected that these vehicles would primarily be used by the residents of the development, the vehicles will be available to other GoCar members.

Note that, at GoCar's request, no specific spaces will be assigned for the car share vehicles. Instead, users may park the vehicles in any of several unassigned visitor parking spaces. Since private cars occasionally park in spaces assigned for GoCar vehicles, leaving users who wish to return a car with nowhere to leave it, GoCar have informed the design team that they find this system is preferable.

These car share spaces form part of the strategy to reduce reliance on private car usage, since car sharing is a less car intensive means of urban transport compared to car ownership. Research has found that car sharing can reduce car ownership at an estimated rate of one rental car replacing 15 owned vehicles. Neighbourhood car sharing encourages members to walk, cycle or utilise public transport for most trips, with car use reserved only for necessary journeys where other travel modes are impractical. Public transport use, cycling, and walking increase among car share members, with a significant decline in annual vehicle kilometres travelled.

13.4 Overview of the development Proposals

Description of Overall 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.

13.5 Internal Road Network

All internal roads in the proposed development are designed for a speed limit of 30kph with generally 5.0m wide carriageways and footpaths along both sides. For the Streamstown development there are 5.5m carriageways. On street parking intermixed with soft verges will separate footpaths from the main carriageway. All road intersections within the development itself will be priority junctions. The low design speeds and traffic calming measures will ensure the safe operation of these junctions.

Throughout the site, pedestrian routes are generally 2.0m wide or greater which provides adequate space for two wheelchairs to pass one another. DMURS identifies a 1.8m wide footpath as being suitable for areas of low pedestrian activity and a 2.5m footpath as being suitable for low to moderate pedestrian activity. It is considered that a 2.0m wide footpath is appropriate for the majority of the proposed development.

13.6 Site Access

Vehicular access is proposed from Malahide Road as part of the development. Various access options for the Malahide Road entrance have been assessed by the multi-disciplinary design team. Of particular concern was the retention of as many trees as possible while providing a safe and suitably sized access to the development. The full assessment of these options accompanies this submission under separate cover by Downey Planning. The main options assessed were:

- Option 1: Providing a new access adjacent to Back Road, to form a new 4-arm signalised junction.
- Option 2: Utilising the existing access to Auburn House as the primary site access, to form a new staggered signalised T-junction.
- Option 3: Utilising both the existing access to Auburn House and the existing access to Little Auburn, with one serving as the vehicular entrance and the other as the exit from the site, forming a staggered priority crossroads with Back Road and the Auburn House entrance, and a priority T-junction at the Little Auburn exit.
- Option 4: Utilising the existing access to Little Auburn as the primary site access in the form of a new priority T-junction.

The assessment determined that Option 1, a new 4-arm signalised junction adjacent to Back Road, is preferable from a roads and transportation viewpoint. Fingal County Council Roads and Transportation department noted that this was their preferred option and the only feasible option.

Vehicular access is also proposed from Carey's Lane as part of the concurrent Streamstown application. The Streamstown entrance road and the entrance road from Malahide Road will not provide full access for through-traffic, but provision is made for the two roads to be connected by a 2m wide grasscrete footpath and 3m wide 2-way cycle track, with drop bollards at either end, as noted above. This allows for emergency and maintenance access, while restricting day-to-day use of the connection.

Although junction modelling has confirmed that one vehicular access is adequate for the proposed development and the accompanying swept path analysis drawing demonstrates that emergency

vehicles can turn and manoeuvre through the site, providing an alternative access/egress route for emergency vehicles was deemed appropriate as a precautionary measure. This ensures that even in atypical scenarios (for example, if a fallen tree were to obstruct one access route), emergency vehicles can still access and exit the site.

13.7 Internal Pedestrian and Cycle Network

An interconnected network of footpaths is proposed through the subject development. The main site access is from Malahide Road, and a 2m wide footpath is provided along the eastern side of the carriageway.

The existing Auburn House entrance from Malahide Road is to be retained as part of the development and utilised as a pedestrian/cycle route. Drop bollards are provided where the existing Auburn House access crosses the new entrance road. The operational management company will have control of these drop bollards for emergency access and for maintenance, and the residents of Auburn House and of Belmont will also have control of these bollards for access.

Provision is made for a 2m wide grasscrete footpath and 3m wide 2-way cycle track to connect between the Auburn House driveway and the concurrent Streamstown development area, with drop bollards also proposed at either end of that route. This provides pedestrian/cycle connectivity between the concurrent application sites. The use of drop bollards at this connection ensures pedestrian and cyclist permeability as well as access for emergency vehicles, while restricting vehicular traffic, in accordance with the Design Manual for Urban Roads and Streets (DMURS) objective to provide pedestrian and cyclist priority. The operational management company will also have control of these drop bollards for emergency access and for maintenance.

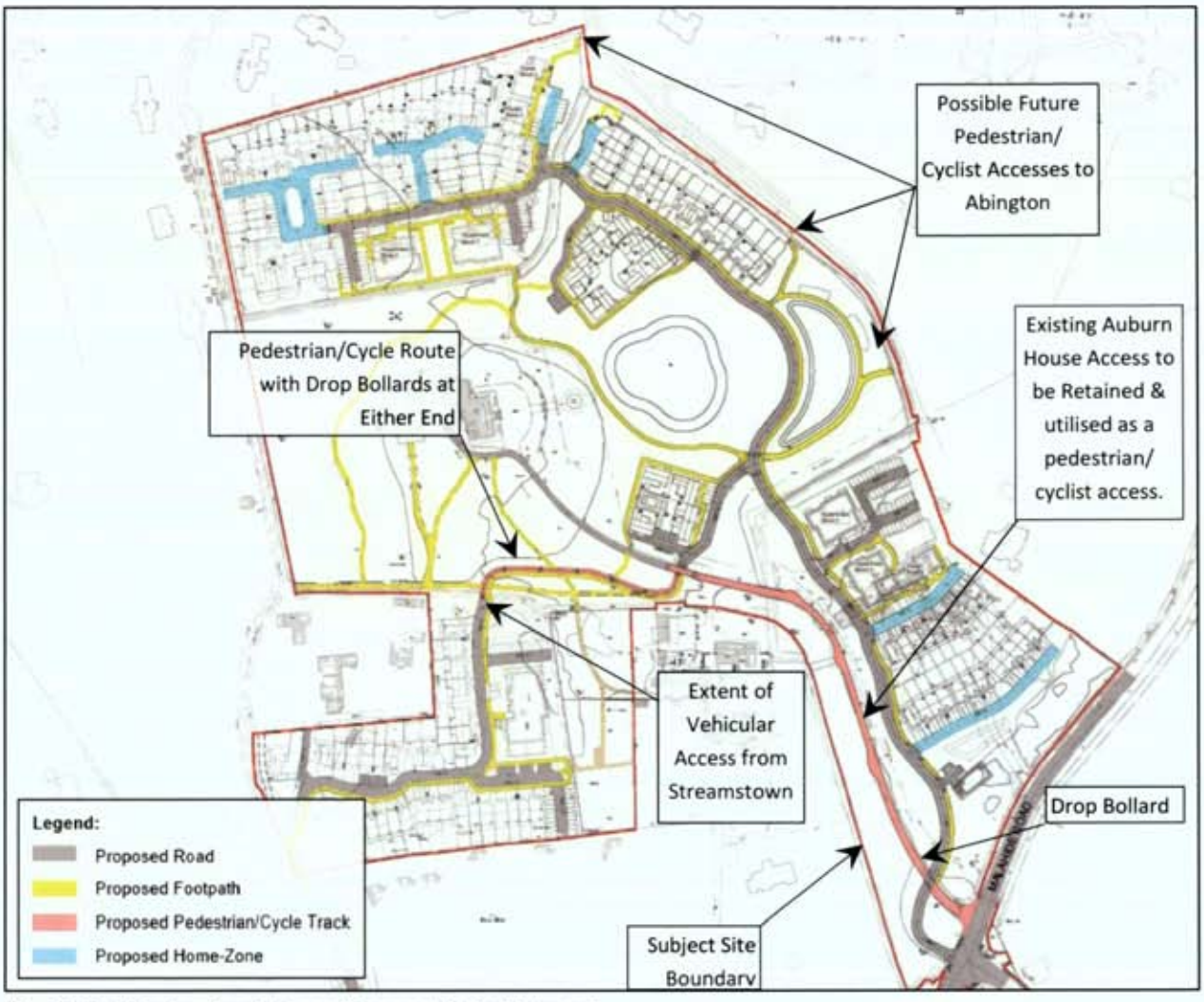

Fig. 13.7. *Masterplan Internal Connectivity Network*

As noted above, the existing Auburn House entrance from Malahide Road is to be retained as part of the development and utilised as a pedestrian/cycle route, and provision is made for a 2m wide grasscrete footpath and 3m wide 2-way cycle track to connect between the Streamstown development area and the Auburn House access. This provides pedestrian/cycle connectivity between the whole development.

13.8 Car Parking

In order to determine the appropriate amount of vehicle parking for the proposed development, reference will be made to the following guidelines/policies:

- Fingal County Council Development Plan 2017 – 2023.
- Design Standard for New Apartments – Dec 2020.
- Previous SHD Planning Application (Reg. Ref. ABP-313360-22) SHD Opinion Report by Fingal County Council.

Fingal County Council Development Plan

Standards for car parking in new developments are set out in Table 12.8 of the Fingal Development Plan 2017 – 2023 (FDP). Based on that, the table below sets out the parking requirements applicable to the subject proposed residential development.

Table 13-3. Fingal County Council Development Plan 2017-2023 - Car Parking Standards.

Description	Car Parking Norm	No. of Units Proposed	Car Parking Requirement
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

Design Standards for New Apartments – December 2020

In December 2020, a revised version of the document "Sustainable Urban Housing: Design Standard for New Apartments" was released.
Chapter 2 of the Design Standard for New Apartments sets out the following "types of location" which are defined by site's accessibility and proximity to public transport and town/city centres:

1) Central and/or Accessible Urban Locations

- *Sites within walking distance (i.e., up to 15 minutes or 1,000-1,500m), of principal city centres, or significant employment locations, that may include hospitals and third level institutions;*
- *Sites within reasonable walking distance (i.e., up to 10 minutes or 800-1,000m) to/from high-capacity urban public transport stops (such as DART or Luas); and*
- *Sites within easy walking distance (i.e., up to 5 minutes or 400-500m) to/from high frequency (i.e., min 10-minute peak hour frequency) urban bus service.*

2) Intermediate Urban Locations

- *Sites within or close to i.e., within reasonable walking distance (i.e., up to 10 minutes or 800-1,000m), of principal town or suburban centres or employment locations, that may include hospitals and third level institutions;*
- *Sites within walking distance (i.e., between 10-15 minutes or 1,000-1,500m) of high-capacity urban public transport stops (such as DART, commuter rail or Luas) or within reasonable walking distance (i.e., between 5-10 minutes or up to 1,000m) of high frequency (i.e., min 10 minutes peak hour frequency) urban bus services or where such services can be provided;*
- *Sites within easy walking distance (i.e., up to 5 minutes or 400-500m) of reasonably frequent (min 15-minute peak hour frequency) urban bus services.*

3) Peripheral and/or Less Accessible Urban Locations

- *Sites in suburban development areas that do not meet proximity or accessibility criteria;*

- *Sites in small towns or villages."*

Chapter 4 of the Design Standard for New Apartments sets out the quantum of car parking or the requirement for any such provision for apartment developments.

1) Central and/or Accessible Urban Locations

In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances. The policies above would be particularly applicable in highly accessible areas such as in or adjoining city cores or at a confluence of public transport systems such rail and bus stations located in close proximity.

2) Intermediate Urban Locations

In suburban/urban locations served by public transport or close to town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard.

3) Peripheral and/or Less Accessible Urban Locations

As a benchmark guideline for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.

Based upon the development site being located in an Intermediate Urban Location, the apartment guidelines state that "planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard".

Previous SHD Application (Reg. Reg. ABP-313360-22) SHD Opinion Report by Fingal County Council

As part of the previous SHD application submission (Reg. Ref. ABP-313360-22), Fingal County Council release an SHD opinion report. Included in this opinion report was the minimum practical parking demand the Transportation Planning Section considers appropriate for this area.

This minimum practical car parking demand is one car parking space per unit for one and two bedrooms and two spaces and units with three or more bedrooms. These minimum practical parking standards have been applied for car parking proposed for each development. These parking rates were agreed in principle with the FCC Roads and Transportation Department on 13th October 2022.

Car Parking Proposed

A total of 405 car parking spaces are being provided for the proposed development. A total of 224 spaces will be provided on curtilage, 163 spaces on-street parking, 6 spaces of undercroft parking and 12 visitor parking spaces. The figure below shows the locations of all car parking spaces provided.

Fig. 13.8. ***Car Parking Proposed***

As part of the proposed car parking, 145 EV Charging points are included in the development as shown in Figure 13.9 below. All car parking spaces provided will include all ducting and services to facilitate non-disruptive retro fitting of EV charging points for all the remaining residential parking spaces.

The electric vehicle charging points which are located in the public realm will be connected fed from a local metered connection (located in an ESB approved meter cabinet) which in turn will be supplied from a nearby ESB Networks mini-pillar. A dedicated ESB Networks meter will be provided in the cabinet which will allow the electricity consumption to be metered by an electricity supplier. Each meter cabinet can supply multiple charging points subject to detailed design and loading requirements.

The public EV Charging Points provided will be Open Charge Point Protocol (OCPP) compliant. Each meter will also be fitted with Radio Frequency Identification (RFID) capability to allow contactless payment via Near Field Communications (NFC) from a pre-registered payment card or from a

smartphone app. The proposed operator of the EV Charging Points will also offer a telephone service with phone numbers printed on the charging point for occasional users of the facility.

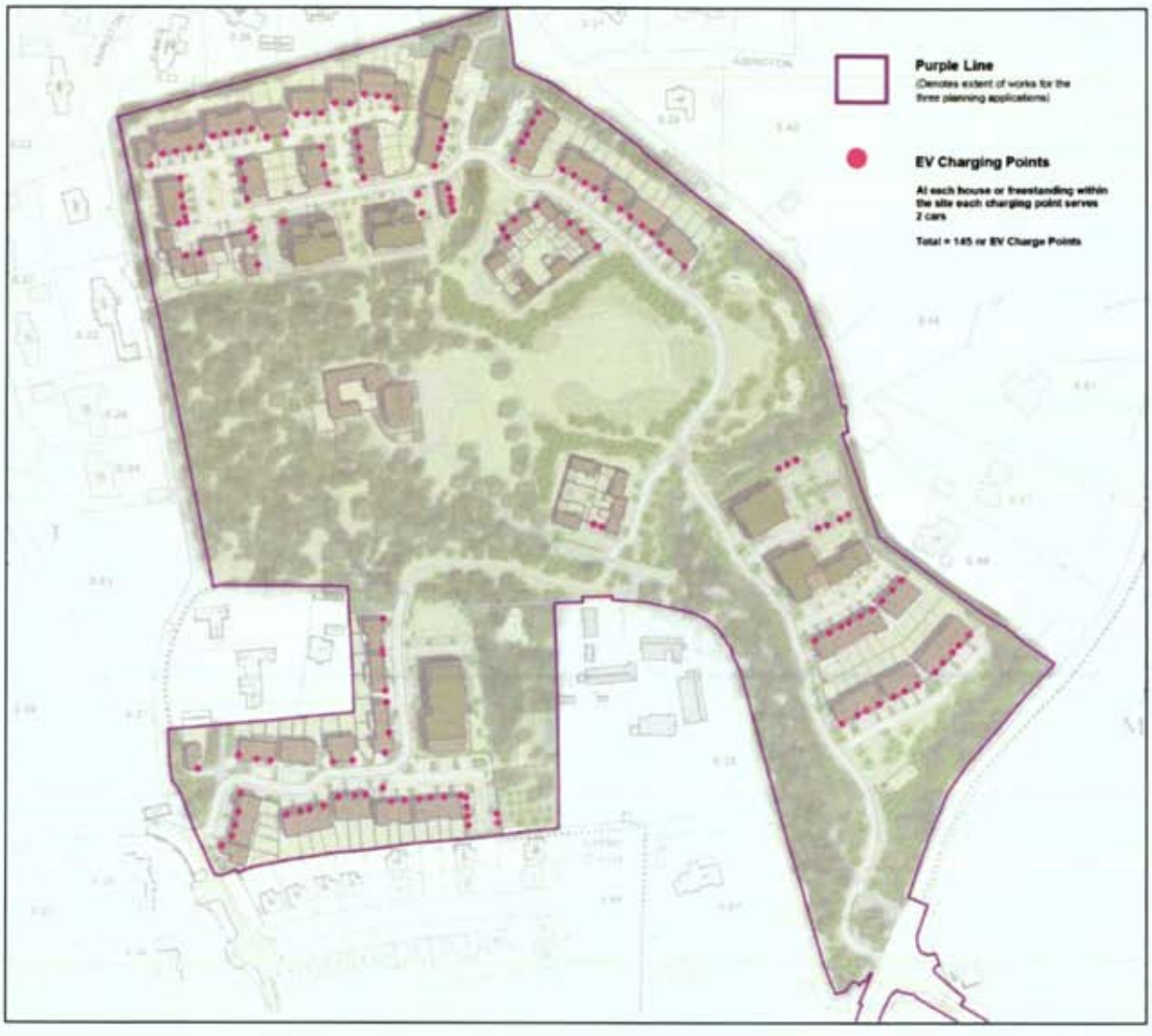

Fig. 13.9. ***EV Car Parking Proposed***

13.9 Cycle Parking

In order to determine the appropriate amount of cycle parking for the proposed development, reference will be made to the following guidelines/policies:

- Fingal County Council Development Plan 2017 – 2023.
- Design Standard for New Apartments – Dec 2020.
- Previous SHD Planning Application (Reg. Ref. ABP-313360-22) SHD Opinion Report by Fingal County Council.

Fingal County Council Development Plan 2017 – 2023

Standards for bicycle parking in new developments are set out in Table 12.9 of the Fingal County Council Development Plan 2017 – 2023. Based on that, Table 23 below sets out the cycle parking requirements applicable to the subject proposed development.

Table 13-4. Fingal County Council Development Plan 2017 - 2023 – Cycle Parking Standards.

Description	Bicycle Parking Norm	No. of Units Proposed	No. of Bedrooms	Required Parking
Apartments	1 Space per bedroom plus 1 visitor space per 5 units	126 Units	229	229 spaces and 25 visitor spaces

Design Standard for New Apartments – December 2020

The following extracts from the "Design Standards for New Apartments – December 2020" summarise the guidelines for cycle parking:

"*Quantity – a general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units. Any deviation from these standards shall be at the discretion of the planning authority and shall be justified with respect to factors such as location, quality of facilities proposed, flexibility for future enhancement/enlargement, etc.*"

These above standards of 1 space per bedroom with an additional visitor space per 2 residential units was agreed in principle with the FCC Roads and Transportation Department on 13th October 2022.

Bicycle Parking Proposed

Table 13-5. Bicycle parking Proposed

Block	Spaces Provided	Visitor Space Provided
Apartment Block 1	85	20
Apartment Block 2	42	10
Apartment Block 3	42	10
Duplex Block 2	20	3
Duplex Block 3	20	3
Duplex Block 4	2	1
Apartment Block 4	46	10
Apartment Block 5	34	10
Duplex Block 1	14	4
Total	305	71

Residential cycle parking has a secure dedicated bike room at ground floor level for residents or an anchor bolt or D lock attached to the external wall for secure bike parking for mid terrace houses. Visitor bike spaces are provided externally via Sheffield Stands with some additional space in secure bike rooms. Each which will be accessed via secure keycard system. Secure bike sheds have been provided for Duplex 2 and 3 also.

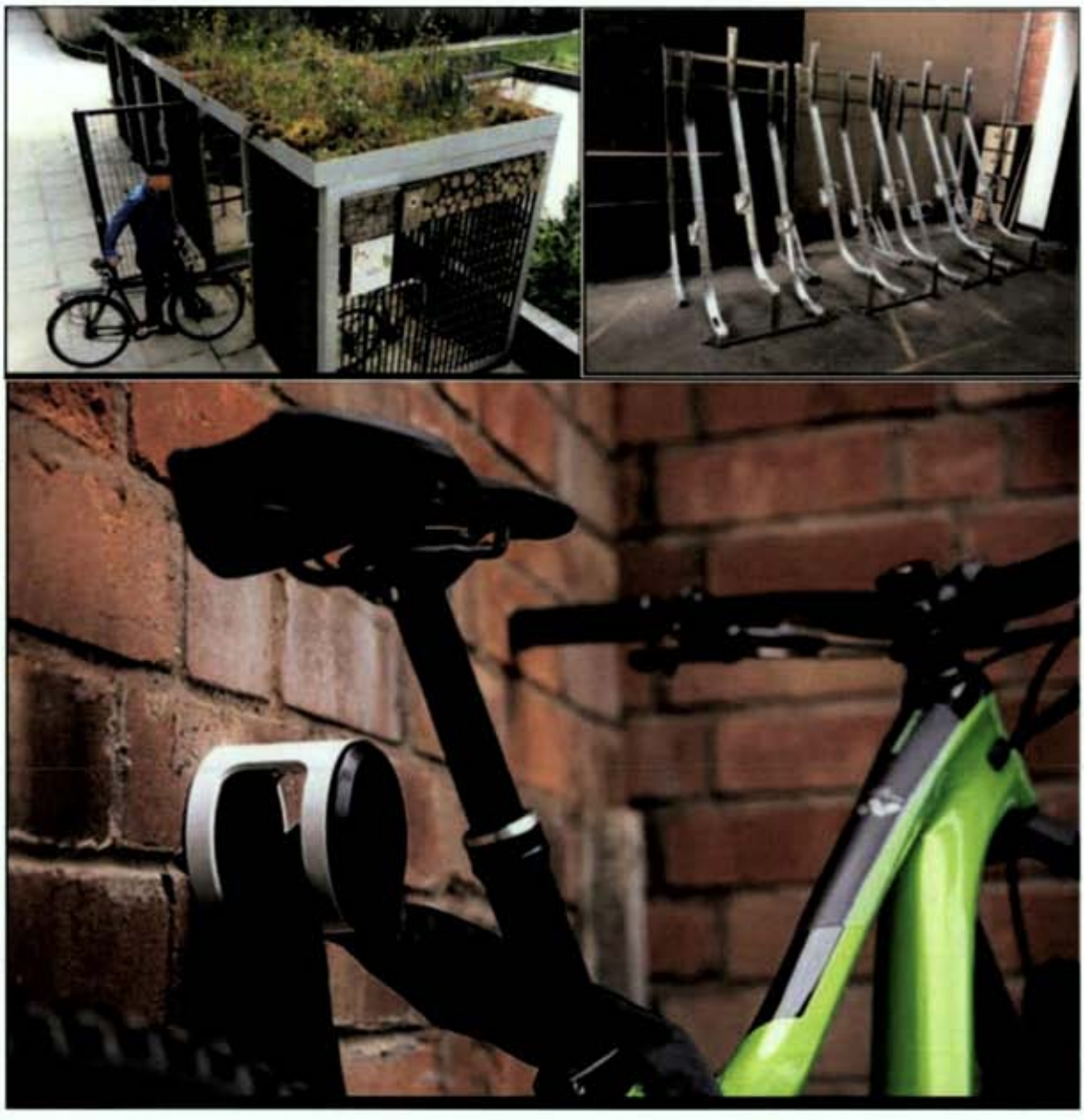

Fig. 13.10. Types of Secure Bike Storage for Residents

13.10 Predicted effects

Introduction

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

Construction traffic

Construction Traffic Impact

There is potential for construction traffic to impact from a noise and dust perspective in relation to the surrounding road network. Deliveries to and from the site by heavy good vehicles will impact on noise levels, whilst dust may result from vehicles travelling along gravel roads and from general earthwork activities. There is also potential for traffic congestion, due to increased heavy good

vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. The potential for inappropriate parking whilst waiting for access to the site, may also impact local road users.

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

Operational traffic

Operational Traffic Impact

The three developments will generate a number of trips by vehicles. These trips may have an impact on the surrounding road network and could contribute to increased congestion. The operational trips generated here are for all three development proposals.

