16. Landscape and Visual Impact Assessment

16.1 Introduction

Murray and Associates were engaged to complete a Landscape and Visual Impact Assessment for a proposed media Park development at Grangecastle, on behalf of Lens Media Ltd.

Statement of Authority

The report was completed by Mr John Ward (B. Agr, Sc. (L. Hort) MLArch, MILI). John has been in practice since 1993 and is Principal landscape architect at murray & associates. He holds a master's degree in landscape architecture from University College Dublin (1993) and is a full Corporate Member of The Irish Landscape Institute. The landscape and visual assessment of the proposed development is a means of appraising the effect that the proposed development would have on the receiving environment in terms of the quality of landscape – both physically and visually. Also considered are construction and demolition works, light emissions and any other relevant landscape and visual factors. It is not foreseen that any notable changes to the visual impact of the development have occurred as a result of alterations made since the original planning submission.

Development Overview

The proposed site abuts the Grand Canal, approximately 6km to the West of Clondalkin,4.5km South-West of Lucan and 3.5km East of Celbridge. Figure 1. Shows the site in relation to the wider context of Dublin, Kildare and Meath, Figure 2. Shows the site and its surrounding/local context whilst figure 3. Depicts the sites extents in relation to its immediate context.

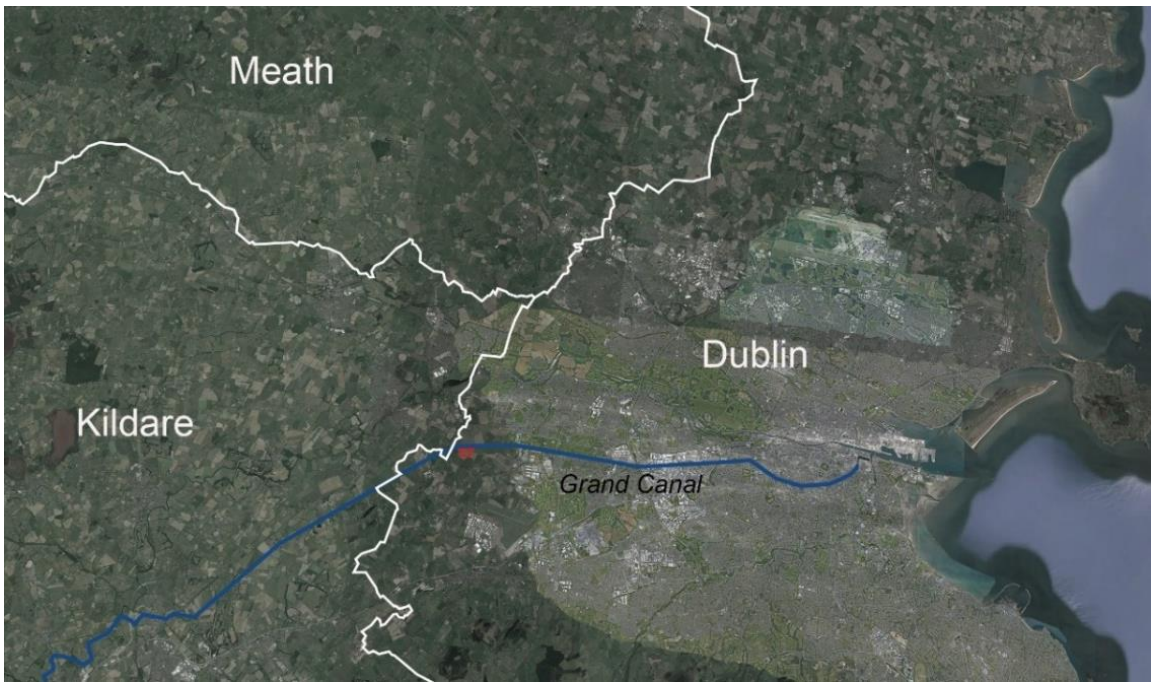


Fig.1 Site and wider context.

Fig.2 Site and local context

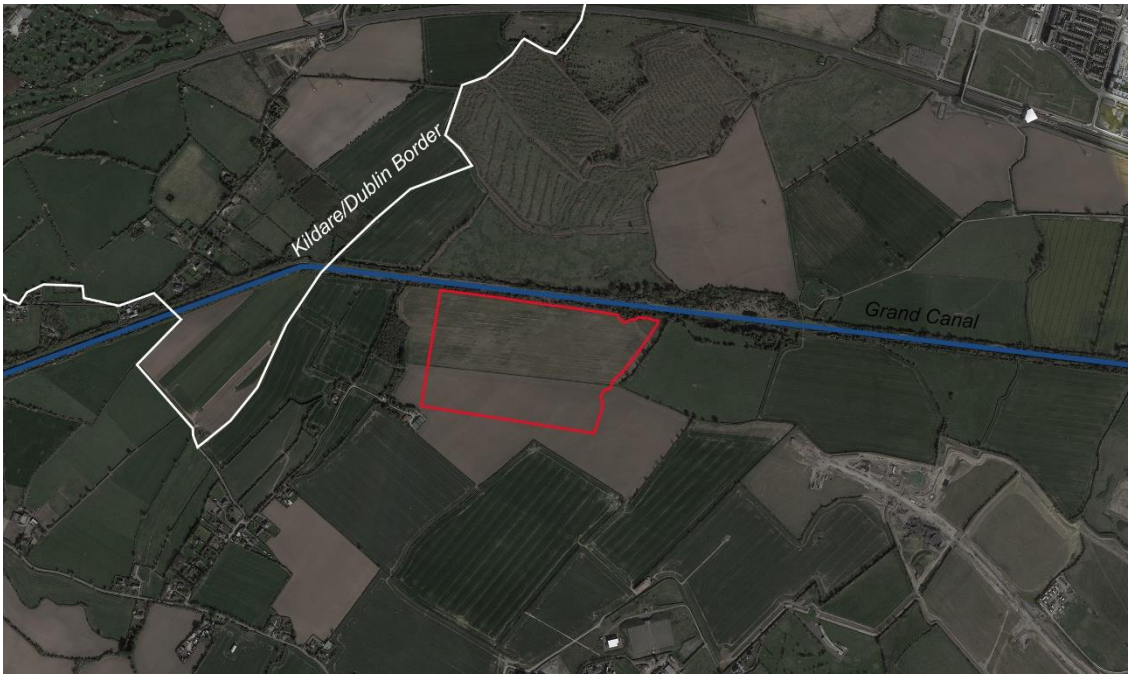


Fig.3 Site and immediate surrounds

Methodology

Legislation, Policy, and Guidance

The following sources were used to inform and structure this report:

- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (EIA Directive).
- The National Landscape Strategy (NLS) for Ireland 2015-2025.
- Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (2022 (EPA Guidelines 2022)).
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015)
- Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013 (GLVIA), published by the Landscape Institute.
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2018, published by the Department of Housing, Planning and Local Government.
- Technical Information Note on Townscape Character Assessment, 2016, published by the Landscape Institute.
- Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19, published by the Landscape Institute.
- Transport Infrastructure Ireland Publication no. PE-ENV-01101, published December 2020: Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects - Overarching Technical Document

Study Methodology

Landscape impacts are defined as changes in the fabric, character, and quality of the landscape as a result of the development (*Guidelines for Landscape and Visual Impact Assessment* - 3rd Edition, by the Landscape Institute / Institute of Environmental Assessment published by E&FN Spon, 2013). This includes direct impacts to landscape receptors and greater effects that can alter the wider distinctiveness of the landscape. Landscape receptors are physical or natural resources, special interest or viewer group that will experience an impact. The sensitivity (of a landscape receptor) is the vulnerability to change. The extent of the landscape impacts has been assessed by professional evaluation using the terminology defined as per Tables 1, 2, 3, and 4.

The terminology in the following tables is based on the criteria set down in the Guidelines for Landscape and Visual Impact Assessment (3rd Edition, by the Landscape Institute / Institute of Environmental Assessment published by E&FN Spon, 2013). Landscape impacts are assumed to be permanent. This report also has regard to the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018), and Environmental Impact

Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

Table 1 – The Significance of Landscape Impact (based on ratings from the EPA Guidelines, 2022)

Extent	Description
Level 1 **Imperceptible Effects**	An effect capable of measurement but without noticeable consequences. There are no noticeable changes to landscape context, character, or features.
Level 2 **Not significant**	An effect which causes noticeable changes in the character of the landscape but without noticeable consequences. There are no appreciable changes to landscape context, character, or features.
Level 3 **Slight Effects**	An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.
Level 4 **Moderate Effects**	An effect that alters the character of the landscape in a manner that is consistent with existing and emerging trends. There are minor changes over some of the area (up to 30%) or moderate changes in a localised area.
Level 5 **Significant Effects**	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the landscape. There are notable changes in landscape characteristics over a substantial area (30-50%) or an intensive change over a more limited area
Level 6 **Very Significant Effects**	An effect which, by its character, magnitude, duration, or intensity significantly alters the majority of a sensitive aspect of the environment. There are notable changes in landscape characteristics over a substantial area (50-70%) or a very intensive change over a more limited area
Level 7 **Profound Effects**	An effect which obliterates sensitive characteristics. There are notable changes in landscape characteristics over an extensive area (70-100%) or a very intensive change over a more limited area

Visual impacts relate solely to changes in available views of the landscape and the effects of those changes on people viewing the landscape, or "the change in the appearance or view of the built or natural landscape and urban areas" as stated in Recital 16 of the EIA Directive. They include the direct impact of the development on views, the potential reaction of viewers, their location and number and the impact on visual amenity. The intensity of the visual impacts is assessed by professional evaluation using the terminology defined as per the tables below.

Table 1 – Significance of Visual Effect (based on ratings from the EPA Guidelines, 2022)

Extent	Description
Level 1 **Imperceptible Effects**	There are no noticeable changes to views in the visual landscape.
Level 2 **Not significant**	An effect which causes noticeable changes in the character of the visual environment but without noticeable consequences. The proposal is adequately screened due to the existing landform, vegetation, or constructed features.
Level 3 **Slight Effects**	An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition or changes the view in a marginal manner.
Level 4 **Moderate Effects**	An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.
Level 5 **Significant Effects**	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Level 6 **Very Significant Effects**	An effect which, by its character, magnitude, duration, or intensity significantly alters the majority of a sensitive aspect of the visual environment. The proposal affects the majority of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Level 7 **Profound Effects**	An effect which obliterates sensitive characteristics. The view is entirely altered, obscured, or affected.

Table 2 – Quality of the Landscape and Visual Impact (EPA Guidelines 2022)

Extent	Description
Neutral Effect	Neither detracts from nor enhances the landscape of the receiving environment or view
Positive Effect	Improves or enhances the landscape of the receiving environment or a particular view
Negative Effect	Detracts from the quality of the landscape or view

Table 2 – The Duration of Landscape and Visual Effects (EPA Guidelines 2022)

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

Please note: "Momentary" and "Brief" Effects as defined in the EPA Guidelines (2022) are not considered relevant to landscape & visual assessment as effects of such short duration are extremely unlikely to generate appreciable effects.

Table 3 – The Extent and Context of Effects (EPA Guidelines 2022)

Extent	Describes the size of the area, the number of sites and the proportion of a population affected by an effect
Context	Describes whether the extent, duration or frequency conforms or contrasts with established conditions

Table 4 – The Probability of Effects (EPA Guidelines 2022)

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

The landscape and visual assessment methodology will be utilized in conjunction with a professional evaluation of the proposed development to determine the degree of impact.

The term 'study area' as used in this report refers to the site itself (i.e. the extent of the planning application) and its wider landscape context in the study of the context, physical landscape, and landscape character. This may extend for approximately 1km or more in all directions from the site in order to achieve an understanding of the overall landscape. In terms of the visual assessment, the study of visual amenity may extend outside the study area, from areas where views of the site are available, but the majority of visual impacts for a development of this nature would be most likely within the local context, as this landscape is relatively flat and enclosed. Please see Figures 1, 2 and 3 for diagrams indicating the site and study area.

The methodology employed in the landscape and visual impact assessment is as follows:

1. Identifying Baseline Conditions: Desktop survey of detailed maps, aerial photography, and other information relevant to the study area.

2. Characterizing the Landscape & Identifying Sensitive Receptors: Site survey and photographic survey to determine landscape character of the general study area and specific landscape of the site and to identify the sensitivity of receptors that have potential to be affected by changes in the baseline conditions.

3. Predicting the Magnitude of Likely Changes to the Baseline Landscape & Visual Environment: In determining visibility, the views to and from the proposed development areas are considered based on the heights, finishes, design and other visual characteristics of the proposed structures and setting. Verified Photomontages have been prepared by a specialist 3-D Visualizations company to represent selected views which are typical of the views within the area and are intended to demonstrate the scale of the buildings in the wider landscape. The extent of visual effects of the proposed development on the built environment is demonstrated through a selection of representative view locations around the proposed development. The photomontages on which the following assessments is based are provided in the CGIs and Verified Views brochure issued by Macroworks.

4. Assessing the Significance of Effect Taking into Account Sensitivity of Receptors and Magnitude of Effect: Assessment of the potential significant impacts of the proposed scheme utilizing the plan and elevation drawings of the scheme and Verified Views to determine the

main impacting features and the degree to which these elements would be visible in relation to the baseline environment.

5. Identifying and assessing appropriate mitigation measures, including alternatives: A scheme of mitigation measures is proposed, where relevant. These will be defined as measures which will be generally implemented and specific landscape measures which would be site-specific and address particular landscape or visual issues identified.

6. Assessing the significance of residual effects, taking account of any mitigation measures: For the purposes of assessment the predicted visual effects of the scheme are assumed at 10 years following the completion of the proposed development.

Specific Considerations from the EPA Guidance 2022

The EPA Guidance 2022 suggests that the following should be considered in Landscape and Visual Assessment, and these are considered in the assessment where relevant:

Visual Effects:

Context

- Character
- Significance
- Sensitivity
- Views & Prospects
- Landscape Amenity:
- Public access
- Public amenities
- Recreation
- Tourism
- The Landscape:
- Landscape Appearance and Character
- Landscape Context
- Historical Landscapes

Terminology

Landscape impacts are defined as changes in the fabric, character, and quality of the landscape as a result of the development. This includes direct effects on landscape receptors and greater effects that can alter the wider distinctiveness of the landscape. Landscape receptors are the physical or natural resource, special interest or viewer group that will experience an impact. The sensitivity of a landscape receptor is its vulnerability to change.

The extents of landscape effects are assessed by firstly establishing the baseline conditions by classifying baseline data according to its importance and sensitivity as per Table 8. Secondly, evaluation of the landscape impact on the baseline environment using the terminology defined in Tables 1, 3 and 4.

The UK Landscape institutes *technical information Note Townscape Character Assessment* recommends that where a proposed development Is within or dominated by built elements that the term 'Townscape' is used instead of 'Landscape'. The subject site is located on the outer edge of lands zoned for commercial development with the land to the West and North designated for rural amenity and agriculture.

Significance & Sensitivity of the Local Landscape and Visual Amenities

In landscape and visual assessments, one of the key factors is the sensitivity of a landscape to change, where the proposed development will inevitably result in adding a new element to the landscape. The publication *Guidelines for Landscape and Visual Impact Assessment* (2013) defines sensitivity as: *"A term applied to specific receptors, combining judgments of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor."*

Sensitivity refers to the inherent sensitivity to change of the landscape resource, as well as the visual sensitivity in terms of views, visibility, number and nature of viewers and scope to mitigate visual impact.

During the initial research and evaluation of the suitability of the subject site for the development, a typology was developed based on the fieldwork and research into the site. These categories will help to identify the sensitivity of the existing receptors.