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

Trip Generation – Operational Traffic

In order to assess the likely impact of the traffic generation arising from the new developments on Auburn Lands, TRICS software has been consulted. TRICS is the national standard of trip generation and analysis in Ireland. It is a database system which allows users to identify representative trip rates and to establish potential levels of trip generation for a wide variety of developments. To obtain the most accurate trip rates, the proposed development was assessed based on the appropriate definition of a housing development as described in TRICS (Version 7.9.2):

1) 03/A - Houses Privately Owned (use class C3)

   Housing developments where at least 75% of units are privately owned. Of the total number of units, 75% must also be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), with no more than 25% of the total units being flats. The TRICS definition of a privately owned dwelling is a dwelling at which residents have any degree of equity, or a dwelling that is owned by a private landlord and rented at market rates. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

2) 03/C - Flats Privately Owned (use class C3)

   Housing developments where at least 75% of households are privately owned. Of the total number of units, **75% must also be flats (sum of flats in blocks and "split" houses)**, with no more than 25% of the total units being "non-split" houses. The TRICS

definition of a privately owned dwelling is a dwelling at which residents have any degree of equity, or a dwelling that is owned by a private landlord and rented at market rates. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

3) 03/K - Mixed Private Housing (Flats & Houses) (use class C3)

Housing developments where at least 75% of units are privately owned. Of the total number of units, less than 75% must be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), and less than 75% must be flats (sum of flats in blocks and "split" houses). The TRICS definition of a privately owned dwelling is a dwelling at which residents have any degree of equity, or a dwelling that is owned by a private landlord and rented at market rates. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

Based on the definitions above, the most appropriate rates applicable to the proposed development is that of *'03/K - Mixed Private Housing (Flats & Houses) (use class C3)'* as shown in the table below. Full trip rates for each land use (residential), which were taken from TRICS Database are included in Appendix 13-2. The peak hours used were 08:00 – 09:00 in the AM and 16:00 – 17:00 in the PM.

Table 13-6 - TRICS – Vehicle Trip Rates.

Land Use Category	AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
	Trip Rate IN	Trip Rate OUT	Trip Rate IN	Trip Rate OUT
Mixed Residential (Flats and Houses)	**0.083** per unit	**0.402** per unit	**0.282** per unit	**0.116** per unit

Streamstown Development

The calculated vehicle trips for the Streamstown Development based on the TRICS trip rates set out above are presented in Table 13-7.

Table 13-7 Trip Generation - Streamstown Development

Land Use Category	AM Peak Hour		PM Peak Hour	
	Car Trips IN	Car Trips OUT	Car Trips IN	Car Trips OUT
69 Mixed Residential (Flats and Houses)	6	28	19	8

As can be seen from above, it is estimated that the proposed development will generate a total of 34 vehicle trips in the AM peak hour (6 inbound and 28 outbound) and a total of 27 vehicle trips in the PM peak hour (19 inbound and 8 outbound).

Auburn Park Development

The calculated vehicle trips for the Auburn Park Development based on the TRICS trip rates set out above are presented in Table 13-8.

Table 13-8 - Trip Generation –Auburn Park Development.

Land Use Category	AM Peak Hour		PM Peak Hour	
	Car Trips IN	Car Trips OUT	Car Trips IN	Car Trips OUT
92 Mixed Residential (Flats and Houses)	8	37	26	11

As can be seen from above, it is estimated that the proposed development will generate a total of 45 vehicle trips in the AM peak hour (8 inbound and 37 outbound) and a total of 37 vehicle trips in the PM peak hour (26 inbound and 11 outbound).

Little Auburn Development

The calculated vehicle trips for The Avenue & Little Auburn Development based on the TRICS trip rates set out above are presented in Table 13-9.

Table 13-9 - Trip Generation – The Avenue & Little Auburn Development

Land Use Category	AM Peak Hour		PM Peak Hour	
	Car Trips IN	Car Trips OUT	Car Trips IN	Car Trips OUT
98 Mixed Residential (Flats and Houses)	8	39	27	11

As can be seen from above, it is estimated that the proposed development will generate a total of 47 vehicle trips in the AM peak hour (8 inbound and 39 outbound) and a total of 38 vehicle trips in the PM peak hour (27 inbound and 11 outbound).

Trip assignment – Operational Traffic

In order to determine the amount of new car trips expected to travel through each surveyed junction in the vicinity of the Auburn Lands, the calculated car trips for the proposed development are presented in the tables have been distributed.

Streamstown Development

The estimated traffic to/from the Streamstown development will come from proposed vehicular access via Carey's Lane. Based on the local road network the majority of traffic will travel via R107 Malahide Road.

Generally, based on the location of the subject vehicular access points and the proposed development in relation to regional roads, to M1 motorway and to major employment and commercial centres, the estimated development car trips are assumed to have the following origin/destination distribution characteristics:

- 70% to/from east along Streamstown Lane;
- 30% to/from south along Streamstown Lane;
- 45% to/from north along R107 Malahide Road;
- 20% to/from Back Road via R107 Malahide Road;
- 25% to/from south along R107 Malahide Road via Streamstown Road;
- 15% to/from west along Feltrim Road;
- 15% to/from south along R107 Malahide Road via Feltrim Road.

The distribution percentage of the car trips for the AM and PM peak hour is detailed in Figure 13-11 below and the corresponding AM & PM peak hour traffic flows, based on the assumed distribution.

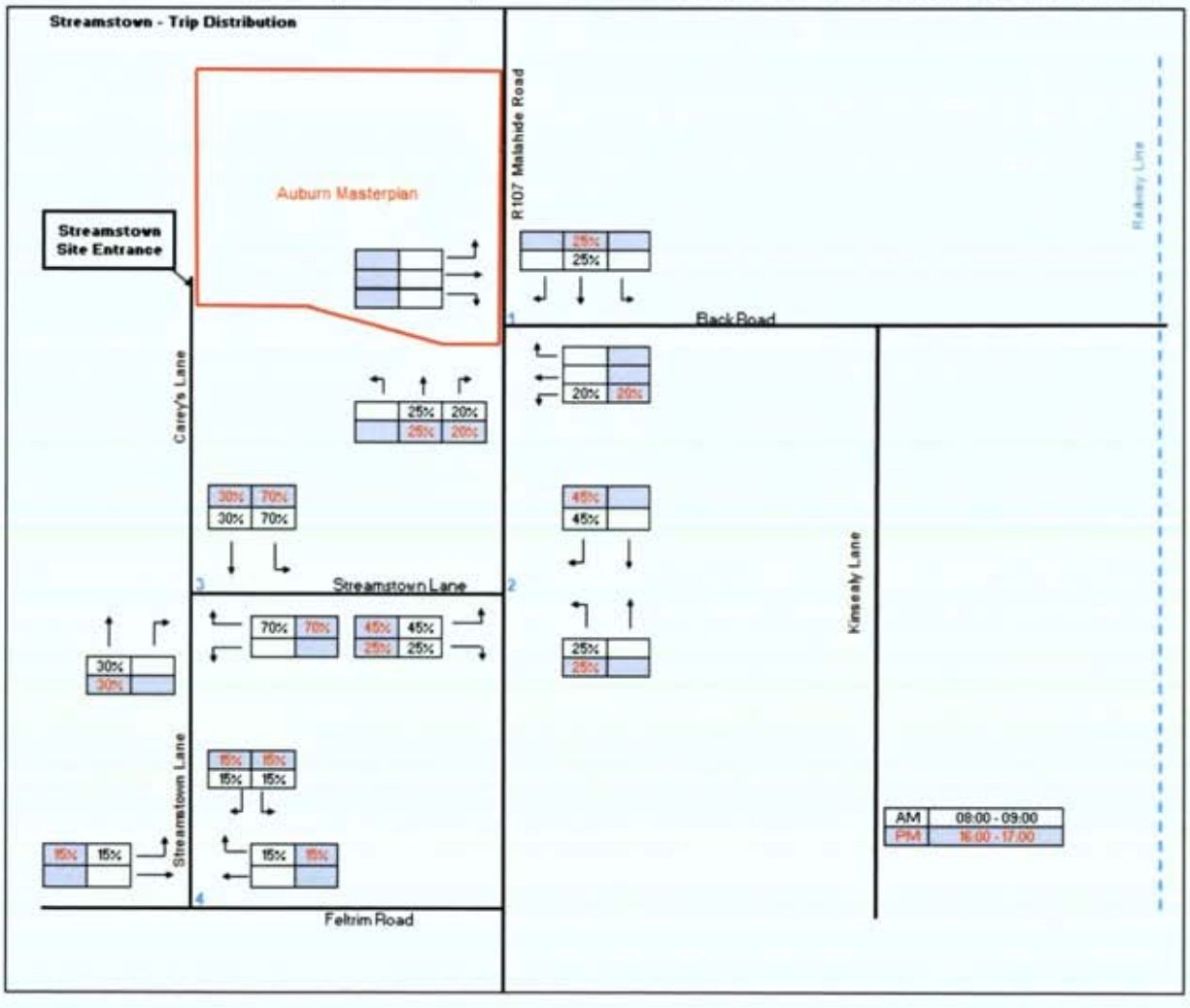

Fig. 13.11. Streamstown Distribution

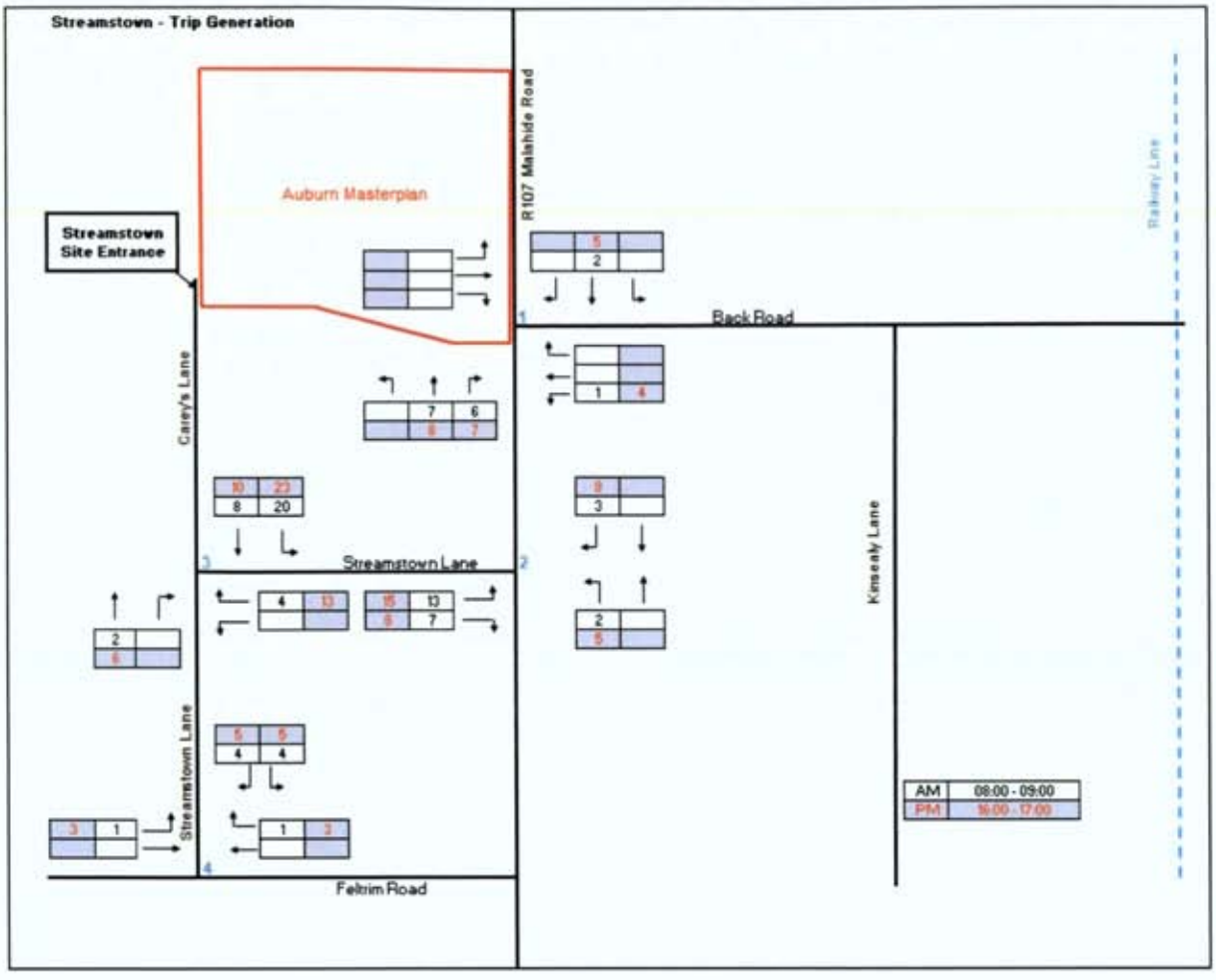

Fig. 13.12. Streamstown Trip Assignment

Auburn Park Development

The estimated traffic to/from the Auburn Park development will come from proposed vehicular access via Malahide Road. Based on the local road network the majority of traffic will travel via R107 Malahide Road. Generally, based on the location of the subject vehicular access points and the proposed development in relation to regional roads, to M1 motorway and to major employment and commercial centres, the estimated development car trips are assumed to have the following origin/destination distribution characteristics:

- 25% to/from south along R107 Malahide Road;
- 50% to/from north along R107 Malahide Road;
- 25% to/from east along Back Road;
- 10% to/from west along Feltrim Road via Streamstown Lane;
- 5% to/from along Feltrim Road via Malahide Road;
- 35% to/from along Malahide Road towards Dublin City Centre.

The distribution percentage of the car trips for the AM and PM peak hour is detailed in Figure 13-13 and the corresponding AM & PM peak hour traffic flows, based on the assumed distribution are shown in Figure 13-14.

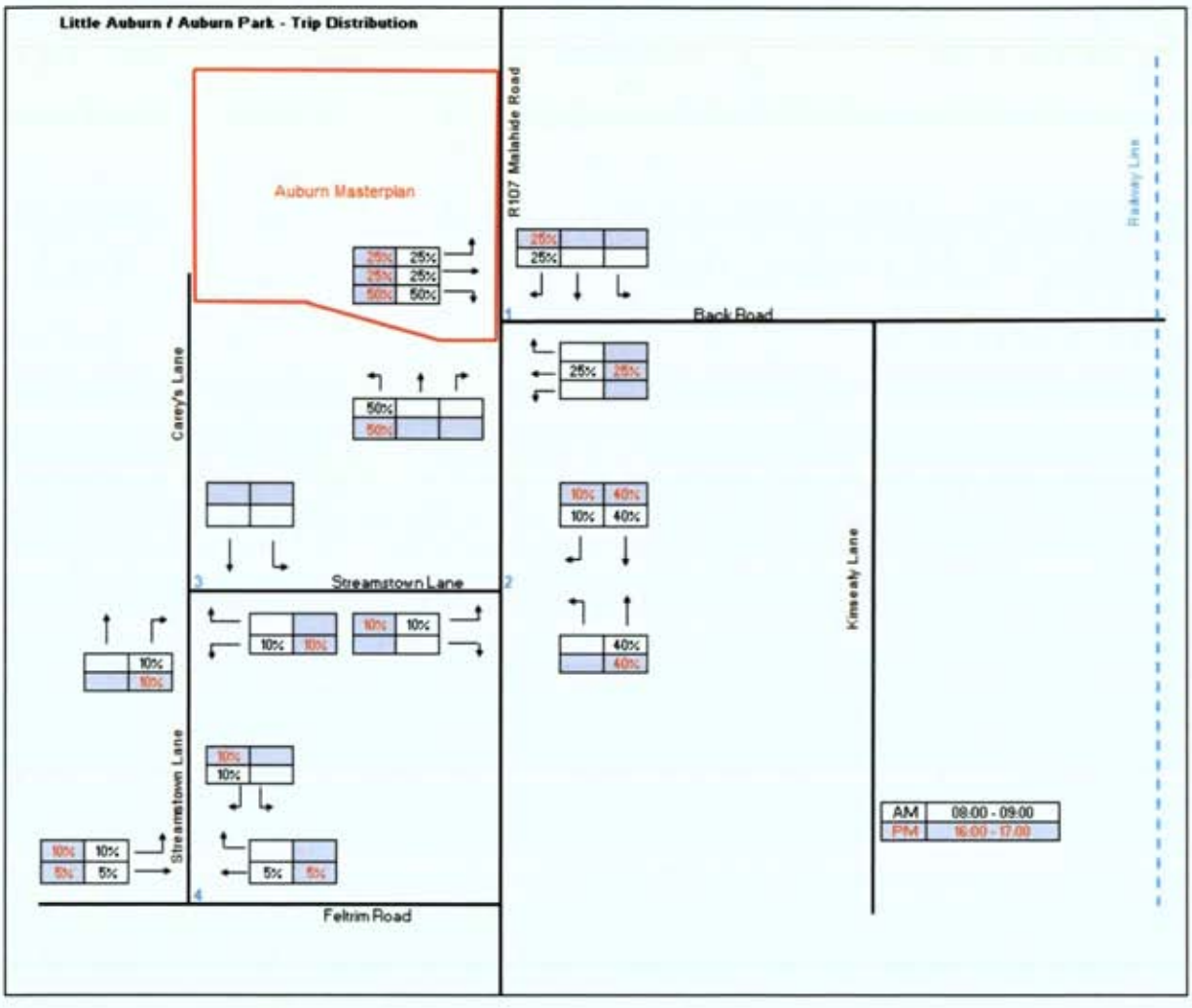

Fig. 13.13 Little Auburn / Auburn Park Distribution

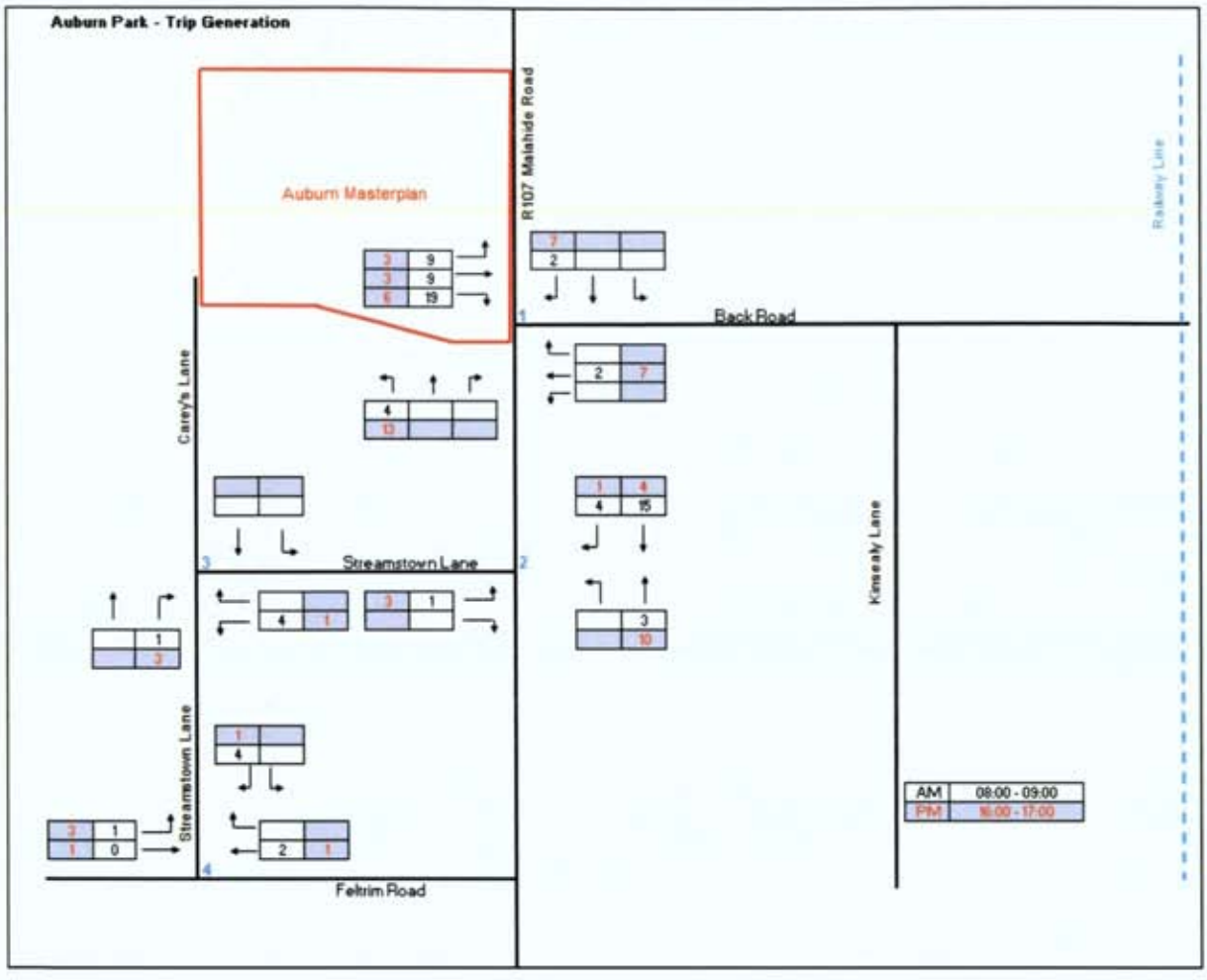

Fig. 13.14. Auburn Park Trip Assignment

Little Auburn Development

The estimated traffic to/from the Little Auburn development will come from proposed vehicular access via Malahide Road. Based on the local road network the majority of traffic will travel via R107 Malahide Road. Generally, based on the location of the subject vehicular access points and the proposed development in relation to regional roads, to M1 motorway and to major employment and commercial centres, the estimated development car trips are assumed to have the following origin/destination distribution characteristics:

- 25% to/from south along R107 Malahide Road;
- 50% to/from north along R107 Malahide Road;
- 25% to/from east along Back Road;
- 10% to/from west along Feltrim Road via Streamstown Lane;
- 5% to/from along Feltrim Road via Malahide Road;
- 35% to/from along Malahide Road towards Dublin City Centre.

The distribution percentage of the car trips for the AM and PM peak hour is detailed in Figure 13-13 and the corresponding AM & PM peak hour traffic flows, based on the assumed distribution are shown in Figure 13-15.

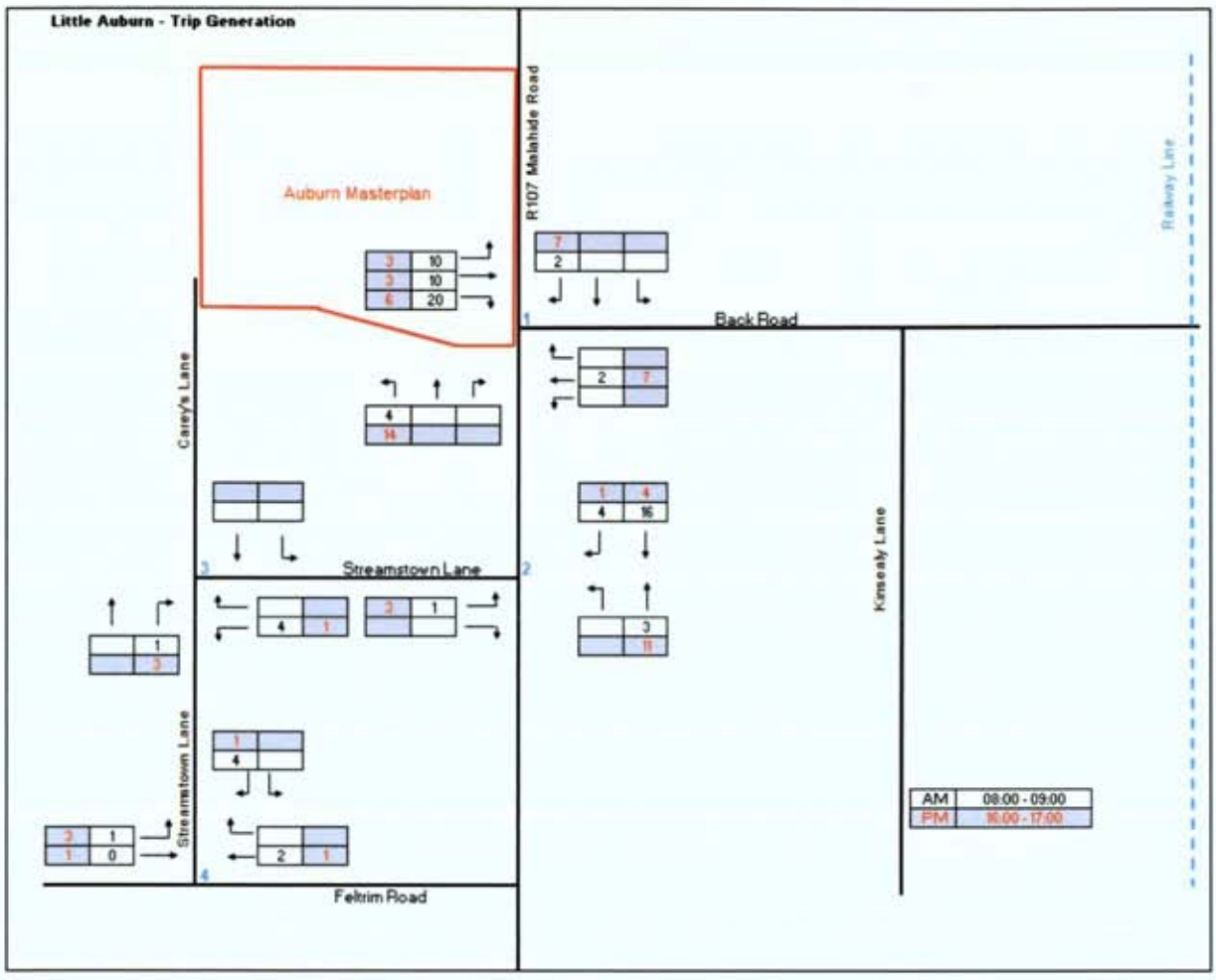

Fig. 13.15. Little Auburn trip Assignment

Cumulative Impact

In order to provide a robust and conservative assessment of the transportation network in the local area, the Broomfield Masterplan (to the east of the subject development site) was also analysed with regards to trip generation and distribution, to determine the cumulative impacts of the subject development and other proposed developments in the vicinity of the site. The location of Broomfield Masterplan is illustrated in Figure 13.16 – extracted from Fingal Development Plan (FDP), Sheet No. 9.