Table 7: Baseline Evaluation – Sensitivity of Landscape Receptor (developed by the author for the proposed development with reference to fieldwork and research)

Landscape typology / Receptor	Category
ACA and/or Urban Landscape associated with listed or protected buildings	IV
Key Public Urban Spaces/ Historic Character Street/ Local Parks/ Tourist Attractions/Routes, Mature trees in the public realm, Local Landmark	III
Local Streets, Residential landscapes	II
Degraded urban townscapes/ streetscapes, Arterial Roads	I
A low-quality landscape, e.g. Industrial landscape, etc.	Not sensitive

Table 8: Baseline Evaluations – Sensitivity of Visual Receptors (developed by the author for the proposed development with reference to fieldwork and research)

Receptor	Category
Listed Views in Relevant Planning Documents Views from Key Public Urban Spaces Good quality / extensive views from listed buildings, within 50m	IV
Local receptors within 100m of the site (residential properties, nursing homes, residential care units, schools, cemeteries, tourist accommodation, tourist facilities, parks) with direct views of the development Publicly accessible viewpoints identified in the study with high-quality views or within a high-quality visual environment.	III
Local receptors within 100m of the site with oblique or compromised views of the development, or more than 100m from the site with existing high-quality views, or from a primary pedestrian route. Existing views from elevated viewpoints, within 1.5 km	II
People travelling through the area.	I
People working in the area.	Not sensitive

The significance of effects can be measured as a function of the magnitude of change and the sensitivity of the receptor. This allows for the following Table to be compiled that act as a guide-point for the assessor. It is important to note that the assessor's professional judgement, common sense and experience are also factors in ascribing rational judgements for the significance of effects.

Table 9: Level of Impact resulting from combination of Sensitivity Rating & Magnitude of Change

	Magnitude of Change				
Sensitivity	Very High	High	Medium	Low	No appreciable change
Very High (IV)	Profound	Very Significant	Significant	Moderate	Slight
High (III)	Very Significant	Significant	Significant	Moderate	Slight
Medium (II)	Significant	Significant	Moderate	Slight	Not Significant
Low (I)	Moderate	Moderate	Slight	Not Significant	Imperceptible
No sensitivity	Slight	Slight	Not Significant	Imperceptible	Imperceptible

16.2 Planning Context

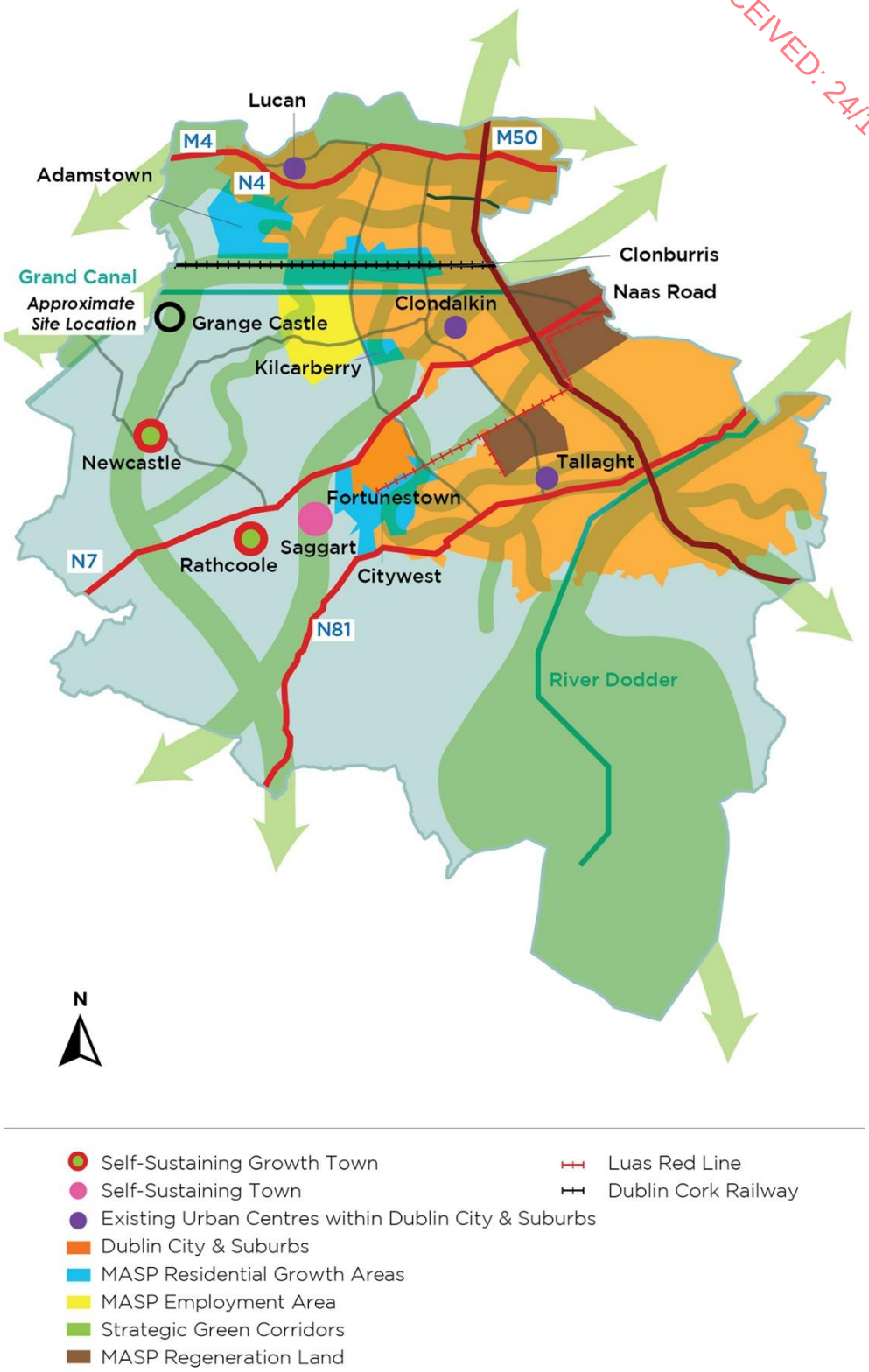


Fig.4 South Dublin County Core Strategy Map 2022-2028 with site location shown.

South Dublin County Development Plan 2022-2028

Chapter 2 – Core-Strategy and settlement

The proposed site at Grange Castle is located within an area of EE zoning. To provide for enterprise and employment related uses. SDCC's employment strategy is "*informed by an evidence-based approach which considers both existing land use zoning for employment purposes, and the requirement for additional employment lands based on population and employment growth assumptions".*

Relevant policy:

Policy CS5: Lands for Employment*: Ensure that sufficient serviced lands continue to be available in the right place for employment generation over the lifetime of the Development Plan.*

Chapter 3 – Natural, Cultural, and built heritage

The proposed site is located alongside the Grand Canal, which is recognised as a Proposed Natural Heritage Area and acts as an important wildlife corridor within South Dublin County.

The protection of Habitats and Species Outside of Designated Areas states that "*A number of habitats and species listed in Annex 1 and Annex 2 of the Habitats Directive are also known to occur at locations outside of protected sites. Strict protection is afforded under Annex IV of the Habitats Directive to some of these species, for example all bat species and otter. The planning process will seek to protect rare and threatened species, including species protected by law and their habitats. Applicants must demonstrate that proposals will not have a significant adverse impact on such species and their habitats. The Planning Authority will take account of the views of the Prescribed Bodies and any licensing requirements in relation to protected species. Wildlife habitats that are not nationally designated may still be important at a county level by acting as Green Infrastructure stepping-stones within the wider ecological network. This is encapsulated by Article 10 of the Habitats Directive which encourages the management of features of the landscape which are of major importance for wild plant (flora) and animals (fauna) and which are essential for the migration and dispersal of species."*

Relevant policies and Objectives:

Policy NCBH5: Protection of Habitats and Species Outside of Designated Areas Protect and promote the conservation of biodiversity outside of designated areas and ensure that species and habitats that are protected under the Wildlife Acts 1976 to 2018, the Birds Directive 1979 and the Habitats Directive 1992, the Flora (Protection) Order 2015, and wildlife corridors are adequately protected.

The SDCC Development plan states that the Grand Canal abutting the site to the North is *"an artificial linear waterway that hosts a rich variety of habitats and plant and animal species, including protected species. It acts as a direct national link and an ecological corridor between the River Shannon and Dublin Bay and is a key element in South Dublin County's ecological and green infrastructure network".*

Policy NCBH9: To Protect and promote the Grand Canal as a key component of the County's Green Infrastructure and ecosystem services network, and protect and enhance the visual, recreational, environmental, ecological, industrial heritage and amenity value of the Grand Canal, recognising its sensitivities as a proposed Natural Heritage Area with adjacent wetlands and associated habitats.

NCBH9 Objective 1: To protect and enhance the important biodiversity resource offered by the Grand Canal, recognising, and protecting the vital function that the Canal provides as a key corridor for habitats and wildlife from the River Shannon to Dublin Bay.

NCBH9 Objective 2: To facilitate the appropriate development of the Grand Canal as a recreational route for walking, cycling, nature study and water-based activities including fishing, canal boating, rowing, paddle boarding and canoeing / kayaking, subject to environmental safeguards and assessments.

NCBH9 Objective 3: To ensure that development along or adjacent to the Grand Canal contributes to the creation of an integrated network of appropriately designed walking and cycling routes connecting with the Grand Canal Way Green Route and which takes due cognisance of the sensitive nature of this national ecological corridor.
NCB9 Objective 4: To ensure that development along and adjacent to the Grand Canal protects and incorporates natural heritage features including watercourses, wetlands, grasslands, woodlands, mature trees, hedgerows, and ditches and includes an appropriate set-back distance or buffer area from the pNHA boundary to facilitate protected species and biodiversity and a fully functioning Green Infrastructure network.

Policy NCBH14: Landscapes Preserve and enhance the character of the County's landscapes, particularly areas that have been deemed to have a medium to high Landscape Value or medium to high Landscape Sensitivity and to ensure that landscape considerations are an important factor in the management of development.

As per specific objectives regarding the Landscape, Views & Prospects, the following is specified:

Policy NCBH15: Views and Prospects: Preserve Views and Prospects and the amenities of places and features of natural beauty or interest including those located within and outside the County.

NCBH15 Objective 1: To protect, preserve and improve Views and Prospects of special amenity, historic or cultural value or interest including rural, river valley, mountain, hill, coastal, upland, and urban views, and prospects that are visible from prominent public places and to prevent development which would impede or interfere with Views and / or Prospects.

Chapter 4 – Green Infrastructure

The SDCC Development plan 2022-2028 presents a vision of "Promoting the development of an integrated GI network for South Dublin County working with and enhancing existing biodiversity and natural heritage, improving our resilience to climate change and enabling the role of GI in delivering sustainable communities to provide environmental, economic and social benefits.

Relevant policies and Objectives:

Policy GI1: To Protect, enhance, and further develop a multifunctional GI network, using an ecosystem services approach, protecting, enhancing, and further developing the identified interconnected network of parks, open spaces, natural features, protected areas, and rivers and streams that provide a shared space for amenity and recreation, biodiversity protection, water quality, flood management and adaptation to climate change.

GI1 Objective 4: To require development to incorporate GI as an integral part of the design and layout concept for all development in the County including but not restricted to residential, commercial, and mixed use through the explicit identification of GI as part of a landscape plan, identifying environmental assets and including proposals which protect, manage, and enhance GI resources providing links to local and countywide GI networks.
GI1 Objective 5: Continue to liaise with adjoining local authorities to ensure the protection and enhancement of cross county GI corridors.

Policy GI2: Strengthen the existing Green Infrastructure (GI) network and ensure all new developments contribute towards GI, in order to protect and enhance biodiversity across the County as part of South Dublin County Council's commitment to the National Biodiversity Action Plan 2021-2025 and the South Dublin County Council Biodiversity Action Plan, 2020-2026, the National Planning Framework (NPF) and the Eastern and Midlands Region Spatial and Economic Strategy (RSES)

GI2 Objective 4: To integrate GI, and include areas to be managed for biodiversity, as an essential component of all new developments in accordance with the requirements set out in Chapter 12: Implementation and Monitoring and the policies and objectives of this chapter.

Listed Views within the study area.

Map Ref.	Prospect	Map Ref.	Prospect
1.	Athgoe Hill	10.	Piperstown Hill
2.	Bustyhill	11.	Glenasmole Valley
3.	Windmill Hill	12.	Cruagh Mountain
4.	Lugmore / Tallaght Hill	13	Kilakee Mountain
5.	Verschoyle's Hill	14.	Ballymorefinn Hill
6.	Mountpelier Hill	15.	Seahan Mountain
7.	Knockannavea	16.	Corrig Mountain
8.	Saggart Hill	17.	Seefingan Mountain
9.	Sliamh na mBánóg	18.	Kippure Mountain

Fig.5 List of prospects to be protected and retained (Chapter 3 SDCC development plan 2022-2028)

Consideration has been given to whether the site, and the proposed development, might fall into any of the designated Key Views indicated in SDCC's development Plan. As indicated in the map below. It is considered unlikely that the proposed development will feature in any of these views.

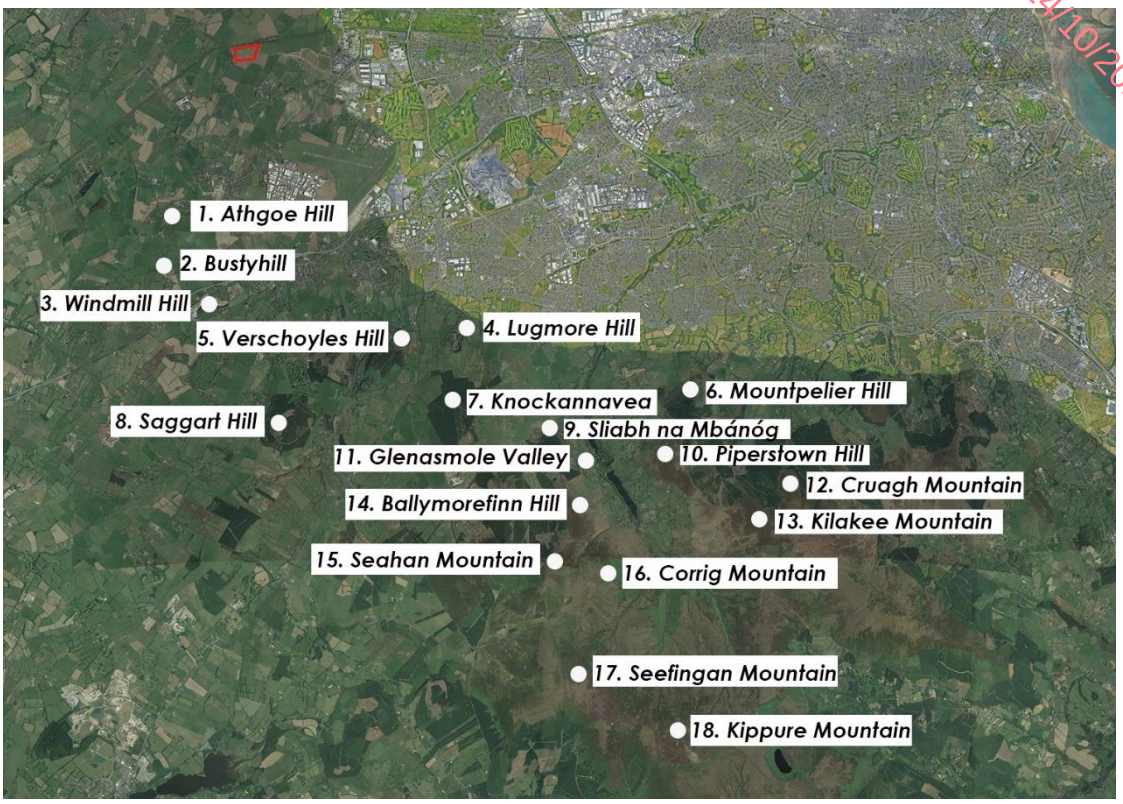


Fig.6 Map of protected views and prospects in relation to the site.

National Planning Framework (NPF), February 2018

The NPF recommends a more flexible approach within planning policies and standards in relation to building height and parking provision.