Broomfield - Description

In the Fingal Development Plan 2017 – 2023, Broomfield Masterplan falls within the zoning objective type of:

> *"**RA – Residential Area**: provide for new residential communities subject to the provision of the necessary social and physical infrastructure.*

Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links 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."

At the time of writing in 2021, Phase 1 of Broomfield Masterplan, approved under Planning References F13A/0459 and F13A/0460, is under construction.

Phase 1 (Planning. Ref's. F13A/0459 and F13A/0460)

The under-construction Phase 1 development of Broomfield Masterplan comprises of a total of 149 residential units (61 dwelling under Planning Reference F13A/0459 and 88 dwellings under Planning Reference F13A/0460). Phase 1 is assumed to be fully developed and occupied by 2026 (Opening year of Proposed Development).

Future Phases

A planning application for the future phases of the Broomfield Masterplan were submitted for planning in April 2022. The SHD application is currently awaiting a decision by An Bord Pleanála. The subsequent phases of Broomfield Masterplan are estimated to comprise approximately 415 residential units. For the purpose of this EIAR Chapter, it was assumed that the last phase of Broomfield Masterplan will be fully completed and occupied by 2031.

Overall Broomfield Masterplan Development

The overall Broomfield Masterplan development expected to be fully completed and occupied by 2031 is presented in Table 13-10.

Table 13-10 - Overall Broomfield Masterplan Development 2031.

Phase	Total Residential Units Houses + Apartments
Phase 1 (Under Construction)	149
Future Phases (Future Applications)	415
Overall Broomfield Masterplan	564

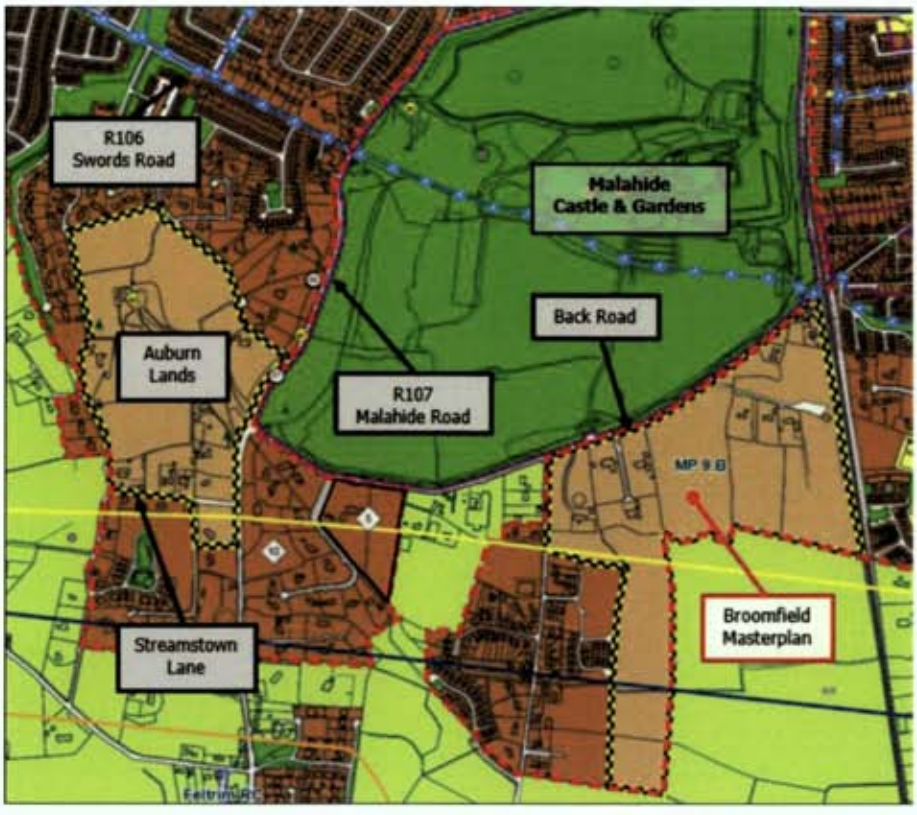

Fig. 13.16. Location Map for Broomfield Masterplan – Extracted from Fingal Dev. Plan - Sheet 9.

Similarly, with the objective to establish the amount of new car trips expected to travel through each surveyed junction, the calculated car trips for the Broomfield Masterplan development (under-construction Phase 1 in 2026 and potential future development in 2031), presented in Table 14, have been distributed.

The distribution percentage of the car trips for the AM and PM peak hour is detailed in Figure 22 and the corresponding AM & PM peak hour traffic flows, based on the assumed distribution, are presented in - Figure 23 for the under-construction Phase 1 in 2026 and Figure 24 for the potential future development in 2031. In summary, car trip distribution for Broomfield Masterplan developments was assumed as follows:

- 30% to/from east along Back Road towards R124 The Hill;
- 70% to/from west along Back Road towards R107 Malahide Road, of which:
  - 10% to/from south along Kinsealy Lane;
  - 20% to/from north along R107 Malahide Road;
  - 30% to/from south along R107 Malahide Road;
  - 10% to/from west along Streamstown Lane and Feltrim Road.

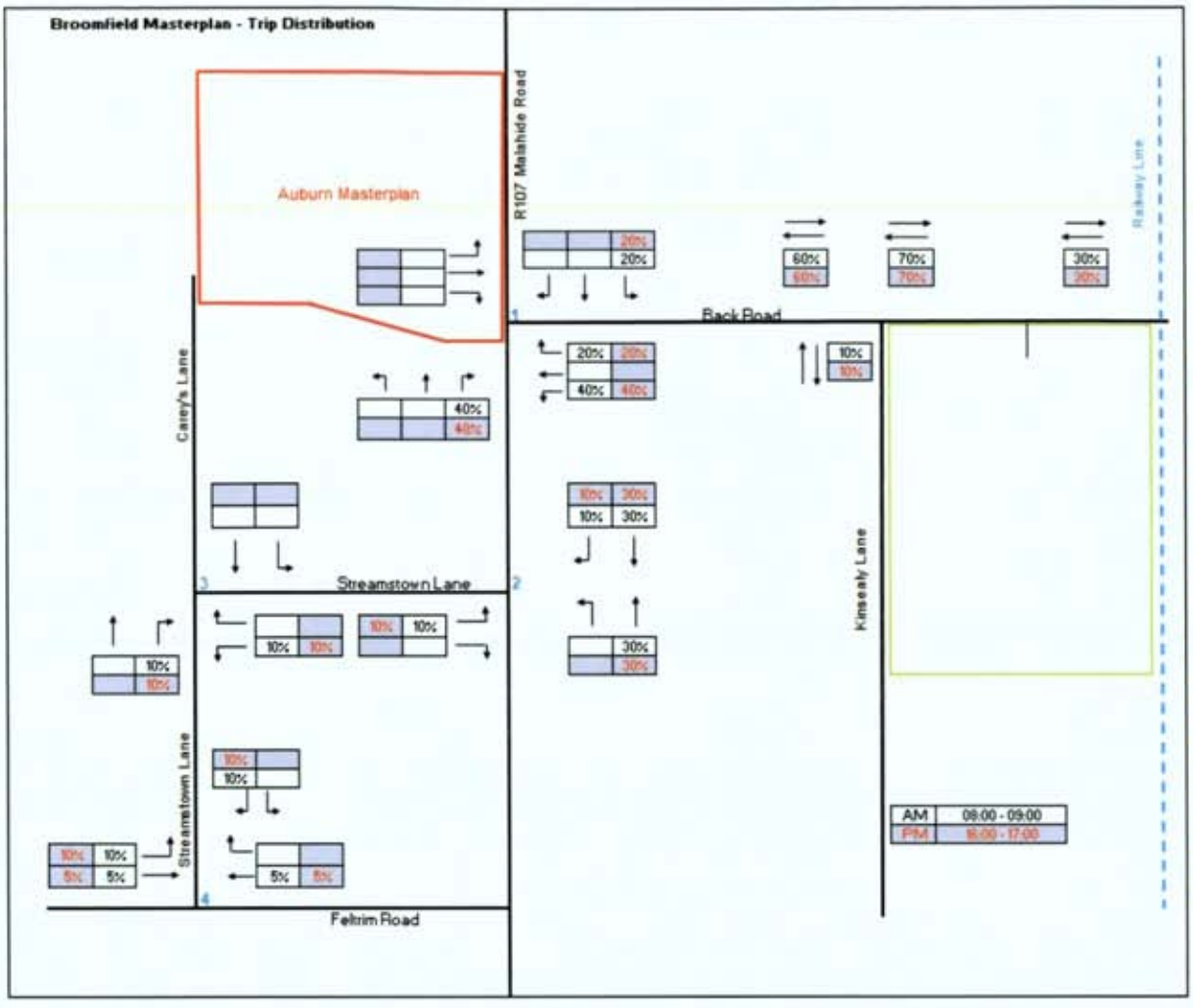

Fig. 13.17. Broomfield Trip Distribution

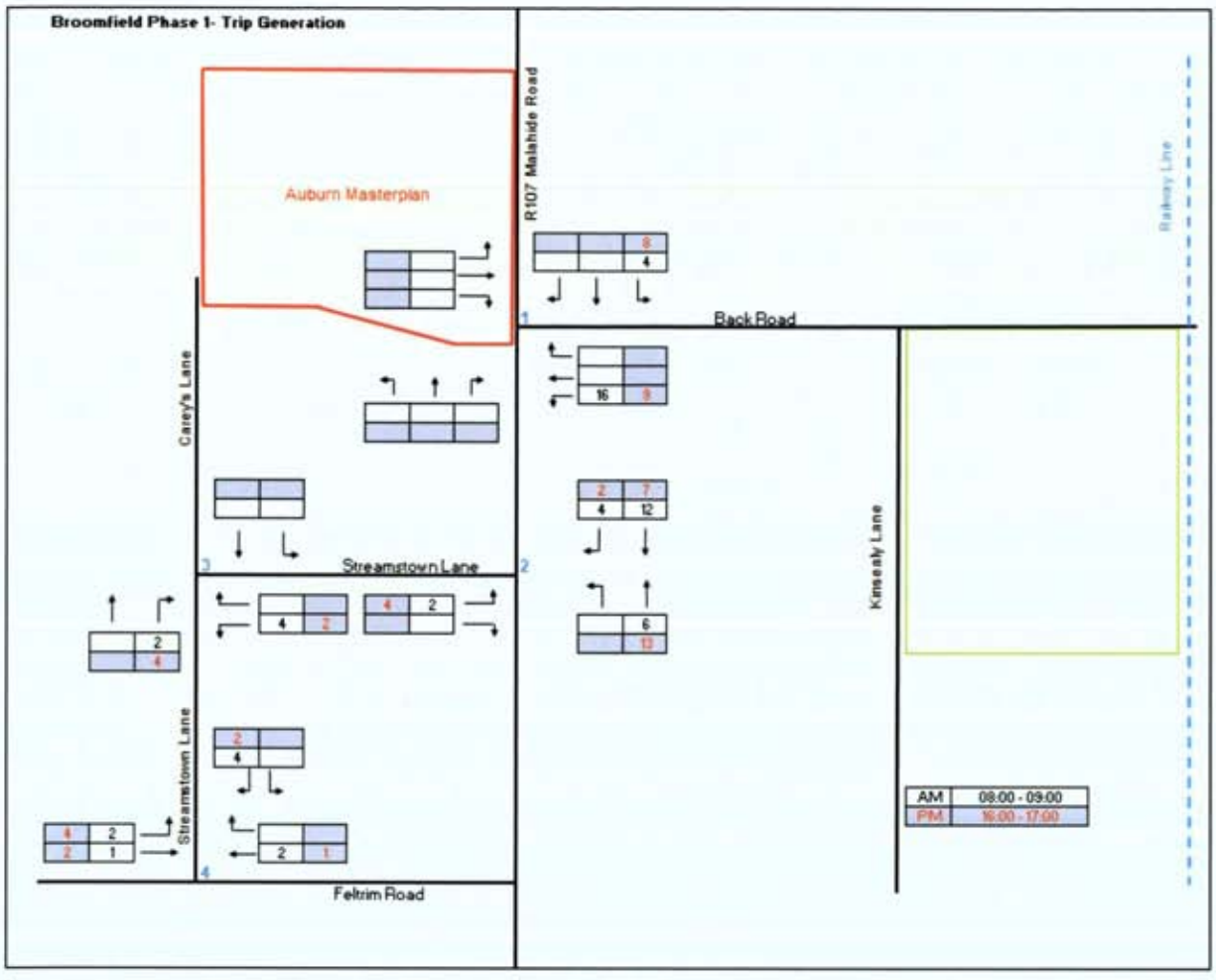

Fig. 13.17. Broomfield Phase 1 Trip Assignment

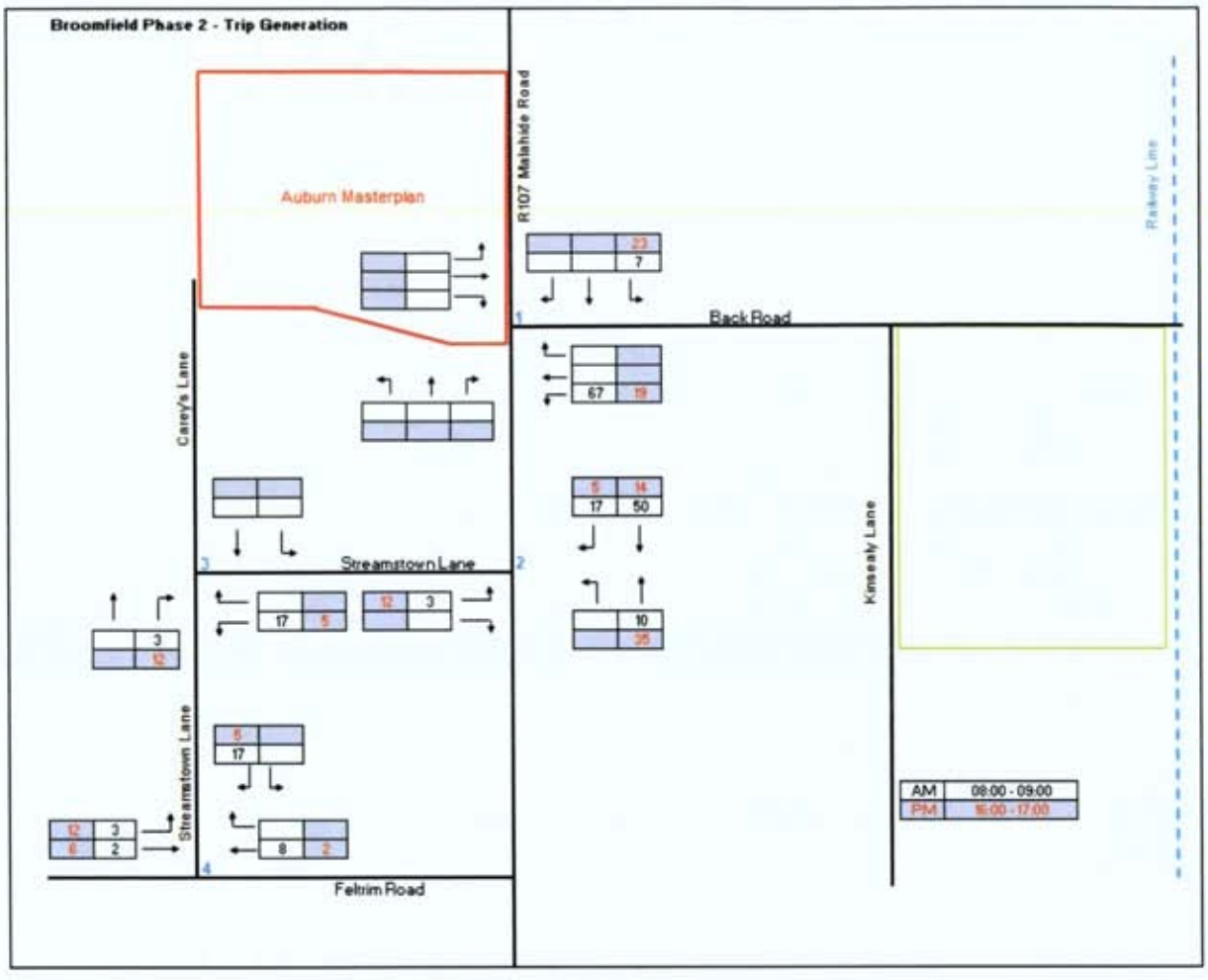

Fig. 13.18. Broomfield Masterplan Trip Assignment

Do-Nothing Scenario

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

Existing Traffic Condition

In order to determine the volume of traffic movements at key points on the road network surrounding the proposed development, traffic count data has been assessed for two/three/four/five junctions in the vicinity of the site.

The data used is taken from a traffic count survey which was carried by IDASO Ltd. On Thursday 24th September 2022 at the 4 junctions indicated in Figure 25 below. The junctions surveyed were:

- **Junction 1 (Existing Priority-controlled T-junction)**: R107 Malahide Road / Back Road;
- **Junction 2 (Existing Priority-controlled T-Junction)**: R107 Malahide Road / Streamstown Lane
- **Junction 3 (Existing Priority-controlled T-Junction)**: Streamstown Lane / Carey's Lane
- **Junction 4 (Existing Priority-controlled T-junction)**: Feltrim Road / Streamstown Lane.

Peak hour data was collected during the surveys, consisting of the morning peak hour from 08:00–09:00 and the evening peak hour from 16:00 – 17:00. The peak hour volumes are illustrated in Figure 13.18 below.

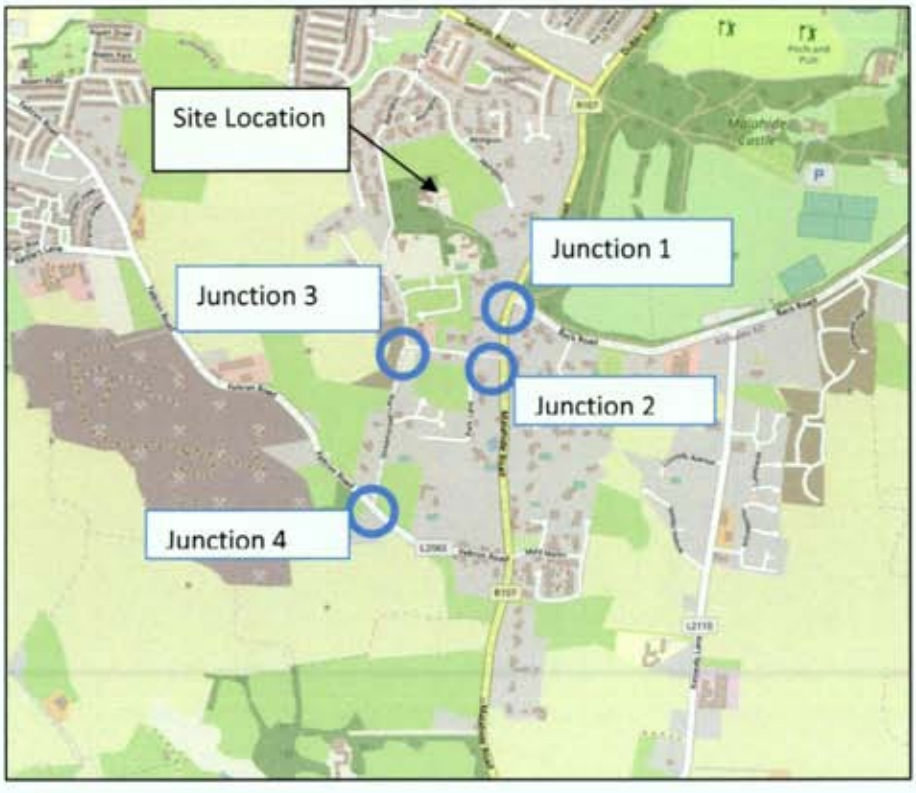

Fig. 13.19. Junctions Surveyed

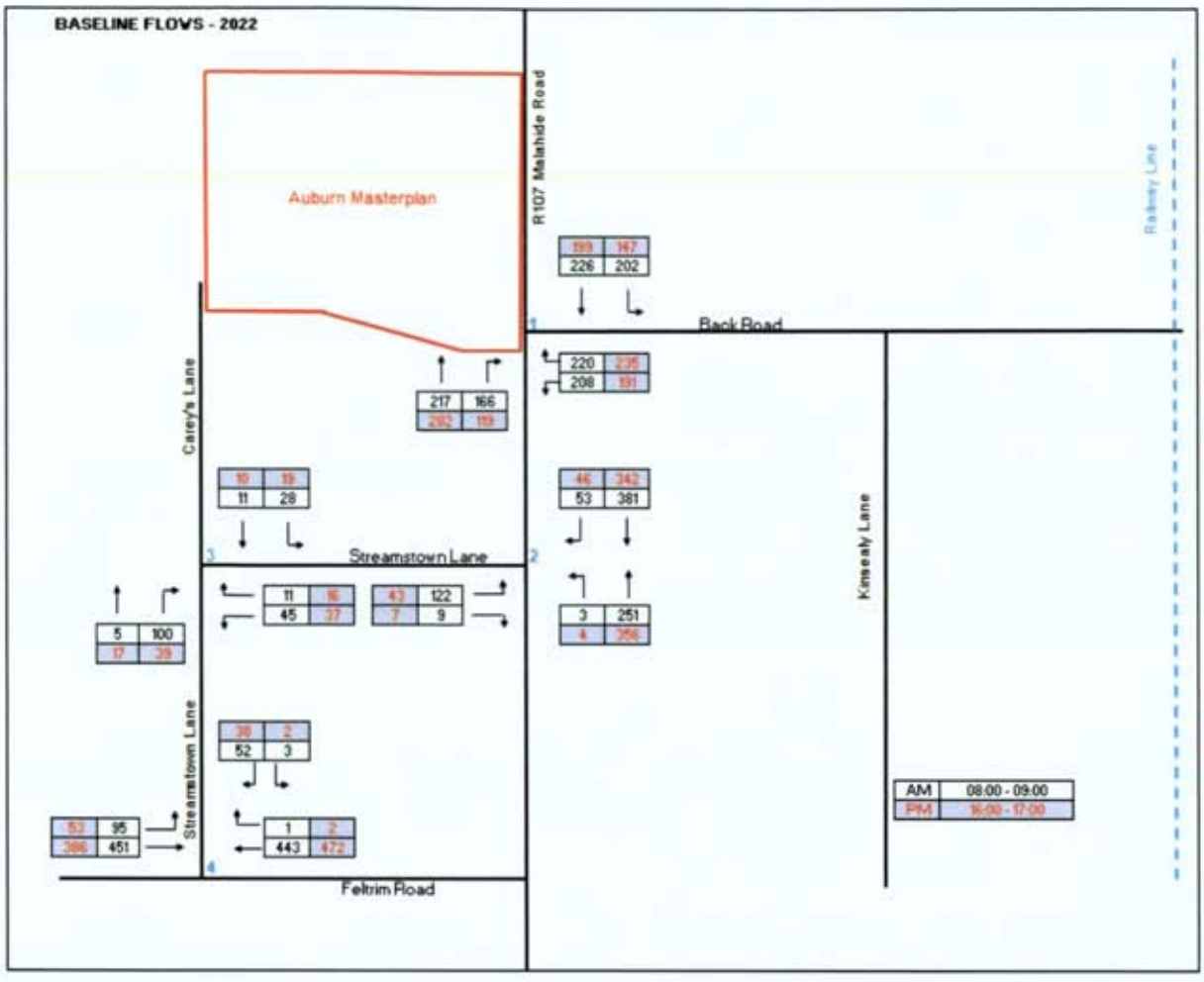

Fig. 13.20. Baseline Traffic Flows

Future Traffic Growth Rates

It has been assumed that the subject development will be constructed over a period of approximately 3 years. Therefore, the assumed year of opening is 2026.

In line with the 'Traffic and Transport Assessment Guidelines (May 2014)' which this TTA is based on, the surveyed junctions were also assessed for the future design years of 2031 (Opening Year +5 Years) and 2041(Opening Year +15 Years).

The background traffic growth used to factor up the 2022 baseline flows are also in accordance with the *'Table 6.1: Link-Based Growth Rates: Metropolitan Area Annual Growth Rates'* within the TII Publications – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019). These are:

- Opening Year: 1.066 (Central Growth) growth factor from 2022 to 2026.
- Opening Year + 5: 1.143 (Central Growth) growth factor from 2022 to 2031.
- Opening Year + 15: 1.196 (Central Growth) growth factor from 2022 to 2041.

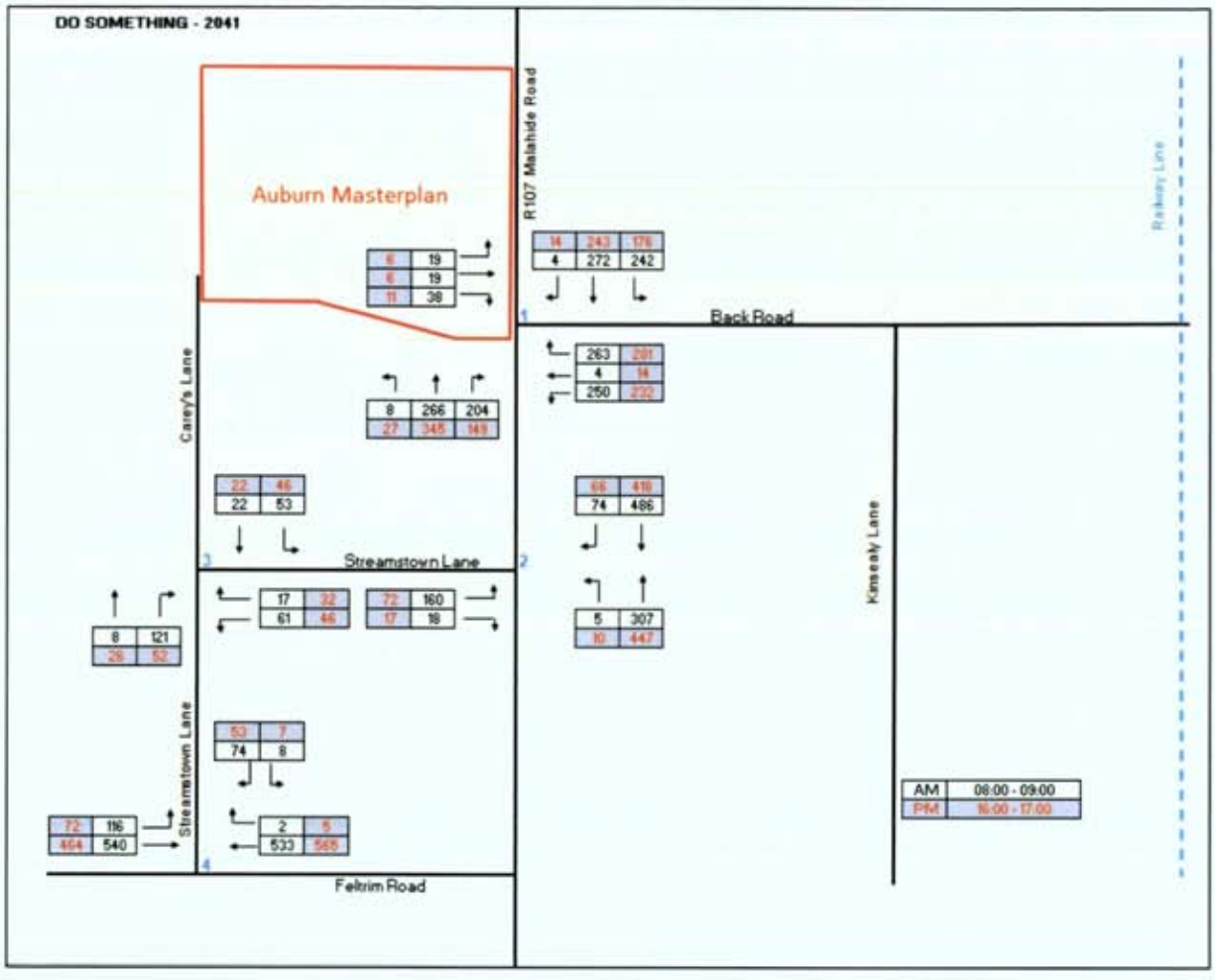

Fig 13.21 DO SOMETHING 2041

Junctions Assessed

The junctions that have been assessed are the following:

- **Junction 1 (Existing Priority-controlled T-junction)**: R107 Malahide Road / Back Road;
- **Junction 2 (Existing Priority-controlled T-Junction)**: R107 Malahide Road / Streamstown Lane
- **Junction 3 (Existing Priority-controlled T-Junction)**: Streamstown Lane / Carey's Lane
- **Junction 4 (Existing Priority-controlled T-junction)**: Feltrim Road / Streamstown Lane.

Assessment Scenarios

The performance of the junctions has been analysed for the critical AM and PM Peak Hours (08:00 – 09:00 and 18:00 – 19:00) for the following scenarios:
The 'Do-nothing' Scenarios will only contain the traffic flows (factored up) to each appropriate assessment year. To be conservative and achieve a more robust assessment it will be assumed that Broomfield Phase 1 is construction but not occupied until 2026.

- **Do Nothing 2022** – Baseline Traffic flows only
- **Do Nothing 2026** – Baseline Traffic flows 'factored up' + Broomfield Phase 1

- **Do Nothing 2031** – Baseline Traffic flows 'factored up' + Broomfield Phase 1
- **Do Nothing 2041** – Baseline Traffic flows 'factored up' + Broomfield Phase 1

The 'Do-something' Scenarios will assess the worst-case scenario in terms of traffic, and this is assuming all developments (Streamstown, Auburn Park and Little Auburn and Broomfield masterplan) will be approved and therefore included in the assessment.

- **DO SOMETHING - 2026 (Opening Year)**: Proposed junction upgrades with 2022 baseline traffic flows factored up + traffic to/from proposed development at Streamstown+ traffic to/from proposed development at Auburn Park + traffic to/from proposed development at Little Auburn + traffic to/from the under-construction Phase 1 development at Broomfield Masterplan + traffic to/from the potential future development at Broomfield Masterplan.
- **DO SOMETHING - 2031 (Opening Year + 5 Years)**: Proposed junction upgrades with 2022 baseline traffic flows factored up + traffic to/from proposed development at Streamstown+ traffic to/from proposed development at Auburn Park + traffic to/from proposed development at Little Auburn + traffic to/from the under-construction Phase 1 development at Broomfield Masterplan + traffic to/from the potential future development at Broomfield Masterplan.
- **DO SOMETHING - 2041 (Opening Year + 15 Years)**: Proposed junction upgrades with 2022 baseline traffic flows factored up + traffic to/from proposed development at Streamstown+ traffic to/from proposed development at Auburn Park + traffic to/from proposed development at Little Auburn + traffic to/from the under-construction Phase 1 development at Broomfield Masterplan + traffic to/from the potential future development at Broomfield Masterplan.

Junction 1: R107 Malahide Road / Back Road

Junction 1 is an existing three-armed priority-controlled junction located immediately southeast of the proposed development site. For the DO NOTHING scenarios, this junction has been modelled based on its current configuration and the PICADY analysis results are summarise in Table 13-11. The arms of the junction were labelled as follows within the PICADY model:

- Arm A: R107 Malahide Road (N);
- Arm B: Back Road (E);
- Arm C: R107 Malahide Road (S).

Table 13-11 - Junction 1 – DO NOTHING - PICADY Analysis Results.

Stream	AM (08:00 to 09:00)		PM (18:00 to 19:00)	
	Queue (veh.)	**RFC**	**Queue (veh.)**	**RFC**
2022 (BASE YEAR) – DO NOTHING				
Stream B-C	0.5	0.35	0.5	0.21
Stream B-A	0.9	0.48	0.6	0.40
Stream C-AB	0.8	0.38	0.9	0.37

2026 – DO NOTHING				
Stream B-C	0.6	0.40	0.6	0.24
Stream B-A	1.1	0.53	0.8	0.44
Stream C-AB	1.0	0.41	1.0	0.40
2031 – DO NOTHING				
Stream B-C	0.8	0.46	0.8	0.27
Stream B-A	1.4	0.60	0.9	0.49
Stream C-AB	1.2	0.46	1.2	0.44
2041 – DO NOTHING				
Stream B-C	1.0	0.51	0.4	0.29
Stream B-A	1.8	0.66	1.1	0.53
Stream C-AB	1.3	0.49	1.4	0.48

The analysis results as shown above, indicate that the Junction 1 is currently operating well within capacity during both peak hours, with the highest RFC at 0.48 and a corresponding queue of 0.9 vehicle during the AM peak hour and a maximum RFC at 0.40 with a corresponding queue of 0.6 vehicle recorded for the PM.

For the future assessment year of 2041 - DO NOTHING, with the baseline flows factored up, the subject junction would continue to operate well within capacity during both peak hours, with the highest RFC at 0.66 and a corresponding queue of 1.8 vehicle during the AM and with the highest RFC at 0.53 and a corresponding queue of 1.1 vehicle recorded for the PM.

For the DO SOMETHING Scenarios, Junction 1 is assumed to be upgraded as part of the Backfield and Front Field Developments for the 'worst case' scenario. Junction 1 is proposed to be upgraded from a priority-controlled T-junction to a four-armed signalised junction with dedicated right turning pocket lanes on the eastern and southern approaches and with the western arm forming the main access to the site. For the DO SOMETHING scenarios, the subject junction has been modelled based on the proposed layout and the TRANSYT analysis results are summarise in Table 13-12. The arms of the proposed junction were labelled as follows within the TRANSYT model:

- Arm A: Back Road (E);
- Arm B: R107 Malahide Road (S);
- Arm C: Site Access Road (W);
- Arm D: R107 Malahide Road (N).

Table 13-12- Junction 1 – DO SOMETHING - TRANSYT Analysis Results.

Arm	Mov.	AM		PM	
		Mean Max Queue (Veh.)	**DOS%**	**Mean Max Queue (Veh.)**	**DOS%**
2026 - DO SOMETHING					
A	S/L	46	3.38	2.72	42
	R	47	2.21	2.23	49
B	S/L	74	8.00	13.99	67
	R	57	4.38	4.05	28
C	S/L/R	41	2.72	1.06	31

D	S/L/R	81	17.20	16.71	71
2031 - DO SOMETHING					
A	S/L	62	6.06	4.03	48
	R	50	2.26	2.28	52
B	S/L	79	9.13	15.38	74
	R	61	4.47	4.07	30
C	S/L/R	41	2.72	1.06	31
D	S/L/R	88	20.36	19.60	79
2041 - DO SOMETHING					
A	S/L	48	3.99	3.65	45
	R	53	2.30	2.32	54
B	S/L	83	10.06	15.94	74
	R	63	4.56	4.07	31
C	S/L/R	41	2.72	1.06	31
D	S/L/R	90	21.55	19.01	78

The analysis results as shown above, indicate that Junction 1, when operating with its proposed configuration of a signalised crossroads, would operate within capacity for the future assessment year of 2026 – DO SOMETHING (Opening of Proposed Development) during both peak hours, with the highest DOS at 81% and a corresponding queue of 17.20 vehicles recorded in the AM and the highest DOS at 71% and a corresponding queue of 16.71 vehicles recorded in the PM.

For the future assessed year of 2041 – DO SOMETHING, the analysis results indicate that Junction 1 would operate with satisfactory capacity during both peak hours, with the highest DOS at 90% and a corresponding queue of 21.55 vehicles during the AM and a maximum DOS at 78% with a corresponding queue of 19.01 vehicles recorded in the PM.

See Appendix 13-3 for full analysis results.

Junction 2: R107 Malahide Road / Streamstown Lane

Junction 2 is a priority controlled junction located east of the proposed development site. This junction has been modelled based on its current configuration and the PICADY analysis results are summarise in Table 13-13 below. The arms of the junction were labelled as followed within the PICADY model:

- Arm A: R107 Malahide Road (N);
- Arm B: Streamstown Lane (E);
- Arm C: R107 Malahide Road (S);

Table 13-13 - Junction 2 - PICADY Analysis Results

Stream	AM (08:00 to 09:00)		PM (18:00 to 19:00)	
	Queue (veh.)	**RFC**	**Queue (veh.)**	**RFC**
2022 (BASE YEAR) – DO NOTHING				
Stream B-AC	0.3	0.22	0.1	0.09
Stream C-AB	0.3	0.12	0.2	0.10
2026 – DO NOTHING				
Stream B-AC	0.3	0.24	0.1	0.10

Stream C-AB	0.3	0.13	0.2	0.11
2031 – DO NOTHING				
Stream B-AC	0.4	0.26	0.1	0.11
Stream C-AB	0.3	0.14	0.3	0.13
2041 – DO NOTHING				
Stream B-AC	0.4	0.27	0.1	0.11
Stream C-AB	0.4	0.15	0.3	0.14
2026 – DO SOMETHING				
Stream B-AC	0.4	0.29	0.2	0.16
Stream C-AB	0.4	0.17	0.3	0.16
2031 – DO SOMETHING				
Stream B-AC	0.5	0.32	0.3	0.20
Stream C-AB	0.6	0.23	0.4	0.19
2041 – DO SOMETHING				
Stream B-AC	0.5	0.33	0.2	0.19
Stream C-AB	0.6	0.25	0.6	0.23

The analysis of Junction 2 shows the junction will continue to operate within capacity during both AM and PM peak hours with the highest RFC of 0.33 and a corresponding queue length of 0.5 vehicle during the AM peak hour and the highest RFC of 0.23 and a corresponding queue of 0.6 vehicle in the PM.

See Appendix 13-3 for full analysis results.

Junction 3: Streamstown Lane / Carey's Lane

Junction 2 is an existing priority-controlled T-junction located south of the proposed development site. This junction has been modelled with its current configuration and the PICADY analysis results are summarise in Table 13-14 below. The arms of the junction were labelled as follows within the PICADY model:

- Arm A: Streamstown (S);
- Arm B: Carey's Lane
- Arm C: Streamstown (E);

Table 13-14 - Junction 3 - PICADY Analysis Results.

Stream	AM (08:00 to 09:00)		PM (18:00 to 19:00)	
	Queue (veh.)	RFC	Queue (veh.)	RFC
2022 (BASE YEAR) – DO NOTHING				
Stream B-AC	0.1	0.08	0.1	0.06
Stream C-AB	0.0	0.02	0.0	0.03
2026 – DO NOTHING				
Stream B-AC	0.1	0.08	0.1	0.06

Stream C-AB	0.1	0.02	0.0	0.03
2031 – DO NOTHING				
Stream B-AC	0.1	0.09	0.1	0.09
Stream C-AB	0.0	0.03	0.0	0.03
2041 – DO NOTHING				
Stream B-AC	0.1	0.10	0.1	0.07
Stream C-AB	0.0	0.03	0.01	0.04
2026 – DO SOMETHING				
Stream B-AC	0.2	0.14	0.1	0.13
Stream C-AB	0.0	0.03	0.1	0.06
2031 – DO SOMETHING				
Stream B-AC	0.2	0.15	0.2	0.13
Stream C-AB	0.0	0.04	0.1	0.06
2041 – DO SOMETHING				
Stream B-AC	0.2	0.15	0.2	0.14
Stream C-AB	0.0	0.04	0.1	0.07

The analysis of Junction 3 shows the junction will continue to operate within capacity during both AM and PM peak hours with the highest RFC of 0.15 and a corresponding queue length of 0.2 vehicle during the AM peak hour and the highest RFC of 0.14 and a corresponding queue of 0.2 vehicle in the PM.

See Appendix 13-3 for full analysis results.

Junction 4: Feltrim Road / Streamstown Lane.

Junction 4 is a priority-controlled junction located south of the proposed development site. This has been modelled based on its current configuration and the PICADY analysis results are summarise in Table 13-15 below. The arms of the junction were labelled as follows within the PICADY model:

- Arm A: Feltrim Road (W);
- Arm B: Streamstown Lane (S);
- Arm C: Feltrim Road (E);

Table 13-15 - Junction 4 - DO SOMETHING - PICADY Analysis Results.

Stream	AM (08:00 to 09:00)		PM (18:00 to 19:00)	
	Queue (veh.)	RFC	Queue (veh.)	RFC
2021 (BASE YEAR) – DO NOTHING				
Stream B-C	0.0	0.02	0.0	0.01
Stream B-A	0.2	0.17	0.2	0.15
Stream C-AB	0.0	0.02	0.0	0.01
2026 – DO NOTHING				
Stream B-C	0.0	0.02	0.0	0.02
Stream B-A	0.3	0.20	0.2	0.16

Stream C-AB	0.0	0.03	0.0	0.01
2031 – DO NOTHING				
Stream B-C	0.0	0.02	0.0	0.02
Stream B-A	0.3	0.22	0.2	0.18
Stream C-AB	0.0	0.03	0.0	0.01
2041 – DO NOTHING				
Stream B-C	0.0	0.02	0.0	0.02
Stream B-A	0.4	0.24	0.3	0.20
Stream C-AB	0.0	0.03	0.0	0.01
2026 – DO SOMETHING				
Stream B-C	0.0	0.03	0.0	0.02
Stream B-A	0.5	0.30	0.3	0.21
Stream C-AB	0.0	0.03	0.0	0.02
2031 – DO SOMETHING				
Stream B-C	0.0	0.03	0.0	0.03
Stream B-A	0.5	0.34	0.3	0.22
Stream C-AB	0.0	0.03	0.0	0.02
2041 – DO SOMETHING				
Stream B-C	0.0	0.03	0.0	0.03
Stream B-A	0.6	0.36	0.3	0.24
Stream C-AB	0.1	0.04	0.0	0.02

The analysis of Junction 4 shows the junction will continue to operate within capacity during both AM and PM peak hours with the highest RFC of 0.36 and a corresponding queue length of 0.6 vehicle during the AM peak hour and the highest RFC of 0.24 and a corresponding queue of 0.3 vehicle in the PM.

See Appendix 13-2 for full analysis results.

13.11 Mitigation and Monitoring Measures

Introduction

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

Construction Phase

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

- Dust and dirt control measures.
- Noise assessment and control measures
- Routes to be used by vehicles

- Working hours of the site
- Details of construction traffic forecasts
- Time when vehicle movements and deliveries will be made to the site
- Facilities for loading and unloading
- Facilities for parking cars and other vehicles

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

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CMP and TMP, it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period.

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

- Stage I: Site clearance and preparation work for the construction.
- Stage II: Site development and construction. The development includes all associated site works and infrastructure which includes roads, utilities, foul and surface water drainage.

The construction programme is intended to be an 18-month programme.

An indicative phasing plan for all three concurrent planning submissions is shown in the Figure below. Each phase is designed to be delivered independently.

The proposed phasing is to help further reduce the impact of construction on the local road network

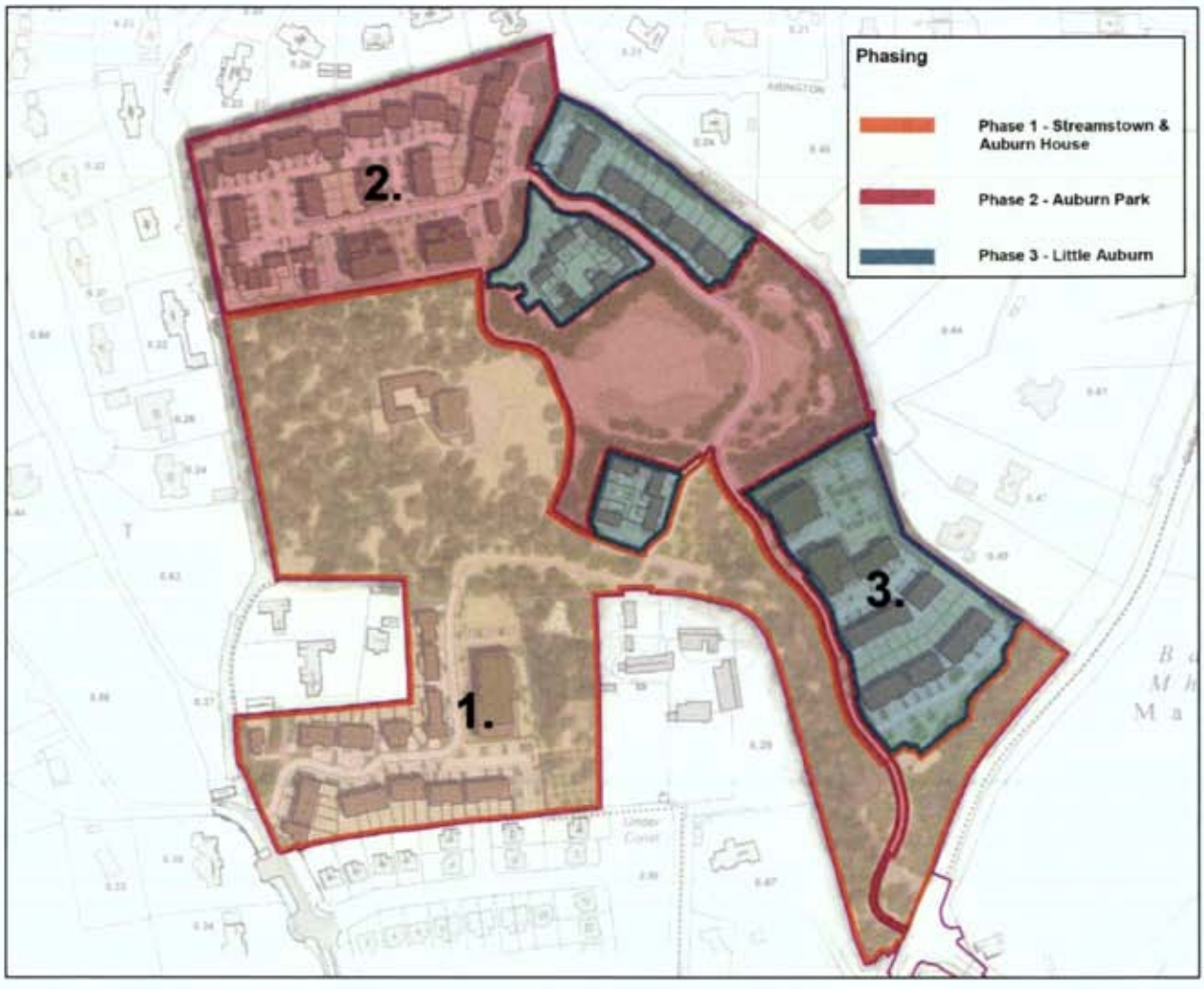

Fig. 13-22 Proposed Phasing

Operational Phase

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

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

A Travel Plan has been included for each proposed development under separate cover for each respective planning application. These Plans sets out method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport.

In addition, the proposed developments propose connectivity to existing facilities and public transport options. The proposed upgrades to the R107 Malahide Road / Back Road junction will improve pedestrian and cyclist connectivity between the proposed development and the surrounding public network. New internal footpaths connecting the access road to R107 Malahide Road provide safe access to public transport in the area.

13.12 Residual Impacts

Introduction

The residual impacts outlined below show the impact of the proposed developments with the above mitigation measures in place.

Construction Phase

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

'Worst-case' Scenario

The 'worst-case' scenario for the construction phase is for the mitigation measures to fail and cause significant and long term effects to the area. These impacts would include long traffic delays and possible detours along the local road network. The 'worst-case' scenario would also affect the construction timeline and increase the construction programme.

Operational Phase

Provided the above mitigation measures and procedures outlined in the Travel Plans provided under each separate cover are incorporated into the operational phases of each proposed development, the residual impact upon the local receiving environment is predicted have permanent effects but not significant in terms of effect.

'Worst-case' Scenario

The 'worst-case' scenario for the operational phase is for slight, permanent effects to the local road network. These would include long delays at nearby junctions due to the impact of the proposed development operational traffic should mitigation measures fail.

13.13 Monitoring And Reinstatement

Construction Stage

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

- Construction vehicles routes and parking
- Internal and external road conditions

- Construction activities hours of work

Operational Stage

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

13.14 Interactions

Construction Stage

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

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

Operational Stage

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

13.15 Difficulties encountered when compiling

There were no difficulties encountered in compiling this Chapter.

13.16 References

- Dublin BusConnects Website: New Dublin Area Bus Network - BusConnects
- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport
- Fingal Council Development Plan 2017 – 2023.
- Fingal City Council Draft Development Plan 2023 - 2029
- NRA Guidelines, Traffic and Transportation Assessment Guidelines (2014), National Roads Authority
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, (May 2019), Transport Infrastructure Ireland Publications
- Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, (2016), Transport Infrastructure Ireland Publications
- Sustainable Urban Housing: Design Standards for New Apartments, (2020), Department of Housing, Planning and Local Government
- Transport for Ireland (TFI): www.transportforireland.ie

13.17 Appendices

Appendix 13-1: GoCar Letter

Appendix 13-2: TRICS – Trip Rates

Appendix 13-2: Junction Analysis Results.

14.0 ARCHAEOLOGY AND CULTURAL HERITAGE

14.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report has been prepared by Courtney Deery Heritage Consultancy Ltd[1] on behalf of Kinwest Ltd. This chapter provides an assessment of the archaeological and cultural heritage background for a proposed residential development at Auburn House, Malahide, Co. Dublin.

The application relates to a masterplan development comprising of 411 residential units and therefore therefore constitutes a Strategic Housing Development under Section 3(d) of the Planning and Development (Housing) and Residential Tenancies Act 2016 (as amended). The Masterplan area (Figure 14.1) is divided into three separate sites for the purpose of making individual planning applications; Auburn Park, at the northern end of the Masterplan area; Little Auburn, located in its eastern portion; and Streamstown, in the southern end of the Masterplan area. The three proposed areas for residential development within the masterplan area will be subject to individual planning applications.