NPO 11 favours development that encourages more people and generates more jobs and activity in existing urban areas.

NPO 13 promotes a performance-based approach to planning standards, and '*in particular building height*', that '*seek to achieve well-designed high-quality outcomes in order to achieve targeted growth*'.

Urban Development and Building Heights, December 2018

With regard to demonstrating that the proposed development is an appropriate addition to the fabric of the surrounding area, the Guidelines set out the following criteria (appropriate extracts with regard to landscape and visual amenity):

At the scale of the relevant city/town

- Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the

character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks and protection of key views.

- On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape.

At the scale of district/ neighbourhood/ street

- The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape
- The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered.
- The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management – Guidelines for Planning Authorities" (2009).
- The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner.
- The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood.

Further Planning Context and Objectives

As previously outlined the site lies along the Grand Canal which is a proposed NHA. Furthermore, the site is located at the junction of two important green infrastructure corridors identified on SDCC's Green infrastructure Strategy Map. Both corridors link into Kildare's GI Network with connections both along the canal and further south towards the Wicklow Mts.

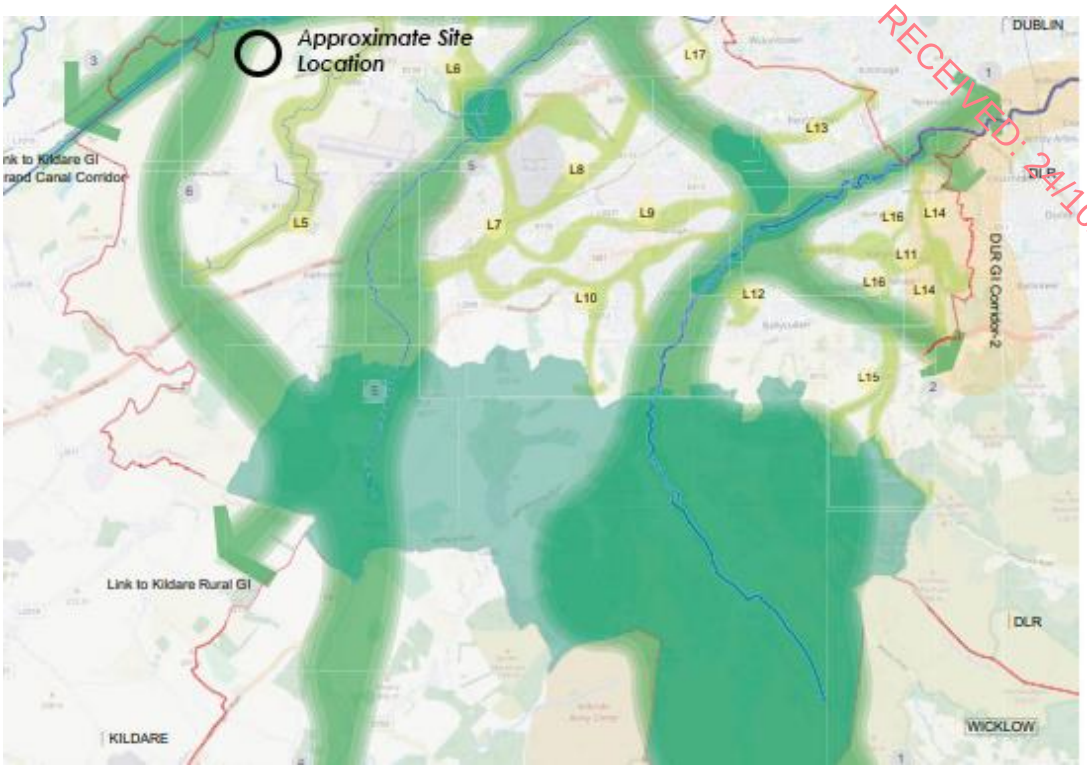


Fig.7 SDCC Green infrastructure map with site location shown.

16.3 Baseline Environment

In this section, the baseline landscape is described and classified. The various components of the landscape are considered and described, including adjacent structures and public spaces, urban fabric, topography, cultural landscape elements and the scenic quality of the study area. The objective of this part of the assessment is to define a baseline of landscape and visual quality against which the effects of the development can be measured. The existing landscape is described from fieldwork and against the context of the relevant planning documents.

Existing Landscape Context and Character

The site of approximately 22.6 hectares is located in the townland of Brownstown, 3km Northwest of Clondalkin, and 4km southwest of Lucan. The Kildare Dublin border lies just west of the site with the Grand Canal sitting immediately North of the Redline boundary. Currently the site is comprised of open arable farming land and is devoid of vegetation except for a line of mature trees and hedgerow which runs directly along the canal. There are further existing trees to the East of the site and a small patch of woodland directly to the west however they both sit beyond the Redline Boundary. Lands surrounding the site are of a similar character and development is dispersed with a low number of buildings or residences in the vicinity.
To the Southwest corner of the site there is a small cluster of agricultural buildings which directly address the site boundary and provide the primary means of access to the existing field.

Existing Visual Context and Views

Fig.8 Site with Redline Boundary shown.

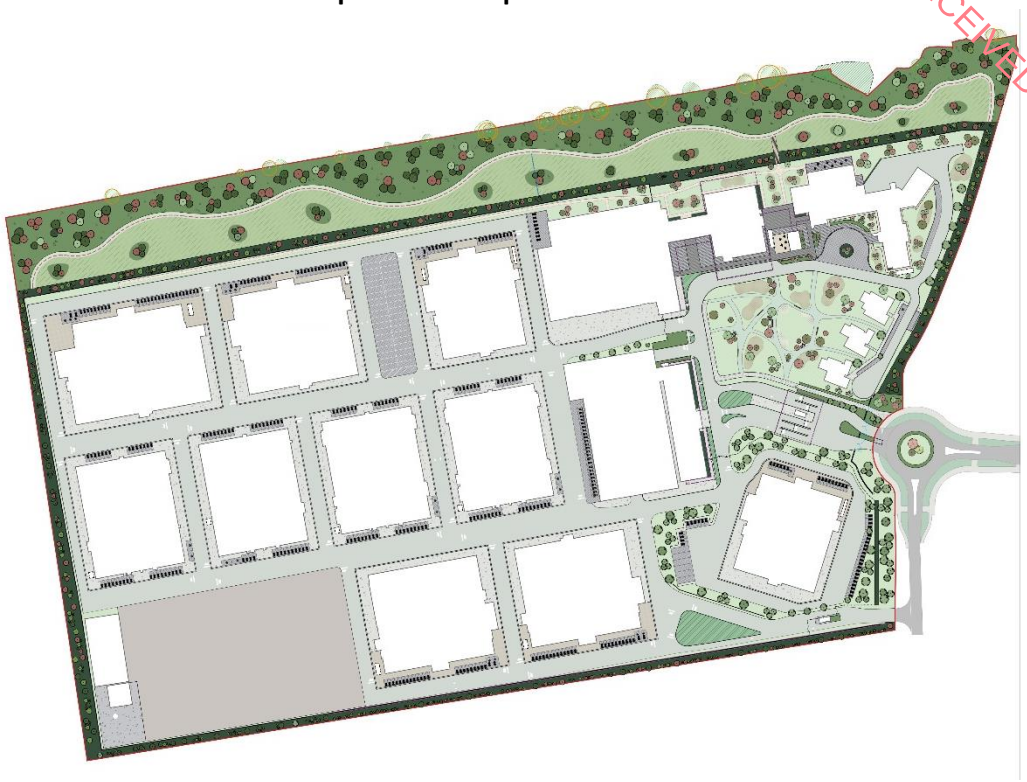
Visual

- Although the site is only densely screened by woodland and hedgerow on one side, the low-lying nature of its immediate surrounds and substantial setback from any major road connection mean it is not easily distinguishable within the wider landscape context.
- There are no protected views within the site area.
- To the North of the site where there is more prevalent infrastructure which includes the train line and Grand canal along with its pedestrian pathway. However, as previously alluded to this boundary of the site is delineated by existing mature tree planting and so the site is not easily visible from this orientation.

Landscape

- The current landscape is generally unremarkable in the context; typical of urban-rural fringe areas locally and regionally.
- The internal site landscape is comprised of arable farmland.
- The existing site presents as vacant greenfield land, with mature tree planting to the Northern boundary parallel to the canal and a small cluster of farm buildings to the south-west corner of the site.

Characteristics of the Proposed Development



Description of the Proposed Development

Fig.9 Site Masterplan

Lens Media Limited are seeking planning permission for the development of a Media Park at a 22.6ha site located in the townlands of Coolscudden, Brownstown and Milltown, west of Grange Castle Business Park, Newcastle, County Dublin. The site is bounded by the Grand Canal to the north. The proposed development will include the removal of existing vegetation and walls in the southwestern corner of the site and construction of:

- 6 no. studio/sound stage buildings comprising internal double height stages with overhead catwalks, 2-storey ancillary production offices including office space, plant and switch rooms, toilets, ICT rooms and staff toilets (c. 35,187 sq. m).
- 4 no. single storey workshop buildings (totalling c. 18,244 sq. m) comprising internal workshop areas, staff toilets and showers, ICT, plant and switch rooms.
- 3-storey TV studio and reception building (c. 10,875sq. m) comprising 3 no. TV studios and various supporting spaces at Ground Floor level including backstage shooting area, green rooms, hair and makeup rooms, production suites with ancillary offices, wardrobe, laundry room, vision dept, lighting dept, pro service, run and crew kit room, chief engineer office, studio manager office, scenic store, props store, cameras and grip room, lighting and electrical room, plant room, mechanical room, sound control rooms, vision rooms, recording rooms, guest holding areas, security offices, staff toilets and locker rooms; First Floor level to include standard dressing rooms, multipurpose spaces, kitchen and crew area, toilets, mechanical/electrical room, technical offices, media store; Second Floor level to include star dressing rooms, toilets, multipurpose rooms and outdoor balcony;

- 2 no. outdoor stage areas associated with the TV Studio and Reception Building
- Dining Hall Building with ancillary 100 seat theatre (c. 4,351sq. m) comprising indoor and outdoor dining areas, kitchen, storage and mechanical rooms, toilets and 3 no. meeting rooms.
- Standalone café (c. 96 sq. m)
- 3 no. single storey production suite buildings (totalling c. 795 sq. m) comprising offices, conference room, kitchenette, communal areas and toilets.
- 3-storey car parking deck (c. 14,782.sq.m) to include 472 no car parking spaces with ancillary offices (c. 4,307sq.m) refuse recycling area and rooftop plant; and
- Site landscaping to include:
    - A biodiversity area along the northern boundary of the site.
    - public realm and planting areas in the vicinity of TV Studio and Reception Building and production suite offices.
    - green roofs; and
    - boundary treatments.
- Hard standing to include backlot area and shooting lanes to facilitate outdoor filming.
- Provision of an Electrical Substation (c 236 sq. m gfa);
- Provision of primary and secondary gate houses.
- Provision of surface car parking & HGV parking area,
- Provision of a waste collection area adjacent to the proposed backlot.
- Provision of rooftop PV panels (Workshops A and B).
- Provision of Green Roofs.
- All associated site development works, drainage and services provision, boundary treatments (including security fencing), and associated works.

The primary proposed vehicular, cyclist and pedestrian entrance will be located at the eastern boundary with a secondary vehicular access at the southeastern corner of the site.

Landscape and Open Space

The proposed landscape scheme for Grange Castle Media Park will be comprised of two main open spaces, a large open meadow area to the centre of the media park campus and the 50 m buffer area running parallel to the canal which ~~will be served by a public connection along the Eastern Boundary of the site~~ (is proposed as a designated ecological area). Further landscape works are to include screening of the site's boundaries with native tree and hedgerow planting, a plaza/break out space to the front of the reception building and theatre, hard landscaping to all parking areas and pathways, site-wide tree and shrub planting and the provision of green roofs to buildings which have been identified as suitable to support them.

Summary of proposals:

- To both reinforce and enhance the interface with the canal through a considerate design approach which is cognisant of the site context ~~and that offers a valuable public realm amenity~~.
-To incorporate where possible, Sustainable urban drainage measures, which will provide efficient and environmentally conscious water management solutions.
-To provide seasonal interest through a planting approach that includes high quantities of native species, and that will be beneficial to local fauna and pollinators.
- To propose and incorporate sustainable landscape management strategies such as natural grasslands and pollinator friendly native meadows.

- To create a strong natural buffer around the site with native tree planting which will assist in bedding the scheme into its context and tie in with existing green infrastructure corridors.
-To provide spaces for dwelling and recreation using materials which complement architectural forms and finishes

Landscape and Visual Sensitivity

Landscape:

On assessment of SDCC's Landscape Character Types and Sensitivity for South Dublin County, an exact designation for the proposed site location is not available, however lands to the South, West and north of the site are considered to be of medium sensitivity as they form part of the Newcastle Lowlands. This area is deemed important due to its provision of agricultural lands which are identified as providing both a distinctive and unique identity to the area. Overall, the landscape sensitivity of the area can be considered low to medium.

Visual:

Overall visual sensitivity is considered to be low to medium.

Sensitivity is considered medium for residential receptors that are adjacent or closer to the proposed site, and for areas which receive higher numbers of footfall and public use.
Furthermore, sensitivity is considered to be low for places in which small numbers of people may occasionally pass through, but which are not passively used for extended periods of time.

Please refer to table 10 for the viewpoint location, distance from the site, description of the view, and the specific sensitivity ratings.

Furthermore, refer to Appendix 16.1 for the locations of the viewpoints and photomontages prepared by Macroworks.

Magnitude and Quality of Change in the Landscape and Visual Environment

The proposed development will result in a low to medium magnitude of change to the landscape, which will give rise to a limited number of landscape and visual effects.

The main visual change on site will occur due to the transition of its nature from a relatively low-lying Greenfield being used for arable farming, to a functioning media park and the massing of buildings that Is associated with this change in land use.

The taller building elements will be softened at ground level in nearby views, due to the extensive tree and hedgerow planting proposed to the site's boundaries and to the 50m Buffer area. As seen in the photomontages this will help to integrate the buildings into the wider landscape by better bedding them into the landscape and reducing visual focus on the facades.

In the wider context, where the taller elements of the building are likely to be visible, and the facades and public realm are not, the likely extent of the change within the landscape context is considered to be slight to moderate as there will be minimal changes to the visual mass and skyline of the area. As previously mentioned, there are developments of a similar nature just

east and South of the site in Grange Castle Business Park and Greenouge Business Park. The magnitude of change will vary depending on the viewpoint location and how visible the proposed development is in that view. Table 10 gives the magnitude of change for each receptor.

Regarding the quality of change, the proposed development is generally considered as an enhancement of the area. There will also be an enrichment of the ecological value of the site due to the proposal for a 50m Buffer area which is designated for ecology. (This will reinforce the interface with the pNHA as well as boosting site biodiversity and providing an additional habitat area for local wildlife). ~~be an enrichment of the landscape amenity value of the site primarily due to the provision of public access to the 50 M buffer area which will provide a space for both passive and active recreational opportunities.~~

Construction stage landscape and visual impacts, where they occur, are considered to be of negative quality, as would be the norm during construction and these impacts will only be short-term.

Table 10 – Visual Sensitivity Analysis

Ref.	*Viewpoint location*	*Distance from site*	*Description of View*	*Level of Sensitivity*	*Magnitude of Change*	*Overall Change*
V1	Newcastle Golf Centre	0.8 km	View from Newcastle golf centre North towards Eastern Boundary of the site. View partially obstructed by existing mature trees. Massing of buildings visible towards clubhouse.	Medium (II)	Low	Slight
V2	Local road South of site at Brownstown	0.8 km	View from gate along local road at Brownstown towards the Southern Boundary of the site	Medium (II)	Low	Slight
V3	Brownstown Cemetery	0.6 km	View from cemetery North towards sites Southwestern boundary. View of site is wholly obstructed by mature trees.	Medium (II)	Low	Slight
V4	Adamstown train station	1.2 km	Elevated Car Park adjacent to Adamstown Train station. Outline of building roofs is visible but is mostly screened by existing vegetation in proximity to the Canal.	Medium (II)	Low	Slight
V5	Hillcrest railway Bridge	0.8 km	View form Hillcrest railway Bridge South towards sites Northern Boundary. The site is partially screened by existing vegetation.	Low (I)	Medium	Slight

V6	12th Lock Grand Canal	2 km	View from Grand Canal Way adjacent to 12th Lock Bridge towards Eastern boundary of site. Outline of site not visible	Medium (II)	Low	Slight
V7	Brownstown Lane	130M	View from Gate at Brownstown Lane, Massing of proposed development mostly screened by mature trees at field boundary.	Medium (II)	Low	Slight
V8	Golierstown Bridge	400M	View from Golierstown Bridge towards Eastern Site Boundary, massing of buildings is not in view due to screening from existing mature vegetation along the Canal.	Medium (II)	Low	Slight
V8A	Golierstown Bridge	400M	View from Golierstown Bridge towards Eastern Site Boundary, roof line of buildings is only slightly in view due to screening from existing mature vegetation along the Canal.	Medium (II)	Low	Slight
V9	View from the entrance of the Grange Castle West Access Road	1.5 KM	View from the entrance of the Grange Castle West Access Road at its junction with the R120. The proposed development is not in view as it is screened by the terrain.	Medium (II)	No appreciable Change	Not significant

16.4 Residual Impact of the Proposed Development

The residual impacts are the impacts that the development is most likely to have on the receiving environment. For the sake of clarity, these shall be considered under the following headings: Landscape Impacts and Visual Impacts.

These impacts are measured under the following categories:

- Construction Phase
- Operational Phase

Construction Phase

During the construction process, the site will undergo a change from that of a greenfield site into a large construction site. Any impacts generated at this stage will be short-term in duration.
There will be moderately negative effects associated with the construction works of this development elsewhere. This will be due to the site clearance, and the building processes required to construct the proposed development and the associated access required to do so. Such effects are temporary and short term. Hours of construction activity associated with any

development on the site will be restricted in accordance with the relevant local authority guidance.

Visual impacts will be more acute than in the operational phase, but short-term in duration. This is due to construction traffic, site hoardings, cranes etc. Cranes and other similar machinery required for construction will be taller than the proposed buildings and therefore more visible in the landscape. There will also be vehicular and crane movement and changes to the configuration of the site which are typical of building sites. Visually, the impacts will be moderately negative and will impact the adjacent properties more acutely than the operational phase. As the building progresses, the adjacent users' views will alter, this is considered in the operational change effects.

Operational Phase - Residual Landscape Impact

Following construction, the main landscape effects of the proposed development are associated with the completion of the site. (The completed landscape character will have a positive effect on the site and the surrounding areas through the implementation of a designated ecological area abutting the grand canal which will serve to strengthen this section of the existing Grand Canal green infrastructure corridor. Furthermore, throughout the media park an ecologically considerate approach has been taken with the proposal of extensive native tree planting, planting of native meadow, and implementation of SuDs features. Such proposals will enhance site biodiversity with high-quality landscape spaces proposed within the site which will enhance the experience of the development for both workers and visitors.) ~~the completion of new public realm to the North of the site which can be accessed along the Eastern site boundary from the main roadway, alongside a strengthening of the existing Grand Canal Green infrastructure corridor.~~

The addition of new structures to the skyline will have an effect on the urban fabric, yet due to the location of the site, this is considered to be in line with the landscape character of the surrounding area, with developments of a similar nature such as Grange Castle Business Park and Greenouge business Park in close proximity to the proposed.

In terms of screening from potential visual receptors this is addressed through the proposal of a 5m wayleave which is heavily screened by tree planting and hedgerow to the Western, Eastern and Southern boundaries and a 50 m buffer zone to the North of the site which is (intended to be a designated ecological area. Here, extensive native tree and meadow planting will provide additional screening as well as functioning to enhance the ecological value of the section of the Grand Canal Green Infrastructure Corridor.) ~~site which serves as a public amenity space and also functions to enhance the ecological value of this section of the Grand Canal Green infrastructure Corridor.~~

Potential Night-time Effects

Site lighting will consist of directionally focused lighting that seeks to minimise light spill. In order to further mitigate any potential chance of light spill, hedgerow planting to the boundaries of the site and high volumes of tree planting to the 50m buffer area will prevent light from spilling onto the canal and thus having any potential adverse effect on local wildlife. Please Refer to Lighting design drawings submitted by Honan O'Brien for further details regarding the proposed lighting strategy.

Operational Phase - Residual Visual Impact

The residual visual impacts are those that will persist following the implementation and establishment of the proposed landscape measures. See *Table 9 Residual Visual Impacts Assessment Summary* for specific details on the visual impact on the identified receptors.

Neighbourhood/Street Scale - Public Realm Receptors

~~The street-level impacts to users of the public realm will be positive due to the creation a new pedestrian link to the Northern Buffer area which runs alongside the Grand Canal~~. (The landscape approach proposes to implement extensive screening to all boundaries of the Media Park with planting of native trees and hedgerow serving to reduce the visual impact of the building facades on the public realm. Over time as this planting establishes and increases in size, the development will begin to merge with the existing landscape character and the visual impact on public realm receptors will be low. At the main entrance way where screening cannot be provided for the purposes of access and functionality, design proposals will be of high quality and contribute positively to the public realm/streetscape).

With regard to other sensitive views from within the surrounding area, the development will not have any perceivable effect on sensitive views listed in the South Dublin County Council Development Plan.

Summary

The proposed development will have an overall slight positive effect on the landscape character of the area due to the implementation of a large biodiverse landscape with ~~publicly accessible routes~~, a strong emphasis on sustainable active management. The proposed development's form and materials are cognisant of the character of the area and will blend into and further enhance the existing site surrounds.

In visual terms, there will be an improvement in the landscape from an internal and external perspective. Internal areas will experience positive visual impacts due to the high volumes of proposed new trees, shrub planting and managed meadow areas which will function both as an aesthetic asset to the site but will also contribute towards enhancing local biodiversity and more seamlessly aligning the scheme with the existing landscapes character. Due to the landscape proposals including heavy levels of screening planting to all boundaries the proposed development will have a generally low visual impact on the wider area. Over time, as vegetation matures, and the scheme begins to blend more into the landscape any initial views will be further softened and reduced.

The proposed development will have a predominantly positive impact both at the immediate and local scale and will be in keeping with policies of the South Dublin County Development plan 2022-2028. The development acknowledges important relevant policy such as.

- The protection, recognition and enhancement of key natural, cultural, and built heritage assets which have shaped South Dublin County.
- The preservation of the character and distinctiveness of the counties landscapes.
- The assurance that the environment and heritage are maintained in a sustainable manner, whilst also enabling a proactive approach to development.
- The creation of a strong and resilient economic base providing expanded opportunities for employment and facilitating a good quality of life within vibrant and attractive places to live, work, visit and invest.
- The promotion and the development of an integrated GI network for South Dublin County working with and enhancing existing biodiversity and natural heritage, bolstering resilience to climate change, and enabling the role of GI in delivering sustainable communities to provide environmental, economic and social benefits.

Table 11 Residual Visual Impact Assessment Summary

Ref.	Viewpoint	Level of Sensitivity	Magnitude of Change to View – Construction	Residual Construction Impact	Magnitude of Change to View – Operational	Residual Operational Impact
V1	View from Newcastle golf centre North towards Eastern Boundary of the site. View partially obstructed by existing mature trees. Massing of buildings visible towards clubhouse.	Medium (II)	Medium	Not significant	Low	Slight
V2	View from gate along local road at Brownstown towards the Southern Boundary of the site	Medium (II)	Medium	Not significant	Low	Slight
V3	View from cemetery North towards sites Southwestern boundary. View of site is wholly obstructed by mature trees.	Medium (II)	Low	Not significant	Low	Slight
V4	Elevated Car Park adjacent to Adamstown Train station. Outline of building roofs is visible but is mostly screened by existing vegetation in proximity to the Canal.	Medium (II)	Medium	Not significant	Low	Slight
V5	View form Hillcrest railway Bridge South towards sites Northern Boundary. The site is partially screened by existing vegetation.	Low (I)	Medium	Not significant	Medium	Slight
V6	View from Grand Canal Way adjacent to 12th Lock Bridge towards Eastern boundary of site. Outline of site not visible	Medium (II)	Low	Not significant	Low	Slight
V7	View from Gate at Brownstown Lane, Massing of proposed development mostly screened by mature trees at field boundary.	Medium (II)	Low	Not significant	Low	Slight
V8	View from Golierstown Bridge towards Eastern Site Boundary, massing of buildings is not in view due to screening from existing mature vegetation along the Canal.	Medium (II)	Low	Not significant	Low	Slight

V8A	View from Golierstown Bridge towards Eastern Site Boundary, massing of buildings is slightly in view but is almost completely screened by existing mature vegetation along the Canal.	Medium (II)	Low	Not significant	Low	Slight
V9	View from the entrance of the Grange Castle West Access Road at its junction with the R120. The proposed development is not on view as it is screened by the terrain.	Medium (II)	No appreciable change	Not significant	No appreciable change	Not significant

16.5 "Do Nothing" Scenario

The do-nothing impact refers to the non-implementation of the proposed development. The primary effect of this would be that the impacts and effects identified would not directly occur. In this regard the following issues are relevant.

The current land use of the subject site is as a vacant Greenfield site, and this would likely not persist in the longer term given its EE zoning on South Dublin County Core Strategy Map 2022-2028. it is highly likely that a development of a similar nature would be proposed in the near future.

16.6 "Worst-Case" Scenario

The views selected for analysis are those from where the proposed development is most likely to be visible and so the analysis of impacts, above, represents a worst-case scenario.

16.7 Monitoring

Construction Phase

Landscape tender drawings and specifications will be produced to ensure that all landscape works are implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting, and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the planting season after completion of the main civil engineering and building work.

Operational Phase

This will consist of weed control, replacement planting, pruning, management of meadows etc. All landscape works will be in an establishment phase for the initial three years from planting. Prior to completion of the landscape works, a competent landscape contractor should be engaged and a detailed maintenance plan, scope of operation and methodology should be put in place.

16.8 Interaction of Impacts

Interactions
The assessment of the landscape impacts associated with the proposed development has a number of interactions with other parameters of the assessment. In summary, these are as follows:

- Population and Human Health
- Biodiversity

The interactions of landscape with these parameters can be summarised as follows:

Population & Human Health
The landscape and visual impact associated with human beings focuses on the effects to dwellings. The proposed development generates visual effects; the effects and associated amelioration of these effects is discussed in the impact section of the report.

Biodiversity
The long-term effects of the proposed development will have a positive effect on the tree cover associated with the development. Existing treelines and hedges are retained around the boundaries and new planting areas are proposed where feasible, while pedestrian and emergency vehicle routes are also considered.

16.9 Potential Cumulative Impacts

The lands on which the proposed development is to take place have been zoned EE –To provide for enterprise and employment related uses as set out in the South Dublin County Development Plan 2022 – 2028. As a general note the proposed is an employment driven development of a Greenfield site and is in keeping with the EE zoning which the Development Plan confers on the site. A more detailed analysis of the particulars of this zoning and its application to the site is contained in the planning report submitted with this application.

Construction

As this is in an urban fringe area on lands zoned for Enterprise and Employment uses, there is a potential for other sites in close proximity to be brought forward for redevelopment, and construction activity may be extensive in the future. There is a permitted development for five logistics / warehousing units at a site just to the East (SD23A/0301) of the proposed development and an undecided application for a medical manufacturing facility (SD23A/0331) to the southeast of the site. If all sites are developed concurrently there is potential for short term moderate negative cumulative impacts as a result of cranes and other similar machinery required for construction that will be taller than the proposed buildings and therefore more visible in the landscape.

Operation

The proposed site is in relative proximity to areas which have undergone extensive development of commercial, residential, and mixed-use development in recent years including Celbridge, Adamstown and Grange Castle. However, the site itself and surrounding lands are greenfield sites of rural character that have historically been used as arable farmland. Once operational as a media campus in the context of surrounding lands which are also likely to be developed, the potential cumulative impact of the operational phase of the proposed development will be significant.

References

Environment Protection Agency, 2002. PA *Guidelines on The Information to Be Contained in Environmental Impact Statements.*

Environment Protection Agency, 2003. *Advice Notes for Preparing Environmental Impact Statements.*

Environment Protection Agency, 2015. *Draft Advice Notes for Preparing Environmental Impact Statements.*

Environment Protection Agency, 2017. *Draft Revised Guidelines on The Information to Be Contained in Environmental Impact Statements*.

South Dublin County Council,2022. County Development Plan 2022-2028.

Routledge, 2013. The Landscape Institute / Institute of Environmental Assessment *Guidelines for Landscape and Visual Impact Assessment* 3rd Edition

Appendix 16.1: Visual Impact Images

Viewpoint 1 - Existing View + Outline View
Viewpoint 1 - Montage View

Viewpoint 2 - Existing View + Outline View
Viewpoint 2 - Montage View

Viewpoint 3 - Existing View + Outline View*

Viewpoint 4 - Existing View + Outline View
Viewpoint 4 - Montage View

Viewpoint 5 - Existing View + Outline View
Viewpoint 5 - Montage View

Viewpoint 6 - Existing View + Outline View*

Viewpoint 7 - Existing View + Outline View
Viewpoint 7 - Montage View

Viewpoint 8 - Existing View + Outline View*

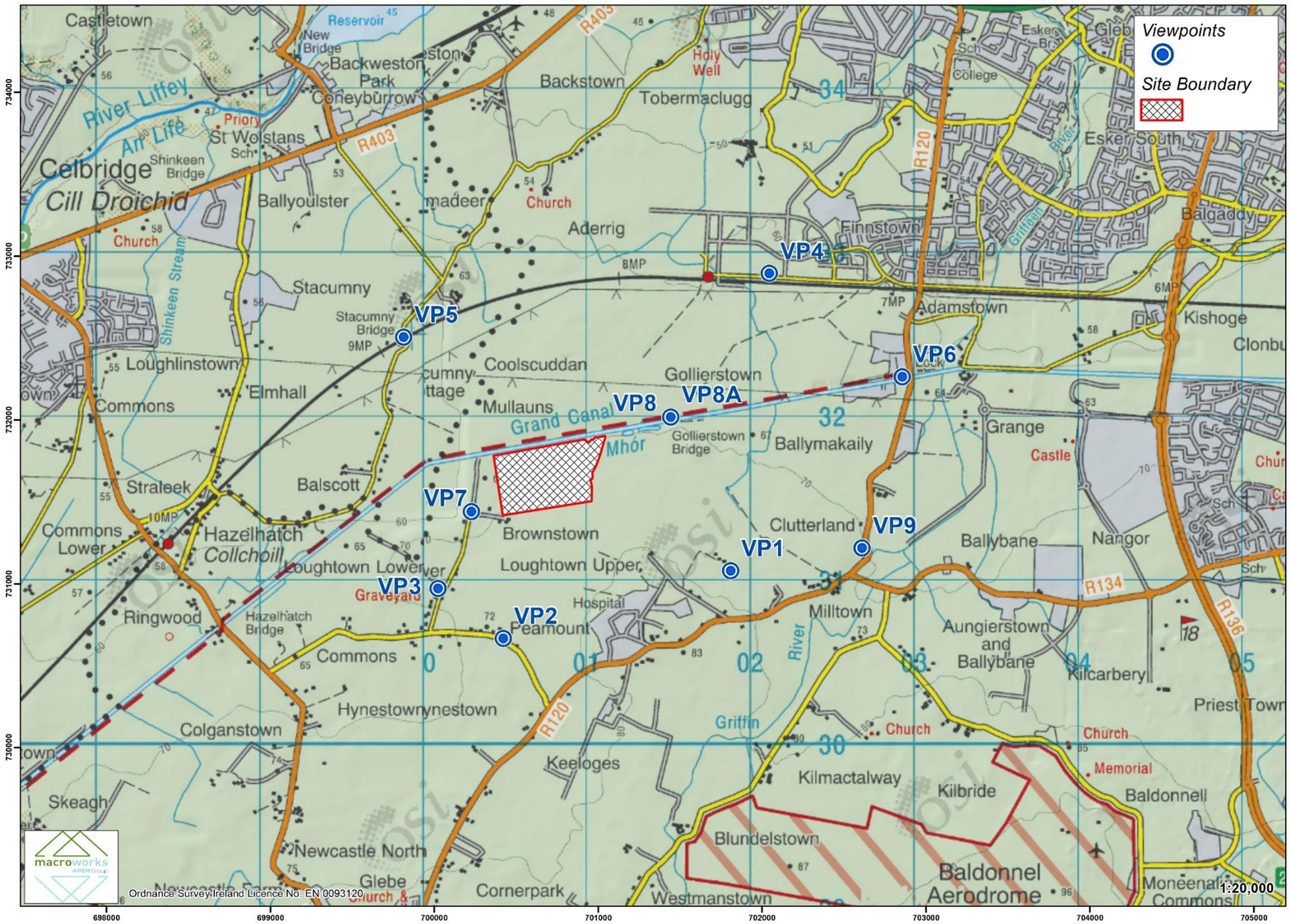
Viewpoint 8A - Existing View + Outline View
Viewpoint 8A - Montage View

Viewpoint 9 - Existing View + Outline View

***NB - There is no Montage View for this viewpoint as the proposed development it completely screened by existing vegetation and/or terrain**

****NB - There is no Montage View for this viewpoint as the proposed development it completely screened by terrain**

LVIA viewpoint locations selected for the Grange Castle Media Park project



Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Newcastle Golf Centre VP1

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	701809	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	731080	Camera:	Canon 1-D Mark II digital SLR	Time:	09:51
Direction of View	59° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

Newcastle Golf Centre VP1

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40 °.