This chapter of the EIAR has considered and has regard to the accompanying planning applications for the 'Auburn Park', 'Streamstown' and 'Little Auburn' developments, and information contained therein, and includes a cumulative assessment of the proposed SHD application at Auburn House, Malahide, Co. Dublin.

The main purpose of the archaeology and cultural heritage section of the EIAR is to assess the potential significance and sensitivity of the existing archaeological and cultural heritage environment, and in turn to evaluate the likely and significant impacts of the proposed development on this environment. Ameliorative measures are proposed where necessary to safeguard any monuments, features or finds of antiquity or features of local cultural heritage interest that are identified during the course of the present study.

Auburn House, a protected structure, is located within the proposed development site. This is assessed in the Architectural Impact Assessment prepared by Sheehan & Barry Conservation Architects.

[1] This EIAR chapter has been prepared by Dr Clare Crowley of Courtney Deery Heritage Consultancy Ltd. Dr Crowley holds a PhD in Archaeology and Ancient History from Trinity College Dublin and certificates in the Repair and Conservation of Historic Buildings from Dublin Civic Trust and in Condition Surveys of Historic Buildings from University of Oxford. She has twenty years of experience in the fields of archaeology, built heritage and cultural heritage, working in both the private and public sector and has managed cultural heritage EIAs for numerous infrastructural and development projects.

Figure 14.1 – Masterplan development area

14.2 STUDY METHODOLOGY

The assessment was based on a desk study of published and unpublished documentary and cartographic sources, supported by geophysical survey and archaeological testing.

14.2.1 Desk Study

The desk study availed of the following sources:

National Monuments Service

The National Monuments, Preservation Orders, Register of Historic Monuments lists for County Dublin were sourced directly from the Department of Housing, Local Governmental and Heritage (DHLGH).

Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR)

The primary source of information for the desk study is the Record of Monuments and Places (RMP) of the DHLGH. The Sites and Monuments Record (SMR), as revised in the light of fieldwork, formed the basis for the establishment of the statutory RMP pursuant to Section 12 of the National Monuments (Amendment) Act, 1994. The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. It is based on a comprehensive range of published and publicly available documentary and cartographic sources. The information held in the RMP files is read in conjunction with constraint maps (published at reduced six-inch scale). The non-statutory SMR database of the Archaeological Survey of Ireland which is available online at www.archaeology.ie was also examined and mapping for the project includes SMR and RMP sites.

Topographical Files of the National Museum of Ireland

The topographical files of the National Museum of Ireland (NMI) identify recorded stray finds held in the museum's archive. The files, which are donated to the state in accordance with national monuments legislation, are provenanced to townland and sometimes include reports on excavations undertaken by NMI archaeologists earlier in the 20th century.

Excavations Bulletins and Excavations Database

'Excavations' is an annual bulletin that contains summary accounts of all excavations carried out annually in Ireland since the 1970s. The online database contains summary accounts of all excavations carried out from 1985 to 2020. The bulletins and database were consulted to establish the results of excavations that previously have been undertaken at sites or as a consequence of development in the environs of the proposed development.

Documentary and Cartographic Sources

Documentary and literary sources were consulted, including the Fingal County Council Development Plan 2017-2023 (see Appendix **14.3**) and a number of other published and unpublished documentary sources, as outlined in the bibliography at the end of the report. A review of historical maps was also undertaken to identify any features of cultural heritage significance within the proposed development site, including Down Survey barony and parish maps (c. 1656), Rocque's map of County Dublin (1760), Taylor's map of the environs of Dublin (1816), and Ordnance Survey mapping (1843, 1906-09, 1939-40).

14.2.3 Field Survey

A geophysical survey (Licence Reference 20R0002) was carried out in accessible areas across the proposed development area. This was followed by the targeted archaeological testing of geophysical anomalies identified (Licence No. 20E0057).

14.2.4 Legislation, Standards and Guidelines

The following legislation, standards and guidelines were considered and consulted for the purpose of this report:

- National Monuments Acts, 1930 as amended;

- Planning and Development Act 2000, as amended;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999;
- Heritage Act, 1995;
- The UNESCO World Heritage Convention, 1972;
- ICOMOS Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas, 2005;
- European Convention Concerning the Protection of the Archaeological Heritage of Europe, 'Valetta Convention' (ratified by Ireland in 1992);
- Council of Europe Convention of the Protection of the Archaeological Heritage of Europe, 'Granada Convention' (ratified by Ireland in 1997);
- The European Landscape Convention 2000;
- Environmental Protection Agency (EPA) (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands.

Excerpts from the relevant legislation are contained in Appendix 14.1 of this chapter.

14.2.5 Impact Significance

Archaeological and cultural heritage sites are considered to be a non-renewable resource and cultural heritage material assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could adversely affect these sites. The likely significance of all impacts is determined in consideration of the magnitude of the impact and the baseline rating upon which the impact has an effect. The impact significance is defined as not significant, imperceptible, slight, moderate, significant, very significant and / or profound. A glossary of impacts is provided in Appendix 14.2.

14.3 EXISTING RECEIVING ENVIRONMENT

14.3.1 Study Area

The proposed development site is located in the townlands of Auburn and Streamstown, in the civil parish of Kinsaley and the barony of Coolock, within the former demesne of Auburn House. The lands are bounded by an existing housing estate (Abington) to the north and west, the Malahide Road and rear gardens to the east and undeveloped lands to the south. Malahide Demesne is located on the opposite side of the Malahide Road to the east. There are no recorded archaeological sites within the proposed development site or its immediate vicinity, however, there is considerable evidence for activity from the Mesolithic period onwards in the wider landscape.

14.3.2 Archaeological and Historical Background

Prehistoric Activity

The coastal area of north County Dublin has produced quantities of flint artefacts, including sites such as the raised beaches at Sutton, where Mesolithic and Neolithic flint artefacts have been found (Stout & Stout 1992) and at Paddy's Hill overlooking Malahide Estuary, at which flint scatters of Mesolithic, Neolithic and Bronze Age date have been identified (Keeling et al, 1994).

With the exception of Howth, prehistoric material has historically been relatively rare in this part of Fingal, and Stout and Stout (1992) speculate that centuries of continuous tillage north of the Liffey must have led to the destruction of a large number of archaeological monuments. However, more recent large-scale archaeological work associated with developments such as TII road projects has begun to identify more prehistoric remains in other parts of Fingal.

Overall, there is a significant body of Neolithic (c. 4000–2400 BC) material from north County Dublin. Excavations at nearby Feltrim Hill (DU012-02502), c. 615m to the southwest, revealed settlement evidence from the Neolithic in the form of pottery sherds and worked stones, although there were no apparent remains of houses (Hartnett & Eogan 1964). Stray finds in the area include leaf-shaped arrowheads, scrapers, a tanged arrowhead, a javelin head, two knives, and several polished stone axe heads (NMI Reg. No. 1965:13-16, 22, 55; 1966:63-92, 122-147, 1968:84-119, 172, 173, 1969:22-33).

This whole stretch of coast has a clear view of Lambay Island to the east where there is evidence for the production of Neolithic stone axes and flint tools (Cooney 2000, 196-7). The highest points of Lambay Island also have at least two cairns that may also date to the Neolithic.

A ring-ditch of Bronze Age date was uncovered during archaeological monitoring in Drinan townland, c. 1.3km northwest (SMR DU012-093; Licence No. 04E1066). The ring-ditch was located a short distance northeast of a multi-period site at which the earliest phase comprised of a cremation burial containing over 70 sherds of Western Neolithic pottery, alongside fragments of burnt bone (SMR DU012-094001; DU012-094002 to -094005; Licence No. 04E1604).

Early Medieval Period

At the start of the early medieval period (5th to 12th century AD), the plains of north County Dublin, formed part of the over-kingdom of Brega. Though initially the Laigin controlled most of Dublin and north as far as the River Boyne, the extent of their hegemony was pushed south of the River Liffey over the course of the 5th century AD. With the collapse of the Laigin hegemony in the Midlands, the overkingship of Brega came to be dominated by Síl nÁedo Sláine, a dynasty of the southern Uí Néill (Byrne 1973). North Dublin was controlled by subject peoples, the Gailenga Becca, the Saitne and the Ciannachta (after Bolger 2006).

A holy well site (RMP DU012-016) known as Lady's well, is recorded c. 690m southwest of the subject lands, in Feltrim Quarry, but no known ecclesiastical centre is situated in the vicinity of this well, which was removed during quarrying operations.

The closest known settlement of early medieval date is the site of a recorded cashel on the western summit of Feltrim Hill, c. 900m southwest (DU012-025001). It comprised an oval area (35m E-W; 25m N-S) enclosed by a drystone wall, with an entrance in the east originally protected by an inner and outer timber gate (Eogan & Hartnett 1964, 21). Excavations in the late 1940s in advance of quarrying produced extensive evidence for an impressive domestic assembly on the site (ibid., 147).

Further settlement is evidenced by ringforts and an enclosure in the neighbouring Broomfield and Grange townlands (DU012-033, DU015-003001 & -003002), and the discovery of a ringfort which initially presented as a cropmark on aerial photography in Kinsaley townland, c. 1km southeast (SMR file DU012-071; pers. comm. T. Condit). Further south in Kinsaley townland is another cluster of enclosures and field system (DU015-112 to -114).

The multi-period site from Drinan townland included a series of enclosures dating to the early medieval / medieval periods (DU012-094002 to -094005; Licence No. 04E1604). The most dramatic feature identified on site was a low-lying artificial mound that was surrounded by a large ditch. It was enclosed by a ditch and it overlay another substantial earlier ditch. It may have been a ringfort or ringwork, with settlement during the 11th or 12th centuries and possibly earlier (Halliday 2005).

Viking raids on the Irish coastline also commenced during the early historic period, and in AD 841 to 842 the Vikings wintered for the first time at Dublin. According to Ball (1920), the name Fingal— Fine Gall, the territory of the Gall, or strangers— was used to denote the district into which the Vikings made these predatory excursions. The harbour at Malahide—or possibly Baldoyle (Baile Dubh Gaill, or town/settlement of the dark[-haired] foreigners)— is reputed to have played an important part in early Vikings raids and the Danes were resident in AD 897. Evidence of Viking influence in the surrounding region is recorded in early documentary references to Swords, which first appear in the late 10th and early 11th century when the village became the target of the Ostmen or Vikings of Dublin. The Annals of the Four Masters record that in 1012 and 1016, Swords was burned by the Danes. Before the Battle of Clontarf in 1014, Brian Ború is also said to have burned Fingal and the district of Howth.

The Vikings of Dublin began to expand northwards in the mid-11th century, conquering Dublin's northern hinterland. Hamond McTurkill, the last Danish King of Dublin, retired to Malahide in 1171 (Lewis 1837, 337), and after his death, the Talbots are reputed in folklore to have been involved conquering his remaining kin and followers in the Malahide area: supposedly at the cluster of ringforts in Broomfield and Grange townlands, although the former townland name for Yellow Walls to the northwest of Malahide Demesne was Hamonstown or Hamonswood. Viking rule and settlement influenced the region for over 250 years, from the 9th to the 12th centuries. Bradley suggests Viking Dublin should be looked at as part of what he calls 'the rurally settled area of the Dublin Scandinavians' rather than as a number of successful trading settlements strategically located along the coast (Bradley in Simms & Fagan 1992).

Anglo-Norman Settlement (12th to 16th Century)

Malahide village may have been site of pre-Anglo-Norman settlement, perhaps focused on an early church of St Fenweis that may have been located near to St Sylvester's church and adjacent to a holy well (DU012-023). A possible motte and bailey (DU012-034) at Wheatfields in Sainthelens townland to the south of the village, appears likely to have served as the early seat of the Anglo-Norman lord Richard Talbot, who was granted lands at Malahide in the 1170s.

Richard Talbot, and soon after his kinsfolk, presumably began to set up a more permanent base of power rapidly following his land grant, in the 1170s or 1180s. In the absence of other strong evidence for an earlier foundation, the first phase of building at Malahide Castle may therefore probably be located in the 15th century, with a subsequent second major medieval phase— likely to have been accompanied by the initial building at the adjacent church —quickly following the manorial grant of 1475. A medieval church and graveyard is recorded in Kinsaley townland to the south (DU015-002).

Malahide castle (DU012-030) was erected on an elevated situation in the present grounds of the Demesne, c. 755m northeast of the subject lands. Archaeological testing and excavation (Consent no. C451) uncovered a set of steps at the north-west corner of the older part of the castle, an early possible enclosing wall identified below the Butler's House as well as a substantial ditch (1.7m in width), which was sealed by the likely late medieval courtyard and probably originally enclosed the 15th-century tower house (RMP file description).

By the 16th century, Fingal was emerging as a distinct cultural zone and was known as the breadbasket of Dublin due its fertile agricultural land. Vital also to the medieval, and the later post-medieval economy in Malahide was the harvesting of marine resources— both fish and oysters from the famed beds in the estuary. Control over these resources, through the granting of the customs and admiralty of the port to Thomas Talbot, accompanied the grant of manorial status in the late 15th century (Byrne 1997, 25), and echoes of such conditions persisted in leases for a long time thereafter. By 1547, Malahide was described as one of the chief havens of Ireland because of its very safe harbour.

Post-Medieval Period

The agricultural land of Fingal was of strategic importance to the city and this was targeted in the 17th century when both royalist Dublin and Confederate forces pursued a scorched earth policy across the north of Dublin County then containing 'the goodliest haggards of corn that ever was seen in those parts', to deprive their enemy from this bounty (Smyth 1992). Fishing resources were similarly targeted. The Earl of Ormonde had instructed the town and the Talbot's at Malahide Castle to take a Dublin garrison of 200 men in March 1641/2 during the Confederate War, but suggested that contrary to instructions for him to raze the villages and towns of Fingal, he should not do so to 'the fisher towns upon the coast in regard... ye market at Dublin may be prejudiced thereby' (Byrne 1997, 25).

Prior to the billeting of Dublin troops, Malahide appears to have fared better than many neighbouring areas because of the security provided by an economy spilt between marine resources and agriculture (Ibid.). Even following Cromwell's invasion, the locality was spared the worst ravages, with the apparent number of trees at Malahide Demesne a possible indicator of this. Such conditions, along with the ready defensibility of the castle following an undoubted refurbishment of its defences during

its 1640s Dublin garrisoning, may have contributed to the confiscation of Malahide Castle by the regicide Miles Corbet in 1652, when the Talbots were forcibly removed to Connaught.

Following Corbet's flight from Ireland at the end of 1659, and his subsequent execution in the wake of Charles II's restoration to the throne, John Talbot managed to regain possession of the manor in the 1660s. John Talbot, and subsequent generations of his family, were obviously concerned to ensure that neither the requisitioning of the castle, nor its confiscation, were ever repeated, and there is a suggestion in surviving estate records (cf. Byrne 1997, 16, 69) that the main concern with renovations and upkeep to the castle and demesne involved not just modifications according to new ideas about polite architecture and landscape design, but also a desire to lessen the military appearance and effectiveness of the site.

By the late 18th century, prosperous Dubliners were leaving the city and establishing small country estates in the surrounding countryside, with coastal locations proving more attractive still. Auburn House ('Auburne') is mentioned as the seat of J. Crawford, Esq. In the mid-18th century, the property belonged to the Crawfords, a prosperous merchant family from Fermanagh. The house was built in about 1779, probably to mark the marriage of its owner, James Crawford, to Frances Vernon of Clontarf Castle in 1776; it is presumed that the courtyard, coach-house and walled gardens also date from this time (www.turtlebunbury.com/published/published_interiors/Ireland/pub_int_auburn).

Bunbury describes Auburn House as one of the finest residences built at this time, it being 'a golden-brown three-storey mansion located within a wooded demesne adjacent to Malahide Castle' (Ibid.). A more detailed account of the house and demesne is contained in the separate architectural heritage conservation report prepared for the project.

14.3.3 National Monuments and Recorded Archaeological Monuments (RMP / SMR sites)

There are no national monuments within or in the vicinity of the proposed masterplan development area.

There are no RMP / SMR sites located within the proposed development site and only two within c. 500m (Figure 14.1). One is an enclosure (SMR DU012-078), also located in Auburn townland, c. 275m southwest of the subject lands. The site was identified by Dr Steve Davis as a cropmark on an aerial photograph in 2015 (SMR file). The second is a mound (RMP DU012-028) c. 300m to the south that was excavated in 1982 and is thought to be the remains of an ornamental feature attached to the grounds of Auburn House (the mound was formed from medieval and post-medieval 'dump' material).

Figure 14.2 Recorded archaeological sites in the vicinity of the proposed development site

14.3.4 Stray Finds (National Museum of Ireland Topographical files)

Only three finds are recorded to Auburn townland, all of which are pottery sherds of unknown date (NMI Reg. Nos 1946:410-412). The volume of stray finds recorded to the surrounding townlands, particularly Feltrim Hill to the southwest and Paddy's Hill in Broomfield to the east, indicates significant activity and settlement in the wider area during the prehistoric period.

14.3.5 Place-Name Evidence

The townland names in this part of north Dublin provide reference to the historical heritage of the area. They are an invaluable source of information not only on the topography, land ownership, and land use within the landscape, but also on its history, the archaeological monuments and the folklore. Where a monument has been forgotten or destroyed, a place name may still refer to it, and may therefore indicate the possibility that remains may survive below the ground surface.

Townland names were recorded by the Ordnance Survey surveyors in the 1830s and 1840s, when the entire country was mapped for the first time. The mapmakers, soldiers and antiquarians who collected the place names and local history varied in their interests and abilities. While most place names were anglicised or translated relatively accurately, some were corrupted virtually beyond recognition. Nonetheless, a variety of place names, whether of Irish, Viking, Anglo-Norman, and English origin, appears throughout Dublin, and the appearance of the different languages is often a good indicator of the cultural heritage, and therefore the archaeological record of the area.

Many of the townland names of this area are English language-derived names, like Auburn, Mabestown, Streamstown and Yellow Walls. There are several that are Irish in origin, largely topographical in nature, such as Drinan (an draighneán) which means 'place of blackthorns' (O'Donovan et al. 1843). The townland name Feltrim refers to 'the ridge of the wolves' (fael druim) (Ibid.), while Kinsaley means 'the head of the brine' (ceann saile) (Joyce 1910). The neighbouring Malahide Demesne takes its name from the village. Although commonly referred to as Mullach Íde in Irish, Joyce notes that it is 'written in all the old documents as Baile-atha-Thíd' meaning town of the ford of Teud, a man's name (the transposition of 'b' to 'm' at the start of the placename is seen elsewhere) (Joyce 1920).

14.3.6 Cartographic sources

Down Survey Map, c. 1656

At the time of the mid-17th century Down Survey, the subject area lay within 'Mabstowne' (Mabestown), with the townland of Auburn presumably a much later division (Figure 14.2). Several small dwellings are depicted in the townland, described as 'foure or five cabbins' in the parish terrier, with the forfeited land formerly the possession of Chris Fagan of Feltrim. Malahide Castle is depicted as a fortified house surrounded by trees to the northeast, while the windmill on Feltrim Hill is also shown to the southwest.

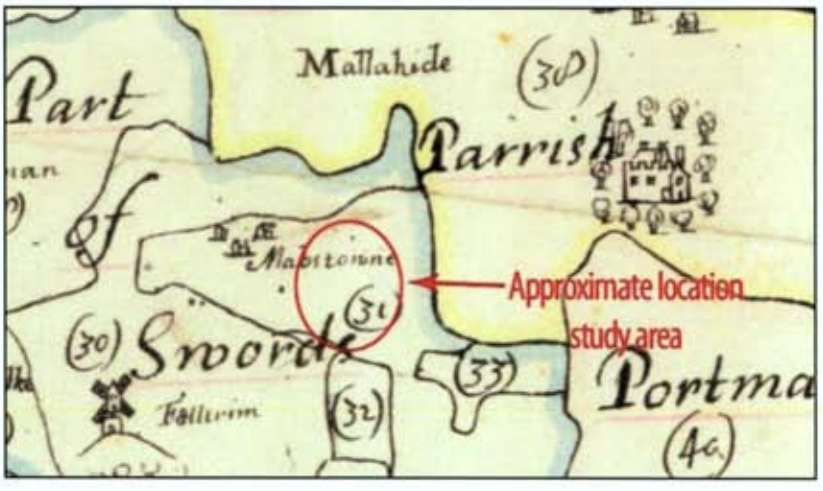

Figure 14.3: Down survey map of the barony of Coolock c. 1656 'An Actual Survey of the County of Dublin', Rocque, 1760

John Rocque, on his 1760 map of County Dublin (Figure 14.3), shows a property already occupying the lands at Auburn. The property comprised a house and outbuildings arranged around a courtyard, with a kitchen garden on the southwest side. The buildings were situated on the south side of 'Peas Fields Hill'. As now, the property was accessed off the Malahide Road. The present house was built around 1779, presumably replacing the earlier dwelling. Malahide Demesne is depicted, named 'Malahide Court'. There are small settlement clusters at' Streams Town', 'Mabes Town' and Feltrim. Feltrim Hill and the windmill are both depicted and named. The application site boundary includes Back Road and Kinsaley Lane, both of which were in place at the time of Rocque's map.

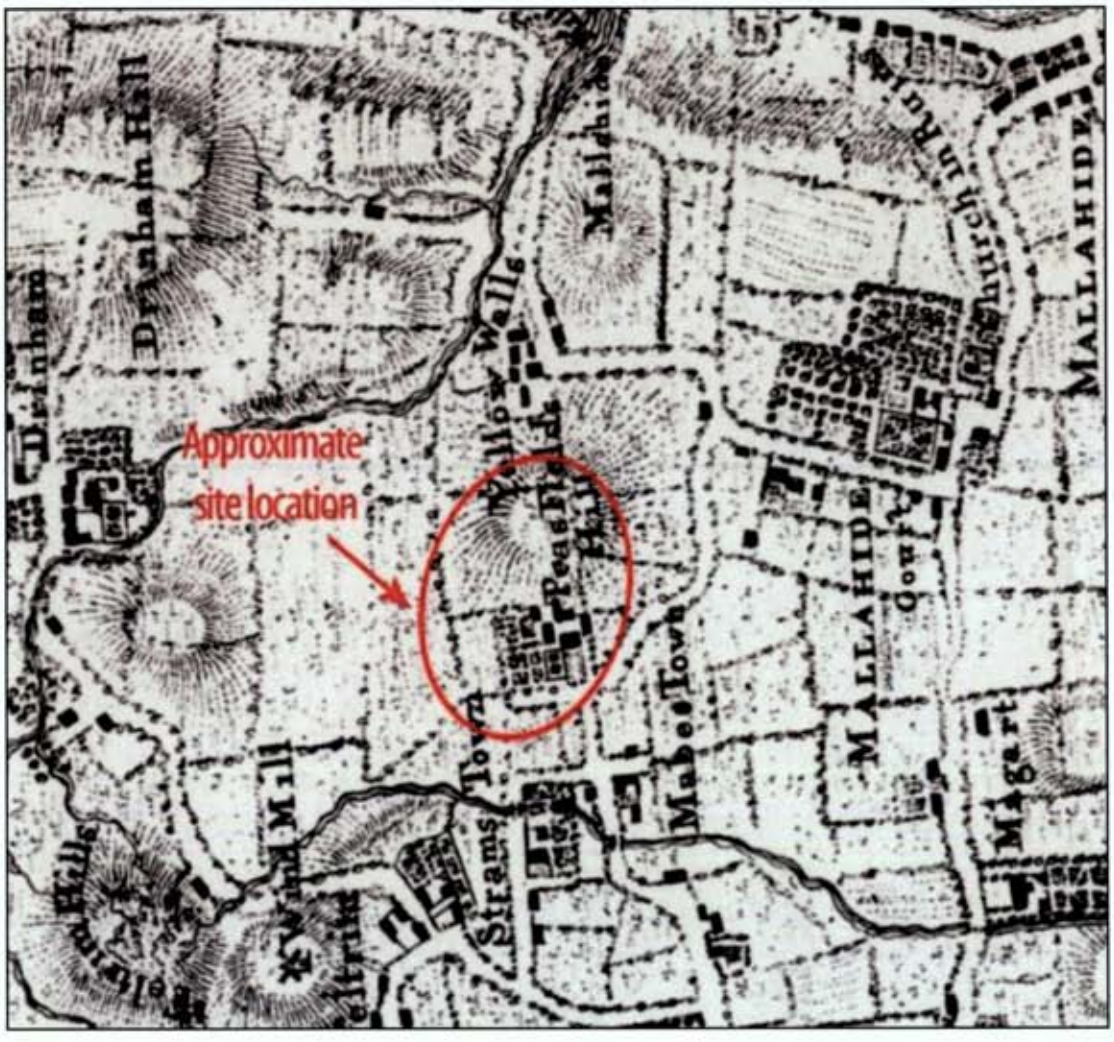

Figure 14.4: Rocque map of the County of Dublin (1760)

John Taylor's Map of the Environs of Dublin

Taylor's map (Figure 14.4) is less detailed than Rocque's, but it provides some new information. Most notably, the present Auburn House is depicted and named, with woodland shown around it to the north, west and south. The house is shown occupying an elevated site, presumably the hill named on Rocque's map, 'Peas Fields Hill'. Malahide Demesne is named as the 'Court of Malahide', with both castle and church ruins indicated. The application site boundary includes Back Road and Kinsaley Lane, both of which were in place at the time of Taylor's map.

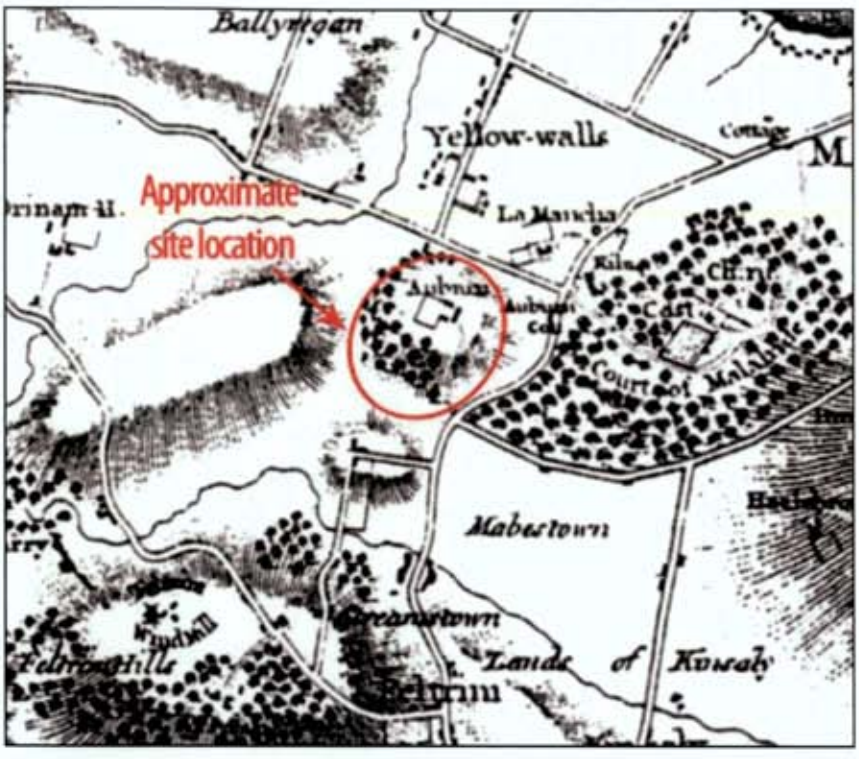

Figure 14.5: Taylor's map of Dublin (1816) Ordnance Survey (OS) Mapping

The first edition OS six-inch map of 1843 (Figure 14.5 & 14.6) represents the earliest accurate and detailed cartographic source for the study area. It shows Auburn House, with courtyard buildings arranged on its west side, and woodland to the north, west, and south (as on Taylor's map). The house is approached along a carriageway that leads north and westwards from the entrance on the Malahide Road. To the south and west of the carriageway is a group of outbuildings, a walled garden and orchards. These form part of the Auburn estate and are in roughly the location of those depicted on Rocque's map of 1760. The remainder of the estate is divided into fields, with an area of parkland to the front (east) of the house.

Mabestown townland is by this time only one small section on the east side of the Malahide Road (the remainder having been renamed Auburn), where it forms part of the large estate associated with Malahide Castle. The part of the proposed development site that falls within Streamstown townland comprise fields outside the boundaries of both Auburn estate and the neighbouring Clairville. The application site boundary includes Back Road and Kinsaley Lane, both of which were in place at the time of the first edition map. The land to either side of Kinsaley Lane is agricultural fields, with no structures and only two small quarries indicated, demonstrating the rural nature of the surrounding area at the time.

There are no significant changes on the OS 25-inch map of 1906-09 (not pictured), though the neighbouring Clairville house is indicated as being in ruin by this time. This remains the case on the revised six-inch edition OS map of 1935-38 (Figure 14.7 & 14.8). By this time, the walled gardens and orchards in the Auburn estate are empty plots.

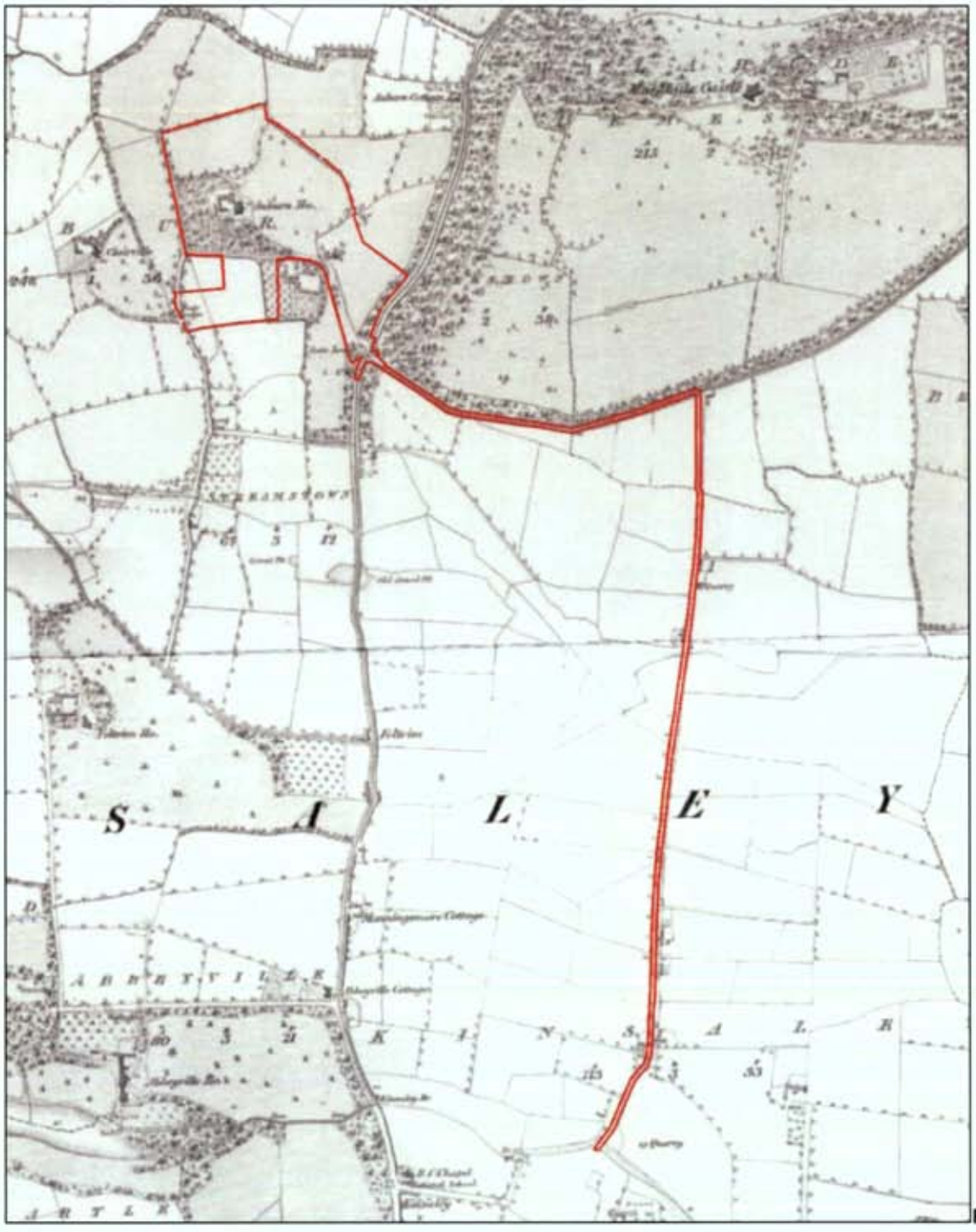

Figure 14.6: First Edition OS six-inch map (1843), showing application site boundary in red

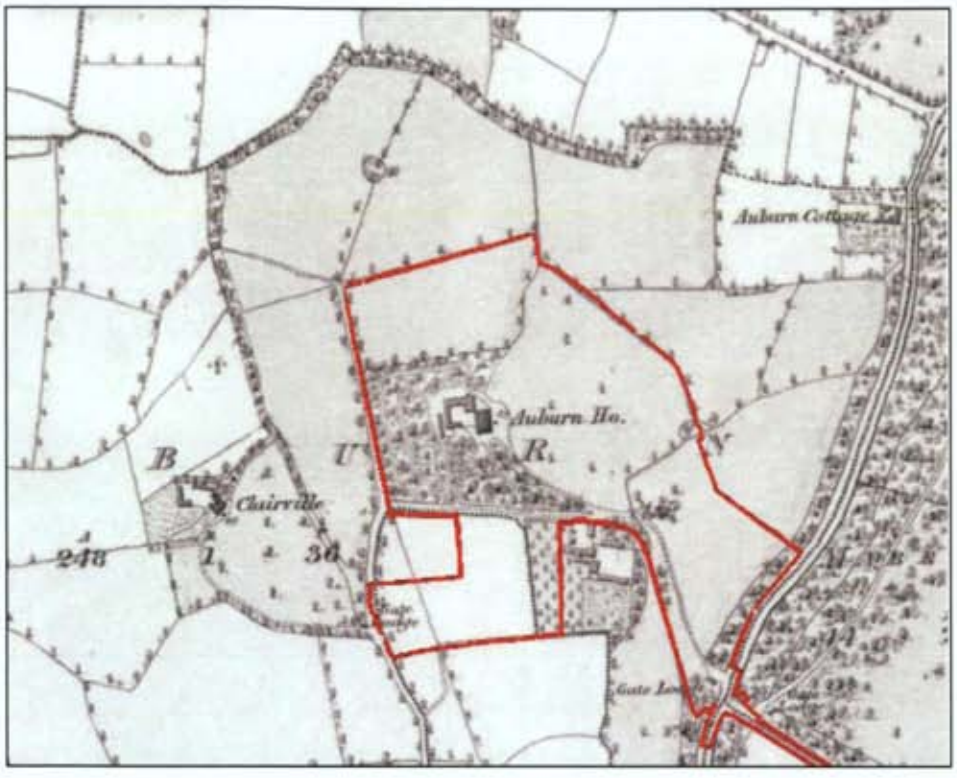

Figure 14.7: Detail of First Edition OS six-inch map (1843), showing Auburn House, with application site boundary in red

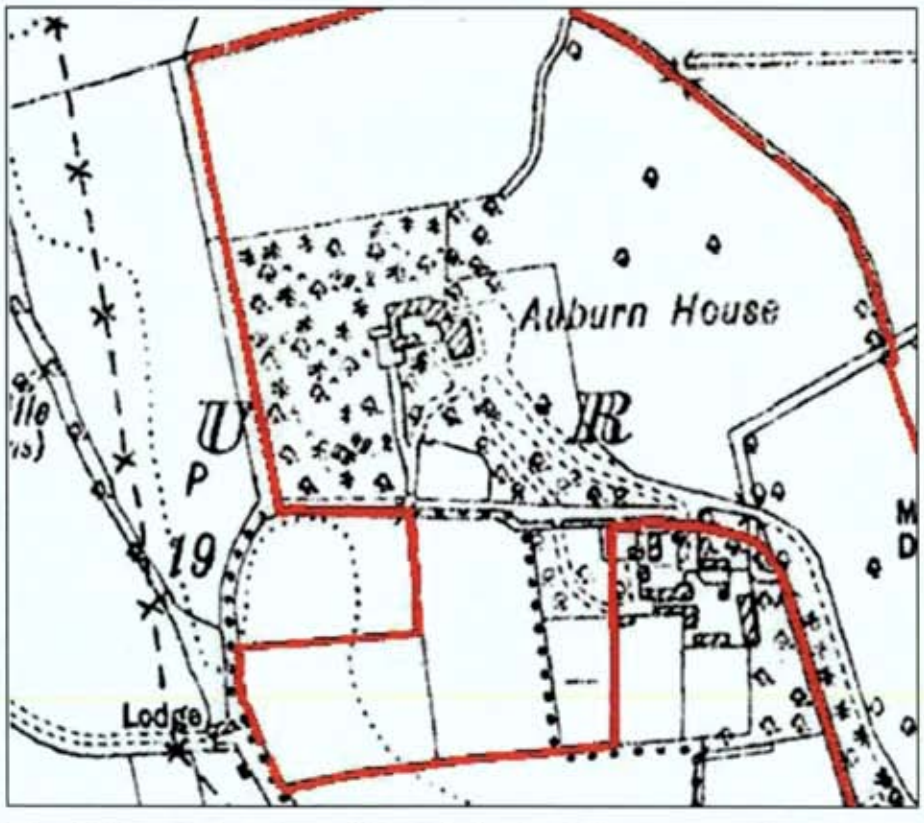

Figure 14.8: Revised Edition OS six-inch map (1935-38), showing Auburn House, with application site boundary in red

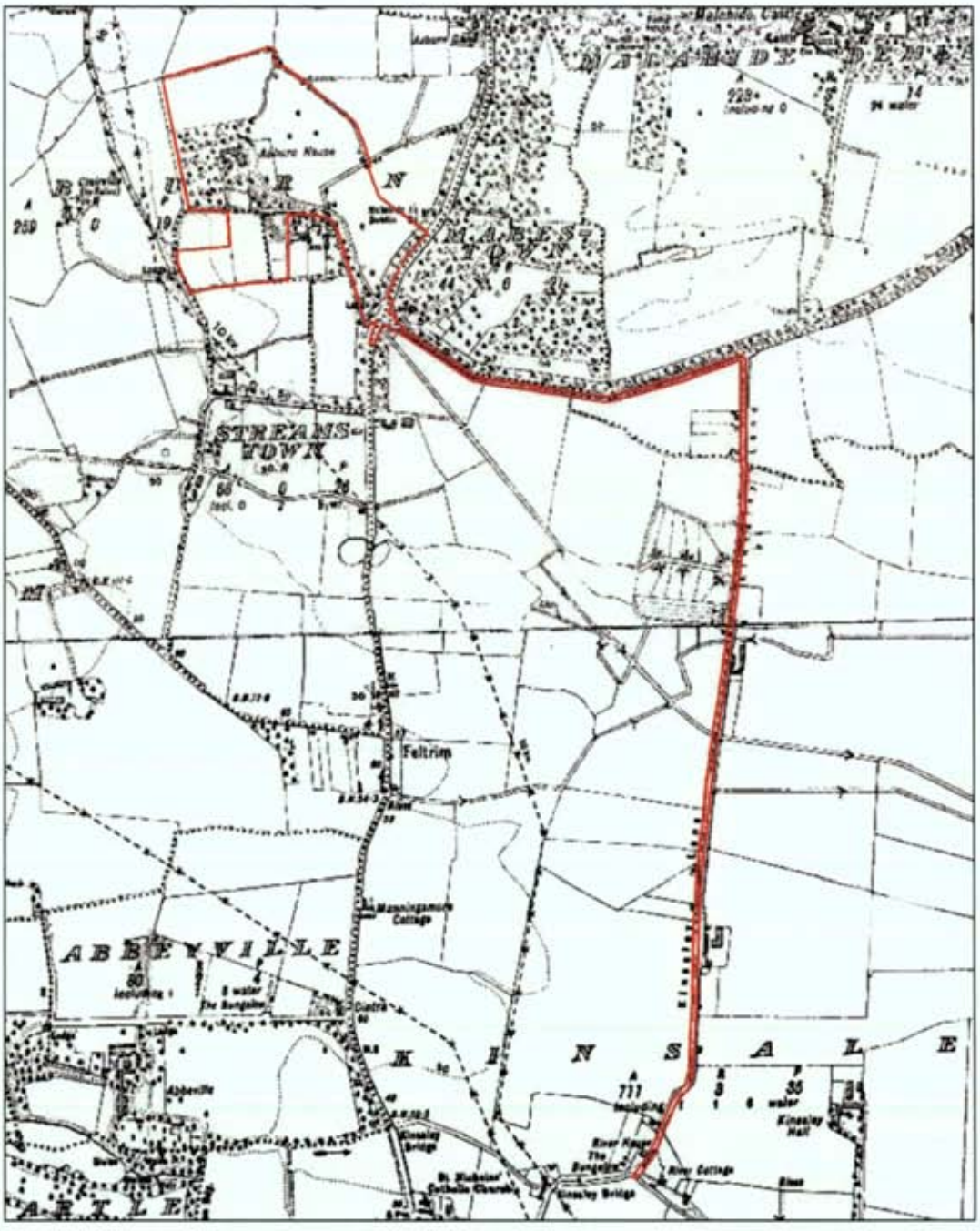

Figure 14.9: Revised Edition OS six-inch map (1935-38), showing application site boundary in red

14.4.1 Previous Archaeological Investigations in the Vicinity of the Proposed Development Site

There have been no previous archaeological investigations within the subject lands and only two in the vicinity, one of which is the aforementioned excavation in 1982 of the mound (RMP DU012-028) in Auburn townland, c. 609m south of the proposed development site (Licence No. E00239). In 2012, archaeological monitoring was undertaken of investigative slit-trenches excavated along the R107 road for a proposed new watermain (St Doolagh's to Streamstown), c. 1km south of the proposed development site. Nothing of archaeological significance was found (Licence No. 12E0185; Excavations Bulletin Ref. 2012:247).

Of those undertaken in the wider area, the discoveries in Kinsaley townland are particularly notable. One, located c. 770m southeast from the proposed development site, unearthed a possibly partially ploughed-out previously unrecorded enclosure, already noticed in a 1995 black and white Ordnance Survey aerial photograph. A geophysical survey (Licence No. 20R0151) was carried out revealing the remains of a clear curvilinear response in the same location as the feature on the aerial photograph. Consequent test trenching uncovered two archaeological features and another possible feature: an enclosure (consisting of three enclosure ditches and a ditch to the south); a spread of burnt stone; and a shell spread of possible archaeological significance. A cow tooth was submitted to Queen's University Belfast for radiocarbon dating. A date range of cal AD 667-824 (UBA 45020-2 sigma) was returned, with a median probability of 727 AD.

More investigations were carried out in the same area, c. 1.3km southeast of the proposed development site. A large enclosure (SMR site DU012-071) visible as a cropmark on aerial imagery was confirmed by geophysical survey and archaeological testing (Licence Nos 14R00314 & 14E0165). A second possible enclosure, previously unknown, was identified by geophysical survey and archaeological testing further north (Licence Nos 14R0038 & 14E0162). Two more possible enclosures were recorded in the same area by archaeological investigations (Licence No. 20E0058), which uncovered a pit, a hearth/burnt pit, and three probable shallow ditches possibly representing two badly plough-damaged enclosures. Another enclosure and two ringforts sites nearby are also visible on aerial imagery (RMP sites DU012-033, -003001 & -003002). These previous excavations confirm the rich heritage of the area, pertaining mostly to the early medieval period, and demonstrates both the efficacy of geophysical survey in this landscape and the prevalence of destroyed archaeological sites that survive below-ground.

14.4.2 Geophysical Survey within the Proposed Development Site

A detailed gradiometer survey was carried out in February 2020 by J.M. Leigh surveys Ltd (Leigh 2020; Appendix 14.4). (Licence No. 20R0002). Areas available for detailed survey within the application area were limited due to dense tree cover, landscaping, buildings and roadways. Detailed survey was contained within six fields (Areas A-F, Figure 14.9). Areas A and B are located immediately to the north and east of Auburn House and comprised short pasture. Areas C, D and E are located in the grounds of Little Auburn and constitute its gardens. There was much magnetic disturbance in these areas and Area C comprised overgrown vegetation as well as modern litter and debris. Area F is located to the south of Auburn House and is surrounded by modern housing and ground conditions were similar to those in Area C.

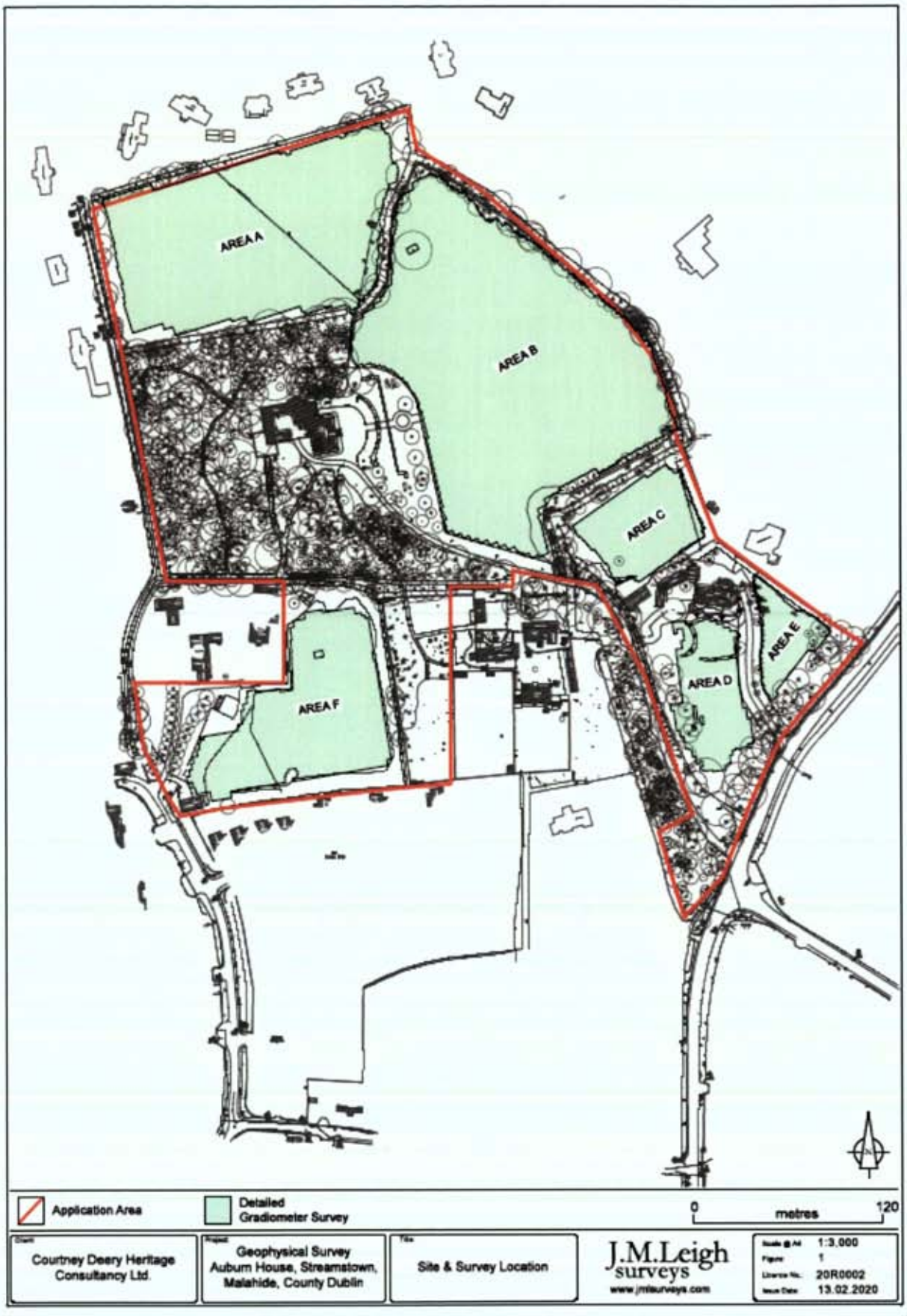

Figure 14.10: Survey Areas A-F (after Leigh 2020, showing application area at the time of survey).

Survey Results Areas A and B (Figures 14.10 & 14.11)

Several strong magnetic linear responses correspond to modern services in both Areas A and B. Curvilinear trends in the southeast of Area A were deemed of archaeological potential, although interpretation was extremely tentative. Several discreet positive magnetic responses were indicated across both Areas A and B and archaeological interpretation was tentative as there was no clear pattern. Two linear trends in the north of Area B did not form a coherent pattern and were interpreted as possible modern agricultural activity. Several linear trends and broad negative responses were identified in the southern half of Area B, however there was no clear pattern and they were interpreted as possible natural variations, with the possibility that they could represent plough damaged remains of former landscaped features. The incoherent nature of the responses makes interpretation cautious. Parallel trends in the south eastern corner of Area B are indicative of ploughing activity. A small area of increased magnetic response was identified in the west of Area B in proximity to the linear trends. This comprises several positive magnetic responses in addition to ferrous responses. Although this could possibly represent a spread of burnt material, an archaeological interpretation was highly tentative given the level of modern ferrous disturbance at the site.

Figure 14.11: Geophysical Survey, summary greyscale, Areas A and B (after Leigh 2020).

Survey Results Areas C, D, E and F (Figures 14.12 & 14.13)

Areas C and E are largely dominated by modern magnetic disturbance with the exception of a possible single isolated response in the north eastern corner of Area C and similar isolated responses are evident in Area F. In both areas there was no clear archaeological pattern and an archaeological interpretation was extremely cautious. Two linear trends were evident in Area D and represent

pathways associated with Little Auburn House. A fragmented magnetic linear trend was identified in Area F oriented north-south and may represent a field boundary depicted on the Cassini 6-inch OS mapping. Further linear trends in Area F may be associated with nearby housing. A curvilinear positive magnetic trend in Area F may represent the remains of a curvilinear ditched feature, however an archaeological interpretation is cautious.