Easting (ITM):	701809	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	731080	Camera:	Canon 1-D Mark II digital SLR	Time:	09:51
Direction of View	59° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Local road south of site at Brownstown VP2

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	700421	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	730668	Camera:	Canon 1-D Mark II digital SLR	Time:	08:24
Direction of View	36° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

Local road south of site at Brownstown VP2

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	700421	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	730668	Camera:	Canon 1-D Mark II digital SLR	Time:	08:24
Direction of View	36° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Brownstown Cemetery VP3

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	700023	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	730972	Camera:	Canon 1-D Mark II digital SLR	Time:	14:53
Direction of View	43° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Elevated carpark adjacted to Adamstown Train Station VP4

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	702045	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732895	Camera:	Canon 1-D Mark II digital SLR	Time:	13:54
Direction of View	146° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

Elevated carpark adjacted to Adamstown Train Station VP4 Page 2 of 2

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	702045	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732895	Camera:	Canon 1-D Mark II digital SLR	Time:	13:54
Direction of View	146° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

macroworks APEM Group

Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Hillcrest railway bridge VP5

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	699813	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732506	Camera:	Canon 1-D Mark II digital SLR	Time:	08:53
Direction of View 130°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

Hillcrest railway bridge VP5

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	699813	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732506	Camera:	Canon 1-D Mark II digital SLR	Time:	08:53
Direction of View 130°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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APEM Group

Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

Grand Canal Way adjecent to 12th Lock bridge VP6

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	702855	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732264	Camera:	Canon 1-D Mark II digital SLR	Time:	16:08
Direction of View	117° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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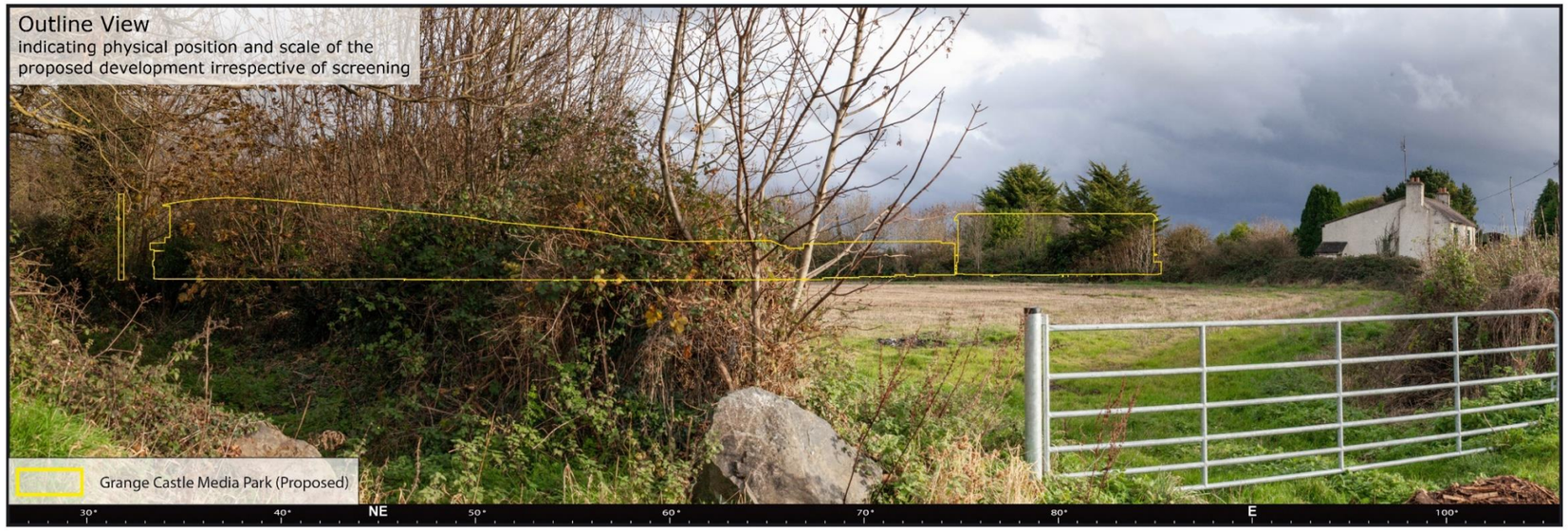
Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

View from Brownstown Lane VP7



These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	700225	Lens:	50mm / Full Frame Sensor	Date:	2023/12/06
Northing (ITM):	731440	Camera:	Canon 1-D Mark II digital SLR	Time:	11:38
Direction of View	66° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

macroworks APEM Group

Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

View from Brownstown Lane VP7

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40 °.

Easting (ITM):	700225	Lens:	50mm / Full Frame Sensor	Date:	2023/12/06
Northing (ITM):	731440	Camera:	Canon 1-D Mark II digital SLR	Time:	11:38
Direction of View	66° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Imagery depicting the view towards the site (Existing and Outline)

View from Golierstown Bridge VP8

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	701444	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732019	Camera:	Canon 1-D Mark II digital SLR	Time:	11:27
Direction of View	66° E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline)

View from Golierstown Bridge (2) VP8A

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	701443	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732018	Camera:	Canon 1-D Mark II digital SLR	Time:	11:27
Direction of View	110° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Grange Castle Media Park

Imagery depicting the view towards the site (Montage)

View from Golierstown Bridge (2) VP8A

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40 °.

Easting (ITM):	701443	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	732018	Camera:	Canon 1-D Mark II digital SLR	Time:	11:27
Direction of View	110° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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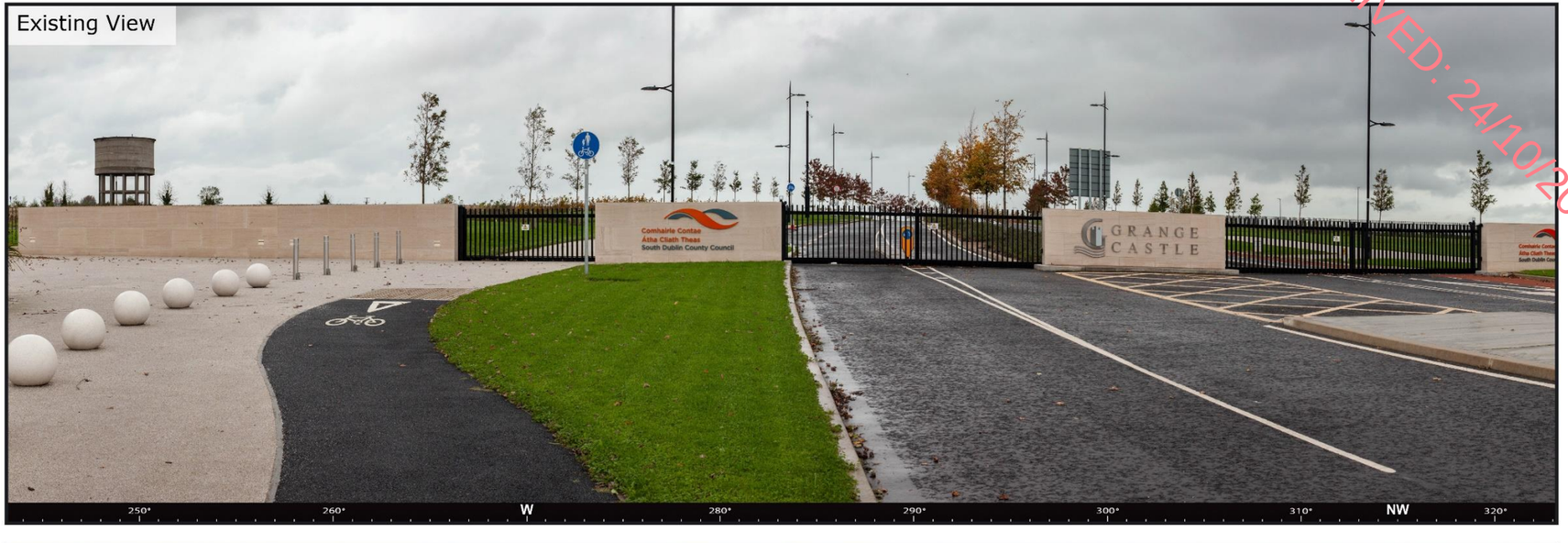
Grange Castle Media Park

Imagery depicting the view towards the site (Existing and Outline) View from the entrance of the Grange Castle West Access Road at its junction with the R120 VP9



These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	702610	Lens:	50mm / Full Frame Sensor	Date:	2023/10/23
Northing (ITM):	731218	Camera:	Canon 1-D Mark II digital SLR	Time:	10:36
Direction of View	77° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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17.0 INTERACTIONS AND CUMULATIVE EFFECTS

17.1 Introduction

This section of the EIAR has been prepared by Gavin Lawlor and Bernard Dwyer, Tom Philips + Associates and deals with likely interactions between effects predicted as a result of the proposed project.

In addition to the requirement under the Planning and Development Regulations 2001 (as amended) to describe the likely significant effects of the proposed development on particular aspects of the environment, it is also required to consider the interaction of those effects. These are assessed below.

This section addresses the intra project significant effects (i.e. those occurring between environmental topics within the project). Inter project effects (i.e. those which are likely to occur as a result of the likely impacts of the proposed project interacting with the impacts of other projects in the locality) have also been considered.

We have reviewed a number of planned and permitted projects that have the potential to interact with either the construction or operational phases of the proposed development. The projects considered most likely to interact with the proposed development are identified in Appendix 1.1.

Further detail relevant to the interaction of impacts may be found in the earlier chapters of the EIAR.

17.2 Methodology

The EIAR has considered and assessed the interactive effects and cumulative effects arising from the construction and operation of the proposed project based on best scientific knowledge. The relevant interactions and interdependencies between specific environmental aspects have been summarised in the matrix set out in Table 18.1.

Interactive effects (or interactions), specifically refer to any direct or indirect effects caused by the interaction of environmental factors as outlined in Article 3 (1) of the amended EIA Directive;

> *"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *(a) population and human health;*
>
> *(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
>
> *(c) land, soil, water, air and climate;*

(d) material assets, cultural heritage, and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).”

Annex IV of the amended Directive states that a description of impacts should include:

“…the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project”

This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000 (as amended) and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001 (as amended) as well as the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

The EPA Guidance in turn references: *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, European Commission, 1999. I*n terms of interactions, the guidelines state the following:

“careful consideration of pathways – direct and indirect – that can magnify effects through the interaction or accumulation of effects – for instance the potential for cumulative significant effects to arise from multiple non-significant effects.”

In terms of Cumulative effects, Annex Iv(5) of the EIA Directive requires:

"A description of the likely significant effects of the proposed project on the environment resulting from, inter alia…

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;…"

We have reviewed a number of planned and permitted projects that have the potential to interact with either the construction or operational phases of the proposed development. The projects considered most likely to interact with the proposed development are identified in Chapter 1 with a more comprehensive list of planned or permitted projects outlined in Appendix 1.1.

17.3 Inter-Relationships / Interactions

In practice many potential impacts from various sources have slight or subtle interactions with other sources of impact. However, the EIAR concludes that most inter-relationships are neutral in impact when the mitigation measures proposed in each chapter are incorporated into the operation of the proposed development.

17.3.1 Interactions between Population & Human Health and Air

Potential interactions between population and human health and air quality are outlined in Chapters 5 & 9 of the EIAR. In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants.

An adverse impact due to air quality in either the construction or operational phase of the proposed project has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed project will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that the predicted residual impact is short-term, negative and imperceptible during the construction phase, and long-term, neutral and imperceptible during the operational phase.

17.3.2 Interactions between Population & Human Health and Noise and Vibration

There is potential for interactions between population and human health and noise and vibration during both the construction and operational stages of the proposed project that have been assessed in Chapter 11. The highest potential for noise and vibration impacts of the proposed project will occur during the construction phase due to the operation of various plant and machinery used to construct the development and heavy goods vehicles movement to, from and around the site.

Chapter 11 sets out a number of mitigation measures to be implemented during the construction phase, as well as best practice mitigation measures relating to building services & plant for the development once operational. No mitigation measures are required for the additional traffic on the surrounding roads once operational as changes to traffic flows will not result in a perceptible increase in noise level in the surrounding environment.

It should be noted that the day to day operation of the proposed development will not give rise to any significant levels of vibration off site and therefore the associated impact is ***neutral, not significant,*** and ***long-term.***

17.3.3 Interactions between Population & Human Health and Waste

The implementation of the mitigation measures outlined in chapter 12 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the Proposed project during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

Other developments in the area, and the indicative future development, will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative effects associated with waste generation and waste management. With mitigation measures described in chapter 12 in place, the predicted effects on human health due to waste will be ***long-term, imperceptible,*** and ***neutral.***

17.3.4 Interactions between Population & Human Health and Traffic and Transportation

During the construction stage of the project the potential impacts to population and human health will primarily be from onsite (plant and vehicle movement) and the increase in offsite plant and traffic movements. A Construction and Environmental Management Plan has been prepared by Barret Mahony Consulting Engineers, as part of the planning application which incorporates a range of integrated control measures and associated management activities with the objective of minimising the effects of construction activities associated with the

development. Chapter 13 prepared by Barrett Mahony Consulting Engineers also sets out a number of mitigation measures. Provided the proposed mitigation measures and management procedures are incorporated during the construction phase, the impact on human health of the local receiving environment will be ***negative, slight,*** and ***short-term.***

With the mitigation measures in place, the effect of the project on traffic and transport is envisaged to be slight, likely in probability and long-term. The Mobility Management Plan initiatives are likely to result in lower volumes of car traffic than that assumed in the modelling assessment.

Prior to mitigation, the assessment of potential operational traffic impact already demonstrates that no significant effects are expected to arise from operational traffic associated with the proposed project.

Notwithstanding this, a Mobility Management Plan will be implemented as a 'best practice' measure which will seek to minimise car-based trips, particularly single-occupancy car trips, through the proposed measures (refer to Section 13.10) to discourage car use and encourage sustainable transport options.