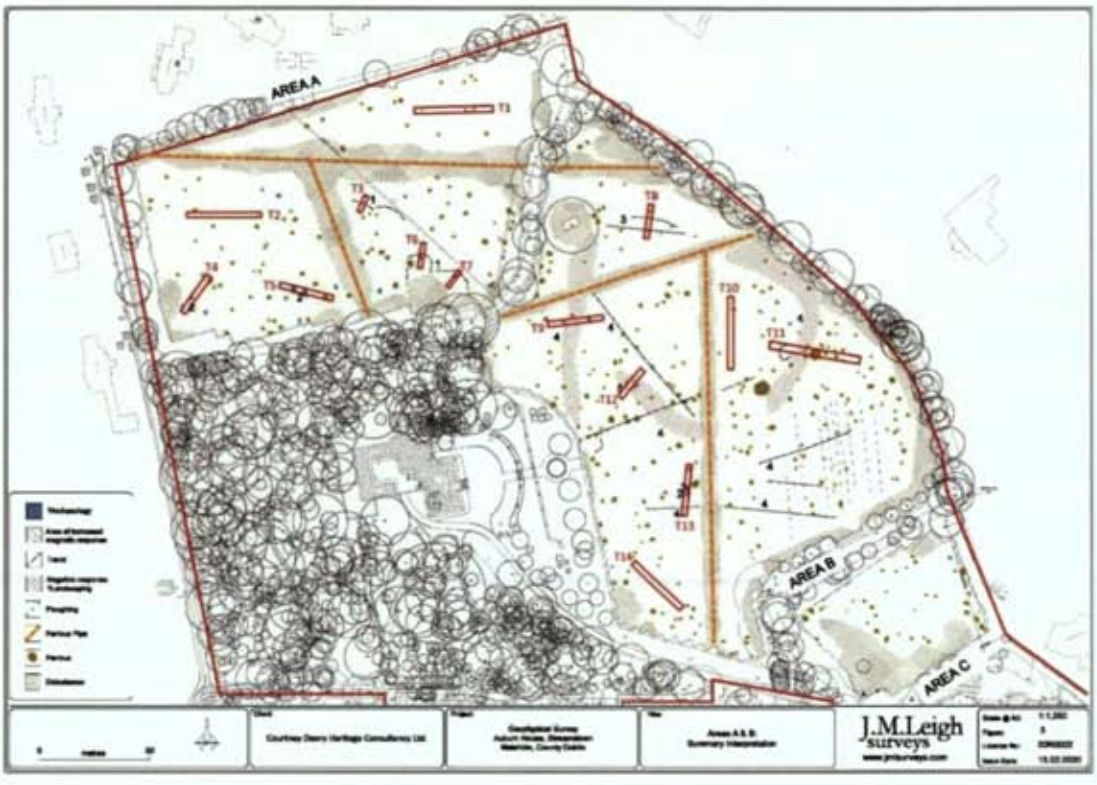

Figure 14.12: Geophysical Survey, summary interpretation, Areas A and B and test trenches 1 – 14 (after Leigh 2020).

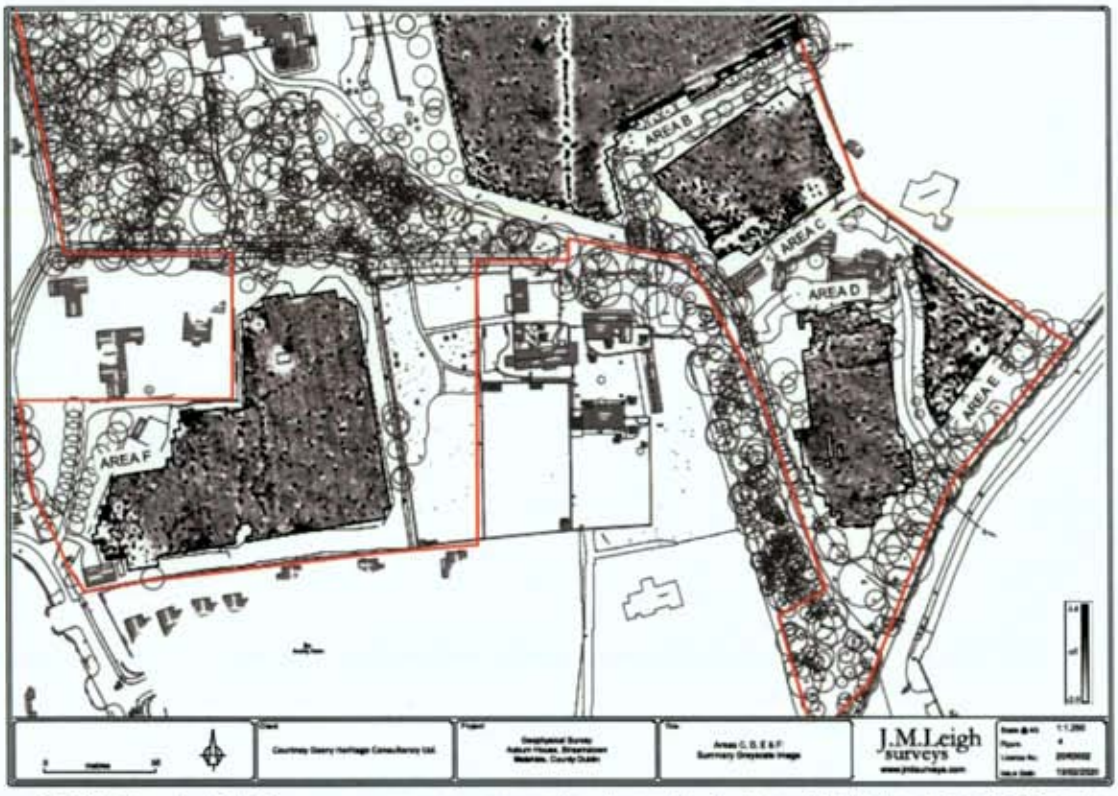

Figure 14.13: Geophysical Survey, summary greyscale, Areas C, D, E and F (after Leigh 2020, showing application area at the time of survey).

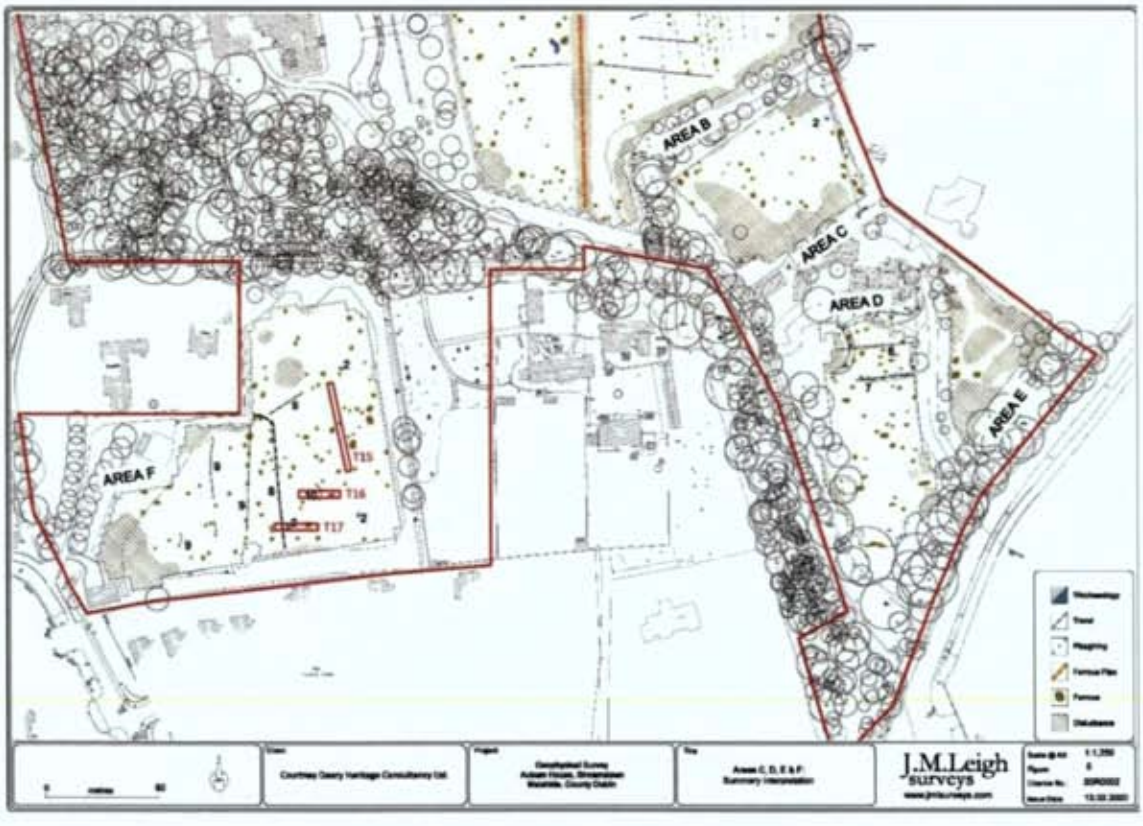

Figure 14.14: Geophysical Survey, summary interpretation, Areas C, D, E and F and test trenches 15-17 (after Leigh 2020, showing application area at the time of survey).

14.4.3 Archaeological Testing within the Proposed Development site

General

Archaeological testing (Licence No. 20E0057) was carried out over three days from 3rd March 2020 (McLoughlin 2020; Appendix 14.4). This was carried out using a mechanical tracked excavator fitted with toothless grading bucket. In total 17 test trenches totalling 430m linear metres were excavated and were placed to target anomalies indicated in the geophysical survey as well as control trenches to test areas where no anomalies were indicated (Figures 14.9 & 14.10).

All trenches were excavated to the surface of archaeological or potential archaeological deposits or to the underlying natural subsoil, whichever was encountered first. Any potential archaeological features were cleaned and sectioned where necessary, to establish their nature, extent and character. Photographs and trench recording sheets were used to record the details of each trench.

Summary of Results

The natural subsoil on the site generally comprised, brown-yellow sandy silt, with frequent gravelly and sometimes stony inclusions towards the top of rises and light grey silty clay on lower areas. Trenches ranged in width from 1.2 - 1.8m wide and depths generally ranged between 0.25 – 0.3m.

Trenches 3-9, 11-13 and 16-17 were placed to test a range of anomalies indicated in the geophysical survey and these are detailed below. Trenches 1, 2, 10, 14 and 15 were placed as control trenches to test areas where no anomalies were indicated in the survey results. No features, finds or deposits of archaeological interest were identified in any of the trenches.

Trench #	Area	Orientation	Length	Width	Depth	Results
1	A	E-W	40m	1.5m	0.3m	No archaeology
2	A	E-W	40m	1.5m	0.35m	No archaeology
3	A	SSW-NNE	15m	1.4m	0.45m	No archaeology
4	A	SW-NE	25m	1.5m	0.3m	No archaeology
5	A	NW-SE	25m	1.4m	0.4m	No archaeology
6	A	SSW-NNE	15m	1.6m	0.25m	No archaeology
7	A	SW-NE	10m	1.7m	0.25-0.3m	No archaeology
8	B	SSW-NNE	20m	1.8m	0.25m	No archaeology
9	B	WSW-ESE	20m	1.7m	0.25m	No archaeology
10	B	NNW-SSE	35m	1.6m	0.3m	No archaeology
11	B	E-W	40m	1.7m	0.25m	No archaeology
12	B	SW-NE	20m	1.8m	0.2-0.3m	No archaeology
13	B	NNE-SSW	25m	1.8m	0.3m	No archaeology
14	B	NW-SE	30m	1.2m	0.3m	No archaeology
15	F	NNW-SSE	40m	1.5m	0.3m	No archaeology
16	F	E-W	15m	1.5m	0.3m	No archaeology
17	F	E-W	15m	1.5m	0.3m	No archaeology

Geophysical survey anomalies

Trenches 3, 6 and 7 were placed to investigate several curvilinear trends and ferrous responses in Area A. In trench 3 a band of gravel mid-way along the trench may correspond with the geophysical anomaly indicated in that location. In trench 6 a pit filled with mortar, slate and brick, up to 1m deep below the present ground level was identified and represents the dumped remains of a demolished modern structure. This deposit extended beyond the limit of the test trench to the east and west. In trench 7 a band of gravelly soil approximately mid-way along the trench appears to correspond with the anomaly on the geophysical survey.

Trenches 4 and 5 were placed to investigate several discreet positive magnetic responses with no clear pattern in Area A. Nothing corresponding with the geophysical anomalies was noted in trench 4 and gravelly patches were identified in trench 5 that could correspond with the survey results.

Trench 8 was placed to investigate two linear trends with no coherent pattern in Area B. No features were noted in the trench that would correspond with the geophysical survey results.

Trenches 9 and 11 were placed to investigate broad negative responses in Area B. There was no clear pattern and they were thought to possibly represent natural variations or plough damaged remains of former landscape features. In trench 9 changes in the natural subsoil from silty to gravelly natural are likely to correspond with the anomaly on the geophysical survey. In trench 11 the natural subsoil changes from sandy silt to pure silty clay and these variations may correspond with the geophysical survey results.

Trench 12 was placed to investigate another broad negative response, a small area of increased magnetic response and ferrous responses in Area B. This was thought to possibly represent a spread of burnt material, although an archaeological interpretation was highly tentative. Mid-way along the trench and corresponding with the geophysical anomalies a deposit of dark soil with modern inclusions was identified.

Trench 13 was placed to investigate an east-west linear trend and a discreet positive magnetic response in Area B. A shallow linear probable furrow oriented roughly east-west was identified in the trench and variations in the natural subsoil most likely account for the other anomalies in the survey results.

Trench 16 was placed to investigate a curvilinear positive magnetic trend possibly representing a ditched feature in Area F, although an archaeological interpretation was cautious. Nothing corresponding with the geophysical anomalies were identified in the trench.

Trench 17 was placed to investigate an isolated response and a fragmented magnetic linear trend oriented roughly north-south in Area F. Nothing corresponding with the geophysical anomalies were identified in the trench.

14.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

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 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.

A detailed description of the proposed development can be found in Chapter **2**.

4.6 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

14.6.1 Construction Phase

Considering the masterplan area, and the three proposed development sites in which it is divided, there are no recorded archaeological sites (RMP/SMR sites), or stray finds recorded within the proposed development site. The nearest archaeological site is an enclosure (SMR DU012-078), also located in Auburn townland, c. 275m southwest of the subject lands. A mound (RMP DU012-028), thought to be the remains of an ornamental feature attached to the grounds of Auburn House, occupies the land c. 300m to the south of the proposed development site. Neither site will be affected by the proposed development. No features of cultural heritage interest were identified.

The desk-based archaeological assessment and archaeological test excavation did not reveal any features, finds or deposits of archaeological interest within the proposed development site. The majority of the geophysical anomalies appear to correspond with variations in the natural subsoil. Therefore, the archaeological potential of the area is considered low. There is, nonetheless, the slight potential that associated or previously unknown archaeological deposits or features may be present below ground within the proposed development site. Given the results of the archaeological testing, it is likely that any deposits / features which are present, would be small-scale and discrete in nature.

Ground-breaking works will have a slight negative permanent impact on any such archaeological features that may be present.

No archaeological potential was identified along Back Lane or Kinsaley Road (the route of the proposed foul sewer), both of which formed part of the historic road network in the area.

14.7 REMEDIAL AND REDUCTIVE MEASURES

Archaeological monitoring of topsoil-stripping within the proposed development site will be undertaken to determine whether there are any archaeological features or deposits present. Given the way that subsurface features and sites present in this landscape, this strategy will ensure a comprehensive archaeological mitigation measure. This should include the area where testing of geophysical anomalies has already been undertaken.

Should any subsurface archaeological stratigraphy be encountered, an appropriate ameliorative strategy will be implemented. This will entail licensed archaeological excavation, in full or in part, of any identified archaeological remains (preservation by record) or preservation in situ.

Archaeological monitoring will be carried out under licence to the DHLGH and the NMI, and will ensure the full recognition of, and the proper excavation and recording of, all archaeological soils, features, finds and deposits which may be disturbed below the ground surface. All archaeological issues will have to be resolved to the satisfaction of the DHLGH and the NMI. The archaeologist will have provision to inspect all excavation to natural soil level and to temporarily halt the excavation work, if and as necessary. They will be given provision to ensure the temporary protection of any features of archaeological importance identified. The archaeologist will be afforded sufficient time and resources to record and remove any such features identified.

The developer will make provision to allow for, and to fund, the necessary archaeological monitoring, inspection and any excavation works that will be needed on the site during and prior to construction, either directly or indirectly via the contractor.

14.8 PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

The predicted impact is that the proposed development may directly impact upon potential (previously unrecorded) below-ground archaeological remains. It is likely that any deposits / features which are present, would be small-scale and discrete in nature.

14.9 INTERACTIONS AND CUMULATIVE IMPACTS

No interactions have been identified during the course of this assessment.

Geophysical survey and archaeological testing identified no archaeological sites or features and the archaeological potential of the proposed development area is considered to be low. As there are no designated or known archaeological or cultural heritage sites within the proposed development area or in proximity to it, no cumulative impacts are predicted.

14.10 MONITORING

There will be no requirement for monitoring post-construction.

14.11 REFERENCES

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15.0 INTERACTIONS

15.1 Introduction

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

15.2 Interactions

Listed below are the interactions between the various significant environmental impacts generated by the proposed development:

No.	Heading	Population and Human Health	Biodiversity	Land, Soils & Geology	Water	Air Quality	Noise & Vibration	Climate	Material Assets – Utilities & Waste	Landscape & Visual Impact	Traffic & Transport	Cultural Heritage
4	Population and Human Health	✔	✔				✔	✔	✔	✔	✔	✔
5	Biodiversity	✔		✔	✔	✔	✔			✔	✔	
6	Land, Soils & Geology	✔	✔		✔			✔		✔		
7	Water		✔	✔					✔			
8	Air Quality	✔	✔								✔	
9	Noise & Vibration	✔	✔								✔	
10	Climate	✔	✔	✔								
11	Material Assets – Utilities & Waste											
12	LVIA		✔									
13	Traffic & Transport	✔				✔	✔	✔				
14.0	Cultural Heritage	✔										

Table 15.1 Interactions Identified in the EIAR

15.2.1 Population and Human Health/Population and Human Health

The population and human health content of this application will impact on the existing environment in terms of the provision of new housing and recreational facilities with an associated requirement generated directly by the development for services, commercial and recreational facilities and employment.

Chapter 4 of this EIAR found that the impact on human beings as a result of the development will be positive or neutral in the general area of the proposed development. The scheme will provide a high-quality residential development required for the redevelopment of the Malahide area in order to meet demand deriving from predicted population increases, on zoned lands which are serviced and highly accessible to public transport links. The overall interaction will be a positive contribution to the critical mass needed to maintain and further expand typical urban facilities both in Malahide's town centre as well as the proposed childcare facility on the site.

15.2.2 Population and Human Health/Biodiversity

While catering for a predicted increase in population, the proposed development will contribute to a population increase, which may place additional pressure on the natural environment in terms of disturbance and loss of habitat during the operational and construction phases of the development.

Chapter 5.0 of the EIAR addresses the potential impact the proposed development would have on the habitats pertaining to the subject lands, however no significant impacts are likely to arise. Furthermore, impacts to protected areas are not predicted to occur, principally due to the separation distance between the site and these areas.

There are a number of mitigation measures required in order to ensure that pollution does not occur during the construction phase, or that negative effects do not occur to bats or birds' nests. With the suggested mitigation in place, the ecological impacts by this proposed development will be largely neutral and given that no significant negative effects are likely to arise additional monitoring is not required.

15.2.3 Population and Human Health/Land, Soils & Geology

The EIAR has found that provided appropriate protective measures are taken whilst construction and excavation works are ongoing and during transport of soil and spoil, any potential impacts on soils and geology in the area will be temporary and limited in extent, and as such no significant adverse impacts on the soils and geology of the subject lands are envisaged.

There is potential for dust generation during construction works which under dry conditions could lead to localised dust impacts for the properties proximate to the subject site. However, the implementation of the planned mitigation measures on site management controls will ensure that no significant adverse impacts will accrue for adjoining local residents.

15.2.4 Population and Human Health/Air Quality & Climate

Dust emissions may arise during the construction phase. In order to ensure that any dust nuisance is minimised, a series of mitigation measures have been set out in Chapter 7.0. If the construction contractor adheres to good working practices and dust mitigation measures, the levels of dust generated are assessed to be minimal and are unlikely to cause an environmental nuisance.

The main potential air quality impacts from the operational phase of the development relate to the impact from increase in traffic associated with the use of the buildings. The potential impacts on the local air quality are considered to be long-term and slight. The mitigation measures set out within the scheme include promoting the use of the public transport network, provision of extensive cycle facilities and the availability of electric car charging points. The emissions of pollutants from road traffic can be controlled by either controlling the number of road users or by controlling the flow of traffic. In this regard, a mobility management strategy will be implemented to promote a modal shift to more sustainable forms of transport and electric vehicles. Emissions arising as a result of any traffic associated with the proposed development is unlikely to impact on air quality standards.

15.2.5 Population and Human Health/Noise and Vibration

There will be some localised temporary adverse impacts in relation to noise during the construction phases of the development. However, these will be localised, intermittent and of limited duration and can be mitigated through the use of appropriate noise control procedures. The implementation of these procedures will reduce noise impacts on the surrounding area.

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 site. Specifically, sources would be likely to include but not be limited to the following: vehicular traffic into and out of the estate by residents, and general residential activities. The EIAR has found that the cumulative impact of noise arising from onsite noise sources and road traffic noise associated with the site will not give rise to a noticeable change on the noise climate at this location.

15.2.6 Population and Human Health/Landscape and Visual Amenity

The proposed development has been designed to address the integration of existing buildings, proposed architecture, access, infrastructure and context. The planting plan for the proposed mix-use development utilizes a palette of naturalised native and ornamental species which are chosen for their visual qualities, ease of establishment and their capacity to provide habitats. The principal mitigation measures involve mitigation by avoidance in the design and layout of the scheme. A comprehensive and cohesive landscape treatment has been proposed to ensure an overall quality external scheme shall be delivered.

It is considered that the general disturbance and the initial change associated with the scheme eases as the new development establishes its own presence and characteristic influence on its environs. The provision of significant quantities of public and private open space within the proposed development will be of benefit to future residents of Auburn and existing residents of the wider area. Therefore, the significance of the landscape and visual impact of the proposed development will be positive as the landscape and environs matures over time.

15.2.7 Population and Human Health/Material Assets – Utilities & Waste

The proposed development and new population will result in an increase demand on utilities, such as energy and telecommunications as well as generation of waste. The impact to services and utilities

are considered to be positive and permanent positive to all end users in light of the mitigation measures outlined in the EIAR.

15.2.8 Population and Human Health/Transportation

The proposed development provides for pedestrian and cycle routes as well as the provision of new roads, which will result in a positive interaction between Population and Human Health and Transportation, as the development will facilitate the use of sustainable forms of transportation (i.e., walking & cycling).

A Travel Plan is included as part of the proposal in order to reduce in overall terms both the number of trips generated by a particular development, and to ensure that greater numbers use public transport. A travel plan will be implemented with the objective of developing a sustainable transportation and access policy for residents and users of the proposed development both during and after the construction.

In addition to the above, the proposed development provides for a continuous connection by road and footpath between Carey's Lane in the west and the R107 in the east, through the subject lands. This is provided for as part of the overall design layout.

The optimal approach adopted in developing the transport infrastructure for the proposed SHD is as follows: *Reduce the need to travel, Reduce the distance travelled, Reduce time spent travelling, Promote sustainable walking and cycling,* and *Promote access to Public transport.*

In conjunction with the upgrades to the wider local road network outside the immediate development area proposed in Auburn, the surrounding junctions have been assessed and this concluded that there will be enough capacity to cater for the entire development. The impact of the increased traffic volumes that will be generated in the area following the construction of the development is not expected to lead to significant congestion as the road network will have sufficient capacity to cater for the proposed development.

15.2.10 Population and Human Health/Material Assets, Cultural & Archaeological Heritage

No archaeological features were uncovered during the targeted test excavations or geophysical survey on the site. However, archaeological monitoring of groundworks is however recommended during the construction phase of the development to ensure no previously unearthed features are discovered.

15.2.11 Biodiversity/Land, Soils & Geology

Movement of soils during the construction phase of the proposed development may result in temporary disruption to fauna. In terms of flora, topsoil removed during the construction phases will be re-spread where possible providing optimal growing conditions for planting, preventing soil erosion. Mitigation measures are set out in Chapter 5.0 of the EIAR to avoid impacts on biodiversity arising from vegetation and soil clearance works.

15.2.12 Biodiversity/Water

All foul drains will be tested and surveyed prior to connection to the public sewers to minimise the risk of uncontrolled ground water penetration of foul water leakage to ground water on the site. In addition, the drainage scheme proposed is based on Sustainable Urban Drainage Systems (SUDS) to improve the water quality of the surface water runoff ensuring that there is no impact on aquatic flora and fauna. Good site management practices will also ensure that pollution to existing watercourses does not occur during the construction and operation phases.