The introduction of new active travel routes near the Grange Castle Media Park site is expected to encourage sustainable forms of travel and will have a **moderate positive** effect on human health. The Bus Connects network is to be introduced on a phased basis over the coming years. This phase involves services in the West/South West of Dublin, serving areas including Grange Castle. The Camac River Greenway branch from the Grand Canal through Clondalkin Village to Corkagh Park and City West is also proposed along with a secondary cycling route along the R120, running north-south before connecting to the Nangor Road and onto the existing route along the R136. As such, the predicted impact during the operational phase is considered to have a ***negligible and 'not significant' long-term effect***.

17.3.5 Interactions between Population & Human Health and Landscape and Visual Impact

The potential interactions between Landscape, Visual impact and Human Health relate largely to the health benefits of green infrastructure. Green Infrastructure planning aims to maximising the benefits of the multi-functionality of nature that includes natural ecological processes, sustaining air and water quality and providing vital amenity and recreational spaces for communities. It also serves to provide an ecological framework for the social, economic, and environmental health of an area. The enhancement of local green infrastructure therefore has knock on benefits for human health outcomes.

As outlined in Chapter 18 of the EIAR, the completed landscape character will have a positive effect on the site and the surrounding areas through the completion of new public realm to the North of the site which can be accessed along the Eastern site boundary from the main roadway, alongside a strengthening of the existing Grand Canal Green infrastructure corridor. The predicted effect during the operational phase is therefore considered to be ***long term, positive, moderate.***

17.3.6 Interactions between Biodiversity and Hydrology

Construction Phase

There is potential for water (rainfall and/or groundwater) to become contaminated with pollutants released during construction activity. If not mitigated, contaminated water can pose a temporary risk.

Liaison with the Ecologist Ger O'Donoghue (see section 6.5.3, Chapter 6) on this strategy, has confirmed there is no ecological concerns and there will be no significant negative operational effects on adjacent habitats.

Based on the potential for release and distance to Natura sites there is no likelihood of an impact on the surface water quality in the Liffey or Natura sites.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are following EIA guidance ***negative***, ***not significant,*** and ***temporary***.

Operational Phase

Surface water runoff from roads, car parking areas, and the proposed petrol station can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons that are a known carcinogen (cause cancer) in many animals and suspected to be carcinogenic to humans and changes in water pH in runoff water may result in adverse changes in water chemistry (dissolved oxygen content, biological oxygen demand etc).

It is proposed to construct a new SuDs for the development to collect runoff from roofs and paved areas and any additional runoff from landscaped areas which doesn't percolate to ground. It is proposed that the new surface water network within the site will convey surface water flows to two swales located within the 50m buffer zone between the proposed development and the Grand Canal to the North of the site. Surface water flows from the site will outfall to the existing watercourse approx. 100m West of the site connecting to the Grand Canal. The swales will be designed to accommodate flows for the 1 in 100-year storm event. A hydrobrake will be fitted at the outfall of each swale which will limit the flow exiting the site to the existing greenfield runoff rate QBAR (57.5 l/s).

As any bulk oil storage is contained, there is no potential for impact on off-site water bodies or Natura sites. Even without mitigation, based on the hazard loading and distance to the Liffey and the Natura sites there is no potential for an impact.

In the absence of mitigation measures (or design measures) the potential impacts during the operational phase on surface water quality are following EPA guidance ***negative***, ***not significant,*** and ***long-term***.

17.3.7 Interactions between Biodiversity and Traffic and Transportation

The potential interactions between Biodiversity and Traffic and Transportation are related to Construction traffic and associated visual and other sensory disturbance effects have the potential to cause localized temporary to short-term displacement and disturbance impacts

upon non-volant mammal species. Increased traffic can lead to an increase in road fatalities for non-volant mammals.

17.3.8 Interactions between Land, Soils and Groundwater and Hydrology

Construction Phase

There is potential for water (rainfall and/or groundwater) to become contaminated with pollutants released during construction activity. If not mitigated, contaminated water can pose a temporary risk.

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from exposed ground, stockpiles and access roads and ground disturbance.
- Cement/concrete (increase turbidity and pH) – arising from construction materials.
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage.
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Taking into account the design and mitigation measures set out in Chapter 7 and 8 of this EIA Report, there is a residual negative interaction between land, soil, and hydrology during the construction phase. The interaction is considered to be neutral, not significant, and short term.

Operational Phase

Surface water runoff from roads, car parking areas, and the proposed petrol station can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons that are a known carcinogen (cause cancer) in many animals and suspected to be carcinogenic to humans and changes in water pH in runoff water may result in adverse changes in water chemistry (dissolved oxygen content, biological oxygen demand etc).

In the absence of mitigation measures (or design measures) the potential impacts during the operational phase on surface water quality are following EPA guidance ***negative***, ***not significant,*** and ***long-term.***

17.3.9 Interactions between Land, Soils and Groundwater and Air Quality

Construction Phase

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and potential nuisance dust. While construction dust tends to be deposited within 350 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the

nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity.

The risk of dust impacts due to the proposed development are summarised in Table 9.13, Chapter 9 for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity to prevent significant impacts occurring.

There is at most a low risk of dust impacts associated with the proposed works. As a result, best practice dust mitigation measures associated with low risk sites will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be ***short-term, negative, and imperceptible.***

Operational Phase

There are no potentially significant interactions identified between land, soils and hydrogeology, and air quality during the operational phase.

17.3.10 Interactions between Land, Soils, Geology and Hydrogeology and Biodiversity

Construction Phase

There is potential for groundwater to become contaminated with pollutants associated with construction activity. Contaminated groundwater which arises from construction sites can pose a significant short-term risk to the underlying Dublin GWB quality for the duration of the construction if contaminated water is allowed percolate to the aquifer. The potential main contaminants include:

- Pollution due to discharges or spillages during the construction phase;
- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage Soils contaminated by petroleum hydrocarbons can affect soil health. They can harm soil microorganisms, reducing their number and activity;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

In the absence of mitigation measures the potential impacts during the construction phase on land, soils and geology, hydrogeology (groundwater) are negative, not significant, and short term.

Operational Phase

There are no potentially significant interactions identified between land, soils and hydrogeology, and biodiversity during the operational phase.

17.3.11 Interactions between Population & Human Health and Waste

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and the mitigation measures in Chapter 12, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible,*** and ***neutral.***

17.3.12 Interactions between Air Quality and Traffic and Transportation

Interactions between Air and Traffic are outlined in Chapter 9 and Chapter 13 of the EIAR. Construction phase traffic can also impact air quality. The TII guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

The construction stage traffic will not increase by 1,000 AADT or 200 HDV AADT and, therefore, does not meet the above scoping criteria. In addition, there are no proposed changes to the traffic speeds or road alignment. As a result, a detailed air assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

Operational phase traffic can impact local air quality due to increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 9.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will cause the operational phase traffic to increase by more than 1,000 AADT on 1 no. road link, the Grange Castle West Access Road to the site. Therefore, a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area. The impacts on the performance of the transport network are addressed in chapter 13 of this EIAR and the Traffic and Transport Assessment report produced by Barret Mahony Consulting Engineers.

17.3.13 Interactions between Waste and Traffic and Transportation

Interactions between Traffic and Waste are outlined in Chapters 13 and 14. Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development.

Provided the mitigation measures detailed in Chapters 12 & 13 and the requirements of the CEMP are adhered to, the effects should be ***short to long term, slight adverse.***

17.3.14 Interactions between Major Accidents and Disasters and other Disciplines

The likely significant interactions of impacts with regard to major accidents and disasters would be with areas such as soils, geology and hydrogeology, hydrology, air quality, noise and vibration, human health, and biodiversity and these are addressed in the respective chapters as required.

	Matrix of Interactions																							
	Cultural Heritage		Population & Human Health		Biodiversity		Land, Soils, Geology and Hydrogeology		Hydrology		Air		Climate		Noise & Vibration		Landscape & Visual Impact		Traffic		Waste		Site Services		Major Accidents and Disasters	
	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
Cultural Heritage																										O
Population & Human Health											X				X	X		X	X	X	X	X			X	X
Biodiversity							X		X						X				X		X	X			X	X
Land, Soils, Geology and Hydrogeology															X				X		X	X			X	X
Hydrology																									X	X
Air																			X	X						
Climate																			X	X						
Noise & Vibration																			X	X						
Landscape & Visual Impact																										
Traffic																					X					
Waste																										
Site Services																										
Major Accidents and Disasters																										

Table 17.1: Matrix of Potential Interactions between Environmental Factors.

17.4 Cumulative Effects

17.4.1 Population and Human Health

The Strategic Environmental Assessment prepared for the South Dublin County Development Plan 2023-2029 has assessed the likely evolution of the County during the course of the Development Plan and the likely impacts. We have reviewed that assessment and conclude that it has reasonably assessed the likely evolution of the County through the implementation of the Development Plan. That assessment has inter alia considered predicted results from development of zoned land (including the subject principal site, which is zoned for redevelopment regardless of the project going ahead) in the county.

Regarding Population (and human health), the Strategic Environmental Assessment prepared for the South Dublin County Development Plan 2022-2028 states that:

> *"There are strong links between income and health, as it is recognised that the sustainability of current and future economic activity is an important element in protecting and promoting population health and in reducing poverty and deprivation. However, emphasising economic growth without due regard for social and environmental consequences of such growth can have negative impacts on health both for the population as a whole and for groups within the population.*
>
> *Access to multiple public transport modes and maximizing the movement of people via sustainable modes (including walking) is important for human health. A shift to using multiple public transport modes, which can incorporate walking, means less energy consumption, fewer emissions, and more active, healthy, and social communities.*
>
> *There needs to be particular attention to the environmental issues and sustainability endeavours to protect human health as the local economy develops. While employment is generally good for health, there can be negative impacts, usually related to the quality of the working environment and nature of work undertaken".*

The cumulative impact on population and human health for the construction and operation phases is anticipated to be long-term, neutral, and not significant.

17.4.2 Biodiversity

Cumulative effects are defined by EPA Guidance (2017) as; 'the addition of many minor or significant effects, including the effects of other projects, to create larger, more significant effects'. An assessment of plans and projects occurring in within the proposed development site boundary and within the wider landscape were evaluated in combination with the project. A review of permitted developments in the wider area was completed (see Appendix 1.1), and the potential for any significant cumulative and in combination effects on the receiving environment were considered for the construction and operational phases of the proposed development below.

The plans and projects that have been proposed or implemented in recent years were considered as part of the assessment of potential cumulative and in combination effects. For instance, the current South Dublin County Development Plan (2022-2028) was considered in relation to the local ecology and planned actions for the protection and restoration of local biodiversity.

There are several mechanisms by which projects in general may act in concert with each other to impact on the local flora, fauna and habitats in a given area. The scale at which these impacts may be felt depends greatly on the nature of these projects and the type of species and habitats in the receiving environment. Loss of habitat associated with a particular project may be exacerbated by multiple similar losses of habitat occurring in the wider area. Increases in noise or lighting from one project can have greater impact if the loss of screening vegetation associated with a neighbouring development allows for a wider cumulative 'spill' of impacts into the wider environment. Similarly, if pressures arising from the connection to wastewater services by multiple projects being developed means that the capacity of local wastewater treatment infrastructure is overwhelmed, the potential for downstream cumulative impacts must be considered. There are also potential positive cumulative effects that can be associated with the delivery of unrelated projects. For instance, if these projects cumulatively increase the amounts of a certain habitat attractive for species of importance and through their own landscaping commitments help improve the ecological connectivity through the wider area.

There are several developments that have either been submitted for planning permission or have been granted permission within and in close proximity to the proposed development site.

17.4.3 Land, Soils, Geology and Hydrogeology

Construction Phase

The works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016).

The implementation of mitigation and monitoring measures detailed in Section 7.6.1; as well as the compliance of permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible,*** and ***short-term***.

Operational Phase

In relation to the potential cumulative impact on land, soils, geology and hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off.
- Increased risk of accidental discharge of hydrocarbons from car parking areas, the petrol station, and along roads is possible unless diverted to surface water system with petrol interceptor.
- There will be a loss of greenfield area locally as part of the proposed Project.

The development will result in an increase in hard standing which will result in localised reduced recharge to ground. The site is underlain mostly by a "Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones". The cumulative impact is considered to be imperceptible. The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages. The proposed development is also located on lands that have been zoned for Enterprise and Employment in the South Dublin Development Plan which has been subject to Strategic Environmental Assessment (SEA).

The implementation of mitigation and monitoring measures detailed in Section 7.6.1; as well as the compliance of the above permitted development with their respective planning and zoning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible,*** and ***long-term.***

17.4.4 Hydrology

The anticipated cumulative effect of the Proposed project with any/all relevant other planned or permitted developments as outlined in Chapter 2 and 3 are discussed in below for construction and operational phases respectively.

Construction Phase

In relation to the potential cumulative effect on hydrology during the construction phase, the construction works which would have potential cumulative effects include:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials unless project-specific CEMPs are put in place for each development and complied with.

The works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016).

The implementation of mitigation and monitoring measures detailed in Section 8.6.1; as well as the compliance of permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrology environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible,*** and ***short-term***.

Operational Phase

In relation to the potential cumulative impact on hydrology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off.
- Increased risk of accidental discharge of hydrocarbons from car parking areas, the petrol station, and along roads is possible unless diverted to surface water system with petrol interceptor.
- There will be a small loss of greenfield area locally as part of the proposed Project.

The development will result in an increase in hard standing which will result in localised reduced recharge to ground. The site is underlain mostly by a "Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones". The cumulative impact is considered to be imperceptible. The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

The implementation of mitigation and monitoring measures detailed in Section 7.6.1; as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to hydrology environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible,*** and ***long-term***.

17.4.5 Air Quality

Construction Phase

According to the IAQM guidance (2014), if the construction phase of the proposed development coincides with the construction phase of any other permitted projects within 350 m of the site, there is a possibility of cumulative dust impacts occurring at any nearby sensitive receptors.

Should simultaneous construction phase occur, it would lead to cumulative dust soiling and dust-related impacts on human health, specifically localised to the works area associated with the proposed works.

A review of the planned and permitted projects within the vicinity of the site was undertaken. 1 no. development within 350 m of the site was identified that may have the potential for cumulative construction phase impacts, SD23A/0301.

There is a low risk of dust impacts associated with the proposed development. The dust mitigation measures outlined in Section 11.6.1 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development and the aforementioned development are deemed *short-term, direct, negative, and imperceptible.*

Operational Phase

There is the potential for cumulative impacts to air quality during the operational phase. This is due to traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational stage air quality assessment included cumulative traffic (see Traffic Impact Assessment and Chapter 13 Material Assets – Traffic & Transportation for further details on specific developments). The cumulative operational phase impact is assessed within Section 9.5.3 and was found to have a neutral impact on air quality. The cumulative operational stage impact is ***long-term, localised, direct, neutral, imperceptible, and non-significant.***

17.4.6 Climate

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that *"for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable."*

However, by presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

17.4.7 Noise and Vibration

Construction Phase

If construction activities at nearby sites are taking place concurrently with the construction of the proposed development, there is potential for cumulative noise impacts to occur. Due to the nature of construction works associated with the proposed development, noise levels from this site will dominate the noise environment when occurring in proximity to the noise sensitive locations along its immediate boundary. The noise contribution from other construction sites would need to be equal to those associated with the proposed development in order to result in any cumulative effect. The implementation of mitigation and monitoring measures detailed in Section 11.6.1 as well as the compliance of the above permitted developments with their respective planning conditions, will ensure that each development will control noise and vibration impacts using best practice guidance documents and appropriate noise and vibration limits.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***negative, slight to moderate*** and ***short-term.***

Operational Phase

There are a number of permitted and planned industrial developments located in the vicinity and a complete list of these developments is provided in Appendix 1.1.

During the operational phase any cumulative impacts will be due to plant noise operating from the granted sites in the night time period. Due to the propagation of sound over distance and the large distances between the closest receiver (NSL1) and the majority of the granted sites in the area (greater than 500m) there will be no audible contribution from the sites.

The following projects within 500m of the proposed development site boundary have been identified as having potential cumulative noise impacts to the surrounding NSLs and hence are considered in the cumulative scenario.

SDCC Reg. Ref.	Description	Distance to Site
SD188/0011	Site located within the Hazelhatch to 12th Lock, Co. Dublin. Permission for development consisting of: The Grand Canal Greenway, which will include the following features: 4.6km of shared walking and cycling Greenway along the existing northern Grand Canal towpath.	Adjacent to the proposed site, located to the north.
SD23A/0301	Site within the townlands of Gollierstown and Milltown, (west of Grange Castle Business Park & the Adamstown Road	Adjacent to the proposed site, located to the east.

SD23A/0331	Grange Castle Business Park West, Clondalkin, Dublin 22 10-year permission for development for a Filling & Packaging Facility for medicines	Adjacent to the proposed site, located to the east.

Table 17.2: Current Permissions/Applications within 500m of the site that were granted in 2023.

Once operational, potential effects associated with The Grand Canal Greenway (SD188/0011) will be low in noise, i.e. people cycling and walking, limited vehicular activity at car parking areas, occasional maintenance works comprising management of surface and vegetation. These activities have not been added to the cumulative noise assessment as they will not be a dominant noise source at the closest sensitive receivers and will be at least 10 dB below the proposed development's predicted operational noise levels presented in Section 11.5.5.

Review of calculated noise levels associated with SD23A/0301 relate to intermittent activities associated with unloading / loading activity at the logistics centre. This activity has not been added to the cumulative noise assessment as it will not form part of the background noise environment.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***negative, not significant,*** and ***long-term.***

Figure 17.1: Other planning applications for assessment of potential cumulative impact (Source: Google Earth, annotated by TPA 2024).

17.4.8 Material Assets – Waste Management

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed project may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase.

Developments that potentially could overlap during the construction phase of can be found in Appendix 1.1, along with descriptions.

Due to the high number of waste contractors in the South Dublin areas and Ireland there would be sufficient contractors available to handle waste generated from many these sites simultaneously, if required. The National Waste Collection Permit Office can be contacted to obtain a list of waste contractors and waste collection permit details. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be ***short-term, not significant, and neutral.***

Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste, and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area, and the indicative future development, will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative effects associated with waste generation and waste management. As such the effect will be a ***long-term, imperceptible, and neutral.***

17.4.9 Material Assets – Site Services

Drainage and water supply material assets should be co-ordinated with communications, electrical and gas material assets to ensure that there are no physical conflicts and that all necessary clearances are provided.

There is no anticipated cumulative effect.

17.4.10 Material Assets – Traffic and Transportation

Construction Phase

As construction related traffic is minor relative to the volumes at operational scale, the cumulative impacts of these are not seen as significant.

Operational Phase

The cumulative impacts of the proposal during its operational phase has been fully analysed within scenarios 4, 7 and 10 of the operational phase traffic analysis detailed earlier, taking into consideration the impact both of the traffic from the proposed development and the 4 No. adjacent permitted developments deemed relevant to the analysis due to their proximity to the local road network of interest.

17.4.11 Archaeology and Cultural Heritage

All permitted and proposed developments within the study area have been reviewed. As any archaeological remains within the proposed development area will be preserved by record no cumulative impacts have been identified. Similarly, no cumulative impacts have been identified upon the cultural heritage or architectural heritage resource.

17.4.12 Landscape and Visual Impact Assessment

Construction Phase

As this is in an urban fringe area on lands zoned for Enterprise and Employment uses, there is a potential for other sites in close proximity to be brought forward for redevelopment, and construction activity may be extensive in the future. There is a permitted development for five logistics / warehousing units at a site just to the East (SD23A/0301) of the proposed development and an undecided application for a medical manufacturing facility (SD23A/0331) to the south east of the site. If all sites are developed concurrently there is potential for short term moderate negative cumulative impacts as a result of cranes and other similar machinery required for construction that will be taller than the proposed buildings and therefore more visible in the landscape.

Operational Phase

The proposed site is in relative proximity to areas which have undergone extensive development of commercial, residential, and mixed-use development in recent years including Celbridge, Adamstown and Grange Castle. However, the site itself and surrounding lands are greenfield sites of rural character that have historically been used as arable farmland. Once operational as a media campus in the context of surrounding lands which are also likely to be developed, the potential cumulative impact of the operational phase of the proposed development will be ***significant and long term***.

17.4.13 Major Accidents and Disasters

The subject site is not located within the consultation distance for any of the existing SEVESO sites located within the wider Grange Castle area and surrounding areas. The closest Upper Tier site is the Brenntag Chemicals facility approximately 3.2 km to the south.

The cumulative residual and operational effects of the proposed project have been assessed and, in regard to screening of major accidents and risks, cumulative effects are considered

imperceptible and neutral as there is no risk to off-site receptors in relation to a major accident.

18.0 MITIGATION

18.1 Introduction

The chapters contained within this EIAR have been ordered in a grouped format by their relevant topic. This chapter summarises all mitigation measures proposed in order to provide a comprehensive overview of the full range of mitigation measures discussed within each chapter.

Paragraph 2 (d) of Schedule 6 to the Planning and Development Regulations 2001, as amended by the 2018 regulations, provides that the following information must be contained in an EIAR:

"a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example, the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development".

18.2 Population and Human Health

18.2.1 Construction Phase Mitigation

Regarding population, housing, employment, economy, and social services and amenity, no negative impacts have been identified in relation to the provision of a media park at a site zoned for Enterprise and Employment use and as such, no mitigation measures are required.

The implementation of a Construction Environmental Management Plan (CEMP) during the construction phase will mitigate impacts on population and human health. The CEMP outlines the various measures to minimise potential impacts from noise, dust, groundwater contamination etc. These measures can be summarised as follows:

- Noise control audits will be conducted at regular intervals through the construction phase of the development and in accordance with the final CEMP as agreed with South Dublin County Council.
- The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:
    - Hours of operation;
    - Opportunities for noise control 'at source';
    - Optimum siting of plant items;
    - Correct use of proprietary noise control measures;
    - Materials handling;
    - Good maintenance of plant and equipment.

- Effective site management regarding dust emissions will be ensured by the formulation of a dust management plan (DMP) for the site, by the Main Contractor.
- The key features of the DMP will be:
    - the DMP will cover both the excavation and fill of soil material phase, soil stabilization phase and the main construction phase;
    - the specification of a site policy on dust;
    - the identification of the site management responsibilities for dust;
    - the development of documented systems for managing site practices and implementing management controls;
    - the development of means by which the performance of the dust management plan can be assessed.

Dust Control – Site Roads

- Dust arising from site roads can be easily and effectively controlled. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.
- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for onsite vehicles.
- Bowsers will be available during periods of dry weather throughout the construction period.
- Research has found that the effect of watering is to reduce dust emissions by 50%. The bowser will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use.
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Dust Control – Land Clearing / Earth Moving

- Land clearing / earth-moving during periods of high winds and dry weather conditions can be a significant source of dust.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Dust Control – Storage Piles

- The location and moisture content of storage piles are important factors which determine their potential for dust emissions.
- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site;

- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency.

Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- A wheel wash facility will be employed at the exit of the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material.

Pest Control

The Main Contractor will take all necessary steps to ensure that pests, rodents, insects and plants are controlled at all times. Control measures will be undertaken prior to commencement of any works on the site. Poison where used, will comply with any relevant Health and Safety requirements and which eliminate any danger to children, household pets and other wildlife. Old and discussed service pipes and voids will be removed or filled to avoid the potential pest to infest the site.

Delivery System

The key to efficient material/plant deliveries will be the effective management and coordination/ timing of all deliveries. Deliveries will be coordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly to adjoining owners) and rush hour traffic. During the project procurement phase, the Main Contractor will produce a schedule of deliveries, adopting a 'just in time' approach to avoid potential conflicts and unnecessary storage and handling.

Working Hours

Working hours shall be agreed with SDCC prior to commencement of construction work.

Groundwater Protection

It has been established that there are no recorded groundwater boreholes for domestic use within the vicinity of the site, and the site is not located near any public groundwater supplies or group schemes, or groundwater source protection zones. On a precautionary basis, the mitigation measures set out in Section 7.6.1.1 Chapter 7, will be implemented during the construction works for the protection of human health and populations.

Furthermore, as stated in Section 7.6.1.1 all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. All sampling and soil handling will be undertaken by suitably qualified and trained persons using suitable personal protective equipment to avoid risks to human health.

Surface Water Protection

It has been established that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located within the vicinity of the proposed site. On a precautionary basis, the mitigation measures set out in Section 8.6.1 will be implemented during the construction works for the protection of human health and populations.

18.2.2 Operational Phase Mitigation

When operational, the proposed development will not result in an increase in population of the Grange Castle area, as there are no residential units proposed as part of the development.

Regarding population, housing, employment, economy, and social services and amenity, no significant negative impacts have been identified in relation to the provision of a media park at a site zoned for Enterprise and Employment use.

A Mobility Management Plan will be implemented once operational to encourage modal shift within the development, thereby reducing car dependency and potential for traffic congestion in the area.

Sound stages will be constructed with appropriate sound proofing to ensure minimal impacts to nearby receptors.

The buildings are designed for most of the production to occur in large sound attenuated studios organized with “shooting lane” for the occasional exterior filming, and exterior “back lot”. The stages, with sound attenuation of NIC 14 – 20 metres for walls and roof assemblies at a height of 14 to 20 metres. While this provides ideal conditions for indoor filming, the stages also effectively provide an 14-20m-tall buffer wall of sound attenuated buildings around the perimeter of the site separating the exterior shooting areas to the interior shooting corridors protected by the height and mass of the stages and other buildings.

The “back lot” on the southwestern portion of the site will limit hours of construction/production and will provide notification to surrounding sensitive receptors. if night productions or special effects generating noise levels of greater than 75dbs, these will be scheduled with prior notification given to surrounding receptors.

Hours of operation of outdoor areas for film production will be agreed with SDCC prior to commencement of operations at the site.

Surface Water Protection

It has been established that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA. On a precautionary basis, the mitigation measures set out in Section 8.6.2 will be implemented during the operational phase for the protection of human health and populations, and downstream material assets.

18.2.3 Monitoring

The measures and targets within the Mobility Management Plan will be monitored and updated as required.

18.3 Biodiversity

18.3.1 Construction Phase Mitigation

Mitigation measures will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the zone of influence (ZOI). These measured are outlined below in sequence, and incorporate elements outlined elsewhere in this EIAR and in the BMCE Construction Environmental Management Plan.

The following construction phase mitigation measures are proposed:

Habitats

There are no specific measures for habitats during the construction phase. Treelines currently located at the periphery of the site will be retained.

Nonvolant Mammals

There are no specific mitigation measures set out for nonvolant mammals during the construction phase.

Bats (International Protection)

No loss of bat roosts will occur due to the development. The development of the site will not impact bats utilising the Grand Canal. It is important to limit artificial lighting within the site to ensure no additional light pollution occurs on bat friendly habitat features, considered under the operational phase below.

Birds (National Protection)

The removal of vegetation could impact on nesting passerines such as blackbird and wren, thus, this activity should be carried out only outside of the bird-nesting season (March 1st-August 31st inclusive) in order to avoid impacts on nesting birds. In the event this work is required earlier an ecological clerk of works (ECoW) should be onsite to ensure no nesting birds are present. Should an occupied nest be found the clearance works will have to wait until after fledging.

Whilst halting the construction to times outside the wintering period was considered, the scale of works was not considered impactful enough to negatively impact wintering birds remaining within and outside of GCWBP. Rather, an ECoW will be involved in the construction and limit construction in areas based on when they are of value to birds. The monitoring section below outlines how bird surveys will continue during the construction phase and based on these results micro exclusion zones can be put in place. An ECoW will be employed during the construction phase to micromanage construction locations to avoid disturbance on key species.

18.3.2 Operational Phase Mitigation

Habitats

In addition to the retention of existing green areas where feasible, the proposed development includes a Landscape Plan which provides for biodiversity offset through the additional planting. The Landscape Plan provides for extensive planting along a supporting strip adjacent to the southern boundary of the Grand Canal corridor and supports native species proposals having regard to the All-Ireland Pollinator Plan for the promotion of supporting habitats and a positive impact in terms of Biodiversity Net Gain.

Nonvolant Mammals

There are no specific mitigation measures proposed for nonvolant mammals during the operational phase of development.

Bats

Artificial lighting is to be limited within the site to ensure that no additional light pollution occurs on bat friendly habitat features.

The lighting plan proposed is designed so that there is a maximum of 1lux light spill in areas to the north and west where Canal and treelines are located. This will be achieved by using well controlled optics and mounting the luminaries without any tilt or with a small 5 degree tilt away from the boundaries in question. This will result in an overall upward light ratio of 0%.

All lights will use an amber-white spectrum which does not contain any blue light component. This colour type has less of a negative effect on invertebrates and bats in comparison to older models. In other areas of the site with less potential for disturbance 3000k warm white lighting has been proposed (instead of typical 4000k neutral white).

A dark zone will be established to the north of the site. A static monitoring program and Lux survey should be completed in the grassland to the north of the site, adjacent to the Grand Canal prior and after construction.

Birds

[amended text]

SDCC has suitable lands (41 hectares) to the west of the Grange Castle West Business Park where Golden plover flocks have been observed. It is the surveyor's opinion that with the correct management regime, these lands can provide viable alternative feeding to the Grange Castle West Business Park. Of these lands, 31 hectares are from high to moderate suitability for Golden plover.

A bird box scheme will be enacted along the Landscape Plan proposed woodland strip bordering the Grand Canal.

[amended text]

18.3.3 Monitoring

An Ornithologist Ecological Clerk of Works will be employed during the construction phase to micromanage construction locations to avoid disturbance on key species. No ecological monitoring is required during the operational phase of development, and no reinstatement measures are proposed.

18.4 Land, Soils, and Groundwater

18.4.1 Construction Phase Mitigation

Suspended Solids

In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- The buffer zone of minimum 10 m from the Grand Canal will be established early in the construction phase where no construction works will take place
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal.
- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,
- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.

- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. Topsoil will be stored in stockpiles of max 2m high as per best practice. The stockpiles will be managed and maintained by the main contractor.
- Construction materials, including aggregates etc. will be stored a minimum of 20 meter buffer distance from any surface water bodies and surface water drainage points.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

In addition to the measures outlined above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Cement/Concrete Works

Where feasible, all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Eireann / SDCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other Construction Chemicals

The following measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site;

- Provision of spill kit facilities across the Site;
- Where mobile fuel bowsers are used, the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training;
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and,
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from surface water gulleys or drains minimum 20 m buffer zone). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Wastewater Management

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Human Health and Populations

It has been established that there are no recorded groundwater boreholes for domestic use within the vicinity of the site, and the site is not located near any public groundwater supplies or group schemes, or groundwater source protection zones. On a precautionary basis, the mitigation measures set out in Section 7.6.1.1, will be implemented during the construction works for the protection of human health and populations.

Furthermore, as stated in Section 7.6.1.1 all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. All sampling and soil handling will be undertaken by suitably qualified and trained persons using suitable personal protective equipment to avoid risks to human health.

18.4.2 Operational Phase Mitigation

Land, Soils, Geology and Hydrogeology

The proposed development design includes hardstand cover across the site and as set out in the BMCE Civil Engineering Infrastructure Report for Planning Report, the proposed surface water drainage system is designed to comply with the 'Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005' and the 'Greater Dublin Regional Code of Practice for Drainage Works, V6.0 2005'. CIRIA Design Manuals C753, C697 and C609 have also been used to design the surface water drainage system within the site.

It is proposed to construct a new surface water drainage system for the development to collect runoff from roofs and paved areas and any additional runoff from landscaped areas which doesn't percolate to ground. It is proposed that the new surface water network within the site will convey surface water flows to two swales located within the 50m buffer zone between the proposed development and the Grand Canal to the North of the site. Surface water flows from the site will outfall to the existing watercourse approx. 100m West of the site connecting to the Grand Canal. The swales will be designed to accommodate flows for the 1 in 100-year storm event. A hydrobrake will be fitted at the outfall of each swale which will

limit the flow exiting the site to the existing greenfield runoff rate QBAR (57.5 l/s). Therefore, the risk of accidental discharge has been adequately addressed through design.

Human Health and Populations

It has been established that there are no recorded groundwater boreholes for domestic use within the vicinity of the site, and the site is not located near any public groundwater supplies or group schemes, or groundwater source protection zones. On a precautionary basis, the mitigation measures set out in Section 7.6.1.1 will be implemented during the operational phase for the protection of human health and populations.

Water Framework Directive Status

It has been established that while, there is a potential of accidental discharges during the operational phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 7.6.1.1 will be implemented during the operational phase to control the storage of hazardous substances and the risk of accidental spills. It is noted that, as set out in Chapter 8 (Hydrology) the surface water discharges from the site are indirect and will be adequately attenuated via SuDS measures to ensure there is no long-term negative impact to any WFD water quality status.

18.5 Hydrology

18.5.1 Construction Phase Mitigation

Construction works and the proposed mitigation measures are informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects.

The Outline Construction Environmental Management Plan (CEMP) prepared by BMCE and project team, will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

Suspended Solids

To manage the potential impact associated with sediment and sediment runoff, the following mitigation measures will be implemented during the construction phase.

- The 50m buffer zone from the Canal will be established early in the construction phase where no construction works will take place. During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion.
- All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Construction materials, including aggregates etc. will be stored a minimum of 50 meter buffer distance from any surface water bodies and surface water drainage points.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

In addition, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Cement / Concrete Works

Where feasible, all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / SDCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site
- Where mobile fuel bowsers are used, the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - all bowsers to carry a spill kit and operatives must have spill response training;
    - o Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and,
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Human Health and Populations

It has been established that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located within the vicinity of the proposed site. On a precautionary basis, the mitigation measures set out in Section 8.6.1 will be implemented during the construction works for the protection of human health and populations.

Potential Impacts on Water Framework Directive Status

It has been established that while, there is a potential of accidental discharges during the construction phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 8.6.1, will be implemented during the construction works for the protection of surface water quality.

18.5.2 Operational Phase Mitigation

Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality and measures have been incorporated into the design to mitigate these potential impacts. The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS). By design, these measures ensure the stormwater leaving the site is of a suitable quality prior to discharge. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long term detrimental damage. The proposed surface water drainage system for this development has been designed as a sustainable urban drainage system with grass swales, permeable paving, and green roofs to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity; and,
- Increase amenity value.

The proposed surface water SuDS approach will attenuate the rate of surface water runoff from the development, intercept first flush flows and improve the quality of water that is intercepted by the surface water drainage network through biodegradation, pollutant adsorption and settlement and retention of solids. There is a low potential loading of hazardous substances during operation (mainly leaks for vehicles) and the drainage design incorporates SuDS measures to treat normal run-off water quality in order to meet surface water regulations.

Human Health and Populations

It has been established that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA. On a precautionary basis, the mitigation measures set out in Section 8.6.2 will be implemented during the operational phase for the protection of human health and populations, and downstream material assets.

Water Framework Directive Status

Even in the absence of the mitigation and monitoring measures there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the operational phase to protect the hydrological environment (receptors). There is a potential of accidental discharges during the operational phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

There are no untreated discharges of wastewater during the operational phase to any open waterbody / watercourse receptors. The discharges to surface water will be adequately treated via SuDS measures to ensure there is no long-term negative impact to the WFD water quality status of the receiving watercourse (receptor). The SuDS and proposed measures have been designed in detail with the ultimate aim and objective of protecting the hydrological (& hydrogeological) environment. The SuDS and project design measures will be maintained correctly as per specifications to ensure long-term / on-going integrity of same.

18.6 Air

18.6.1 Construction Phase Mitigation

The proposed development has been assessed as having a low risk of dust impacts during the construction phase because of earthworks, construction and trackout activities. The following dust mitigation measures shall be implemented during the construction phase of the proposed development and are appropriate for sites with a low risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement involves explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary. This notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension. Therefore, mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water and mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site use dust suppression/mitigation measures will be utilised.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles/Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas. If long haul routes are required these speeds may be increased, with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

- Use enclosed chutes and conveyers and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment where appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfacers as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate. This is to ensure moisture content is high enough to increase the stability of the soil, and therefore, suppress dust.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out. If this is required for a particular process, then ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems. This is to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective dust control measure for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes which are regularly damped down, with fixed or mobile sprinkler systems, or mobile water bowsers, and regularly cleaned.
- Implement a wheel washing system where reasonably practicable (with rumble grids to dislodge accumulated dust and mud prior to leaving the site).

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility (when required) and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary. Cleaning is to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

18.6.2 Monitoring

Construction Phase

During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Monitoring of emissions is not proposed for the construction phase of the proposed development as impacts are predicted to be imperceptible. Once the dust mitigation measures outlined in the mitigation section are implemented construction dust emissions will be imperceptible.

Operational Phase

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

18.7 Noise

18.7.1 Construction Phase Mitigation

The assessment detailed in Section 11.5.2 and Section 11.5.4 of Chapter 11 has found that predicted construction noise and vibration levels do not exceed the thresholds whereby a significant impact would be likely. Therefore, while the contractor should employ best practice noise and vibration control measures, specific mitigation measures are not necessary for the proposed construction works.

18.7.2 Operational Phase Mitigation

In order to ensure that acceptable operational noise levels at the nearest noise sensitive locations are achieved, the following mitigation measures should be considered during the detailed design stage.

Noise emissions from building services plant will be designed to ensure that noise levels at the façade of the noise-sensitive locations both within the development and in the surrounding area do not exceed the criteria discussed in 11.3.4 and Section 11.5.5.

During the detailed design of the development, the selection and location of mechanical and electrical plant will be undertaken in order to ensure the noise emission limits set out above are not exceeded. In addition to selecting plant with suitable noise levels, the following best practice measures are recommended where required, for all plant items in order to minimise potential noise disturbance for adjacent buildings:

- where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required to reduce noise breakout;
- ventilation plant serving plant rooms will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment;
- the use of perimeter plant screens for plant areas to screen noise sources;
- the use of attenuators or silencers on external air handling plant;
- all mechanical plant items e.g. fans, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised; and,
- Installed plant shall have no tonal or impulsive characteristics when in operation that would be audible at an NSL.

18.7.3 Monitoring

Construction Phase

During working hours, dust control methods will be monitored as appropriate. This depends on the prevailing meteorological conditions. Monitoring of emissions is not proposed for the construction phase of the proposed development as impacts are predicted to be imperceptible. Once the dust mitigation measures outlined in the mitigation section are implemented, then construction dust emissions will be imperceptible.

Operational Phase

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

18.8 Climate

18.8.1 Construction Phase Mitigation

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.

- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Waste materials will be re-used on site where possible and where re-use is not possible on-site, they will be sent off-site for recycling, re-use or recovery.
- Sourcing materials locally where possible to reduce transport related CO2 emissions.

In addition to the above best practice measures, the carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically due to building materials (see Section 10.5.2). To reduce carbon impacts from the proposed development, using alternative materials with lower embodied carbon emissions, such as timber frame walls or concrete with a 50% recycled cement content, can reduce the impact of the development on climate.

Alternative material types with lower embodied carbon should be investigated during the detailed design phase of the proposed development.

18.8.2 Operational Phase Mitigation

A number of measures have been incorporated into the of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.5.3).

A number of design mitigation measures have been integrated into the development's design to reduce the impact on climate. Full details of these measures are outlined within the Sustainability and Energy Statement TGD L Compliance Report prepared by Homan O'Brien in relation to the development. Details are provided in Section 10.5.3 and include compliance with the NZEB regulations. These measures will aid in reducing the impact of the development on climate during the operational phase.

18.8.3 Monitoring

Construction Phase

No monitoring is required for the construction phase of the proposed development.

Operational Phase

No monitoring is required for the operational phase of the proposed development.

18.9 Material Assets (Waste)

18.9.1 Construction Phase Mitigation

The following mitigation measures will be implemented during the construction phase of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the Resource and Waste Management Plan (RWMP) (Appendix 12.1) in compliance with any planning conditions, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream;
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phase;
- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling, and recovery. The following waste types, at a minimum, will be segregated:
    - Concrete rubble;
    - Plasterboard;
    - Metals;
    - Glass;
    - Timber; and
    - Waste generated by workers activities.
- Left over materials (e.g. timber off-cuts, concrete, and metal) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery, or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled, or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licenced facilities; and,
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

18.9.2 Operational Phase Mitigation

The following mitigation measures will be implemented during the operational phase of the proposed development:

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

As previously stated, a project specific OWMP has been prepared and is included as Appendix 12.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse, and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021, draft NWMPCE Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the SDCC waste byelaws.

The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse, and recovery at the site of the proposed development.

18.10 Material Assets (Traffic and Transportation)

18.10.1 Construction Phase Mitigation

General Construction Traffic Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing local road network and residential areas to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- During peak hours, ancillary, maintenance and other site vehicle movements will be discouraged.
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues.
- Construction vehicle access routes will be restricted to/from the M50 via the R120 / R134, thus minimising impact to residential communities.
- All existing roads will remain open to general traffic through all stages of the construction.
- At pre-commencement stage, the Applicant shall provide a Community Liaison Plan (alongside a final Construction Management Plan).
- Construction vehicles shall not be permitted to park or wait on public roads outside the site boundary.

- All construction access roads shall be kept clean and a maintenance plan for same, shall be agreed with SDCC.
- Prior to commencement, an independent Environmental Monitoring Officer (EMO) shall be appointed to monitor any environmental impacts during construction. The EMO shall report to the Planning Authority and shall maintain communication with the Applicant, contractors, local community, and other relevant stakeholders.

Pedestrian Safety

Deliveries will be scheduled outside of peak traffic hours, to avoid disturbance to pedestrian traffic in the vicinity of the site.

Hours of Working

Working hours shall be agreed with SDCC prior to commencement of construction works.

Construction Traffic Management Plan

A detailed Construction Traffic Management Plan (CTMP) will be developed by the Contractor and presented to SDCC for approval prior to commencement of the construction works. The CTMP will contain detailed temporary traffic management drawings for each construction stage and will include the mitigation measures described in this section. Please refer to Outline Construction and Environmental management Plan prepared by Barret Mahony and Associates and submitted within this application for further details of proposed traffic management measures.

18.10.2 Operational Phase Mitigation

The development shall incorporate several design and management elements intended to mitigate the impact of the development on the surrounding road network during its operational phase. These include:

- a high provision of secure bicycle parking, which shall serve to encourage bicycle journeys by both development occupants and visitors; and
- promotion of sustainable transport modes such as walking, cycling and public transport use.

As described in the Mobility Management Plan document prepared in support of this planning application, a Mobility Management Plan Coordinator shall be appointed for the proposed development, with the remit to implement and oversee an ongoing Mobility Management. This shall assist development occupants and visitors in making the most of sustainable transport opportunities and in avoiding single-occupant car journeys to and from the development site where possible.

18.10.3 Monitoring

Construction Phase

The construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the Construction Traffic Management Plan (CTMP).

Operational Phase

As described in the accompanying Mobility Management Plan (MMP) document, a Mobility Management Plan Coordinator (MMPC) shall be appointed for the Proposed Development, with the remit to implement and oversee an ongoing MMP. In conjunction with this, the MMPC will be responsible for monitoring the travel habits of development occupants and visitors.

The MMP is a dynamic process whereby a package of measures and campaigns is identified, piloted, and then monitored on an ongoing basis. The MMP will identify specific targets against which the effectiveness of the plan can be assessed at each review; these will typically take the form of target modal splits for journeys to and from a site. The MMP Coordinator will gather data on travel patterns, for instance by conducting periodic travel surveys of development occupants.

Post-development monitoring of the surrounding street network's performance is not required or proposed in this case.

18.11 Material Assets (Site Services)

All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment.

Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time. It will be suggested that products and materials are supplied locally, where practicable and available, to reduce carbon footprint of travel and production.

18.11.1 Construction Phase Mitigation

The following mitigation measures are recommended for the construction phase:

- The contractor is to conduct works in accordance with all relevant local authority requirements, and health and safety legislation.
- Relevant service providers are to be consulted in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services, such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains.

- Neighbouring sites are to be advised of construction methodologies in advance of works, in situations which may affect them
- All retained underground services are to be protected.
- All decommissioned infrastructure will have to be sent to an accepting landfill for disposal.
- A construction methodology will be required by the contractor to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed disposal facility.
- All infrastructure is to be appropriately tested by an approved method during the construction phase, all in accordance with Uisce Éireann / SDCC requirements.
- Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning.
- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption.
- All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority.

With the implementation of these mitigation measures, the severity of the impact of the proposed development on the built services will be minimised, with tie-ins to existing services and installation of new services completed in a satisfactory manner for the relevant service providers.

18.11.2 Operational Phase Mitigation

The material assets are to be constructed in accordance with all relevant local authority and UÉ standards.

18.11.3 Monitoring

The construction of works should be monitored to ensure compliance with relevant SDCC and UÉ requirements, and health and safety legislation.

The operational phase of public works should be monitored by those responsible for the respective asset.

The operational phase of private assets should be monitored by the management company for the development. By ensuring that these networks are adequately supervised the potential for water or effluent leaks are reduced to within acceptable limits.

18.12 Landscape and Visual Impact

18.12.1 Construction Phase Mitigation

Hours of construction activity associated with any development on site will be restricted in accordance with the relevant local authority guidance.

18.12.2 Operational Phase Mitigation

[amended text]

In terms of screening from potential visual receptors this is addressed through the proposal of a 5m wayleave which is heavily screened by tree planting and hedgerow to the Western, Eastern and Southern boundaries and a 50 m buffer zone to the North of the site which is (intended to be a designated ecological area. Here, extensive native tree and meadow planting will provide additional screening as well as functioning to enhance the ecological value of the section of the Grand Canal Green Infrastructure Corridor.).

[amended text]

18.12.3 Monitoring

Construction Phase

Landscape tender drawings and specifications will be produced to ensure that all landscape works are implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting, and maintenance. The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the planting season after completion of the main civil engineering and building work.

Operational Phase

This will consist of weed control, replacement planting, pruning, management of meadows etc. All landscape works will be in an establishment phase for the initial three years from planting. Prior to completion of the landscape works, a competent landscape contractor should be engaged and a detailed maintenance plan, scope of orientation and methodology should be put in place.

18.13 Cultural Heritage including Archaeology

18.13.1 Construction Phase Mitigation

Archaeological Heritage

It is acknowledged that that preservation in-situ is the preferred method for the conservation of archaeological remains. With regards to AA1-5, it is not possible to preserve the remains in-situ due to the ground disturbance required for the development, including the construction of buildings and infrastructure. Therefore, AA1-5 will be preserved by record prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoHLGH.

All topsoil stripping within the proposed development area will be subject to archaeological monitoring during construction. This will be carried out by a suitably qualified archaeologist. If any features of archaeological significance are identified, consultation with the National Monuments Service of the DoHLGH will be required in order to determine whether preservation by record or in-situ is the most appropriate manner in which to proceed.

Cultural Heritage

During the course of monitoring topsoil stripping, the site of the townland boundaries crossing the development area, will be recorded as part of the overall monitoring exercise.

Architectural Heritage

No mitigation is required.

18.13.2 Operational Phase Mitigation

No mitigation is required for the archaeological, architectural, or cultural heritage resource at operational phase.

18.13.3 Monitoring

The mitigation measures detailed above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.