15.2.13 Biodiversity/Landscape and Visual Amenity

The removal of some trees may have a negative impact on fauna, such as birds and bats, but all tree removal should only be carried out during the appropriate season and under the supervision of an ecologist/bat specialist to ensure that no protected species are affected. Mitigation measures will ensure that significant negative effects on biodiversity do not occur.

15.2.14 Biodiversity/Noise and Vibration

The construction phase of the development is anticipated to give rise to temporary, intermittent increases in daytime noise levels which may give rise to temporary disruption to fauna. However, impacts are not predicted to be significant in this regard and will be minimised through appropriate mitigation measures, which are outlined in this EIAR.

15.2.15 Land, Soils & Geology/Water

Ground clearance works may give rise to accidental spillage/contamination of local watercourses. 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, particularly during adverse weather conditions. Storm water runoff from the surface of the excavated areas may result in silt discharges to local streams. 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. However, appropriate mitigation measures are specified in order to minimise and prevent the accidental release of hazardous material to soil and waters. Thus, no significant adverse impacts are envisaged.

15.2.16 Land, Soils & Geology/Landscape and Visual Amenity

Topsoil removed during the construction phase will be re-used in landscaping works for proposed open space and other landscaped areas, rather than being transported for disposal off site. Although this will have an impact, it will be mitigated by means of appropriate landscaping features. This is also

outlined in the Construction and Demolition Waste Management Plan submitted by Waterman Moylan Consulting Engineers as part of the planning application.

15.2.17 Air Quality & Climate/Biodiversity

The development will have no effect on climatic conditions that would be sufficient to affect animal populations on or in the vicinity of the site.

15.2.18 Air Quality & Climate/Transportation

Emissions from motor vehicles accessing the proposed development and using the proposed new roads within the development are not anticipated to have a significant adverse impact on air quality in the area.

Traffic-related air emissions during the operation phase may generate higher quantities of air pollutants when compared to the existing traffic volumes. A Travel Plan has been prepared and will be implemented to promote a modal shift to more sustainable forms of transport. Air emissions arising as a result of any traffic associated with the proposed development is unlikely to impact on air quality standards, however, due to the size and scale of the site, the impacts of the operational phase of the development on climate are considered to be long term and equates to an imperceptible impact in relation to climate and air quality as a result of operational traffic. It is noted that the move towards more sustainable electric vehicles and non-car-based transport modes will over time reduce emissions associated with travel.

15.2.19 Noise and Vibration/Transportation

Temporary minor increases in noise may be generated as a result of construction traffic. A Traffic Management Plan will be implemented to minimise disruption arising as a result of traffic generated during the construction phase.

15.2.20 Transportation/Biodiversity

While traffic associated with the construction and operation stages may disrupt fauna, impacts are unlikely to be significant.

15.2.21 Material Assets – Utilities & Waste/Water

There is potential for some temporary impacts on water from the waste generated by the construction phase of the development. However, this can be mitigated by the implementation of the Construction & Demolition Waste Management Plan, which has been prepared by Waterman Moylan Consulting Engineers.

15.3 Summary

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

16.0 SUMMARY OF MITIGATION MEASURES

16.1 Introduction

The list incorporated in Table 16.1 below, contains the mitigation measures proposed to ensure no significant residual, significant effects arise from the proposed development, which have been set out in Chapters 5.0 to 14.0 of the Environmental Impact Assessment Report to the various impacts referred to in the relevant Environmental Impact Assessment Regulations.

16.2 Mitigation Measures

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

Chapter	Mitigation Measures Proposed
Biodiversity	**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) = π(stem diameter mm 12)/1,000) x2 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.

Land, Soils & Geology	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. An estimate of the total general cut & fill volumes, specific excavation volumes & topsoil generation for use in landscaping are presented in the Table below. As can be seen, the total cut and fill volumes are optimised to minimise the balance, with an estimated total balance required for the entire site of approximately 350m^3. 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. Operation 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.
Water	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.
Air Quality	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 DMRB assessment, it is likely the operational phase will not generate air emissions that would have an adverse impact on local ambient air quality and as such there are no mitigation measures specified. Also, 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.
Noise & Vibration	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.
Climate	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. These can be summarised below: Construction Phase: • CO_2 reduction measures to minimise impacts from transport during the construction phase, such as reducing idle times for vehicles and turning off engines when not in use. • It is also proposed to reduce embodied CO2 in the use of materials and to maximise the reuse of materials or "green" materials in the construction stage. • The construction of the buildings will also be energy efficient and use energy efficient technology such as heat pumps, heating controls and timers. Reduction in thermal bridging shall be maximised. Operation Phase: • Reduce demand for transport based trips. • Encourage the use of electric vehicles and cycling/walking. • Encourage public transport as a preferred mode of transport.
Transportation	Construction Phase: It is considered that a Construction Management Plan (CMP) will be prepared by the appointed contractor in order to minimise the potential impact of the construction phase of each proposed development on the safety and amenity of other users of the public road. The CMP will consider the following aspects: • Dust and dirt control measures.

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

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

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CMP and TMP, it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period.

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

- Stage I: Site clearance and preparation work for the construction.
- Stage II: Site development and construction. The development includes all associated site works and infrastructure which includes roads, utilities, foul and surface water drainage.

The construction programme is intended to be an 18-month programme.

An indicative phasing plan for all three concurrent planning submissions is shown in the Figure below. Each phase is designed to be delivered independently.

The proposed phasing is to help further reduce the impact of construction on the local road network

Operation Phase:

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

	Residents will be encouraged to avail of these facilities for travel to and from work. Provision of this information would be made during the sales process and will be included in the new homeowner's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. It is anticipated that this measure may help to reduce the level of traffic at the proposed development, thus providing mitigation against any traffic and transport effects of the development. A Travel Plan has been included for each proposed development under separate cover for each respective planning application. These Plans sets out method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport. In addition, the proposed developments propose connectivity to existing facilities and public transport options. The proposed upgrades to the R107 Malahide Road / Back Road junction will improve pedestrian and cyclist connectivity between the proposed development and the surrounding public network. New internal footpaths connecting the access road to R107 Malahide Road provide safe access to public transport in the area.
Material Assets, Cultural & Archaeological Heritage	Construction Phase: Monitoring of topsoil stripping to be undertaken by archaeologist. Should any archaeological material be uncovered then this will be subject to further investigation under the appropriate licence. Operational Phase: No mitigation necessary
Material Assets – Utilities & Waste	Construction Phase: The site-specific Construction and Demolition Waste Management Plan (C&DWMP) shall be implemented. Operation Phase Operational waste management will be managed by a designated management company on site and the appointed licenced waste contractor which will ensure the sustainable management of domestic and commercial waste arising from the development in accordance with legislative requirements and best practice standards.
Landscape and Visual Impact	Construction Phase: It is proposed that careful attention will be paid to avoiding any potentially adverse construction-related effects on the adjacent residences and the wildlife associated with the estuaries wetlands. Operating a well-managed, organised and planned

	construction site, with adequate control of construction traffic and working activity, is key to avoiding/minimising such impacts. In addition, any lighting required during the construction phase should be located sensitively to avoid unnecessary light spill into the surrounding residential areas and into the woodlands.
	
	The construction works and the habitat protection measures will be carried out in accordance with measures outlined by the project ecologist and FCC.
	
	Operation Phase:
	
	The careful and considered approach to the layout of the proposed development is to minimise negative visual impact both locally and from the wider surrounding area. The landscape strategy below details the landscape proposals that will assist in mitigating the landscape and visual impacts of the proposed development: refer to landscape drawings and Landscape Development Reports. The key objectives included:
	
	• Retention and protection of the vegetation along existing field boundaries where possible.
	  ○ This helps to retain a mature, established character to the site and provide a unifying, cohesive landscape framework that relates it to the surrounding landscape and its historical context, as well as being of ecological benefit.
	  ○ Generally this will involve retention of mature good quality trees within the woodlands, tree belts and hedgerows, pruning and tiding of the retained hedgerow and replanting where the hedgerow is of poorer quality (as outlined in the Arboricultural Reports).

	○ The design of the development has, where possible, followed the pattern of exiting field boundaries to ensure the retention of the vegetation where possible and to retain the historical patterns of the landscape. • Integration of the development into the surrounding landscape, minimising landscape and visual impact in particular upon nearby residential dwellings, from Malahide Road and from Malahide Demesne. ○ This is largely to be achieved by an extensive planting programme within the site and along the site boundaries and working with the existing topography of the site as much as possible. • Roadway lighting and lighting of cycle/ pedestrian walkways will be by means of high quality, modern standing fixtures. They will include full cut-off (FCO) and energy efficient lighting where practicable to reduce the impacts of light pollution on the surrounding area and sky. Introduction of usable amenity spaces, as described within the Landscape Development Reports and indicated on landscape drawings and which will be planted with appropriate species as listed in the planting specifications within these reports. The planting proposals within the scheme will be employed to: • assist in the successful integration of the proposed scheme into its landscape setting • structured native tree planting is proposed within the spaces and along the new main central spine road which links into the amenity spaces. • create visual interest and a sense of place • act as a buffer and assist in partially screening and filtering views of the proposed development from the surrounding area e.g. adjoining residential areas, Malahide Road • assist in defining areas and reinforcing the character of the various spaces • provide visually attractive spaces for future residents and the local community to relax, move and/ or socialise within • open lawn and grassland meadows are proposed throughout the public spaces which provide space for informal play and passive recreation. • provide a sense of enclosure at the transitions between public areas to communal areas and the proposed buildings, while also permitting passive surveillance of the open space areas

	• compensate for any loss/ enhance biodiversity benefits with an emphasis on pollinator friendly plant species.
Cultural Heritage	Construction Phase: Monitoring of top-soil stripping to determine if any archaeological features or deposits are present.

Table 16.1 Summary of Mitigation Measures

DOWNEY
29 Merrion Square, D02RW64

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)
Volume 2 - Appendices

Proposed Residential Development

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

October 2022

TABLE OF CONTENTS – VOLUME 2 APPENDICES

S.I. Ltd Contract No: 5690

Client:	Hatley Homes
Engineer:	Waterman Moylan
Contractor:	Site Investigations Ltd

Auburn,
Malahide, Co. Dublin
Site Investigation Report

Prepared by:

.....

Stephen Letch

Issue Date:	27/02/2020
Status	Final
Revision	1

Contents:

Appendices:

1. Introduction

On the instructions of Waterman Moylan, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at Malahide, Co. Dublin. The investigation was completed for a new residential development on the site and completed on behalf of the Client, Hollybrook Homes. The investigation was completed in February 2020.

2. Site Location

The site is located to the west of the Malahide Road in to the south of Malahide, Co. Dublin. Malahide is to the north of Dublin city and is shown on the map on the left and the location of the site in Malahide is shown on the right.

3. Fieldwork

The fieldworks comprised a programme of trial pits with dynamic probes and soakaway tests. All fieldwork was carried out in accordance with Eurocode 7: Geotechnical Design and IEI Specification & Related Documents for Ground Investigation in Ireland (2006).

The fieldworks comprised the following:

- 5 No. trial pits with dynamic probes
- 5 No. soakaway tests

3.1. Trial Pits with Dynamic Probes

5 No. trial pits were excavated using a wheeled excavator. The pits were logged and photographed by SIL geotechnical engineer and representative disturbed bulk samples were

recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

Adjacent to the trial pits, dynamic probes were completed using a track mounted Competitor 130 machine. The testing complies with the requirements of BS1377: Part 9 (1990) and Eurocode 7: Part 3. The configuration utilised standard DPH (Heavy) probing method comprising a 50kg weight, 500mm drop height and a 50mm diameter (90°) cone. The number of blows required to drive the cone each 100mm increment into the sub soil is recorded in accordance with the standards. The dynamic probe provides no information regarding soil type or groundwater conditions.

The dynamic probe results can be used to analyse the strength of the soil strata encountered by the probe. 'Proceedings of the Trinity College Dublin Symposium of Field and Laboratory Testing of Soils for Foundations and Embankments' presents a paper by Foirbart that is most relevant to Irish soil conditions and within this paper the following equations were included:

Granular Soils: DPH N_{100} x 2.5 = SPT N value

Cohesive Soils: C_u = 15 x DPH N_{100} + 30 kN/m²

These equations present a relationship between the probe N_{100} value and the SPT N value for granular soils and the undrained shear strength of cohesive soils.

The trial pit logs with the dynamic probe results are presented in Appendix 1 along with the photographs.

3.2. Soakaway Tests

Soakaway tests were scheduled at the trial pit locations but groundwater was encountered in three of the trial pits and therefore, these soils are already saturated and unsuitable for soakaway locations. Therefore, two soakaways were completed at TP04 and TP05 and logged by SIL geotechnical engineer. The soakaway test is used to identify possible areas for storm water drainage. The pit was filled with water and the level of the groundwater was recorded over time. As stipulated by BRE Special Digest 365, the pit should be filled three times and that the final cycle is used to provide the infiltration rate. The time taken for the water level to fall from 75% volume to 25% volume is required to calculate the rate of infiltration. However, if the water level does not fall at a steady rate then the test is deemed to have failed and the area is unsuitable for storm water drainage.

The test results are provided in Appendix 2.

3.3. Surveying

Following completion of all the fieldworks, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is supplied on each individual log and along with a site plan in Appendix 5.

4. Laboratory Testing

Geotechnical laboratory testing was completed on representative soil samples in accordance with BS 1377 (1990). Testing included:

- 5 No. Moisture contents
- 5 No. Atterberg limits
- 5 No. Particle size gradings
- 5 No. pH, sulphate and chloride content

Environmental testing was completed by ALS Environmental Ltd. and consists of the following:

- 5 No. Rilta Suite analysis
- 5 No. loss on ignition tests

The geotechnical laboratory test results are presented in Appendix 3 with the environmental tests reported in Appendix 4.

5. Ground Conditions

5.1. Overburden

The natural ground conditions vary slightly with TP01, TP04 and TP05 encountered cohesive brown grey CLAY soils until termination of the pits. TP02 and TP03 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 1.20mbgl and 1.10mbgl 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.

5.2. Groundwater

Groundwater details in the trial pits during the fieldworks are noted on the logs in Appendix 1. Groundwater ingresses were recorded in three of the trial pits, TP01, TP02 and TP03, at 2.60mbgl, 1.20mbgl and 1.10mbgl respectively. The ingresses in TP02 and TP03 correspond with the boundary with the GRAVEL, with rapid ingress rates.

6. Recommendations and Conclusions

Please note the following caveats:

The recommendations given, and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for adjacent unexpected conditions that have not been revealed by the exploratory holes. It is further recommended that all bearing surfaces when excavated should be inspected by a suitably qualified Engineer to verify the information given in this report.

Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.

6.1. Foundations

Due to the unknown depth of foundation and no longer-term groundwater information, this analysis assumes the groundwater will not influence the construction or performance of these foundations.

For analysis of bearing capacities from the dynamic probes, the N_{100} values are used as follows in cohesive soils. The undrained shear strength (C_u) is calculated using the N_{100} value as per the equation in Section 3.1. This can then be used in calculations to work out the ultimate bearing capacity (ULS) and when a factor of safety of 3 is applied, the allowable bearing capacity (ABC) can be provided.

In granular soils, the N_{100} value is used as per Section 3.1. to correlate with the SPT N-value and this is SPT N-value = N_{100} x 2.5. The SPT N-value can then be used to calculate the allowable bearing capacity, as per Terzaghi and Peck, using the correlation of SPT N-value x 10 = ABC. All capacities shown below are in kN/m^2.

The table overleaf shows the allowable bearing capacities for N_{100} values 1 to 10 at 1.00mbgl.

N_{100} Value	Cohesive Soils			Granular Soils	
	C_u	ULS	ABC	SPT N-value	ABC
1	45	250	85	2.5	25
2	60	330	110	5	50
3	75	400	135	7.5	75
4	90	480	160	10	100
5	105	555	185	12.5	125
6	120	630	210	15	150
7	135	705	235	17.5	175
8	150	780	260	20	200
9	165	855	285	22.5	225
10	180	930	310	250	250

All capacities shown are in kN/m^2.

The probes generally are 3 or greater and for cohesive soils, this would indicate a shear strength of $75kN/m^2$ and an allowable bearing capacity of $135kN/m^2$. TP02 did record lower values of 2 and this indicates a shear strength of $60kN/m^2$ and an allowable bearing capacity of $110kN/m^2$.

If granular soils are recorded as at TP02 and TP03, the lower value of 3 recorded at TP03 indicates an allowable bearing capacity of $75kN/m^2$, however, this increases to 5 at 1.30mbgl and this indicates an allowable bearing capacity of $125kN/m^2$.

It would be recommended that a suitably qualified Engineer inspects the founding strata prior to pouring the foundations to ensure that the ground is suitable for the final foundation design.

The following assumptions were made as part of these analyses. If any of these assumptions are not in accordance with detailed design or observations made during construction these recommendations should be re-evaluated.

- The foundation is to be 1m wide.
- Foundations are to be constructed on a level formation of uniform material type (described above).
- All man-made or filled material is to be removed prior to construction.
- The bulk unit weight of the material in this stratum has a minimum density of $19kN/m^3$.
- Based on groundwater observations this analysis assumes the groundwater will not influence the construction or performance of these foundations.

6.2. Groundwater

The caveats below relating to interpretation of groundwater levels should be noted:
There is always considerable uncertainty as to the likely rates of water ingress into excavations in clayey soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water.

Furthermore, water levels noted on the borehole and trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the borehole or trial pit is rarely left open for sufficient time for the water level to reach equilibrium.

Also, during boring procedures, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to aid drilling. Therefore, an extended period of groundwater monitoring using any constructed standpipes is required to provide more accurate information regarding groundwater conditions. Finally, groundwater levels vary with time of year, rainfall, nearby construction and tides.

Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below the groundwater level. Deep trial pits also aid estimation of seepage rates.

As discussed previously, groundwater was encountered in three of the trial pits during the fieldworks period. There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. However, based on this information at the exploratory hole locations to date, it is considered likely that any shallow ingress into excavations of the CLAY will be slow. If granular soils are encountered in shallow excavations, then the possibility of water ingressing into an excavation increases.

If groundwater is encountered during excavations then 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.

6.3. Soakaway Tests

The two soakaway tests completed failed the specification as the water level did not fall sufficiently enough to complete the tests. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The tests were terminated at the end of the first (of a possible three) fill/empty cycle since further testing would give even slower fall rates due to increased soil saturation. 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.

6.4. Pavement Design

The CBR test results in Appendix 3 indicate CBR values ranging from 6.1% to 8.3%.

The CBR samples were recovered from 0.50mbgl and inspection of the formation strata should be completed prior to construction of the pavement. Once the exact formation levels are finalised then additional in-situ testing could be completed to assist with the detailed pavement design.

6.5. Contamination

Environmental testing was carried out on five samples from the investigation and the results are shown in Appendix 4. For material to be removed from site, Rilta Suite testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of 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 created using HazWasteOnline™ software shows that the material tested can be classified as non-hazardous material.

Following this analysis of the solid test results, the leachate disposal suite results indicate that the soils tested would generally be able to be treated as Inert Waste.

Five samples were tested for analysis but it cannot be discounted that any localised contamination may have been missed. Any MADE GROUND excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

6.6. Aggressive Ground Conditions

The chemical test results in Appendix 3 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 SO_3. The BRE Special Digest 1:2005 – '*Concrete in Aggressive Ground*' guidelines require SO_4 values and after conversion ($SO_4 = SO_3 \times 1.2$), the maximum value of 151mg/l shows Class 1 conditions and no special precautions are required.

Appendix 1

Trial Pit and Dynamic Probe Logs and Photographs

Contract No: 5690	**Trial Pit and Dynamic Probe Log**				Trial Pit No: **TP01**
Contract:	Auburn	Easting:	720836.089	Date:	04/02/2020
Location:	Malahide, Co. Dublin	Northing:	745302.027	Excavator:	JCB 3CX
Client:	Hatley Homes	Elevation:	10.19	Logged By:	P. McGonagle
Engineer:	Waterman Moylan	Dimensions (LxWxD) (m):	3.50 x 0.60 x 3.00	Scale:	1:25

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples Depth	Samples Type	Probe	Water Strike
0		TOPSOIL.		10.0				1, 1, 1, 3, 3, 9, 23, 23, 25, 22, 30, 21, 29, 32, 28, 35	
	0.30				9.89				
0.5		Firm becoming stiff brown slightly sandy gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subangular of limestone (up to 500mm diameter).		9.5		0.50 0.50	CBR ES		
1.0						1.00	B		
				9.0					
1.5									
				8.5					
2.0									
				8.0					
2.5						2.50	B		▼
				7.5					
3.0	3.00	Pit terminated at 3.00m			7.19				
				7.0					
3.5									
				6.5					
4.0									
				6.0					
4.5									
				5.5					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth.	Minor pit wall collapse.	2.60 Rapid	Dynamic probe completed adjacent to pit	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 5690	**Trial Pit and Dynamic Probe Log**				Trial Pit No: **TP02**
Contract:	Auburn	Easting:	720958.397	Date:	04/02/2020
Location:	Malahide, Co. Dublin	Northing:	745323.628	Excavator:	JCB 3CX
Client:	Hatley Homes	Elevation:	9.13	Logged By:	P. McGonagle
Engineer:	Waterman Moylan	Dimensions (LxWxD) (m):	3.50 x 0.60 x 2.30	Scale:	1:25

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples Depth	Type	Probe	Water Strike
0		TOPSOIL.		9.0				1	
	0.30				8.83			2	
0.5		Firm brown grey slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles are angular to subangular of limestone.		8.5		0.50 0.50	CBR ES	2 3 3	
1.0						1.00	B	4 4 4 3 2	
	1.20			8.0	7.93			4	
1.5		Dark grey brown silty sandy fine to coarse, angular to subangular GRAVEL of limestone with high cobble content. Sand is fine to coarse. Cobbles are angular of limestone.		7.5				15 15 13 26 35	
2.0						2.00	B		
	2.30	Pit terminated due to pit wall instability.		7.0	6.83				
2.5		**Pit terminated at 2.30m**		6.5					
3.0				6.0					
3.5				5.5					
4.0				5.0					
4.5				4.5					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Pit wall instability.	Major pit wall collapse forcing completion of pit.	1.20 Rapid	Dynamic probe completed adjacent to pit	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 5690	**Trial Pit and Dynamic Probe Log**				Trial Pit No: **TP03**
Contract:	Auburn	Easting:	721023.024	Date:	04/02/2020
Location:	Malahide, Co. Dublin	Northing:	745208.740	Excavator:	JCB 3CX
Client:	Hatley Homes	Elevation:	8.89	Logged By:	P. McGonagle
Engineer:	Waterman Moylan	Dimensions (LxWxD) (m):	3.50 x 0.60 x 2.20	Scale:	1:25

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples Depth	Type	Probe	Water Strike
0	0.30	TOPSOIL.		8.5	8.59	0.50	CBR	1 1 1 2 1	
0.5		Firm brown grey sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles are angular to subangular of limestone.				0.50	ES	2 2 2 2 2	
1.0	1.10			8.0	7.79	1.00	B	4 4 3	▼
1.5		Dark grey brown silty sandy fine to coarse, angular to subangular GRAVEL of limestone with high cobble content. Sand is fine to coarse. Cobbles are angular of limestone.		7.5				5 5 5 7 6	
2.0	2.20	Pit terminated due to pit wall instability. **Pit terminated at 2.20m**		7.0	6.69	2.00	B	7 9 5 5 5 5 5 5	
2.5				6.5				8 7 9 8 7 9 11	
3.0				6.0					
3.5				5.5				14 13 12 12 10	
4.0				5.0				35	
4.5				4.5					
				4.0					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Pit wall instability.	Major pit wall collapse forcing completion of pit.	1.10 Rapid	Dynamic probe completed adjacent to pit	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 5690	**Trial Pit and Dynamic Probe Log**				Trial Pit No: **TP04**
Contract:	Auburn	Easting:	720867.968	Date:	04/02/2020
Location:	Malahide, Co. Dublin	Northing:	744987.754	Excavator:	JCB 3CX
Client:	Hatley Homes	Elevation:	11.99	Logged By:	P. McGonagle
Engineer:	Waterman Moylan	Dimensions (LxWxD) (m):	3.50 x 0.60 x 2.20	Scale:	1:25

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples Depth	Type	Probe	Water Strike
0	0.20	TOPSOIL.		11.79				1	
		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subangular of limestone (up to 500mm diameter).		11.5		0.50 0.50	CBR ES	2 2 3 5 4 4 4	
1.0				11.0		1.00	B	9 9 10 12 14	
1.5				10.5				22 24 22 26 30 35	
2.0				10.0		2.00	B		
	2.20	Obstruction - possible boulders or bedrock. **Pit terminated at 2.20m**			9.79				
2.5				9.5					
3.0				9.0					
3.5				8.5					
4.0				8.0					
4.5				7.5					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	Dynamic probe completed adjacent to pit	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental