



216983-04/11/2021-EIAR Main Report Part 11  
(Landscape, Traffic Part 1)

# 13. Landscape

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 Cork.



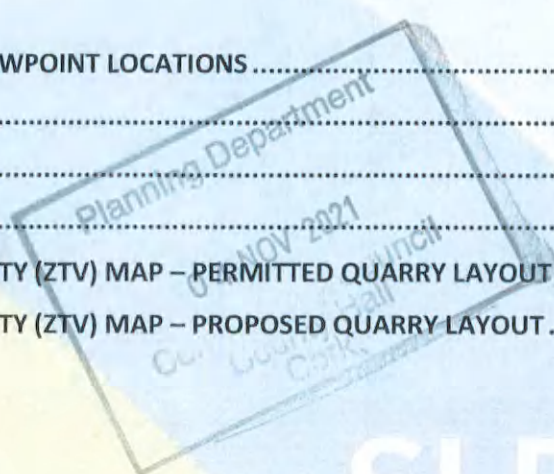
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## INTRODUCTION

### Background

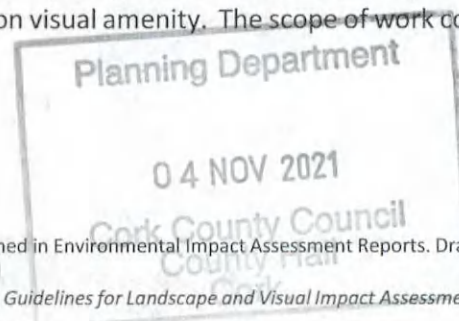
- 13.1 This report assesses the landscape and visual effects arising from the proposed further development of the existing Lagan Materials Ltd. quarry at Rossmore, Carrigtwohill, Co. Cork. The quarry is located 1.5km south of the N25 National Road and the town of Carrigtwohill.
- 13.2 The planning application area covers the existing permitted quarry area, containing the existing quarry void and the settlement pond / infiltration pond system. It is proposed to deepen the quarry from the currently permitted -20m ordnance datum (OD) by a further two benches to -50m OD, within the existing quarry footprint. Minor amendments to the permitted quarry layout are also proposed. The existing screening berms and vegetation along the site boundaries will be retained. It should be noted that Cork County Council have granted permission for a landscaped mound to the north of the existing northern boundary (P.Ref. 20/06709), which will replace the existing boundary berm, once constructed. All existing facilities, such as welfare facilities, offices and manufacturing plant will continue to be used and no new such facilities will require construction as part of this planning application. Further details on the proposed development are provided in chapter 2 of this EIAR.

### Scope of Work / EIA Scoping

- 13.3 The draft EPA guidelines in relation to the preparation of an EIAR<sup>1</sup> suggest the following typical headings that may be included in respect of the prescribed environmental factor 'The Landscape':
- Landscape Appearance and Character;
  - Landscape Context;
  - Views & Prospects; and
  - Historical Landscapes.
- 13.4 These headings are incorporated in the below assessment, as appropriate. However, in the absence of more detailed Irish guidance, the overall scope of work of this 'Landscape' chapter is based on the information contained in the third edition of the *Guidelines for Landscape and Visual Impact Assessment* issued by the Landscape Institute and Institute of Environmental Management & Assessment<sup>2</sup> (hereafter referred to as GLVIA3).
- 13.5 GLVIA3 emphasises that landscape and visual effects are related but independent issues; landscape effects are changes in the landscape, its character and quality, while visual effects relate to the appearance of these changes and the resulting effect on visual amenity. The scope of work covered by this assessment can be summarised as follows:

<sup>1</sup> Environmental Protection Agency (2017). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Draft dated August 2017. Environmental Protection Agency, Johnstown Castle Estate, Co. Wexford

<sup>2</sup> Landscape Institute and Institute of Environmental Management & Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment*. Third Edition, Routledge.



- a description of the planning context relevant to this Landscape and Visual Impact Assessment (LVIA) (i.e. the Regulatory Background);
- a description of the landscape and the visual baseline, including the identification of relevant landscape and visual receptors (i.e. the Receiving Environment);
- a description of the aspects of the development which are likely to cause landscape effects and those likely to cause visual effects, an assessment of landscape and visual receptor sensitivity and the magnitude of the landscape and visual effects, as well as their combined level of significance (i.e. the Impact Assessment);
- a description of additional measures required to reduce/avoid any significant landscape and visual effects identified (i.e. the Mitigation Measures); and
- a summary of the degree of the landscape and visual effects, following the implementation of the mitigation measures (i.e. the Residual Impact Assessment).

13.6 Wherever possible, identified effects are quantified, however the nature of landscape and visual impact assessment requires interpretation by professional judgement. Please refer to **Appendix 13-A** at the end of this chapter, for the detailed methodology used in this assessment, which is illustrated by the following Figures:

- **Figure 13-1:** Landscape Baseline and Viewpoint Locations
- **Figure 13-2:** Viewpoints A & B
- **Figure 13-3:** Viewpoints C & D
- **Figure 13-4:** Viewpoints E & F
- **Figure 13-5:** Zone of Theoretical Visibility (ZTV) Map – Permitted Quarry Layout
- **Figure 13-6:** Zone of Theoretical Visibility (ZTV) Map – Proposed Quarry Layout



## Consultations / Consultees

- 13.7 A pre-planning consultation meeting was held between officials of Cork County Council and the applicant as part of this planning application on the 11<sup>th</sup> March 2021 at the offices of the Planning Authority. The Planning Authority requested that Zone of Theoretical Visibility (ZTV) mapping be considered for the existing and proposed development.
- 13.8 Following a review of published development plans and the site survey, it was considered that there was no requirement for a separate formal consultation to be carried out with regard to the landscape and visual impacts of the proposed development.

## Contributors / Author(s)

- 13.9 The assessment, including site work and production of figures, was carried out by Anne Merkle, an Associate Landscape Architect with SLR Consulting Ireland. Anne graduated from the Nürtingen-Geislingen University (Germany) in Landscape Architecture (Dipl.-Ing. (FH)), in 2002. She has since gained 19 years' experience working for landscape consultancies in Ireland, specialising in

Landscape and Visual Impact Assessments for a wide range of projects, including quarries, waste recovery facilities, wind farms, powerlines and mixed developments. In 2017, Anne completed an MSc in Biodiversity and Land Use Planning at NUI Galway. She is a full member of the Irish Landscape Institute (ILI) since 2005.

## Limitations / Difficulties Encountered

- 13.10 No difficulties were encountered during the desktop study, field survey or in the preparation of this report.

## REGULATORY BACKGROUND

- 13.11 The following paragraphs set out the regulatory background with regard to LVIA in Ireland in general and the site-specific planning background relevant to the proposed development, in particular.

### Legislation

- 13.12 There is no specific legislation relevant to this section of the EIAR. However, the information provided within this chapter is informed by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018<sup>3</sup>.
- 13.13 Also, Ireland ratified the European Landscape Convention<sup>4</sup>, which promotes the protection, management and planning of landscapes. The National Landscape Strategy for Ireland 2015-2025<sup>5</sup> was published “to ensure compliance with the European Landscape Convention and establish principles for protecting and enhancing the landscape while positively managing its change”.
- 13.14 Article 1a of the European Landscape Convention defines landscape as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”. This definition has been included in the Planning and Development (Amendment) Act 2010, along with the requirement that objectives relating to landscape shall be included in development plans.

### Planning Policy and Development Control

- 13.15 The Cork County Council Development Plan (CDP) 2014<sup>6</sup> is the statutory plan detailing the development objectives/policies of the authority, covering the application area. Those policies/objectives, with relevance to this assessment, are listed below. Also, the Draft Cork County Development Plan (CCDP) 2021<sup>7</sup> was reviewed and the similarities to the existing plan and/or relevant changes likely to occur are summarised below.
- 13.16 Further to that, online and other map resources were checked for outdoor recreational facilities in proximity to the application area. As was the National Parks and Wildlife Service (NPWS) website for any protected nature conservation sites in proximity to the application area. Refer to **Figure 13-**

<sup>3</sup> European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018:

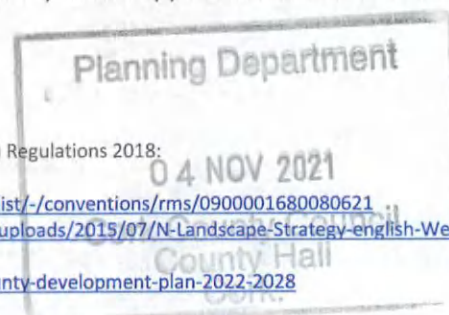
<http://www.irishstatutebook.ie/eli/2018/si/296/made/en/pdf>

<sup>4</sup> European Landscape Convention: <https://www.coe.int/en/web/conventions/full-list/-/conventions/rms/0900001680080621>

<sup>5</sup> National Landscape Strategy for Ireland 2015-2025: <https://www.chg.gov.ie/app/uploads/2015/07/N-Landscape-Strategy-english-Web.pdf>

<sup>6</sup> Cork County Development Plan 2014: <http://corkcocodevplan.com/>

<sup>7</sup> Draft Cork County Development Plan 2021: <https://www.corkcoco.ie/en/cork-county-development-plan-2022-2028>



1 – Landscape Baseline and Viewpoint Locations for the location and extent of the relevant designations within the study area.

### Mineral Extraction

13.17 Section 6.12 of the current Cork CDP, ‘Mineral Extraction’, includes the following statement:

*“Quarrying operations can give rise to land use and environmental issues which require mitigation and control. It is necessary to ensure that minerals can be sourced without significantly damaging the landscape, environment, ... and / or residential amenities of the area.”*

13.18 CDP **Objective EE 12-3:** ‘Impacts of Mineral Extraction’ states the following:

*“Minimise environmental and other impacts of mineral extractions through rigorous application of licensing, development management and enforcement requirements for the extractive industry and ancillary developments. ...*

*All extractive industry developments to have regard to the “Quarries and Ancillary Activities Guidelines for Planning Authorities (2004)” published by the DoEHLG or as may be amended from time to time.*

*With new quarries and mines and extensions to existing quarries and mines regard should be had to visual impacts, ... impacts on residential and other amenities, ... phasing, re-instatement and landscaping of worked sites.”*

13.19 In the Draft CCDP 2021 an emphasis is put on safeguarding the county’s mineral resources as stated in **draft Objective EC 8-13:** ‘Safeguarding Mineral resources’:

*“a) Protect and safeguard the county’s natural mineral resources from inappropriate development, by seeking to prevent incompatible land uses that could be located elsewhere, from being located in the vicinity of the resource, since the extraction of minerals and aggregates is resource based. ...”*

13.20 In addition to this objective, the consideration of environmental concerns is mentioned in section 8.16 Mineral Extraction: *“The Council therefore aims to protect and safeguard the operations of working quarries and proven aggregate resources ..., whilst also ensuring that environmental, rural, scenic and residential amenities are protected”.*

### Landscape

13.21 Section 13.6 of the current Cork CDP summarises the content of the Draft Landscape Strategy, which was prepared for County Cork in 2007. This strategy identifies 16 landscape character types (LCT) and includes an evaluation of “each landscape character type in terms of its Landscape Value, Sensitivity and Importance” (refer to Landscape Baseline below for more detail).

13.22 Those LCTs of particularly high value, sensitivity and importance were designated as High Value Landscapes (HVL) and the application area is located within one such HVL. The Cork CDP states the following about the HVL:

13.23 *“Within these High Value Landscapes considerable care will be needed to successfully locate large scale developments without them becoming unduly obtrusive. Therefore, the location, siting and design of large scale developments within these areas will need careful consideration and any such developments should generally be supported by an assessment including a visual impact assessment which would involve an evaluation of visibility and prominence of the proposed development in its immediate environs and in the wider landscape.”*

13.24 CDP **Objective GI 6-1:** ‘Landscape’ states the following:

*"a) Protect the visual and scenic amenities of County Cork's built and natural environment.*

*b) Landscape issues will be an important factor in all landuse proposals, ensuring that a proactive view of development is undertaken while maintaining respect for the environment and heritage generally in line with the principle of sustainability.*

*c) Ensure that new development meets high standards of siting and design.*

*d) Protect skylines and ridgelines from development.*

*e) Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments."*

13.25 CDP **Objective GI 6-2:** 'Draft Landscape Strategy' states the following:

*"Ensure that the management of development throughout the County will have regard for the value of the landscape, its character, distinctiveness and sensitivity as recognised in the Cork County Draft Landscape Strategy and its recommendations, in order to minimize the visual and environmental impact of development, particularly in areas designated as High Value Landscapes where higher development standards (layout, design, landscaping, materials used) will be required."*

13.26 The Draft CCDP 2021 contains the same two objectives under new numbering, i.e. **Objective GI 14-9** and **Objective GI 14-10**.

### Views and Prospects

13.27 Section 13.7 of the current Cork CDP, 'Landscape Views and Prospects' includes objectives with regard to Views and Prospects and Scenic Routes.

13.28 CDP **Objective GI 7-1:** 'General Views and Prospects' states the following:

13.29 *"Preserve the character of all important views and prospects, particularly sea views, river or lake views, views of unspoilt mountains, upland or coastal landscape, views of historical or cultural significance (including buildings and townscapes) and views of natural beauty as recognized in the Draft Landscape Strategy."*

13.30 In a number of views from locations on the northern side of Great Island the application area is visible in conjunction with the with the Great Island Channel (refer to **Viewpoint A** on **Figure 13-2**). These views could be considered as falling under those described in Objective GI 7-1. The compliance with this Objective of the proposed development in terms of these views will be assessed at the end of this report.

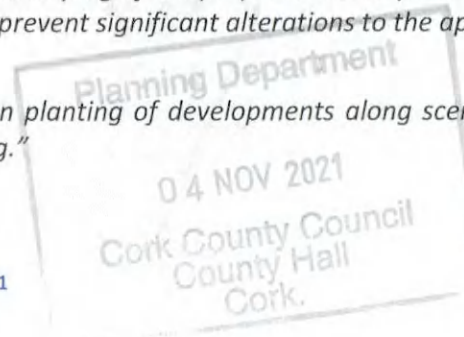
13.31 CDP **Objective GI 7-2:** 'Scenic Routes' states the following:

*"Protect the character of those views and prospects obtainable from scenic routes and in particular stretches of scenic routes that have very special views and prospects identified in this plan. ..."*

13.32 CDP **Objective GI 7-3:** 'Development on Scenic Routes' states the following:

*"a) Require those seeking to carry out development in the environs of a scenic route and/or an area with important views and prospects, to demonstrate that there will be no adverse obstruction or degradation of the views towards and from vulnerable landscape features. In such areas, the appropriateness of the design, site layout, and landscaping of the proposed development must be demonstrated along with mitigation measures to prevent significant alterations to the appearance or character of the area.*

*b) Encourage appropriate landscaping and screen planting of developments along scenic routes which provides guidance in relation to landscaping."*





- 13.33 A number of scenic routes are located within the study area. They are as follows:
- S42 – Local Road at Forest-town, N.W. Carrigtohill and Westwards to Caherlag; Views of the Harbour, open countryside & tree lined hillsides (note: approximately 2.8km north-west of the application area)
  - S51 - R630 Regional Road & Local Road from Ballynacorra via East Ferry to Whitegate and Roche's Point; Views of the Estuary & Harbour, Roche's Point & the rural coastal environment (note: approximately 4km south-east of the application area)
  - S52 – Local Road at N.E. Great Island; Views of Great Island Channel & rural coastal environment (note: approximately 1.3km south of the application area)
  - S53 - R624 Regional Road, between Cobh and Belvelly; Views of the Upper Harbour and coastal environment (note: approximately 3.2km west of the application area)
- 13.34 The Draft CCDP 2021 contains the same/very similar three objectives under new numbering, i.e. **Objective GI 14-12**, **Objective GI 14-13** and **Objective GI 14-14**. The scenic routes have not changed from the current Cork CDP.

*Outdoor Recreational Facilities within the Study Area*

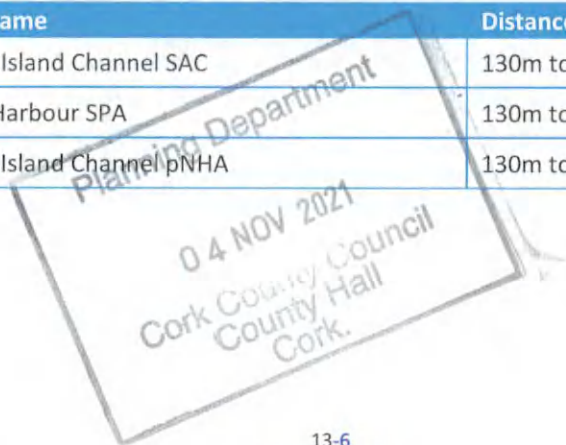
- 13.35 Fota Wildlife Park, Fota House & Gardens, two of the most popular tourist attractions in Co. Cork, as well as Fota Island Resort are all located 2-4km west of the application area. It should be noted that due to the dense woodland vegetation surrounding Fota Island, there are no views towards the application area from any of these facilities.
- 13.36 The roads/tracks along the shores of the Great Island Channel are likely to be used for recreational walking. Due to the low elevation along the shoreline and the existing boundary/intervening vegetation, there are no locations from where the application area is visible (refer to Viewpoints B & C on Figures 13-2 & 13-3).
- 13.37 There are no known formal walking routes or other recreational facilities within the study area.

*Protected Nature Conservation Sites*

- 13.38 A number of nature conservation sites are located within the study area, i.e. one Special Area of Conservation (SAC), one Special Protection Area (SPA) and one proposed Natural Heritage Area (pNHA), as detailed further in Table 1.

**Table 13-1  
Nature Conservation Sites**

Type	Site Code	Site Name	Distance/Direction from Application Area
SAC	001058	Great Island Channel SAC	130m to the south of the quarry void
SPA	004030	Cork Harbour SPA	130m to the south of the quarry void
pNHA	001058	Great Island Channel pNHA	130m to the south of the quarry void



## Guidelines

- 13.39 As mentioned previously, this landscape and visual impact assessment was undertaken based on the Landscape Institute and Institute of Environmental Management & Assessment **Guidelines for Landscape and Visual Impact Assessment (Third Edition, 2013)**, published by Routledge; hereafter referred to as GLVIA3).
- 13.40 The report format and some of the descriptions of effects are based on the **Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft)**, published by the Environmental Protection Agency (EPA) in August 2017.

## Technical Standards

- 13.41 Photography and visual representations are based on the Landscape Institute – Technical Guidance Note 06/19 – ‘Visual Representation of Development Proposals’. However, since there is no Irish standard/guidance and in our experience a less stringent approach to visual representations is accepted in Ireland, it is considered sufficient to provide annotated viewpoint photography only (i.e. Type 1 in said guidance), despite this LVIA forming part of an EIA. It is further considered sufficient to provide two viewpoints on one A3 sized sheet, using a range of horizontal angles of view (i.e. 40°-110°) to illustrate the full extent of the proposed development within each view, as well as the context within which the site is located. If requested, viewpoint sheets scaled in accordance with the LI Technical Guidance Note can be provided.
- 13.42 The Landscape Institute – Technical Guidance Note 02/21 – ‘Assessing landscape value outside national designations’ was taken account of in the preparation of the assessment methodology, as provided in **Appendix 13-A** at the end of this chapter.

## Significant Risks

- 13.43 There are no known significant risks to human health or environmental effects, which may occur in relation to this landscape and visual impact assessment.



## RECEIVING ENVIRONMENT

### Study Area

- 13.44 A study area of 3km surrounding the application area and extending up to 5km to the north and west was identified. This is based on the ZTV mapping (refer to **Figures 13-5 & 13-6**), SLR's previous experience with mineral extraction sites and a previous LVIA associated with the existing Lagan quarry at Rossmore undertaken by SLR. Ridgelines 5km to the north and 3km to the south of the application area mark the study area boundaries. Locally intervening topography and vegetation in the landscape surrounding the application area restrict views in many locations. It should therefore be noted that the visual envelope, i.e. the area from where the application area is actually visible, is much smaller than the study area.

### Baseline Study Methodology

- 13.45 Refer to **Appendix 13-A** at the end of this chapter for information on the selection of landscape and visual receptors.

### Viewpoints

- 13.46 The visibility of the application area was initially assessed by a desktop study of OSI Discovery Maps (1:50,000), the ZTV Mapping and available aerial photography, in order to identify a number of provisional viewpoints, to be visited during the site survey. Six of these viewpoints were selected to illustrate the general visibility within the study area, as well as the visibility of the proposed application area. Refer to **Figures 13-2, 13-3 and 13-4** for these six representative and illustrative viewpoints (VP A-F).
- 13.47 Photographs were taken during two site surveys, one on February and one in October of 2020, using a Nikon D610 digital SLR full frame camera, with a fixed 50mm lens. For the visual presentations 3-6 photographic frames were merged together using Adobe Photoshop software. It should be noted that photography is a tool to assist in the visualisation process and cannot be expected to replicate the actual view that would be attained on the ground.

### Sources of Information

- 13.48 The desktop study and field work was supported by, *inter alia*:
- the Cork County Council Development Plan 2014;
  - Draft Cork County Development Plan 2021;
  - digital as well as paper (Ordnance Survey Ireland) mapping at different scales; and
  - information available on the internet (such as information on recreational facilities and nature conservation sites).

### Field Survey

- 13.49 A detailed site survey was carried out on 20<sup>th</sup> February 2020 in mostly sunny and clear conditions with good visibility. A follow up visit to take further viewpoint photography was carried out on 13<sup>th</sup> October 2020 in similar conditions. The assessment concentrated on the publicly accessible areas such as the road and public footpath networks, residential and outdoor recreational areas.

## Landscape Baseline

### Existing Relevant Landscape Character Assessments

- 13.50 A Draft Landscape Strategy was prepared in 2007 for County Cork. This strategy identifies 76 landscape character areas (LCA), which were “*amalgamated into a set of 16 landscape character types based on similarities evident within the various areas. These landscape character types provide a more general categorization of the County’s landscape*” (refer to section 13.6 of the Cork CDP 2014).
- 13.51 The application area is fully located within landscape character type (LCT) 1: City Harbour and Estuary. The nearest other LCT, i.e. LCT 10b: Fissured Fertile Middleground, is located approximately 5km to the north of the application area and due to this distance is not considered further in this assessment.
- 13.52 The landscape description for LCT 1 states the following:
- “The topography and landscape components in this area, primarily the River Lee as well as the vast open and natural harbour, have provided the opportunity for human settlement and the development of a city.*
- Overall, the landscape of the city and harbour area comprises a mix of rural and intensely urban areas, combined with a large expansive harbour. To the south of the city, the western side of the harbour supports major industrial development, while on higher ground telecommunication masts or water storage towers punctuate the skyline. The harbour includes large islands, which, along with much of the harbour shore, comprises landscape of fertile farmland which slopes gently to the sea. It comprises a mosaic of fertile fields of mixed use on brown podzols.*
- The rural areas around much of the greater harbour area are now characterised by a prevalence of infrastructure such as roads, bridges and electricity power lines and some urban sprawl. The narrow harbour mouth is defined by two hilltops with old military fortifications on their summits.”*
- 13.53 LCT 1 was evaluated as being of very high landscape value, i.e. “*Scenic landscapes with highest natural and cultural quality, areas with conservation interest and of national importance.*” LCT 1 has further been evaluated as having very high sensitivity, i.e. “*Very high sensitivity landscapes are extra vulnerable landscapes (for example, seascape area with national importance) likely to be fragile and susceptible to change.*”

### Landscape of the Site and its Context

- 13.54 The application area is located approximately 1.5km south of the town of Carrigtwohill and 15km east of Cork’s City Centre. The area comprises the existing permitted quarry void and the settlement pond / infiltration pond system, permitted under PL04.QD.0010. Minor amendments to the permitted quarry void are also proposed. Apart from some incidental areas of scrub which have self-seeded in areas, which haven’t been disturbed for a number of years, the application area consists of bare rock, stockpiles or overburden. The quarry boundaries are marked by screening berms covered with scrub / hedgerow vegetation. The existing facilities are located to the south of the application area. These include welfare facilities, offices and the asphalt plant.
- 13.55 Beyond the screening berm along the southern boundary of the site a narrow strip of land forms the shore of Rossmore Bay. To the west the quarry is adjoined by a third party quarry, to the north by an agricultural field and to the east, beyond the local road leading to the quarry entrance, by

further agricultural fields. The settlement pond and infiltration pond system is located to the south-east, across the road from the quarry.

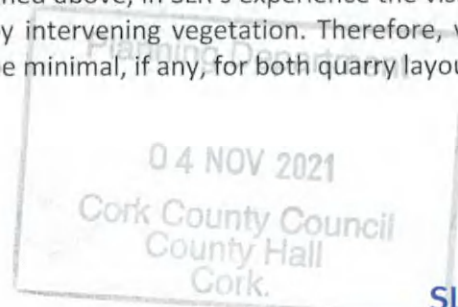
- 13.56 Levels within the application area currently range from 25m OD within the overburden at its northern end to -20m OD at the lowest point on the quarry floor. Levels along the top of the screening berm/vegetation along the western boundary slope from 18-10m OD from north to south. Along the eastern boundary levels stay at approximately 25m OD for the most part. The majority of the quarry processing/office area to the south of the application area is at a level around 5m OD. The top of the screening berm/vegetation along the southern boundary ranges between 8-10m OD for the most part with some taller shrubs/trees along its eastern end.
- 13.57 The landscape surrounding the application area forms part of the rural areas described as part of LCT1 in the Cork Draft Landscape Strategy (see above). It contains fertile sloping farmland, as well as the Great Island Channel and its associated shoreline and islands. It does however also include many infrastructural and other manmade elements, such as roads, powerlines, residential and farm buildings and several existing quarries. Fields are mostly angular in shape, with sizes ranging from small to large. Mature hedgerows typically bound the fields, creating a defined field pattern, but in some locations, hedgerows were replaced by post and wire fencing. Small woodlands and shelterbelts are present throughout the study area, in particular on Great Island and in the valleys between the highpoints to the north. Larger areas of woodland are present on Fota Island, in particular along its shoreline.
- 13.58 Within 1.5km to the west, north and east of the application area the land is gently undulating with levels ranging from 0m OD along the shores of the Great Island Channel to 28m at a local highpoint, approximately 500m to the east of the site. The topography of this area coupled with the typically mature boundary hedgerows and small woodland areas results in the local landscape being visually enclosed. The flat surface of the Great Island Channel expands from just south of the existing quarry development in a western and eastern direction. Generally, it is around 1km wide, widening and narrowing in places.
- 13.59 On the southern side of the Great Island Channel the land slopes to 70-90m OD within 1km distance (i.e. between 1.5-2.5km to the south of the application area) and land forms a ridgeline parallel to the shoreline. Within 3-4km to the north of the applications area the land slopes to levels over 100m OD. A series of local highpoints form an undulating ridgeline, approximately 5km to the north and north-west of the application area. The landscape remains visually enclosed on this sloping ground, where mature roadside vegetation is present. However, where views over or along the Great Island Channel open up, the scale of the landscape increases considerably. Belvelly Castle near the southern end of Belvelly Bridge presents a focal point in the local landscape.
- 13.60 The main settlement within the study area is the town of Carrigtwohill, approximately 1.5km to the north of the application area. The remainder of the study area is predominantly rural, however, one-off housing and ribbon development along all local roads is abundant. Larger more urban settlements are present just outside the study area, including Cobh, 5km to the south-west, Middleton, 5km to the east and Passage West, 6km to the south-west.
- 13.61 The main roads within the study area are the N25 – Cork to Middleton National Road, just south of Carrigtwohill and the R624 – Carrigtwohill to Cobh Regional Road, 1.5km to the west of the application area. In addition, there is a dense network of local roads surrounding Carrigtwohill and on Great Island.
- 13.62 The key characteristics of the landscape within the study area can be summarised as:
- majority of study area: undulating/sloping farmland with fields bound by mostly tree-lined hedgerows and some pockets of woodland;

- southern central part of study area: large flat expanse of Great Island Channel framed by mostly tree-lined shores and a backdrop of sloping farmland;
- frequent signs of human presence in the form of residential and farm buildings, roads, stone walls, fencing, high voltage powerlines, telegraph poles and boats, as well as a number of existing quarries.

## Visual Baseline

### *Zone of Theoretical Visibility (ZTV) Mapping*

- 13.63 As requested by Cork County Council, ZTV mapping was produced for the permitted and the proposed quarry layout, to assess their potential visibility and in particular the differences in visibility, if any. The required 3D computer modelling and subsequent calculation of the zone of theoretical visibility (ZTV), was carried out using LSS (McCarthy Taylor) software, in accordance with the methodology provided in **Appendix 13-B** at the end of this chapter.
- 13.64 It should be noted that ZTV mapping is generally based on a bare terrain; that is, the computer model does not include vegetation or built structures. As a result, the extent of visibility which is illustrated, is regarded as a worst-case scenario, and would be greatly reduced if vegetation and buildings were included in the model. In this case, the height information for the berms and vegetation along the site boundaries was available and included in the 3D model. The extent of visibility shown on the resultant ZTV mapping (refer to **Figures 13-5 & 13-6**) is therefore reduced by the screening provided by the site boundary berms/vegetation.
- 13.65 In SLR's experience, views from within areas with a visibility of a subtended vertical angle of up to 0.4 degrees tend to be screened by intervening hedgerows and other vegetation in the wider landscape (if present) and/or built structures in an urban environment. These areas are, therefore, coloured in shades of grey on the ZTV mapping, in order to differentiate them from the other areas of more probable visibility, which are marked in shades of yellow, orange and red.
- 13.66 The ZTVs for both the permitted and the proposed quarry layout indicate that that the areas with the highest visibility (i.e. the areas of visibility marked in shades of yellow, orange and red) are likely to be the northern side of the peninsula south of Rossmore Bay and the northern slopes of Great Island, within 2.5km to the south-west and south-east and 2km to the south of the extraction area. The areas of higher visibility area marginally larger for the proposed quarry layout, compared with the permitted one, which may be attributed to the minor amendments to the northern and eastern quarry faces. However, since these areas of higher visibility mostly cover agricultural land and the ZTV does not take account of the screening provided by existing hedgerow vegetation within these areas, there is unlikely to be an increase in visual impact on any visual receptors, due to the proposed quarry layout.
- 13.67 Both ZTVs also indicate that visibility is possible, although to a lesser degree (i.e. areas in shades of grey), from locations within 4km to the south-west, 3km to the west and between 3-5km to the north-west. Again, there is a marginal increase of the visibility areas for the proposed compared with the permitted quarry design. However, as mentioned above, in SLR's experience the visibility in those area shaded in grey tends to be screened by intervening vegetation. Therefore, visual impact on visual receptors within this area is likely to be minimal, if any, for both quarry layouts.



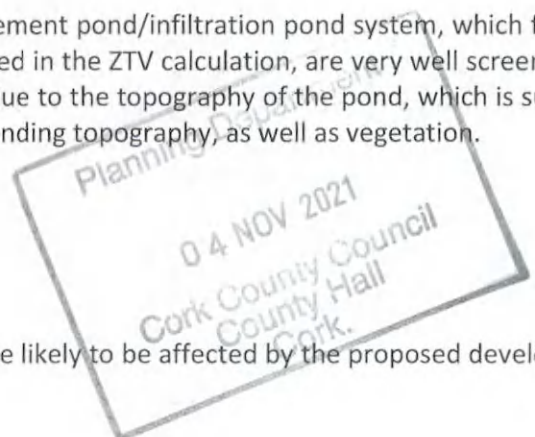
### Existing Visibility

- 13.68 The site survey revealed that views from publicly accessible locations within the areas of theoretical visibility indicated by the ZTV mapping are greatly restricted by dense roadside, as well as intervening vegetation. The topography of the existing quarry development, including the vegetated boundary berms ensure that the application area is not visible in the vast majority of views from within the study area, in particular from locations on low-lying or undulating land. The only elements visible are parts of the existing northern and eastern quarry faces in views from elevated locations to the south of the application area.
- 13.69 The upper section of the existing eastern quarry faces are visible from a number of locations along the elevated roads on the northern side of Great Island, as illustrated by **Viewpoint A** on **Figure 13-2**. Some of the existing plant and structures, but which are not located within the application area, are visible to the front of the quarry void in these views. While it is acknowledged that there are many similar views from agricultural fields within the elevated land on the northside of Great Island, these are typically not publicly accessible and are therefore not considered further as part of the visual assessment.
- 13.70 Small parts of the uppermost section of the eastern quarry face can be glimpsed in views from a number of locations near the southern shore of the Great Island Channel. However, the northern quarry face and the quarry floor are fully screened by boundary and intervening vegetation/topography in all available views, as illustrated by **Viewpoints B & D** on **Figures 13-2 & 13-3**.
- 13.71 While parts of the plant and structures at the southern end of the existing quarry development are visible in some views from locations near the northern shore of the Great Island Channel in the vicinity of the site, the existing quarry void and associated quarry faces are fully screened by topography and vegetation. Refer to **Viewpoint C** on **Figure 13-3** for an example of one such view. While it is acknowledged that there are likely to be some views from the agricultural land on the northern side of the peninsula to the south of Rossmore Bay (as indicated by the ZTV mapping), this area is not publicly accessible and therefore not considered further as part of the visual assessment.
- 13.72 An existing screening berm along the northern boundary, as well as the existing overburden in the northern part of the application area are visible in some views from elevated locations to the north of the site. The berm and overburden mound currently screen the quarry void and associated faces, as will the permitted landscaped mound (P.Ref. 20/06709), once completed, as illustrated by **Viewpoints E and F** on **Figure 13-4**.
- 13.73 No views could be identified from beyond site boundaries to the west, east and north-east, due to the intervening topography and vegetation. This includes all of Fota Island, views from which are screened by the dense woodland vegetation along its shores.
- 13.74 It should be noted that the existing settlement pond/infiltration pond system, which form part of the application area, but were not included in the ZTV calculation, are very well screened in views from the surrounding landscape. This is due to the topography of the pond, which is sunk into the ground and therefore screened by surrounding topography, as well as vegetation.

### Sensitive Receptors

#### Landscape Receptors

- 13.75 The components of the landscape that are likely to be affected by the proposed development, i.e. the landscape receptors, are the



- the rural section of LCT 1: City Harbour and Estuary; i.e. undulating rich farmland and estuarine landscape with frequent manmade elements

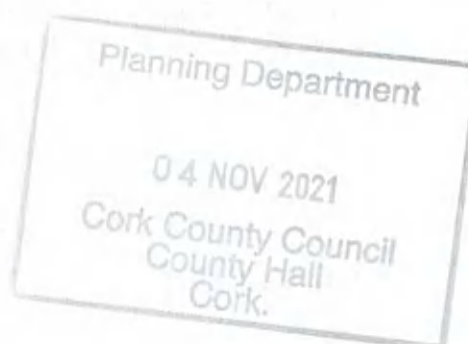
13.76 A small amount of scrub vegetation, which has naturally colonised the existing overburden storage area, will require removal. However, this vegetation does not form a characteristic landscape element and is therefore also not considered a sensitive landscape receptor.

**Visual Receptors**

The receptors with views of the application area consist of road users and local residents. Those experiencing similar views of the application area are placed into Visual Receptor Groups (VRGs). The location and extent of each VRG is indicated on **Figure 13-1** and described in **Table 13-2**. The table further lists the types of receptors present in each VRG, summarises the nature of views/visual amenity the groups experience and lists the representative viewpoints provided (refer to **Figures 13-2, 13-3 & 13-4**).

**Table 13-2  
Visual Receptor Groups (VRG)**

VRG	Location / Extent	Types of Receptors	Nature of Views / Visual Amenity
1	Intermittent views along approx. 1,200m of the local roads in the townlands of Ballynacrusa, Rosslague and Currabally on Great Island.	Residential properties with views of the Great Island Channel and road users along the relevant stretches of road.	<p>Parts of the existing quarry, i.e. some of the plant and stockpiles and the eastern upper quarry faces are visible as a narrow band in the midground of views, above the shore of Rossmore Bay.</p> <p>The neighbouring third-party quarry development is visible to the west (left in these views), alike a continuation of the Lagan Quarry.</p> <p>Carrigtwohill and the sloping agricultural land to the north of the town are visible in the background.</p> <p>Agricultural land on Great Island and the Great Island Channel are visible in the foreground.</p> <p>Medium-high visual amenity, due to wide field of vision dominated by the Great Island Channel and distant ridgeline, with many, but largely unobtrusive, manmade elements visible.</p> <p><b>Viewpoint A</b> represents a typical view.</p>





## IMPACT ASSESSMENT

### Evaluation Methodology

13.77 Refer to **Appendix 13-A** at the end of this chapter for information on the assessment of landscape and visual sensitivity, the assessment of the magnitude of change in the landscape and on views, as well as the assessment of landscape and visual effects and their significance.

### Operational Stage Landscape Effects

13.78 The operational stage of the proposed development, for the purpose of this assessment, is considered to include the extraction and restoration period, i.e. a 22 year period.

13.79 Works likely to result in landscape effects will include:

- the extraction activities, resulting in changes to the landform by lowering the ground within the extraction area to -50m OD (i.e. 2 benches or 30m more than what is currently permitted), covering approximately 9.5ha of the application area; and
- the restoration of the overall site to a natural habitat, consisting of the quarry void which will be left to naturally fill with water, some incidental woodland planting, grass seeding of larger areas and grass/scrub vegetation to be allowed to naturally colonise the remainder of the areas above the final water level, consistent with the quarry restoration scheme granted permission by An Bord Pleanála under Section 37L (ABP Ref. PL04.QD.0010).

13.80 The removal of some scrub vegetation from the northern end of the extraction area will be another landscape effect, however it should be noted that these changes are already consented under the existing planning permission (PL04.QD.0010) covering the application area.

13.81 The proposed development will not result in any changes to the existing settlement pond/infiltration pond system for the duration of the extraction works. Therefore, there will be no landscape effects associated with this section of the application area, until the final restoration of the overall site (as stated above).

### Landscape Sensitivity

13.82 **Table 13-3** describes the value attached to each of the identified landscape receptors and their susceptibility to the changes caused by the proposed development. It further makes a judgement of the overall sensitivity of each of the landscape receptors.



**Table 13-3**  
**Sensitivity of Landscape Receptors**

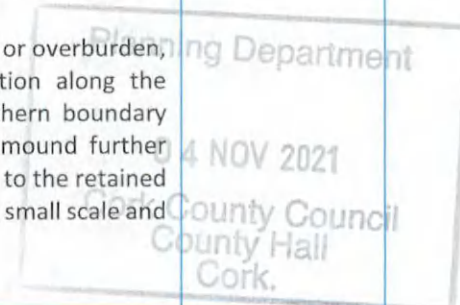
Landscape Receptor	Value	Susceptibility	Overall Sensitivity
<b>Rural section of LCT 1</b>	<p>LCT 1 has been afforded very high landscape value and national importance in the Draft Landscape Strategy for County Cork.</p> <p>Several nature conservation areas are associated with the estuary.</p> <p>However, considering the application area is located in one of the rural areas within LCT 1 <i>“characterised by a prevalence of infrastructure such as roads, bridges and electricity power lines and some urban sprawl”</i>; and further considering the presence of the existing quarry development, including the neighbouring third party quarry, as well as the visual separation from the Great Island Channel from boundary vegetation; the value associated with the application area and immediately surrounding land is judged to be at a local authority, rather than a national level.</p> <p style="text-align: center;"><b>LOCAL AUTHORITY</b></p>	<p>The very high sensitivity assigned to LCT1 is defined as <i>“likely to be fragile and susceptible to change”</i> in the Draft Landscape Strategy for County Cork.</p> <p>However, taking account of the location of the proposed development within the existing permitted quarry site, as well as the abundance of local screening vegetation and topography, it is considered that the relevant characteristics of the landscape surrounding the application area have the ability to accommodate the proposed development without transformational adverse effects.</p> <p style="text-align: center;"><b>LOW</b></p>	<b>LOW</b>

*Magnitude of Landscape Change*

13.83 **Table 13-4** describes the size and scale, geographical extent, and duration/reversibility of the landscape change, all of which contribute to the assessment of the magnitude of this change.

**Table 13-4**  
**Factors of Magnitude of Landscape Change**

Factor	Description	Level of effect
<b>Size &amp; Scale</b>	<p>All works will be contained within the existing quarry development, which is substantially screened. The lowering of the quarry floor and slight changes to the northern and eastern quarry face will not result in the introduction of new landscape elements. Also, the final landform will not be any more noticeable in the local landscape than the existing quarry. Therefore, the composition and balance of the surrounding landscape will not be changed.</p> <p>The 9.5ha of the extraction area currently consist of bare rock or overburden, with some patches of scrub. The scrub/hedgerow vegetation along the boundaries of the overall quarry will be retained. The northern boundary boundary berm will be replaced by a landscape screening mound further north, once completed. Considering the amount of vegetation to be retained and newly planted, the loss of some scrub within the site is of a small scale and imperceptible from the surrounding areas.</p>	<b>NEGLIGIBLE</b>
<b>Geographical Extent</b>	<p>The changes will influence the landscape at the site level only. Considering the large area of surrounding undulating farmland and estuarine landscape, the changes will affect a limited extent of the landscape receptors.</p>	<b>NEGLIGIBLE</b>



Factor	Description	Level of effect
Duration/ Reversibility	The operational stage (extraction + restoration) will last for a total of 22 years. While the changes to the landform will not be reversed, the proposed restoration of the overall quarry development to a natural habitat, could be considered a partial reversal, as the site will merge back into the surrounding landscape, in particular the vegetated shores of Rossmore Bay.	LONG-TERM REVERSIBLE

13.84 The magnitude of landscape change on all landscape receptors, due to the proposed development, is judged to be **NEGLIGIBLE**, owing to the negligible scale and geographical extent of the landscape change, which offset the long-term duration.

*Assessment of Landscape Effects and Significance*

13.85 The sensitivity of the rural section of LCT1 was assessed as LOW. The magnitude of landscape change was assessed as NEGLIBLE. In combination the landscape effects for all landscape receptors are judged to be **NEGLIGIBLE**. This is not considered to be significant landscape effect.

**Post – Operational Stage Landscape Effects**

13.86 The post-operational stage of the proposed development, for the purpose of this assessment, is considered to be the period following the completion of the extraction and restoration activities. Those areas above the water level within the quarry void will become more and more vegetated on completion of the restoration works and the site will therefore more and more merge with the surrounding landscape. As a result, the effects on all landscape receptors will reduce to **NEGLIGIBLE-NONE** at the post-operational stage.

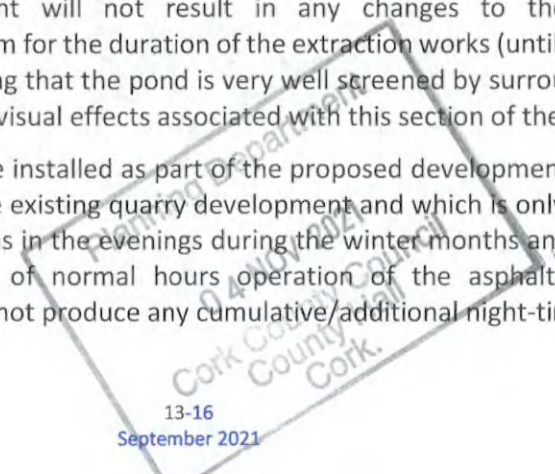
**Operational Stage Visual Effects**

13.87 For the duration of the operational stage, i.e. the extraction and restoration stage, the overall quarry development and in particular the quarry void will remain screened in views from the vast majority of locations within the study area, except for a small number of locations within 2-3km to the south-west of the application area. The only viewpoints, including residential properties with views, are those identified as part of the VRG 1 earlier in this chapter (refer to **Table 13-2 and Figure 13-1**).

13.88 **VRG 1:** In a number of views from elevated locations on the northside of Great Island, the existing visible sections of the eastern quarry face will be pushed back slightly. Also, the removal of stockpiles and the early stages of the lowering of the quarry floor will be visible. Once the quarry floor within the visible area has been lowered by one bench, all further extraction activities will be fully screened. Any activities associated with the extraction works, e.g. the transport of material from the extraction void to the processing area, will not change from what is currently visible.

13.89 The proposed development will not result in any changes to the existing settlement pond/infiltration pond system for the duration of the extraction works (until final restoration of the overall site). Also, considering that the pond is very well screened by surrounding topography and vegetation, there will be no visual effects associated with this section of the application area.

13.90 No additional lighting will be installed as part of the proposed development over and above what is already present within the existing quarry development and which is only in use during working hours, i.e. for short durations in the evenings during the winter months and during the permitted number of days with out of normal hours operation of the asphalt plant. The proposed development will therefore not produce any cumulative/additional night-time light pollution.



*Visual Receptor Sensitivity*

13.91 The value placed on views for each of the VRGs identified earlier (refer to **Table 13-2** above) is described in **Table 13-5** below. Also, the susceptibility to change of each of the receptor types (as per the LVIA Methodology in **Appendix 13-A**) present within the VRGs is stated and a judgement of the overall sensitivity made.

**Table 13-5**  
**Sensitivity of Visual Receptors**

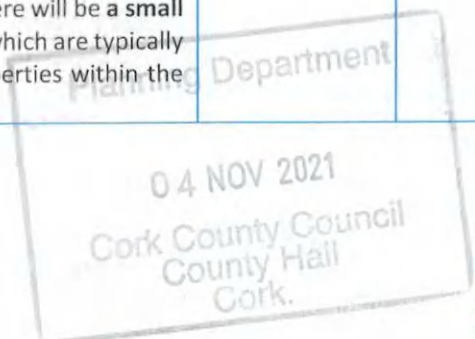
VRG	Value	Susceptibility	Sensitivity
1	No designated or locally promoted views towards the application area. <b>LOW</b>	Residents: <b>HIGH</b> Road users (views incidental to journey): <b>LOW</b>	<b>MEDIUM</b>  <b>LOW</b>

*Magnitude of Visual Change*

13.92 The magnitude of change to views for each of the VRGs, in terms of the size/scale, geographical extent and duration/reversibility is described in **Table 13-6** below. A judgment of the overall magnitude of change to views for each VRG is also provided.

**Table 13-6**  
**Factors of Magnitude of Visual Change**

VRG	Description of Factors of Visual Change	Level of Effect	Magnitude
1	<p><b>Size &amp; Scale:</b></p> <p>The visual changes will be <b>fully contained within the existing quarry development</b>, which is visible as a <b>narrow band in the midground</b> of available views, at a <b>distance of 2-3km</b>. <b>No characteristic elements will be removed, or new elements added</b> to these views.</p> <p>The <b>composition of the views will be barely altered</b> and the <b>changes barely perceptible</b>.</p> <p>It should be noted that the recently permitted readymix concrete batching plant and ground limestone processing plant (Plan File Ref. No. 20/04124) will, if constructed, also become visible in views for this VRG, to the left of the existing asphalt plant. Considering the location of the currently proposed development behind this plant its visibility will be further reduced, once the plant is constructed.</p>	<b>NEGLIGIBLE</b>	<b>NEGLIGIBLE</b> (owing mainly to the negligible scale and temporary duration)
	<p><b>Geographical Extent:</b></p> <p>The views are intermittently available from <b>limited sections of three linear routes</b>, i.e. 1,200m in total, as indicated on <b>Figure 13-1</b>. There will be a <b>small number of viewers</b>, consisting of the users of these roads, which are typically used by locals only and the residents of a number of properties within the area.</p>	<b>SMALL</b>	



VRG	Description of Factors of Visual Change	Level of Effect	Magnitude
	<p><b>Duration/Reversibility:</b></p> <p>The works associated with the changes to the eastern quarry face and lowering of the visible section of the quarry floor will be visible for a limited duration during the operational stage of the proposed development, <b>i.e. less than 5 years.</b></p> <p>While the eastern quarry face will continue to be visible over the course of the operational stage, crevices within the face are likely to be colonised with grass and scrub species and the stone will become weathered, both of which will soften its appearance. This could be regarded as a partial reversal of the visual effects.</p>	<p><b>TEMPORARY / SHORT-TERM REVERSIBLE</b></p>	

*Assessment of Visual Effects and Significance*

13.93 The sensitivity of residents within **VRG 1** was assessed as MEDIUM and that of road users as LOW. The magnitude of change on views from within VRG 1 was assessed as NEGLIGIBLE. In combination the visual effect on residents is judged to be **MINOR/NEGLIGIBLE** and that on road users as **NEGLIGIBLE**. Both are not considered to be significant visual effects.

**Post – Operational Stage Visual Effects**

13.94 On completion of all restoration works (i.e. the operational stage), the vegetation cover within the site will increase more and more. The emerging grass and scrub vegetation will be similar to that visible along the site boundaries and in surrounding fields and therefore the site will increasingly merge with the surrounding landscape. The visibility of the eastern quarry face will diminish further over time, as the rock continues to weather, and more and more vegetation will grow in its crevices. As a result, the visual effects for all visual receptors will reduce to **NEGLIGIBLE** at the post-operational stage.

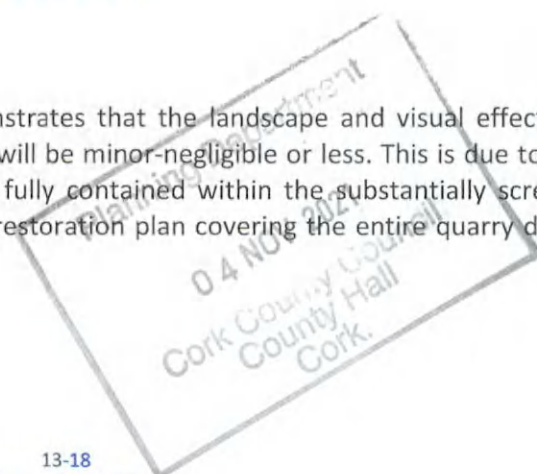
**Direct/Indirect Effects**

13.95 All landscape and visual effects described above are direct effects. The proposed development is not considered to have indirect effects in landscape and visual terms, i.e. the proposed development is unlikely to cause consequential changes to the surrounding landscape character areas or to existing views of the areas surrounding the application site.

**Compliance with relevant Planning Policies**

*Mineral Extraction*

13.96 The above impact assessment demonstrates that the landscape and visual effects, due to the proposed development on the whole will be minor-negligible or less. This is due to the design of the proposed development, which is fully contained within the substantially screened existing quarry development. Furthermore, a restoration plan covering the entire quarry development is provided.



- 13.97 It is therefore considered that the proposed development is in compliance with **Objective EE 12-3** contained in the current Cork CDP, as well as the proposed provision with regard to 'Mineral Extraction' in the Draft CCDP 2021.

## Landscape

- 13.98 The above landscape and visual impact assessment had regard to the Cork County Draft Landscape Strategy and has shown that the landscape and visual effects, due to the proposed development on the whole will be minor-negligible or less.
- 13.99 While located in a High Value Landscape, the location and design of the proposed development ensures that it does not become any more visible than the existing quarry development, which is substantially screened. No skylines or ridgelines will be affected by the proposed development, which will only require the removal of a small amount of scrub vegetation.
- 13.100 In light of the above, it is considered that the proposed development is in compliance with **Objective GI 6-1** and **Objective GI 6-2** contained in the current Cork CDP, as well as the proposed **Objectives GI 14-9** and **GI 14-10** in the Draft CCDP 2021.

## Views and Prospects

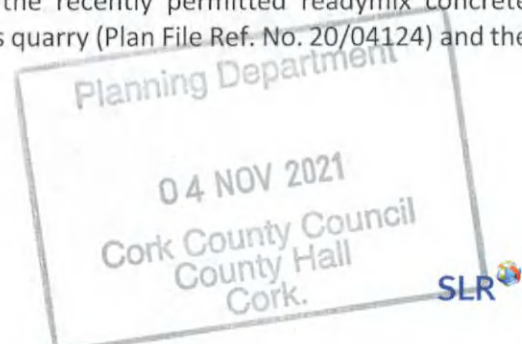
- 13.101 The above visual assessment has shown that the proposed development will not be visible in conjunction with sea/river views (i.e. the Great Island Channel) in the vast majority of such views within the study area, as illustrated by **Viewpoints B, D & F** on **Figures 13-2, 13-3 & 13-4**. In the small number of available views the visual effects were assessed as minor-negligible (refer to **Viewpoint A on Figure 13-2 and VRG 1 above**). It was concluded that the composition and visual amenity of these views will be barely altered, and it is therefore considered that the character of these views will be preserved, thereby complying with **Objective GI 7-1** contained in the current Cork CDP.
- 13.102 Further to that the above visual assessment has shown that there will be no views of the proposed development from scenic routes within the study area, as also illustrated by **Viewpoints B, D & F** on **Figures 13-2, 13-3 & 13-4**. It is therefore considered that the proposed development is in compliance with **Objective GI 7-2** and **Objective GI 7-3** contained in the current Cork CDP, as well as the proposed **Objectives GI 14-12, GI 14-13** and **GI 14-14** in the Draft CCDP 2021.

## Unplanned Events (i.e. Accidents)

- 13.103 It is highly unlikely that any unplanned events within the application area would result in noticeable landscape or visual impact.

## Cumulative / Synergistic Impacts

- 13.104 Considering the containment of the proposed development within the existing quarry, cumulative landscape or visual impacts with any other existing developments or developments currently in the planning process are highly unlikely. This includes the recently permitted readymix concrete batching and ground limestone processing plant at this quarry (Plan File Ref. No. 20/04124) and the existing adjacent quarry operated by Kilsaran.



## Transboundary Impacts

13.105 The proposed development is not located in the vicinity of a national boundary. Therefore, transboundary landscape or visual impacts will not arise.

## Interaction with Other Impacts

13.106 There are no known interactions with other impacts.

## 'Do-nothing Scenario'

13.107 If no further works within the application site were to be carried out, the extraction works would be continued within the same extraction area as what is proposed, but to the level of -20m OD, as per the current planning permission (ABP Ref. PL04.QD.0010). The restoration of the site under this permission would also be to a natural habitat, similar to what is currently suggested. Therefore, there would be no difference with regard to the landscape or visual effects between the 'Do-nothing Scenario' and what is currently proposed, except for the timeframe within which the site would be restored.



## MITIGATION MEASURES

### Operational Stage

- 13.108 The location within the existing quarry, as well as the substantial screening provided by the topography and vegetation along the site boundaries are the main mitigating factor minimising the landscape and visual impacts associated with the proposed development. It is proposed to retain all vegetation along the site boundaries.
- 13.109 This combined with the proposed restoration of the quarry development to a natural habitat (i.e. quarry void to naturally fill with water, some incidental woodland planting, grass seeding of larger areas and grass/scrub vegetation to be allowed to naturally colonise the remainder of the areas above the final water level) will help the integration of the site into the local landscape. No further landscape or visual mitigation measures are considered necessary at this stage. Please refer to the Restoration Plan, provided in Chapter 2 of this EIAR, for the restoration proposals.

### Post – Operational Stage

- 13.110 During the post-operational stage, the vegetation within the restored quarry area will continue to mature and the site will more and more merge with the surrounding landscape. Additional landscape or visual mitigation measures at the post-operational stage are therefore not found necessary.

## RESIDUAL IMPACT ASSESSMENT

### Operational Stage

- 13.111 As no additional mitigation measures are required during the operational stage, the residual levels of landscape and visual effects will be as per the assessment above. In summary, the assessment has found that the proposed development will have negligible landscape effects during the operational stage (i.e. levels of impact not considered to be significant).
- 13.112 The visual effects on views ranges from none for the vast majority of locations within the study area, to minor/negligible or negligible for a small number of locations within 2-3km south-west of the application area (i.e. impacts not regarded as significant).

### Post – Operational Stage

- 13.113 As no additional mitigation measures are required during the post-operational stage, the residual landscape and visual effects will be as per the assessment above. In summary, on completion of all restoration works all predicted landscape and visual effects will reduce to negligible or less.

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## MONITORING

13.114 There are no monitoring requirements, arising from this landscape and visual assessment.

## REFERENCES

**Environmental Protection Agency (August 2017)** Guidelines on the Information to be contained in Environmental Impact Assessment Reports - Draft, EPA Ireland

**The Landscape Institute with the Institute of Environmental Management and Assessment (2013)** Guidelines for Landscape and Visual Impact Assessment, Third Edition, Routledge

**The Landscape Institute (2019)** Technical Guidance Note 06/19: Visual Representation of Development Proposals, Landscape Institute

**The Landscape Institute (2021)** Technical Guidance Note 02/21: Assessing landscape value outside national designations, Landscape Institute



## APPENDICES

Planning Department  
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Cork County Council  
County Hall  
Cork.

## Appendix 13-A – Method used in Assessing Landscape and Visual Impact Effects

### Introduction

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify the effects of development on “*landscape as an environmental resource in its own right and on people’s views and visual amenity*” (GLVIA3, paragraph 1.1). GLVIA3<sup>8</sup> (paragraph 2.22) states that these two elements, although inter-related, should be assessed separately. GLVIA3 is the main source of guidance on LVIA.

Landscape is a definable set of characteristics resulting from the interaction of natural, physical and human factors: it is a resource in its own right. Its assessment is distinct from visual assessment, which deals specifically with effects on the views and visual amenity of different groups of people at particular locations. Clear separation of these two topics is recommended in GLVIA3.

As GLVIA3 (paragraph 2.23) states, professional judgement is an important part of the LVIA process: whilst there may be some scope for objective measurement of landscape and visual changes, much of the assessment must rely on qualitative judgements. It is critical that these judgements are based upon a clear and transparent method so that the reasoning can be followed and examined by others.

Impacts can be defined as the action being taken, whereas effects are the changes result from that action. This method of assessment assesses landscape and visual effects.

Landscape and visual effects can be positive, negative or neutral in nature. Positive effects are those which enhance and/or reinforce the characteristics which are valued. Negative effects are those which remove and/or undermine the characteristics which are valued. Neutral effects are changes which are consistent with the characteristics of the landscape or view.

In LVIA’s which form part of an EIA, it is necessary to identify significant and non-significant effects. In non-EIA LVIA’s, also known as appraisals, the same principles and process as LVIA may be applied but, in so doing, it is not required to establish whether the effects arising are or are not significant given that the exercise is not being undertaken for EIA purposes (see GLVIA3 statement of clarification 1/13 10-06-13, Landscape Institute).



<sup>8</sup> Landscape Institute and Institute of Environmental Management and Assessment ‘Guidelines for Landscape and Visual Impact Assessment’ (Third Edition, April 2013)

## Landscape Effects

Landscape, as defined in the European Landscape Convention, is “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”, (Council of Europe, 2000). Landscape does not apply only to special or designated places, nor is it limited to countryside.

GLVIA3 (paragraph 5.34) recommends that the effect of the development on landscape receptors is assessed. Landscape receptors are the components of the landscape that are likely to be affected by the proposed development, and can include individual elements (such as hedges or buildings), aesthetic and perceptual aspects (for example sense of naturalness, tranquillity or openness), or, at a larger scale, the character of a defined character area or landscape type. Designated landscapes, such as National Parks or Areas of Outstanding Natural Beauty (AONBs), may also be treated as landscape receptors, in which case attention is also given to effects on their special qualities.

This assessment is being undertaken because the proposed development has the potential to remove or add elements to the landscape, to alter aesthetic or perceptual aspects, and to add, remove or alter characteristics and thus potentially change overall character.

Judging landscape effects requires a methodical assessment of the sensitivity of the landscape receptors to the proposed development and the magnitude of effect which would be experienced by each receptor. The criteria and definitions used in making these judgements are set out below.

### Landscape Sensitivity

The sensitivity of landscape receptors is assessed by combining assessments of the value attached to each receptor and the susceptibility of each receptor to the type of change which is proposed. (GLVIA3, paragraph 5.39).

### Value Attached to Landscape Receptors

Landscape receptors may be valued at community, local, national or international level. Existing landscape designations provide the starting point for this assessment, as set out in **Table 13A-1** below.

The table sets out the interpretation of landscape designations in terms of the value attached to different landscape receptors. As GLVIA3 (paragraph 5.24) notes, at the local scale of an LVIA study area it may be found that the landscape value of a specific area may sometimes be different to that suggested by the presence or absence of a formal designation.



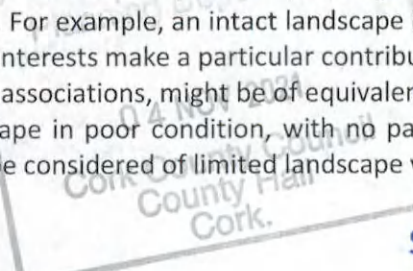
**Table 13A-1: Interpretation of Landscape Designations**

Designation	Description	Value
World Heritage Sites, candidate World Heritage Site	Unique sites, features or areas identified as being of international importance according to UNESCO criteria. Consideration should be given to their settings especially where these contribute to the attributes of outstanding universal value for which such an area of landscape is valued.	International
National Parks	Areas of landscape identified as being of national importance. Consideration should be given to their settings especially where these contribute to the special qualities for which the landscape is valued.	National
Local Landscape Designations (such as Areas of High Amenity) included in local planning documents; or other landscapes of identified value	Areas of landscape identified as having value, which are either recognised at the local authority level by a local designation or other equivalent recognition of value OR are landscapes considered to have elevated value, having regard to the criteria in Table 2 below and/or by virtue of demonstrable physical attributes.	Local Authority
Undesignated landscapes	Landscapes which do not have any formal designation, and which are not considered to have demonstrable physical attributes that elevate their value, but which may be valued by local communities.	Community
Undesignated landscapes with negative attributes	Landscapes with no designations or demonstrable physical attributes that elevate their value, which are in poor condition or are degraded or fundamentally altered by presence of man-made structures judged to be intrusive.	Low

Where landscapes are not designated and where no other local authority guidance on value is available, an assessment is made by reference to criteria in the **Table 13A-2** below. This is based on Table 1 of Landscape Institute Technical Guidance Note 2/21. These factors are not fixed and should be reviewed on a case-by-case basis. When assessing landscape value of a site it is important to consider not only the site itself but also its context.

Landscapes may be judged to be of local authority or community value on the basis of one or more of these factors. There may also be occasional circumstances where an undesignated landscape may be judged to be of national value, for example where it has a clear connection with a nationally designated landscape or is otherwise considered to be of equivalent value to a national designation. Similarly, on occasions there may be areas within designated landscapes that do not meet the designation criteria or demonstrate the key characteristics/special qualities in a way that is consistent with the rest of the designated area.

An overall assessment is made for each landscape receptor, based on an overview of the above criteria, to determine its value - whether for example it is comparable to a local authority landscape designation or similar, or whether it is of value to local people and communities. For example, an intact landscape in good condition, where scenic quality, tranquillity, and/or conservation interests make a particular contribution to the landscape, or where there are important cultural or historical associations, might be of equivalent value to a local landscape designation. Conversely, a degraded landscape in poor condition, with no particular scenic qualities or natural or cultural heritage interest is likely to be considered of limited landscape value.



**Table 13A-2: Factors Considered in Assessing the Value of Non-Designated Landscapes**

Factor	Criteria
<b>Natural Heritage</b>	Landscape with clear evidence of ecological, geological, geomorphological or physiographic interest. Presence of wildlife and habitats that contribute to the sense of place. Landscape which contains valued natural capital assets that contribute to ecosystem services.
<b>Cultural Heritage</b>	Landscape with clear evidence of archaeological, historical or cultural interest. Landscape which contributes to the significance of heritage assets. Landscape which offers a dimension of time depth.
<b>Landscape Condition</b>	Landscape which is in a good physical state both with regard to individual elements and overall landscape structure. Absence of detracting/incongruous features.
<b>Associations</b>	Landscape which is connected with notable people, events and the arts.
<b>Distinctiveness</b>	Landscape that has a strong sense of identity or place. Presence of distinctive features that are characteristic of a place, or presence of rare/unusual features that confer a strong sense of place. Includes landscape that makes an important contribution to the character or identity of a settlement.
<b>Recreational</b>	Landscape offering recreational opportunities where experience of landscape is important. Includes open access areas, common land and rights of way where appreciation of the landscape is an important element of the experience. Landscape that forms part of a view that that is important to the enjoyment of a recreational activity.
<b>Perceptual (Scenic)</b>	Landscape that appeals to the senses, primarily the visual sense. Distinctive features, or distinctive combinations of features. Strong aesthetic qualities. Visual diversity or contrasts. Memorable/distinctive views or landmarks, or landscape that contributes to these.
<b>Perceptual (Wildness and Tranquillity)</b>	Landscape with a strong perceptual value notably remoteness, wildness, tranquillity and/or dark skies.
<b>Functional</b>	Landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape. Natural hydrological systems, important parts of the green infrastructure network, pollinator rich habitats. Landscapes that have strong physical or functional links with an adjacent national landscape designation or are important to the appreciation of the designated landscape and its special qualities.

**Susceptibility of Landscape Receptors to Change**

As set out in GLVIA3, susceptibility refers to the ability of the landscape receptor to “accommodate the proposed development without undue adverse consequences for the baseline situation and/or the achievement of landscape planning policies and strategies”. Judgement of susceptibility is particular to the specific characteristics of the proposed development and the ability of a particular landscape or feature to accommodate the type of change proposed, and makes reference to the criteria set out in **Table 13A-3** below. Aspects of the character of the landscape that may be affected by a particular type of development include landform, skylines, land cover, enclosure, human influences including settlement pattern and aesthetic and perceptual aspects such as the scale of the landscape, its form, line, texture, pattern and grain, complexity, and its sense of movement, remoteness, wildness or tranquillity.

For example, an urban landscape which contains a number of industrial buildings may have a low susceptibility to buildings of a similar scale and character. Conversely a rural landscape containing only remote farmsteads is likely to have a high susceptibility to large scale built development.

**Table 13A-3: Landscape Receptor Susceptibility to Change**

Susceptibility	Criteria
High	The landscape receptor is highly susceptible to the proposed development because the key characteristics of the landscape have no or very limited ability to accommodate it without transformational adverse effects, taking account of the existing character and quality of the landscape.
Medium	The landscape receptor is moderately susceptible to the proposed development because the relevant characteristics of the landscape have some ability to accommodate it without transformational adverse effects, taking account of the existing character and quality of the landscape.
Low	The landscape receptor has low susceptibility to the proposed development because the relevant characteristics of the landscape are generally able to accommodate it without transformational adverse effects, taking account of the existing character and quality of the landscape.

**Defining Sensitivity**

As has been noted above, the sensitivity of landscape receptors is defined in terms of the relationship between value and susceptibility to change as indicated in **Figure 13A-1** below. This summarises the general nature of the relationship, but it is not formulaic and only indicates general categories of sensitivity. Professional judgement is applied on a case-by-case basis in determining sensitivity of individual receptors with the diagram only serving as a guide.

**Table 13A-4** below summarises the nature of the relationship but it is not formulaic and only indicates general categories of sensitivity. Judgements are made about each landscape receptor, with the table serving as a guide.

Where, taking into account the component judgements about the value and susceptibility of the landscape receptor, sensitivity is judged to lie between levels, an intermediate assessment of high/medium or medium/low is adopted. In a few limited cases a category of less than low (very low) may be used where the landscape is of low value and susceptibility is particularly low.



Figure 13A-1: Levels of Sensitivity defined by Value and Susceptibility of Landscape Receptors

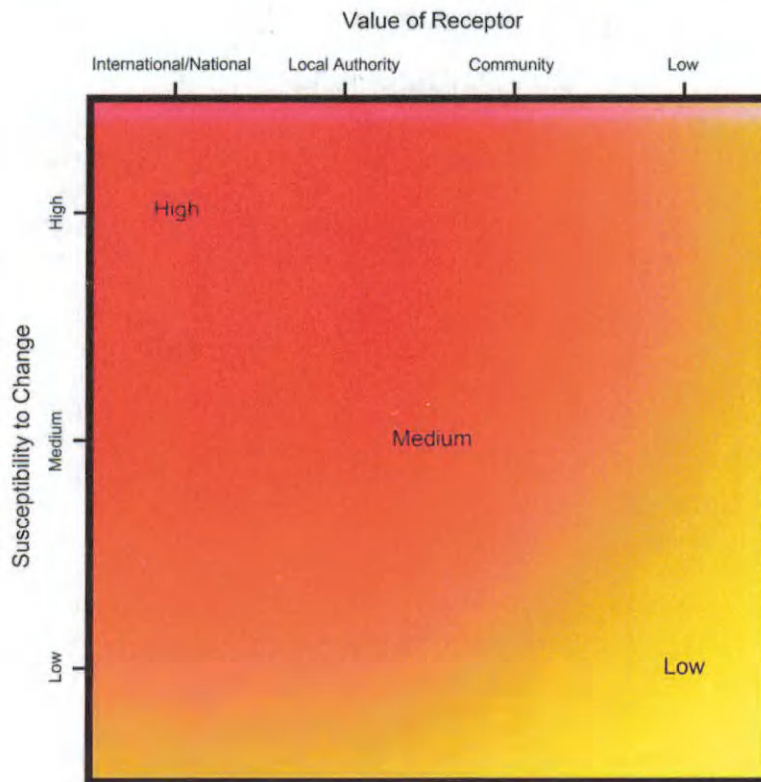


Table 13A-4: Example Levels of Sensitivity defined by Value and Susceptibility of Landscape Receptors

Sensitivity	Criteria
High	The landscape receptor is of international or national value and is considered to have high susceptibility to the effects of the proposed development OR The landscape receptor is of national value and is considered to have medium susceptibility to the effects of the proposed development
Medium	The landscape receptor is of international or national value and is considered to have low susceptibility to the effects of the proposed development OR The landscape receptor is of local authority value and is considered to have high susceptibility to the effects of the proposed development OR The landscape receptor is of local authority value and is considered to have medium susceptibility to the effects of the proposed development OR The landscape receptor is of community value and is considered to have high susceptibility to the effects of the proposed development

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Sensitivity	Criteria
Low	<p>The landscape receptor is of local authority value and is considered to have low susceptibility to the effects of the proposed development</p> <p>OR</p> <p>The landscape receptor is of community value and is considered to have medium susceptibility to the effects of the proposed development</p> <p>OR</p> <p>The landscape receptor is of community value and is considered to have low susceptibility to the effects of the proposed development</p>

**Magnitude of Landscape Change**

The magnitude of landscape change is established by assessing the size or scale of change, the geographical extent of the area influenced and the duration and potential reversibility of the change.

**Size and Scale of Change**

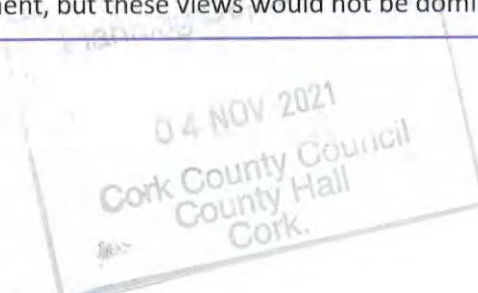
The size and/or scale of change in the landscape takes into consideration the following factors:

- the extent/proportion of landscape elements lost or added; and/or
- the degree to which aesthetic/perceptual aspects are altered; and
- whether this is likely to change the key characteristics of the landscape.

The criteria used to assess the size and scale of landscape change are based upon the amount of change that will occur as a result of the proposed development, as described in **Table 13A-5** below.

**Table 13A-5: Magnitude of Landscape Change - Size/Scale of Change**

Category	Description
Large level of landscape change	<p>There would be a large level of change in landscape character, and especially to the key characteristics if, for example, the proposed development:</p> <ul style="list-style-type: none"> <li>• becomes a dominant feature in the landscape, changing the balance of landscape characteristics; and/or</li> <li>• would dominate important visual connections with other landscape types, where this is a key characteristic of the area.</li> </ul>
Medium level of landscape change	<p>There would be a medium level of change in landscape character, and especially to the key characteristics if, for example:</p> <ul style="list-style-type: none"> <li>• the proposed development would be more prominent but would not change the overall balance or composition of the landscape; and/or</li> <li>• key views to other landscape types may be interrupted intermittently by the proposed development, but these views would not be dominated by them.</li> </ul>



Category	Description
Small level of landscape change	There would be a small level of change in landscape character, and especially to the key characteristics if, for example: <ul style="list-style-type: none"> <li>there would be no introduction of new elements into the landscape and the proposed development would not significantly change the composition/balance of the landscape.</li> </ul>
Negligible/no level of landscape change	There would be a negligible or no level of change in landscape character, and especially to the key characteristics if, for example, the proposed development would be a small element and/or would be a considerable distance from the receptor.

### Geographical Extent of Change

The geographical extent of landscape change is assessed by determining the area over which the changes will influence the landscape, as set out in **Table 13A-6**. For example, this could be at the site level, in the immediate setting of the site, or over some or all of the landscape character types or areas affected.

**Table 13A-6: Magnitude of Landscape Change - Geographical Extent**

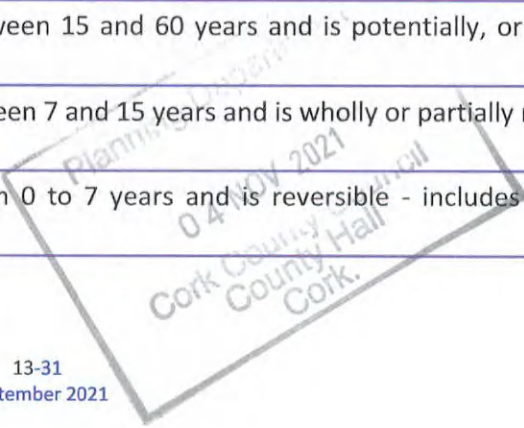
Category	Description
Large extent of landscape change	The change will affect all of, or a large proportion of, the landscape receptor under consideration.
Medium extent of landscape change	The change will affect a moderate proportion of the landscape receptor under consideration.
Small extent of landscape change	The change will affect a small extent of the landscape receptor under consideration. A localised change.
Negligible extent of landscape change	The change will affect only a negligible extent of the landscape receptor under consideration.

### Duration and Reversibility of Change

The duration of the landscape change is categorised in **Table 13A-7** below, which considers whether the change will be permanent and irreversible or temporary and reversible. The levels of duration are based on the EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (2017).

**Table 13A-7: Duration and Reversibility**

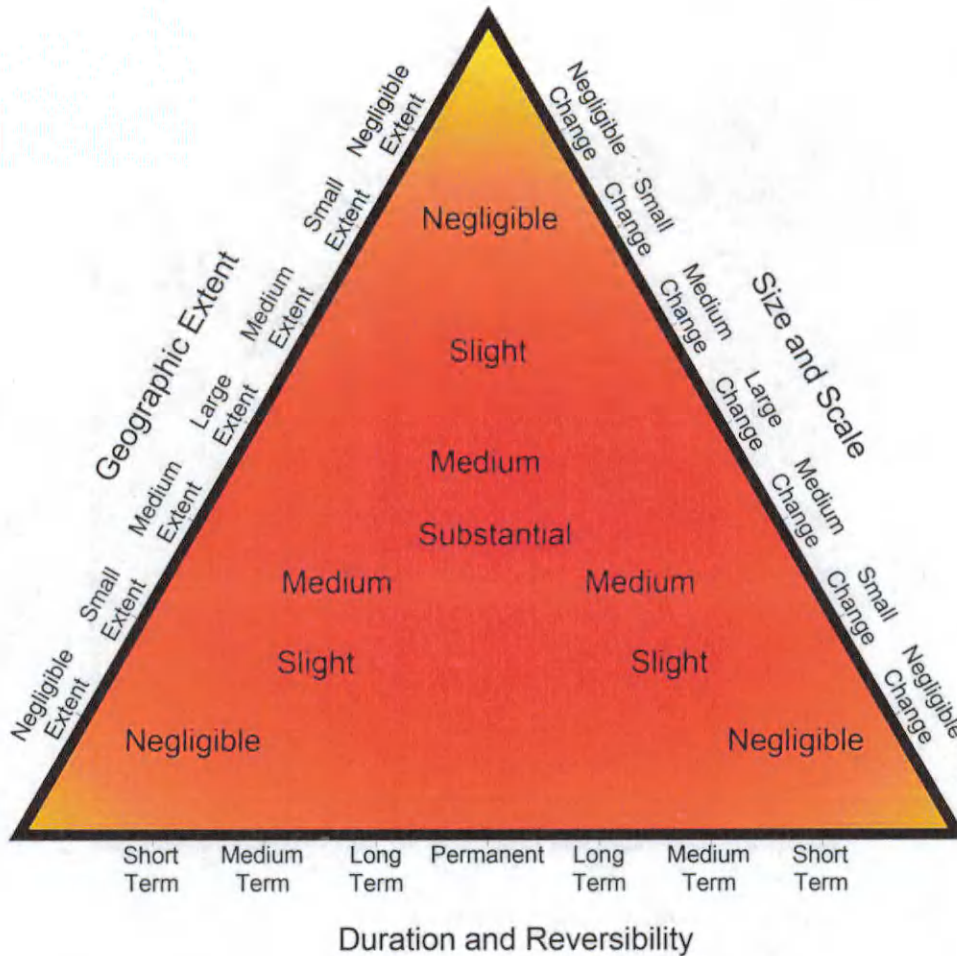
Category	Description
Permanent/ Irreversible	Change that will last for over 60 years and is deemed permanent or irreversible.
Long-term reversible	Change that will last between 15 and 60 years and is potentially, or theoretically reversible.
Medium-term reversible	Change that will last between 7 and 15 years and is wholly or partially reversible.
Temporary/ Short-term reversible	Change that will last from 0 to 7 years and is reversible - includes construction effects.



**Deciding on Overall Magnitude of Landscape Change**

The relationships between the three factors that contribute to assessment of the magnitude of landscape effects are illustrated graphically, as a guide, in **Figure 13A-2** below. Various combinations are possible, and the overall magnitude of each effect is determined using professional judgement rather than by formulaic application of the relationships in the diagram.

**Figure 13A-2: Determining the Magnitude of Landscape Change**

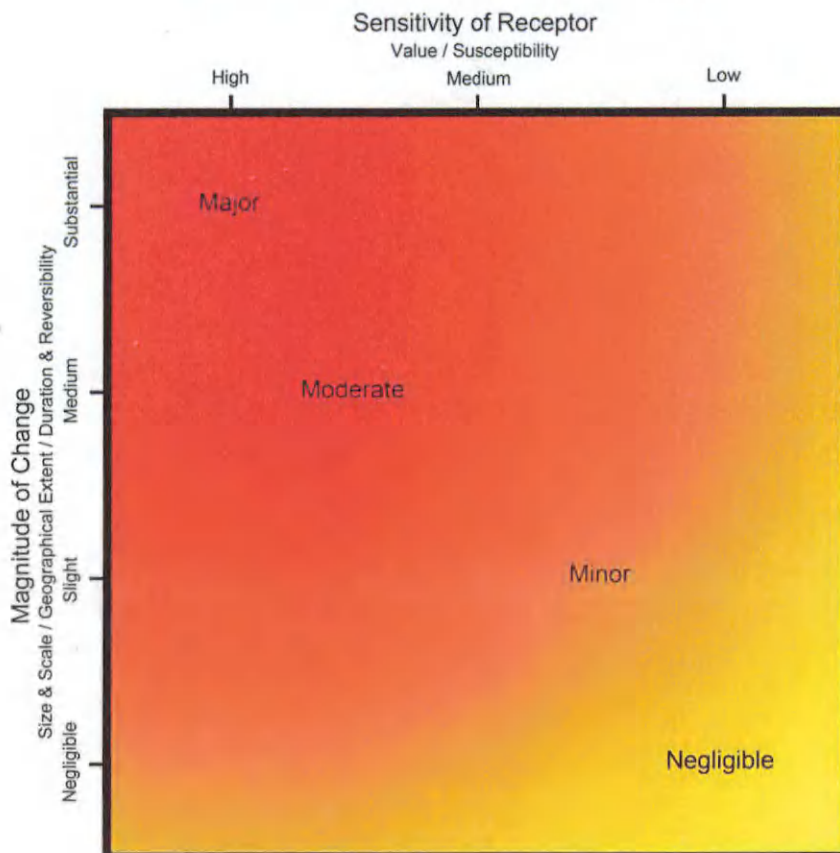


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Assessment of Landscape Effects

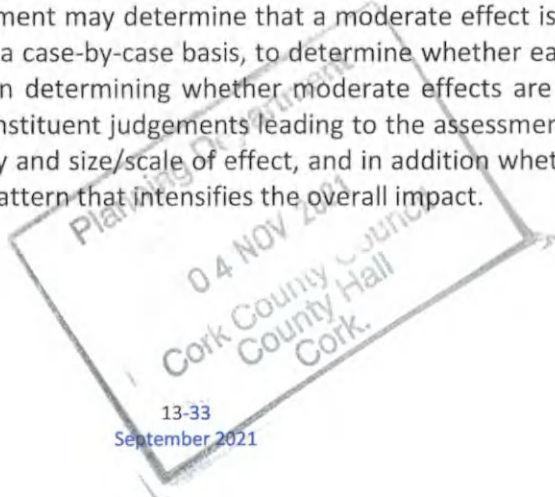
The assessment of landscape effects is defined in terms of the relationship between the sensitivity of the landscape receptors and the magnitude of the change. The diagram below (Figure 13A-3) summarises the nature of the relationship, but it is not formulaic. Judgements are made about each landscape effect using this diagram as a guide.

Figure 13A-3: Assessment of Landscape Effects



Assessment of Significance of Landscape Effects as part of EIA

Effects that fall in the red (darker) section of the above diagram, that is those which are considered to be major and major/moderate effects by virtue of the more sensitive receptors and the greater magnitude of effects, are generally considered to be the **significant landscape effects**. Those effects falling outside the major or major/moderate categories are generally considered to be not significant. However, it should be noted that GLVIA3 states ‘there are no hard and fast rules about what effects should be deemed significant’ and in some cases professional judgement may determine that a moderate effect is significant. Moderate effects are considered individually on a case-by-case basis, to determine whether each effect is considered to be significant or not significant. In determining whether moderate effects are or are not significant, particular attention is given to the constituent judgements leading to the assessment of a moderate effect and particularly to value, susceptibility and size/scale of effect, and in addition whether the effect is found across a number of receptors or in a pattern that intensifies the overall impact.



## Visual Effects

Visual effects are the effects of change and development on the views available to people and their visual amenity. Visual receptors are the people whose views may be affected by the proposed development. They generally include users of public rights of way or other recreational facilities or attractions; travellers who may pass through the study area because they are visiting, living or working there; residents living in the study area, either as individuals or, more often, as a community; and people at their place of work. They may include:

- Communities within settlements (i.e. towns and villages);
- Residents of individual properties and clusters of properties outside settlements;
- People using nationally designated or regionally promoted footpaths and cycle routes;
- Visitors at publicly accessible sites including, for example, gardens and designed landscapes, historic sites, and other visitor attractions or outdoor recreational facilities where the landscape or seascape is an important part of the experience;
- Users of outdoor sport and recreation facilities;
- Visitors staying at caravan parks or camp sites;
- Road users on recognised scenic or promoted tourist routes;
- Users of other roads;
- Rail passengers;
- People at their place of work.

Judging visual effects requires a methodical assessment of the sensitivity of the visual receptors to the proposed development and the magnitude of effect which would be experienced by each receptor.

Viewpoints are chosen, ideally in discussion with the competent authority and other stakeholders and interested parties, for a variety of reasons but most commonly because they represent views experienced by relevant groups of people.

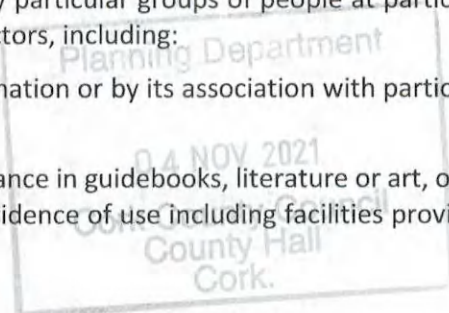
### Visual Sensitivity

Sensitivity of visual receptors is assessed by combining an assessment of the susceptibility of visual receptors to the type of change which is proposed with the value attached to the views (GLVIA3, paragraph 6.30).

### Value Attached to Views

Different levels of value are attached to the views experienced by particular groups of people at particular viewpoints. Assessment of value takes account of a number of factors, including:

- Recognition of the view through some form of planning designation or by its association with particular heritage assets; and
- The popularity of the viewpoint, in part denoted by its appearance in guidebooks, literature or art, or on tourist maps, by information from stakeholders and by the evidence of use including facilities provided for its enjoyment (seating, signage, parking places, etc.); and



- Other evidence of the value attached to views by people including consultation with local planning authorities, some of whom have carried out assessments of valued views, and professional assessment of the quality of views.

The assessment of the value of views is summarised in **Table 13A-8** below. These criteria are provided for guidance only.

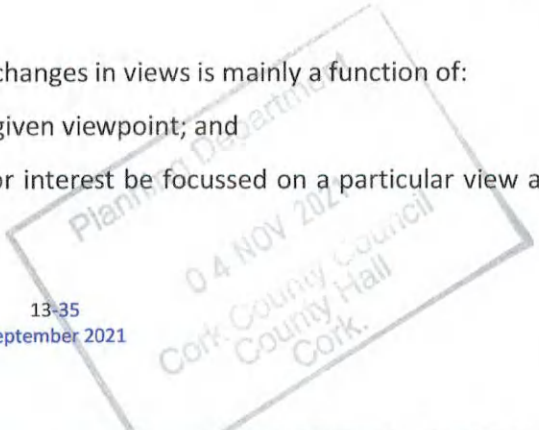
**Table 13A-8: Examples of Factors Considered in assessing the Value Attached to Views**

Value	Criteria
High	<p>Views from nationally (and in some cases internationally) known viewpoints, which:</p> <ul style="list-style-type: none"> <li>• have some form of planning designation; or</li> <li>• are associated with internationally or nationally designated landscapes or important heritage assets; or</li> <li>• are promoted in sources such as maps and tourist literature; or</li> <li>• are linked with important and popular visitor attractions where the view forms a recognised part of the visitor experience; or</li> <li>• have important cultural associations.</li> </ul> <p>Also, may include views judged by assessors to be of high value.</p>
Medium	<p>Views from viewpoints of some importance at regional or local levels, which:</p> <ul style="list-style-type: none"> <li>• have some form of local planning designation associated with locally designated landscapes or areas of equivalent landscape quality; or</li> <li>• are promoted in local sources; or</li> <li>• are linked with locally important and popular visitor attractions where the view forms a recognised part of the visitor experience; or</li> <li>• have important local cultural associations.</li> </ul> <p>Also, may include views judged by the assessors to be of medium value.</p>
Low	<p>Views from viewpoints which, although they may have value to local people:</p> <ul style="list-style-type: none"> <li>• have no formal planning status; or</li> <li>• are not associated with designated or otherwise high-quality landscapes; or</li> <li>• are not linked with popular visitor attractions; or</li> <li>• have no known cultural associations.</li> </ul> <p>Also, may include views judged by the assessors to be of low value.</p>

**Susceptibility of Visual Receptors to Change**

The susceptibility of different types of people to changes in views is mainly a function of:

- The occupation or activity of the viewer at a given viewpoint; and
- The extent to which the viewer's attention or interest be focussed on a particular view and the visual amenity experienced at a given view.



The susceptibility of different groups of viewers is assessed with reference to the guidance in **Table 13A-9** below. However, as noted in GLVIA3 “*this division is not black and white and, in reality, there will be a gradation in susceptibility to change*”. Therefore, the susceptibility of each group of people affected is considered for each project and assessments are included in the relevant text in the report.

**Table 13A-9: Visual Receptor Susceptibility to Change**

Susceptibility	Criteria
High	Residents; People engaged in outdoor recreation where their attention is likely to be focused on the landscape and on particular views; Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience; Communities where views contribute to the landscape setting enjoyed by the residents.
Medium	Travellers on scenic routes where the attention of drivers and passengers is likely to be focused on the landscape and on particular views. People engaged in outdoor sport or recreation, which may involve appreciation of views e.g. users of golf courses.
Low	People engaged in outdoor sport or recreation, which does not involve appreciation of views; People at their place of work whose attention is focused on their work; Travellers, where the view is incidental to the journey.

**Defining Sensitivity**

The sensitivity of visual receptors is defined in terms of the relationship between the value of views and the susceptibility of the different receptors to the proposed change. **Figure 13A-4** below summarises the nature of the relationship; it is not formulaic and only indicates general categories of sensitivity. Judgements are made on merit about each visual receptor, with the table below only serving as a guide. **Table 13A-10** sets down the main categories that may occur but again it is not comprehensive and other combinations may occur.



Figure 13A-4: Levels of Sensitivity Defined by Value and Susceptibility of Visual Receptor Groups

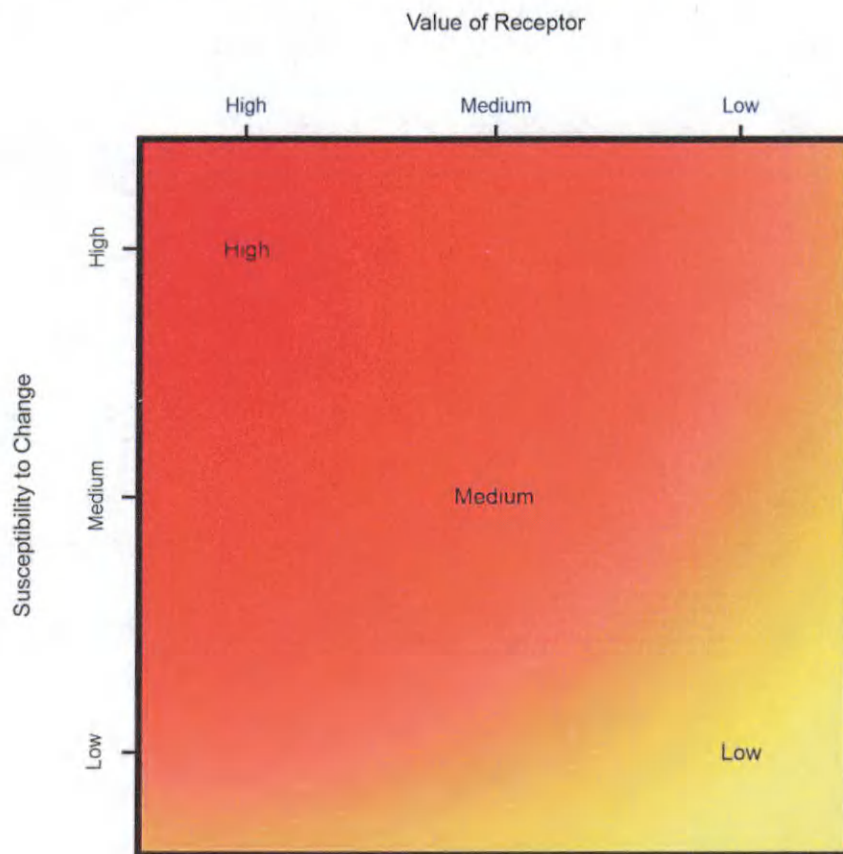


Table 13A-10: Example Levels of Sensitivity defined by Value and Susceptibility of Visual Receptors

Sensitivity	Criteria
High	The visual receptor group is highly susceptible to changes in views and visual amenity and relevant views are of high value OR The visual receptor group has a medium level of susceptibility to changes in views and visual amenity and relevant views are of high value
Medium	The visual receptor group is highly susceptible to changes in views and visual amenity and relevant views are of value at the medium level. OR The visual receptor group is highly susceptible to changes in views and visual amenity and relevant views are of value at the low level OR The visual receptor group has a medium level of susceptibility to changes in views and visual amenity and relevant views are of value at the medium level OR The visual receptor group has a low level of susceptibility to changes in views and visual amenity and relevant views are of value at the high level.

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Sensitivity	Criteria
Low	<p>The visual receptor group has a medium level of susceptibility to changes in views and visual amenity and relevant views are of value at the low level</p> <p>OR</p> <p>The visual receptor group has a low level of susceptibility to changes in views and visual amenity and relevant views are of value at the medium level</p> <p>OR</p> <p>The visual receptor group has a low level of susceptibility to changes in views and visual amenity and relevant views are of value at the low level.</p>

**Magnitude of Visual Change**

The magnitude of visual change is established by assessing the size or scale of change, the geographical extent of the area influenced and the duration and potential reversibility of the change.

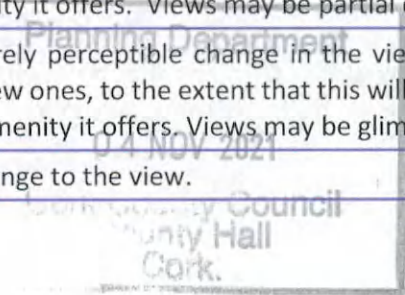
**Size and Scale of Change**

The criteria used to assess the size/scale of visual change are as follows and as summarised in the **Table 13A-11** below:

- the scale of the change in the view with respect to the loss or addition of features in the view, changes in its composition, including the proportion of the view occupied by the proposed development and distance of view;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of factors such as form, scale and mass, line, height, colour and texture; and
- the nature of the view of the proposed development, for example whether views will be full, partial or glimpses or sequential views while passing through the landscape.

**Table 13A-11: Size/Scale of Change**

Category	Criteria
Large visual change	The proposed development will cause a complete or large change in the view, resulting from the loss of important features in or the addition of important new ones, to the extent that this will substantially alter the composition of the view and the visual amenity it offers.
Medium visual change	The proposed development will cause a clearly noticeable change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will alter to a moderate degree the composition of the view and the visual amenity it offers. Views may be partial/intermittent.
Small visual change	The proposed development will cause a perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will partially alter the composition of the view and the visual amenity it offers. Views may be partial only.
Negligible visual change	The proposed development will cause a barely perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will barely alter the composition of the view and the visual amenity it offers. Views may be glimpsed only.
No change	The proposed development will cause no change to the view.



**Geographical Extent of Change**

The geographical extent of the visual change identified at representative viewpoints is assessed by reference to a combination of the Zone of Theoretical Visibility (ZTV), where this has been prepared, and field work, and consideration of the criteria in **Table 13A-12** below. Representative viewpoints are used as 'sample' points to assess the typical change experienced by different groups of visual receptors at different distances and directions from the proposed development. The geographical extent of the visual change is judged for each group of receptors: for example, people using a particular route or public amenity, drawing on the viewpoint assessments, plus information about the distribution of that particular group of people in the Study Area.

The following factors are considered for each representative viewpoint:

- the angle of view in relation to the main activity of the receptor;
- the distance of the viewpoint from the proposed development; and
- the extent of the area over which changes would be visible.

Thus, low levels of change identified at representative viewpoints may be extensive or limited in terms of the geographical area they are apparent from: for example, a view of the proposed development from elevated land may be widely visible from much or all of an accessible area, or may be confined to a small proportion of the area. Similarly, a view from a public footpath may be visible from a single isolated viewpoint, or over a prolonged stretch of the route. Community views may be experienced from a small number of dwellings or affect numerous residential properties.

**Table 13A-12: Geographical Extent of Change**

Category	Description
Large extent of visual change	The proposed development is seen by the group of receptors in many locations across the Study Area or from the majority of a linear route and/or by large numbers of viewers; or the effect on the specific view(s) is extensive.
Medium extent of visual change	The proposed development is seen by the group of receptors from a medium number of locations across the Study Area or from a medium part of a linear route and/or by a medium number of viewers; or the effect on the specific view is moderately extensive.
Small extent of visual change	The proposed development is seen by the group of receptors at a small number of locations across the Study Area or from only limited sections of a linear route and/or by a small number of viewers; or the effect on a specific view is small.
Negligible extent of visual change	The proposed development is either not visible in the Study Area or is seen by the receptor group at only one or two locations or from a very limited section of a linear route and/or by only a very small number of receptors; or the effect on the specific view is barely discernible.

**Duration and Reversibility of Change**

The duration of the visual change at viewpoints is categorised in **Table 13A-13** below, which considers whether views will be permanent and irreversible or temporary and reversible. The levels of duration are based on the EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (2017).

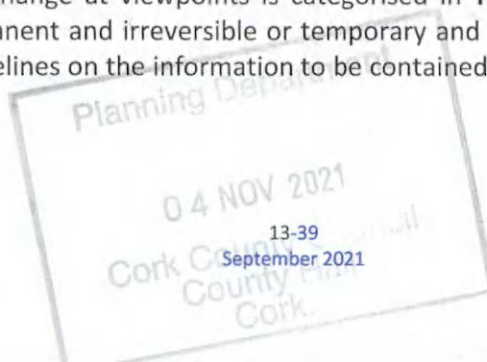


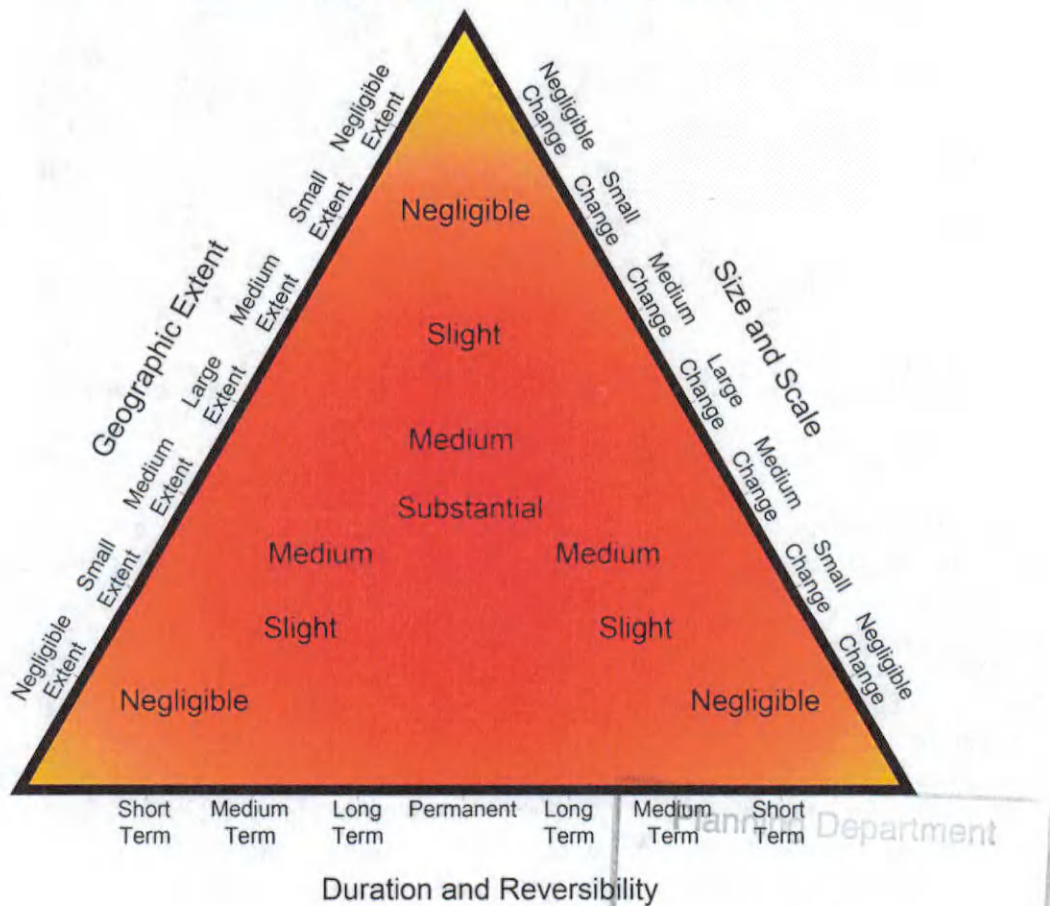
Table 13A-13: Duration and Reversibility

Category	Description
Permanent/ Irreversible	Change that will last for over 60 years and is deemed permanent or irreversible.
Long-term reversible	Change that will last between 15 and 60 years and is potentially, or theoretically reversible.
Medium-term reversible	Change that will last between 7 and 15 years and is wholly or partially reversible.
Temporary/ Short-term reversible	Change that will last from 0 to 7 years and is reversible - includes construction effects.

Deciding on Overall Magnitude of Visual Change

The relationships between the three factors that contribute to assessment of the magnitude of visual effects are illustrated graphically, as a guide, in Figure 13A-5 below. Various combinations are possible and the overall magnitude of each effect is judged on merit rather than by formulaic application of the relationships in the diagram.

Figure 13A-5: Determining the Magnitude of Visual Change

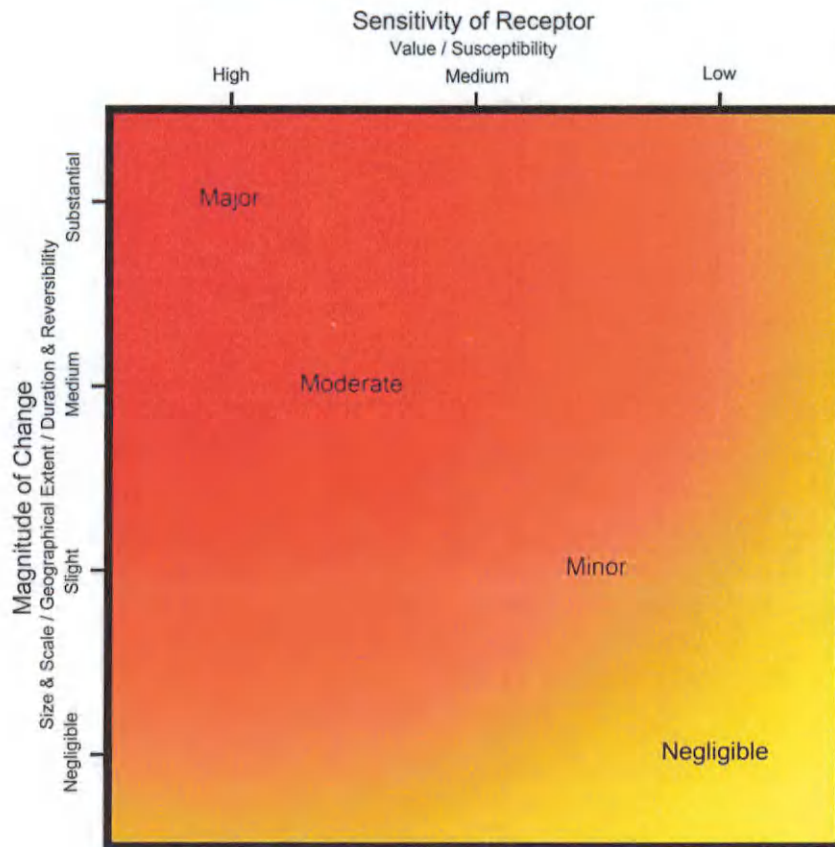


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Assessment of Visual Effects

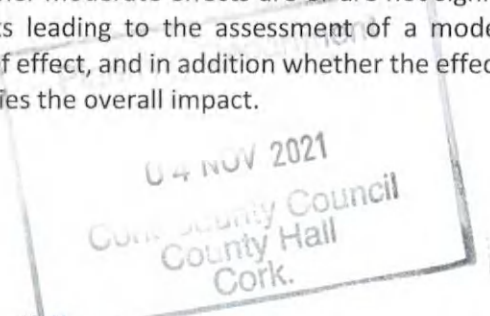
The assessment of visual effects is defined in terms of the relationship between the sensitivity of the visual receptors and the magnitude of the change. The diagram below (Figure 13A-6) summarises the nature of the relationship, but it is not formulaic and only indicates broad levels of effect. Judgements are made about each visual effect using this diagram as a guide.

Figure 13A-6: Assessment of Visual Effects



Assessment of Significance of Visual Effects as part of EIA

Effects that fall in the red (darker) section of the diagram, that is those which are considered to be major and major/moderate effects by virtue of the more sensitive receptors and the greater magnitude of effects, are generally considered to be the **significant landscape effects**. Those effects falling outside the major or major/moderate categories are generally considered to be not significant. However, it should be noted that GLVIA3 states ‘there are no hard and fast rules about what effects should be deemed significant’ and in some cases professional judgement may determine that a moderate effect is significant. Moderate effects are considered individually on a case-by-case basis, to determine whether each effect is considered to be significant or not significant. In determining whether moderate effects are or are not significant, particular attention is given to the constituent judgements leading to the assessment of a moderate effect and particularly to value, susceptibility and size/scale of effect, and in addition whether the effect is found across a number of receptors or in a pattern that intensifies the overall impact.



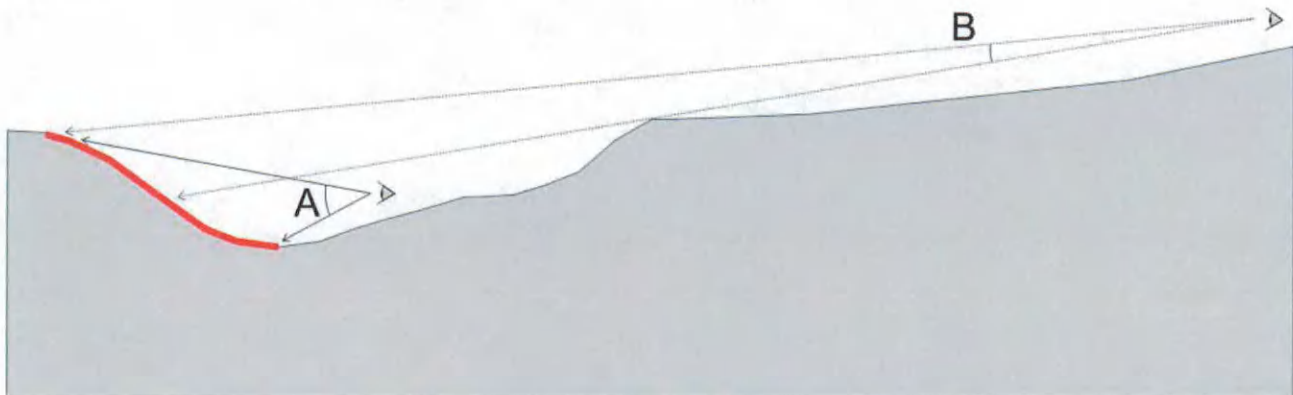
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**Appendix 13-B – Zone of Theoretical Visibility (ZTV) Methodology**

A Zone of Theoretical Visibility (ZTV) Study was conducted for the permitted and the proposed quarry layout to help identify areas sensitive to visual impacts, as well as to allow a comparison between the two designs. This study used the measurement of the vertical subtended angle for its methodology. This method is explained below and illustrated by Figure A, below.

When a Target Area (red) is observed from a Viewpoint (A or B) its apparent height can be measured in the form of degrees, to give a Subtended Vertical Angle.

Figure A:



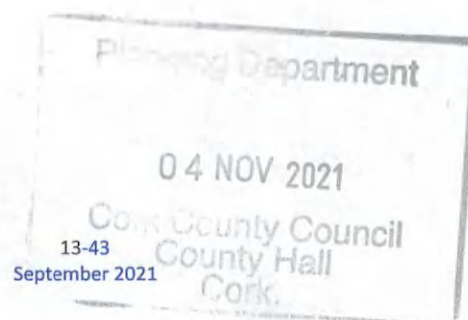
The use of the Subtended Vertical Angle in formulating a ZTV has the benefit of automatically reducing values to reflect the distance from the Target Area, and partial screening by intervening landforms. Generally the further the viewpoint is from the Target Area the smaller the Subtended Vertical Angle, reflecting the effect of distance on visual impacts.

Thus, in the example section above Viewpoint A experiences a higher subtended angle due to proximity to the red target area. Viewpoint B has a lower subtended angle due to greater distance from the target area and partial screening by intervening landform.

If the Subtended Vertical Angle is measured from a series of grid points for a particular Target Area, the resultant data can then be used to generate contours. Each contour level representing a certain vertical angle, and thus potential level of visibility.

The subtended vertical angle method of calculating ZTVs using LSS digital terrain modelling software has been proven by field investigation on numerous sites to be an accurate method of predicting areas of potential visibility for on-site investigation.

However, the computer generated ZTV study is undertaken using a bare earth landform to give the worst case scenario. In reality any built structures (settlements, walls etc) or areas of vegetation (woodlands, scrub and hedgerows) will reduce the actual visibility of the target area. Therefore, it is necessary to carry out fieldwork to validate the results of the ZTV.



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FIGURES

Figure 13-1  
Landscape Baseline and Viewpoint Locations

Figure 13-2  
Viewpoints A & B

Figure 13-3  
Viewpoints C & D

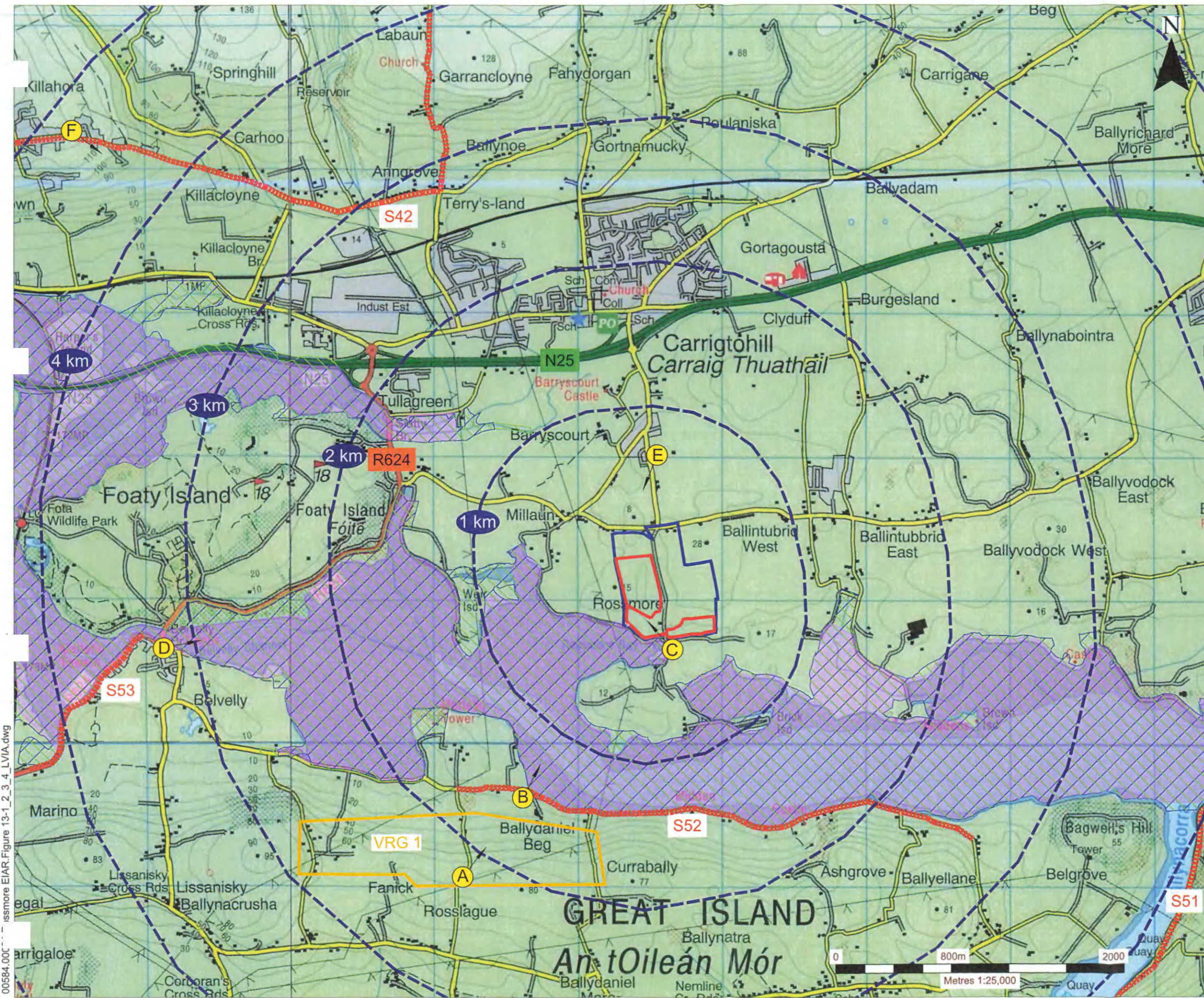
Figure 13-4  
Viewpoints E & F

Figure 13-5  
Zone of Theoretical Visibility (ZTV) Map – Permitted Quarry Layout

Figure 13-6  
Zone of Theoretical Visibility (ZTV) Map – Proposed Quarry Layout







**NOTES**

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- LEGEND**
- LAND OWNERSHIP BOUNDARY
  - APPLICATION AREA
  - VIEWPOINT LOCATIONS
  - DISTANCE FROM PROPOSED EXTRACTION AREA
  - VISUAL RECEPTOR GROUPS (I.E. RECEPTORS WITH SIMILAR VIEWS OF THE DEVELOPMENT)
- LANDSCAPE BASELINE**
- SCENIC ROUTES (CORK COUNTY DEVELOPMENT PLAN 2014)
  - SPECIAL PROTECTION AREAS (SPA)
  - SPECIAL AREA OF CONSERVATION (SAC)
  - PROPOSED NATURAL HERITAGE AREAS (pNHA)

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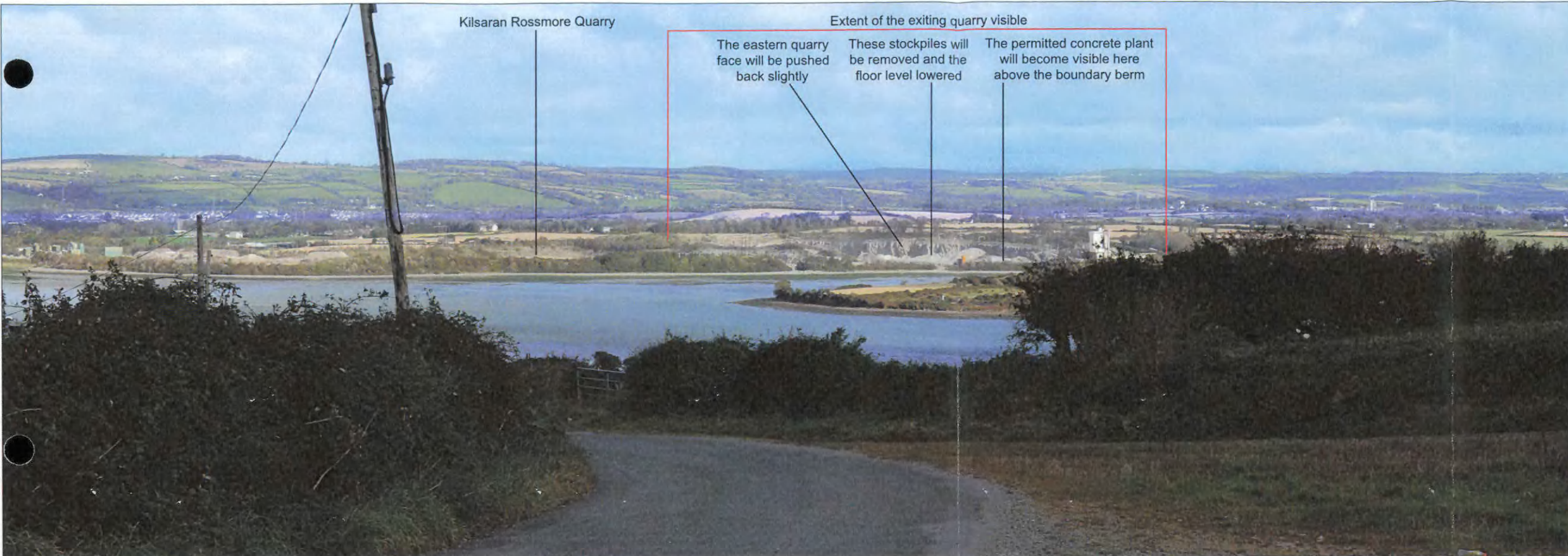
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 LANDSCAPE BASELINE  
 AND VIEWPOINT LOCATIONS

**FIGURE 13-1**

Scale 1:25,000 @ A3      Date SEPTEMBER 2021

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**VIEWPOINT A: Local road in the townland of Rosslague, close to the highest point along this road.**

Grid Reference (ITM): 581173:569157

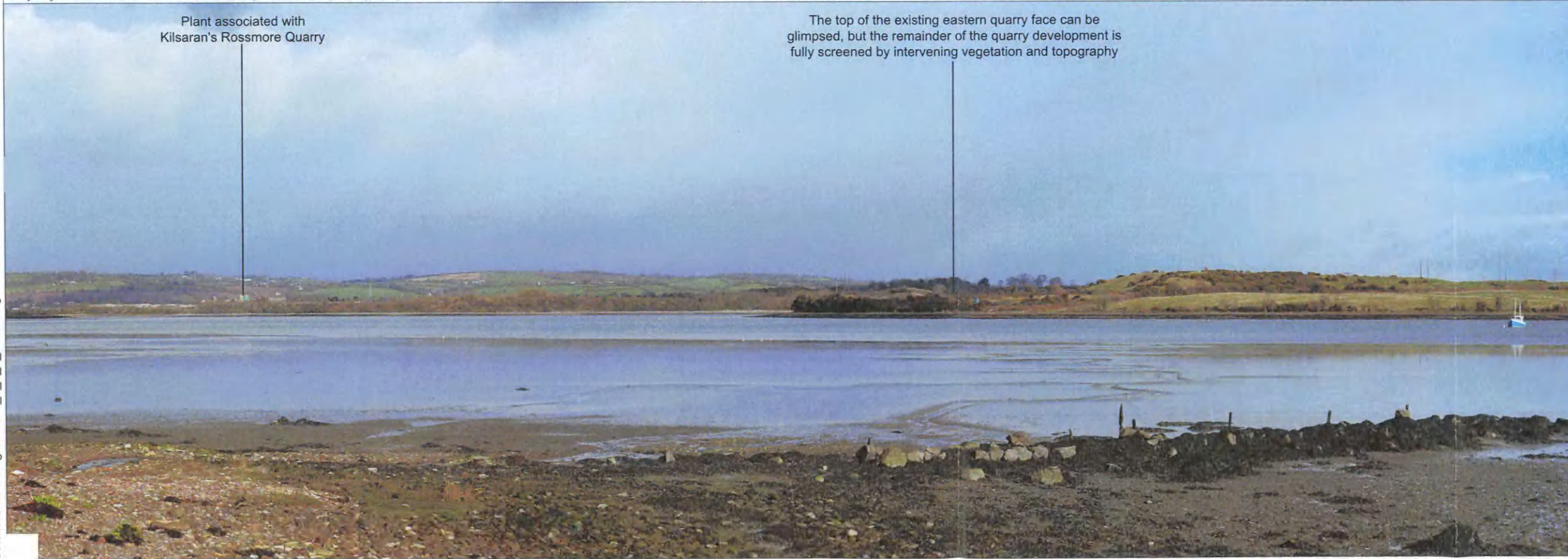
Elevation: 65m AOD

Distance from application area boundary: 2,100m

Direction of View: North east

Date and Time of Photography: 13/10/2020 at 12:15

**Description:** The existing eastern quarry face and some of the stockpiles and plant are visible in views from a number of elevated locations on the north-side of Great Island, including a number of residential properties. The eastern face will be pushed back slightly in these views and the lowering of the quarry floor will result in the removal of some of the stockpiles currently visible. The activities associated with the changes to the visible quarry face and lowering of the quarry floor will only be visible for a limited duration, while the majority of the extraction works will be fully screened by topography. All visual changes caused by the proposed development will be contained within the existing visible quarry area and the overall composition of the views will not be changed.



**VIEWPOINT B: Local road along northern shore of Great Island (i.e. Scenic Route 52), south west of Rossmore Bay.**

Grid Reference (ITM): 581612:569732

Elevation: 2m AOD

Distance from application area boundary: 1,450m

Direction of View: North east

Date and Time of Photography: 20/02/2020 at 12:20

**Description:** The top of the existing eastern quarry face can be glimpsed in a small number of views from this road, but the remainder of the quarry development is fully screened by intervening topography (mostly provided by the peninsula to the south of Rossmore Bay) and vegetation. While the eastern quarry face will be pushed back slightly, as part of the proposed development, the visible area is so small that the changes will be imperceptible. The proposed development will therefore have no visual impact on views from locations near the waterfront on the northern side of Great Island, including views from Scenic Route 52.

**NOTES**  
 1. EXTRACT FROM Ordnance Survey 1:50,000 Discovery Series Mapping - Map No. 80, 81 & 87  
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**LEGEND**

- LAND OWNERSHIP BOUNDARY
- APPLICATION AREA
- VIEWPOINT LOCATIONS
- DISTANCE FROM PROPOSED EXTRACTION AREA

**VIEWPOINT LOCATION MAP (1:60,000 @ A3)**



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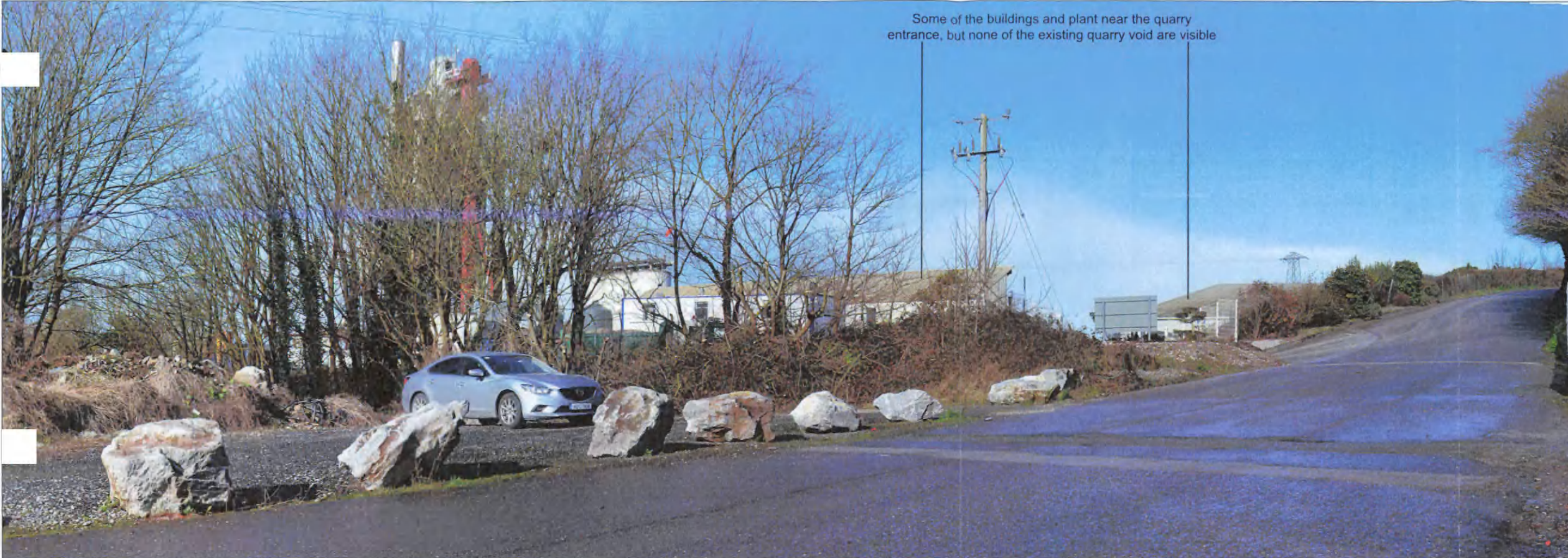
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 VIEWPOINTS A & B

**FIGURE 13-2**

Scale N/A Date SEPTEMBER 2021

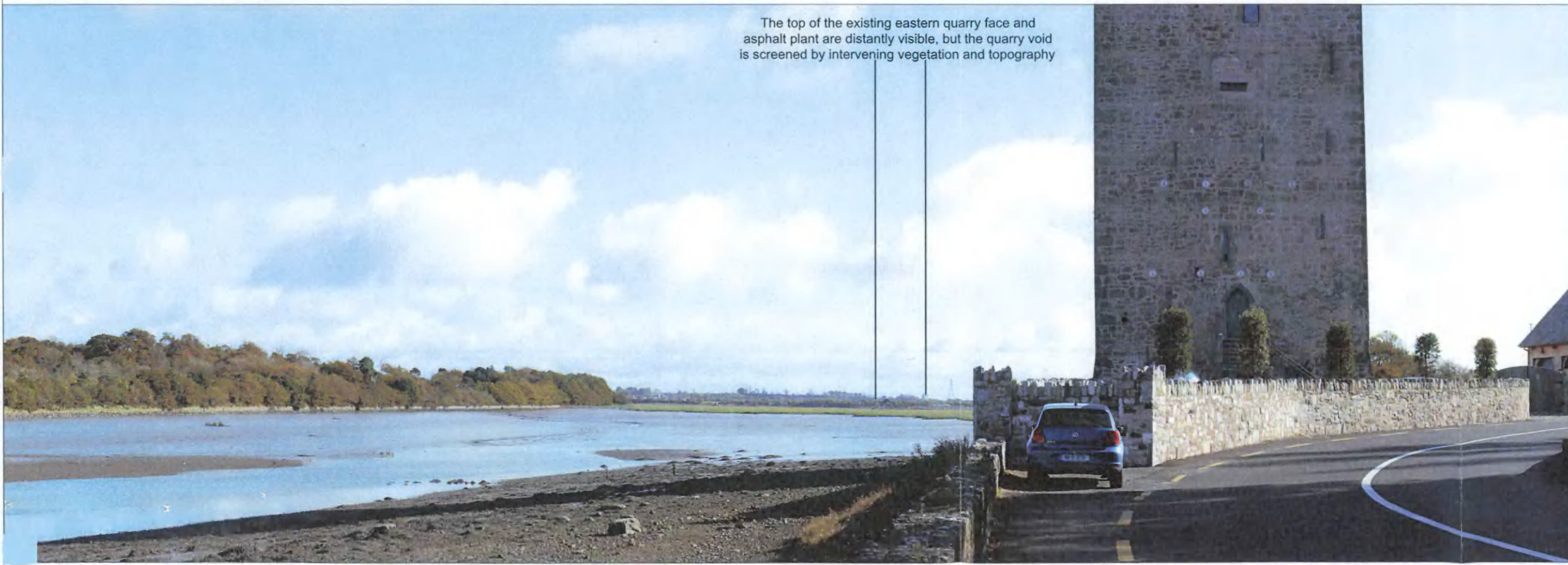
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**VIEWPOINT C: Local road to east of Lagan's Rossmore Quarry - Just south of the quarry entrance.**

Grid Reference (ITM): 582560:570760      Elevation: 5m AOD      Distance from application area boundary: 180m      Direction of View: North west      Date and Time of Photography: 20/02/2020 at 11:55

**Description:** Some of the existing buildings and plant are visible in views from locations in the vicinity of the entrance to Lagan's Rossmore Quarry. However, none of the extraction void is visible in any of these views and therefore the proposed development will not become visible either. Neither customers at the East Cork Civic Amenity site, nor any of the residential properties on the peninsula south of Rossmore Bay will experience views of the proposed development.



**VIEWPOINT D: Local Road, just east of junction with R624 - Regional Road at southern end of Belvelly Bridge.**

Grid Reference (ITM): 579128:570718      Elevation: 2m AOD      Distance from application area boundary: 3,150m      Direction of View: East      Date and Time of Photography: 13/10/2020 at 12:00

**Description:** The top of the existing eastern quarry face and the asphalt plant are visible from a short section of the R624 Regional road and local road in the vicinity of Belvelly Bridge, as well as a small number of local residential properties. However, the remainder of the quarry development is fully screened by intervening vegetation and topography. While the eastern quarry face will be pushed back slightly, as part of the proposed development, the visible area is so small that the changes will be imperceptible. This is the case in all available views in the vicinity of this viewpoint and from locations near the waterfront on the northern side of Great Island in general (also refer to Viewpoint B).


**NOTES**  
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**LEGEND**

-  LAND OWNERSHIP BOUNDARY
-  APPLICATION AREA
-  VIEWPOINT LOCATIONS
-  DISTANCE FROM PROPOSED EXTRACTION AREA



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**FIGURE 13-3**

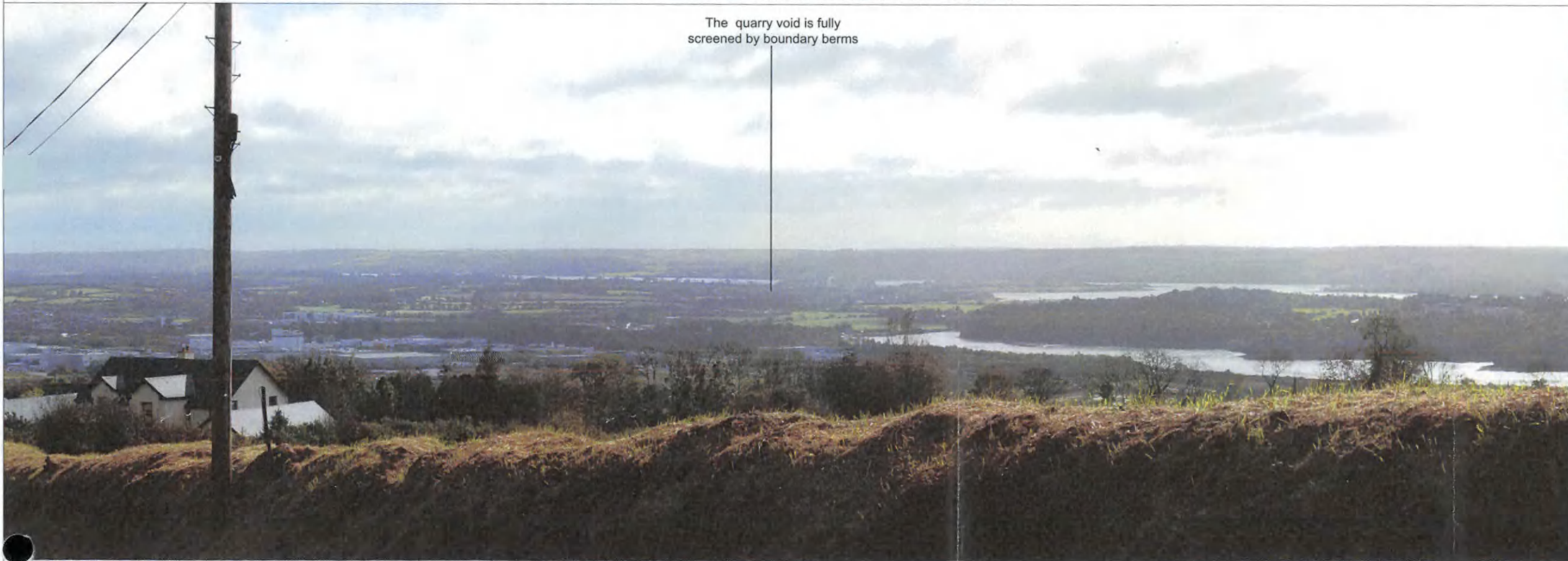
Scale	N/A	Date	SEPTEMBER 2021
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The existing overburden along the northern boundary is visible, but the quarry void will be fully screened at all times

**Viewpoint E: Local Road in the townland of Barryscourt, approximately 590m north-east of the application area.**  
 Grid Reference (ITM): 582459:572034      Elevation: 18m AOD      Distance from application area boundary: 590m      Direction of View: South west      Date and Time of Photography: 20/02/2020 at 11:40  
**Description:** The existing overburden storage area along the northern boundary of the existing quarry is intermittently visible from an approximately 200m long section of this road, when the roadside hedgerow is newly cut. Permission was granted by Cork Co. Co. (P.Ref. 20/06709) to move this overburden further north (slightly closer to the viewing position) to construct a landscaped mound. The existing quarry void is neither currently visible, nor will it be visible when the landscaped mound is in place and therefore the proposed development will be screened at all times. This is the case in all views from locations to the north west, north and north east of the application area (also refer to Viewpoint F).



The quarry void is fully screened by boundary berms

**Viewpoint F: Local road at the eastern end of Killahora, along Scenic Route 42.**  
 Grid Reference (ITM): 578467:574267      Elevation: 125m AOD      Distance from application area boundary: 4,700m      Direction of View: South east      Date and Time of Photography: 13/10/2020 at 11:30  
**Description:** The existing berms and vegetation along the northern and western boundaries of the existing quarry are distantly visible in a number of views from elevated locations to the north and north west of Carrigwohill. The existing quarry void is neither currently visible, nor will it be visible when the the permitted landscaped mound along the northern boundary (P.Ref. 20/06709) is in place and therefore the proposed development will be screened at all times. This is the case in all views from locations to the north west, north and north east of the application area (also refer to Viewpoint E).

**NOTES**  
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 2. ORDNANCE SURVEY IRELAND LICENCE NO. CYAL50167032 (c) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

**LEGEND**

-  LAND OWNERSHIP BOUNDARY
-  APPLICATION AREA
-  VIEWPOINT LOCATIONS
-  DISTANCE FROM PROPOSED EXTRACTION AREA



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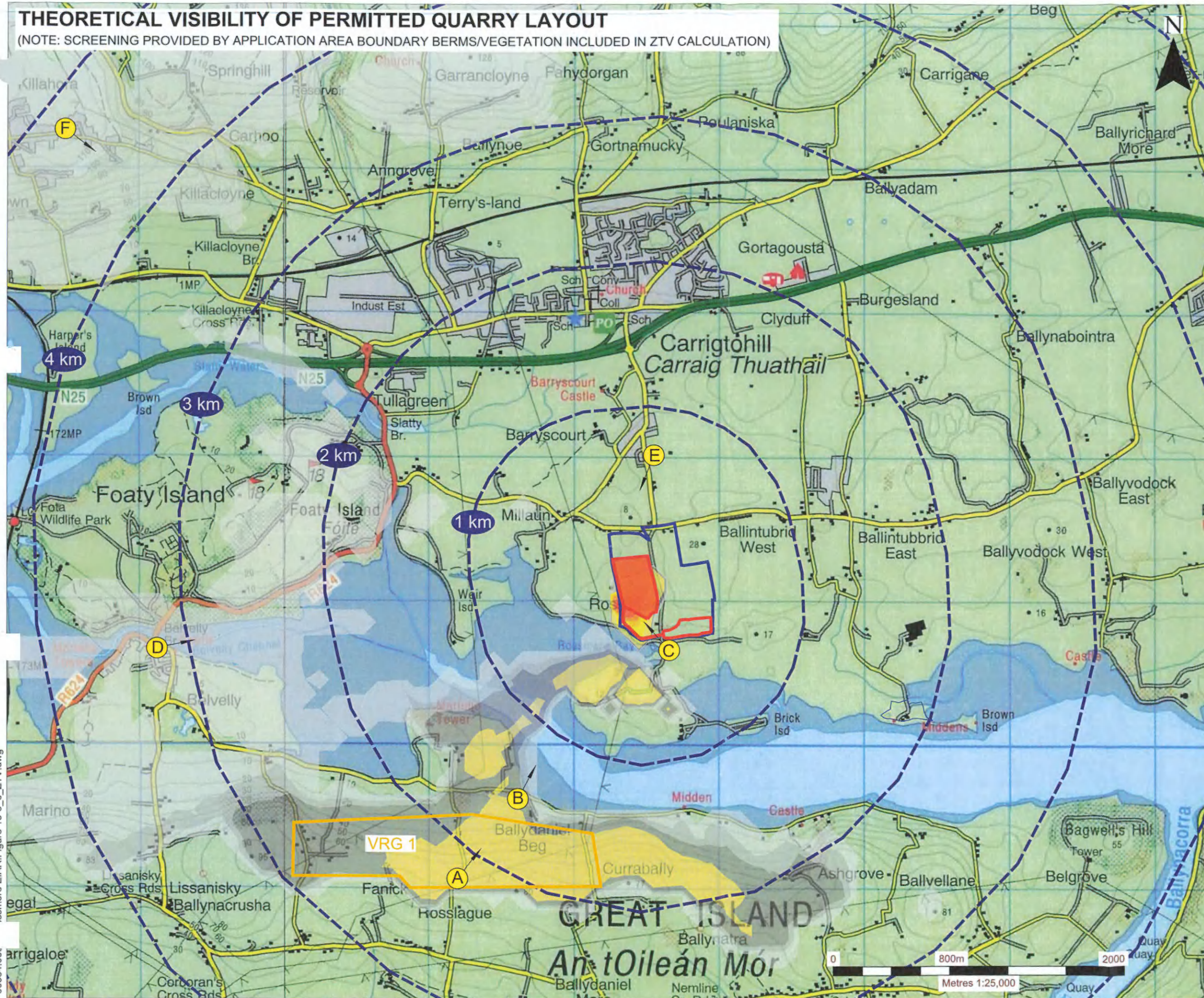
**FIGURE 13-4**

Scale: N/A      Date: SEPTEMBER 2021

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# THEORETICAL VISIBILITY OF PERMITTED QUARRY LAYOUT

(NOTE: SCREENING PROVIDED BY APPLICATION AREA BOUNDARY BERMS/VEGETATION INCLUDED IN ZTV CALCULATION)



**NOTES**  
 1. Extract from Ordnance Survey 1:50,000 Discovery Series Mapping - Map No. 80, 81 & 87  
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- LEGEND**
- LAND OWNERSHIP BOUNDARY
  - APPLICATION AREA
  - VIEWPOINT LOCATIONS
  - DISTANCE FROM PROPOSED EXTRACTION AREA
  - VISUAL RECEPTOR GROUPS (I.E. RECEPTORS WITH SIMILAR VIEWS OF THE DEVELOPMENT)

- VERTICAL SUBTENDED ANGLES VISIBLE (OF THE PERMITTED QUARRY LAYOUT, INCLUDING SCREENING PROVIDED BY THE BOUNDARY BERMS AND VEGETATION):**
- SUBTENDED VERTICAL ANGLE GREATER THAN 25.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 12.8 TO 25.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 6.4 TO 12.8 DEGREES
  - SUBTENDED VERTICAL ANGLE 3.2 TO 6.4 DEGREES
  - SUBTENDED VERTICAL ANGLE 1.6 TO 3.2 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.8 TO 1.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.4 TO 0.8 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.2 TO 0.4 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.1 TO 0.2 DEGREES
  - SUBTENDED VERTICAL ANGLE LESS THAN 0.1 DEGREES (NO THEORETICAL VISIBILITY)

**NOTE:** Vegetation cover and built structures are not taken into account as part of the ZTV calculation process (except for the boundary berms and vegetation in this case). Areas in grey (i.e. less than 0.4 degrees) tend to be screened by hedgerows and vegetation, if present. Please refer to Appendix 13-B of the EIA for the ZTV methodology.

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**ZONE OF THEORETICAL VISIBILITY (ZTV)  
 MAP - PERMITTED QUARRY LAYOUT**

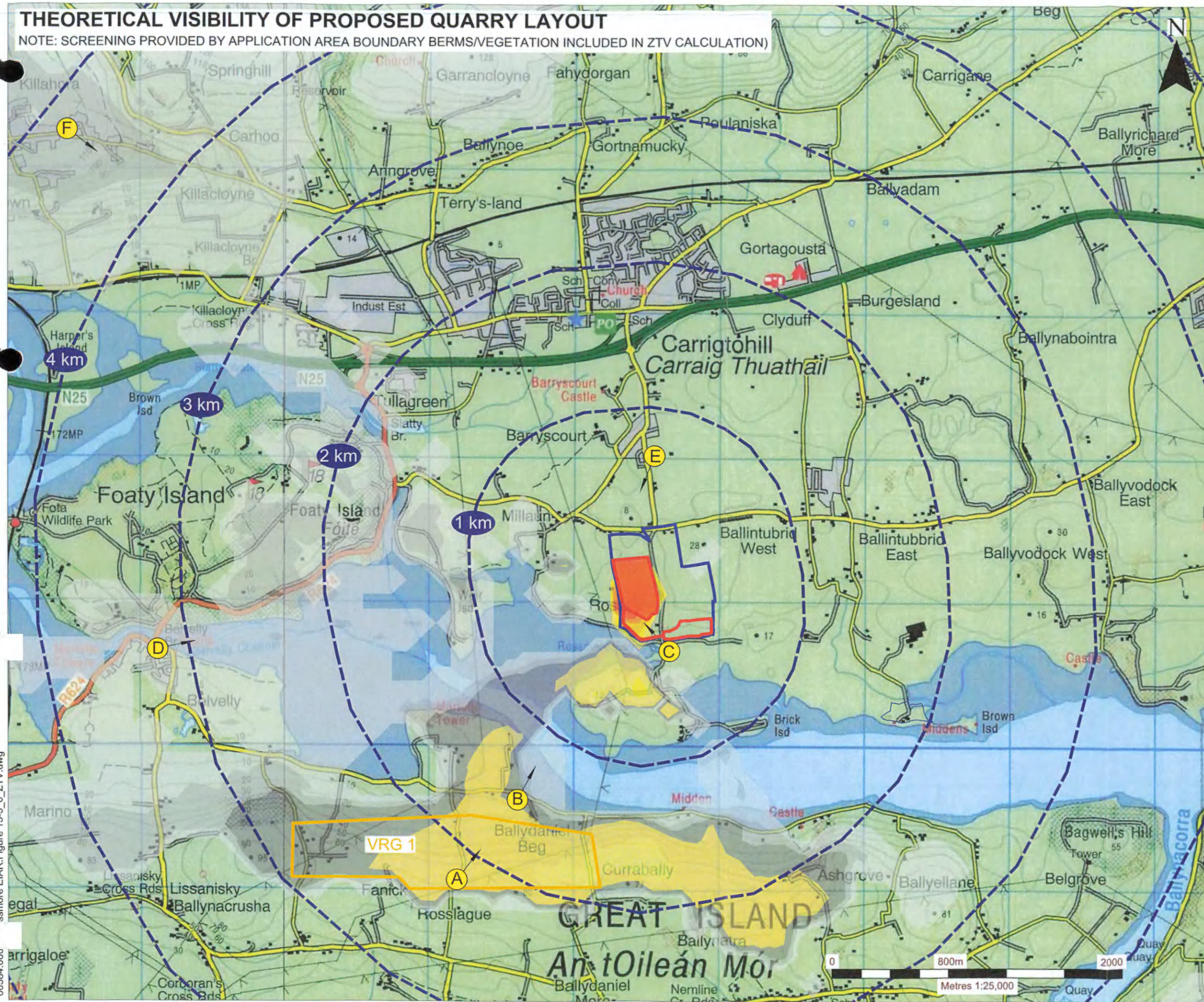
**FIGURE 13-5**

Scale: 1:25,000 @ A3  
 Date: SEPTEMBER 2021

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# THEORETICAL VISIBILITY OF PROPOSED QUARRY LAYOUT

NOTE: SCREENING PROVIDED BY APPLICATION AREA BOUNDARY BERMS/VEGETATION INCLUDED IN ZTV CALCULATION



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- LEGEND**
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  - APPLICATION AREA
  - VIEWPOINT LOCATIONS
  - DISTANCE FROM PROPOSED EXTRACTION AREA
  - VISUAL RECEPTOR GROUPS (I.E. RECEPTORS WITH SIMILAR VIEWS OF THE DEVELOPMENT)

- VERTICAL SUBTENDED ANGLES VISIBLE (OF THE PROPOSED QUARRY LAYOUT, INCLUDING SCREENING PROVIDED BY THE BOUNDARY BERMS AND VEGETATION):**
- SUBTENDED VERTICAL ANGLE GREATER THAN 25.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 12.8 TO 25.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 6.4 TO 12.8 DEGREES
  - SUBTENDED VERTICAL ANGLE 3.2 TO 6.4 DEGREES
  - SUBTENDED VERTICAL ANGLE 1.6 TO 3.2 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.8 TO 1.6 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.4 TO 0.8 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.2 TO 0.4 DEGREES
  - SUBTENDED VERTICAL ANGLE 0.1 TO 0.2 DEGREES
  - SUBTENDED VERTICAL ANGLE LESS THAN 0.1 DEGREES (NO THEORETICAL VISIBILITY)

**NOTE:** Vegetation cover and built structures are not taken into account as part of the ZTV calculation process (except for the boundary berms and vegetation in this case). Areas in grey (i.e. less than 0.4 degrees) tend to be screened by hedgerows and vegetation, if present. Please refer to Appendix 13-B of the EIA for the ZTV methodology.

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**ZONE OF THEORETICAL VISIBILITY (ZTV)  
 MAP - PROPOSED QUARRY LAYOUT**

**FIGURE 13-6**  
 Scale: 1:25,000 @ A3  
 Date: SEPTEMBER 2021

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 ssmore EIA Figure 13-5\_6\_ZTV.dwg



# 14. Traffic

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FIGURE 14-1 LOCATION PLAN

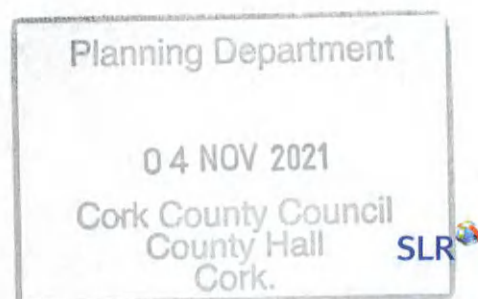
FIGURE 14-2 SURROUNDING NETWORK LAYOUT

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## Glossary of Terms

<b>Road Network:</b>	The existing and proposed public and private roads within the study area.
<b>Traffic Growth:</b>	The normal expected growth in traffic over time.
<b>Trip:</b>	One movement, in or out of the study area by foot, cycle or vehicle.
<b>Thresholds:</b>	Minimum intervention levels at which Transport and Traffic Assessments are to be conducted.
<b>Generated Trips:</b>	Additional trips made as a result of the presence of a development.
<b>Peak Time:</b>	Time of day at which the transport demands from a development are greatest.
<b>Capacity Calculations:</b>	Standardised methods of estimating traffic capacity on links and at junctions.
<b>Trip Distribution:</b>	The estimated directional distribution of the estimated traffic at each junction in the study area.
<b>Trip Assignment:</b>	The final estimated flows of traffic for each direction of travel at each junction and along each link within the study area.
<b>TRICS:</b>	A database containing empirically obtained trip generation data for a wide range of different types of developments.
<b>AADT:</b>	Annual Average Daily Traffic – The mean daily traffic volume over the course of a year on a particular route.
<b>Level of Service:</b>	Level of Service (LOS) is a measure of the capacity of a road related to the average vehicular speed and level of congestion on the road. It ranges from LOS A to LOS F, with A representing free flow and F representing stop/start traffic. LOS C represents stable flow conditions



## Introduction

### General

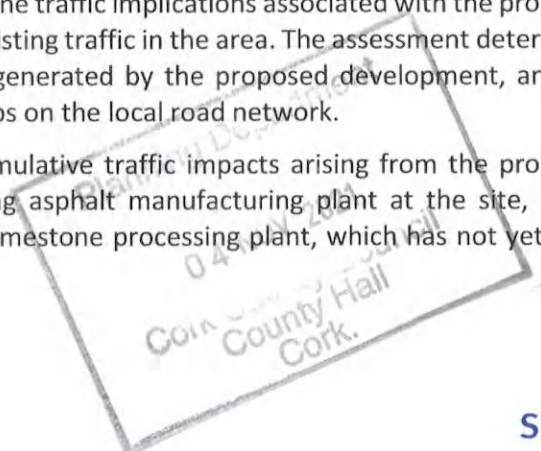
- 14.1 This assessment has been undertaken to determine the traffic impacts associated with a planning application for the further development of the existing quarry at Rossmore, Carrigtwohill, Co. Cork. The full description of the proposed development is outlined in Chapter 2 of the EIAR.
- 14.2 A Traffic and Transport Assessment has been prepared in support of this Environmental Impact Assessment Report for the proposed development.
- 14.3 This chapter and assessment have been prepared by Aly Gleeson, BSc MEng MBA RSA Cert CEng FIEI, Director, PMCE Consultants.

### Information Reviewed

- 14.4 In preparing this assessment, reference has been made to the following documents: -
- “Traffic and Transport Assessment Guidelines” (September 2014) published by the National Roads Authority (now Transport Infrastructure Ireland (TII)).
  - Unit 5.3 (Travel Demand Projections) of the “Project Appraisal Guidelines” (2019) published by Transport Infrastructure Ireland.
  - Traffic Count Survey Data collected by Traffinomics (13<sup>th</sup> April 2021).
  - Unit 16.1 (Expansion Factors for Short Period Traffic Counts) of the “Project Appraisal Guidelines” (2016) published by Transport Infrastructure Ireland.
  - DN-GEO-03031 - “Rural Road Link Design,” (June 2017) published by TII.
  - DN-GEO-03060 – “Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions),” (Jun 2017) published by TII.
  - Topographical Survey Data/Mapping provided by Lagan Materials Ltd.

### Scope

- 14.5 The objective of this assessment is to examine the traffic implications associated with the proposed development in terms of its integration with existing traffic in the area. The assessment determines and quantifies the extent of additional trips generated by the proposed development, and the impact on operational performance of such trips on the local road network.
- 14.6 In addition, the assessment considers the cumulative traffic impacts arising from the proposed development in combination with the existing asphalt manufacturing plant at the site, and a permitted readymix concrete plant / ground limestone processing plant, which has not yet been constructed.



## Methodology

14.7 The methodology adopted for this assessment involved, in brief: -

- A site visit on the 17th June 2021, the weather was dry, and the ground surface was dry.
- Trip Generation and Trip Assignment – This is used to derive trip rates for a 12-hour period and to assign such trips to the surrounding road network according to which direction of travel vehicles will travel to/from the Lagan Quarry in Rossmore, Carrigtwohill Co. Cork.
- Link Capacity Assessment - To obtain an AADT value for the main roads linking the Lagan Quarry in Rossmore, Co. Cork to the surrounding network.
- Existing Traffic Assessment – The traffic count data was used to develop a Junctions 9 model for the junctions assessed as part of this report.
- Future Year Assessments – The estimated future year volumes on the study area network, as a result of the increase in background traffic and any site related traffic, was used to assess the future operational performance of the junctions and surrounding road network for 2022 (assumed year of opening) and at two future assessment years, the opening year +5 (2027) and the opening year +15 (2037).

## Location Plan

14.8 Figure 14.1 shows the location of the application site and surrounding area.





Figure 14.1 Location Plan (Source OpenStreetMap)



## Existing Conditions

### The Site

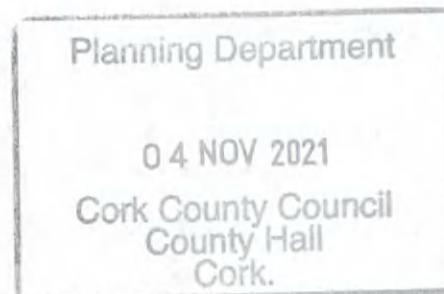
14.9 The proposed development being applied for under this current planning application is shown on EIAR Figure 2-1 and is similar to that previously granted under An Bord Pleanála reference number 04.QD.0010 and will consist of:

- Deepening of the existing quarry extraction area by 2 no. 15 metre benches from -20m OD to -50 m OD, along with minor amendments to the permitted quarry layout (Plan File ref. no's: S/02/5476 & ABP Ref. PL04.203762 and ABP Ref. PL04.QD.0010) all within the existing permitted quarry footprint and the continued use of the existing water management system (settlement pond / infiltration pond system, permitted under PL04.QD.0010) for the life of the proposed development, all within an application area of c. 12.6 hectares – refer to Figures 1.1 and 1.2;

- An extraction capacity of up to 375,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates for large infrastructure projects in the Region; and,
  - Permission is sought for twenty years plus two years for final restoration (total duration 22 years).
- 14.10 The planning application relates to the existing Lagan Quarry located in the townland of Rossmore, approximately 2km south of Carrigtwohill town, 1.5km south of the N25 National Road, and approximately 18km east of Cork City.
- 14.11 The lands surrounding the subject site can be characterised as coastal and rural, with land uses in the area comprising agriculture, waste management, extractive, and single house residential.
- 14.12 The development will continue to use an existing private access that runs approximately 750m south of its junction with L7645 and L3619.
- 14.13 The operations at the quarry include limestone extraction / processing and asphalt production. A readymix concrete plant and ground limestone processing plant are permitted, but not yet constructed.

### Existing Road Network

- 14.14 The N25 National Road, between Midleton and Cork City is the closest main road to Lagan Quarry at Rossmore (approximately 1.5km due north at closest point). The R624 Regional Road between Carrigtohill and Cobh is approximately 2km to the west of the site at its closest point. Between these roads, the landscape is intersected by a pattern of minor roads, such as the L3612 (Barryscourt Road), L7645 and the L3619, with the proposed development being accessed by one of these local roads, south of its junction with the L3619 and the L7645, refer to Figure 14-2.



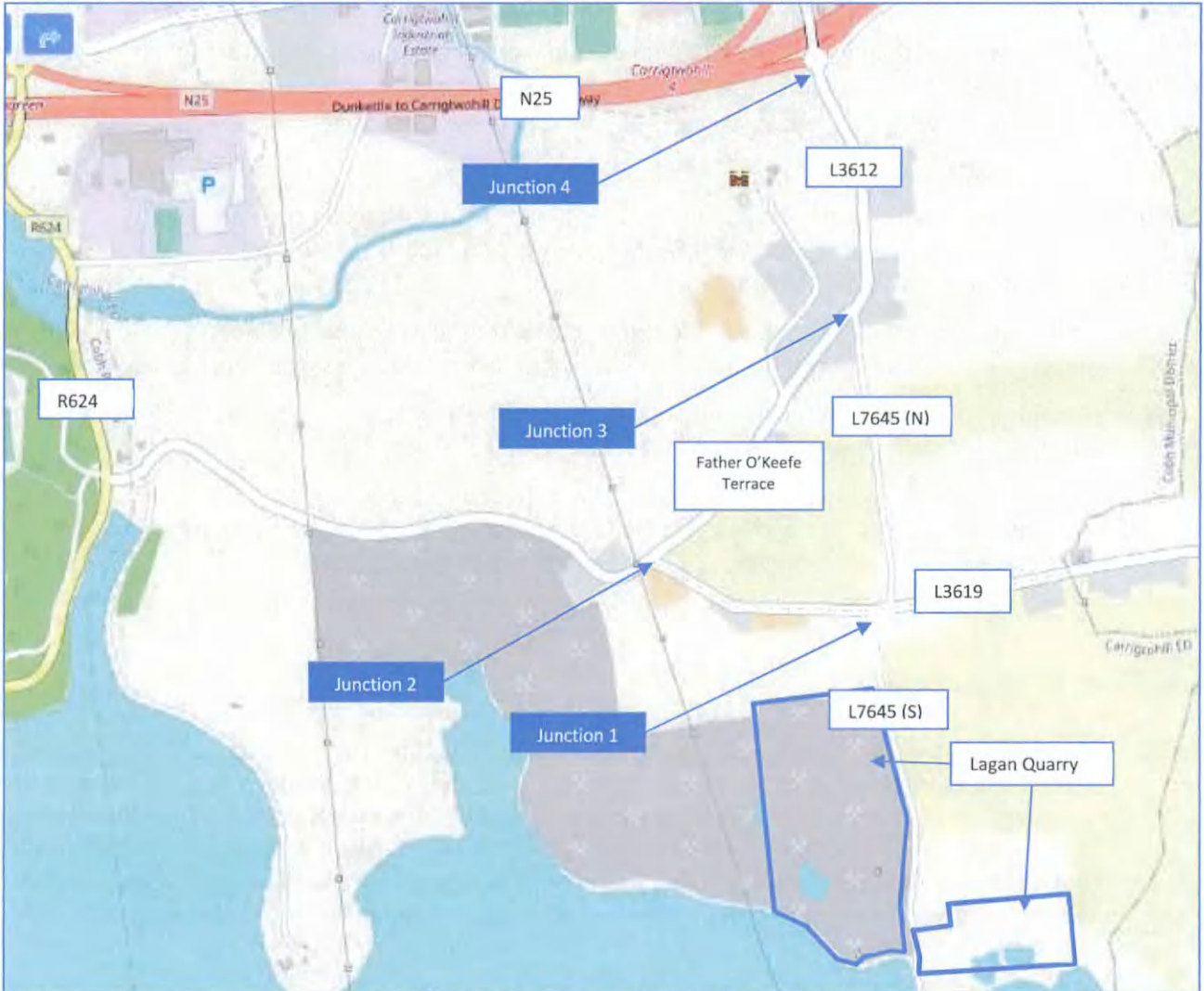


Figure 14-2: Surrounding Network Layout

## Study Area

14.15 The study area for this assessment is shown on Figure 14-2, and includes: -

- Junction 1 – L3619/L7645 Staggered junction (referred to as the ‘Staggered Junction’ in this report). This junction accommodates the applicant’s quarry and the local authority landfill to the south, as well as other quarries located in the area
- Junction 2 – L3619 & Father O’Keefe Terrace T-junction (referred to as the ‘L3619 Junction’ in this report)
- Junction 3 – L7645 & Father O’Keefe Terrace T-junction (referred to as the ‘L7645 Junction’ in this report)

- Junction 4 – 5-Arm Roundabout junction of the L7645, Private Access, N25 Overbridge, slip road from the N25 and slip road to the N25 (referred to as the 'N25 Junction' in this report)

## Traffic Volumes

14.16 Classified 12-Hour Junction Turning Counts (JTCs) were carried out on the 13<sup>th</sup> of April 2021, by Traffinomics Ltd., at a total of 4 No. junctions along the designated haul routes between the quarry site and the N25 National Road. The counts were carried out between 7:00am and 7:00pm, which includes the peak hours on the adjacent National and Local Roads. The detailed results of the traffic survey are summarised in Appendix 14B. Surveyed vehicles were broken down into five categories as follows: -

- Cars
- LGV's (Light Goods Vehicles)
- OGV1 (Two and three axle goods vehicles)
- OGV2 (Four and five axle goods vehicles)
- Buses



14.17 The JTCs undertaken in April 2021 have recorded existing quarry traffic and existing asphalt plant movements, which will be included in the traffic analysis as background traffic. This will be modelled, along with additional trip movements, to assess cumulative traffic impacts to the local road network.

14.18 At the time of the Junction Turning Count (JTC) survey in April 2021, Government enforced travel restrictions were in place nationally due to the COVID-19 pandemic. As a direct result of these travel restrictions, travel patterns on the surrounding road network are likely to have significantly reduced, and therefore may not be representative of typical travel patterns.

14.19 To address this, traffic flows recorded at the TII traffic counter (Ref: TMU N25 010.0 E) located on the N25 Carrigtwohill Bypass, Carrigtwohill, Co. Cork were used in order to determine any reduction in background traffic in the area arising from the Covid-19 travel restrictions. The current traffic flows, recorded by the traffic surveys in April 2021, were then adjusted to account for the observed reduction in traffic between 2019 & 2021 at the nearby TII Traffic Counter based on a comparison of traffic volumes during the same month (April), and day (Tuesday), better reflecting similar traffic patterns and operations. From this comparison, a growth rate was estimated and applied to the 2021 traffic flow data to bring this data in line with pre-pandemic levels. This revised data formed the Base Year traffic data for this Traffic and Transport Assessment.

14.20 The count data for each site has been converted to Annual Average Daily Traffic (AADT) values using the methodology described in "Expansion Factors for Short Period Traffic Counts" (Unit 16.2 NRA Project Appraisal Guidelines, August 2012). Annexes A to C of the above document were used in the expansion of traffic counts to AADT's.

14.21 A combined factor of 0.756 was arrived at by combining the individual hourly factors for the count duration. This factor was then used to determine the 24-hour traffic flow. This was then converted



to a Weekly Average Daily Traffic (WADT) using an index of 0.94 for the Tuesday traffic count. Finally, this was converted to AADT using an index of 0.98 for the month of April. These factors were used to calculate the AADT for the four junctions.

14.22 The results of the traffic survey at the Staggered Junction are summarised in Table 14-1. From the survey data the peak hours at this junction have been established as: -

- 08:00hrs to 09:00hrs – Weekday AM Peak Hour
- 15:00hrs to 16:00hrs – Weekday PM Peak Hour

**Table 14-1 ESTIMATED 2021 AADTs AT JUNCTION 1 (STAGGERED JUNCTION)**

Hour Ending	L3619 (E)	L7645 (S)	L3619 (W)	L7645 (N)
<b>08:00</b>	50	37	10	72
<b>09:00</b>	136	47	53	134
<b>10:00</b>	64	52	39	81
<b>11:00</b>	65	59	35	87
<b>12:00</b>	84	82	56	103
<b>13:00</b>	85	55	49	85
<b>14:00</b>	102	53	55	101
<b>15:00</b>	100	77	53	119
<b>16:00</b>	157	60	79	135
<b>17:00</b>	126	49	53	122
<b>18:00</b>	122	18	56	84
<b>19:00</b>	86	5	24	70
<b>Period Total</b>	1,177	594	563	1,193
<b>Period Total HGVs</b>	108	306	66	320
<b>% HGVs</b>	9.18%	51.52%	11.73%	26.83%
<b>Total AADT</b>	1,434	724	686	1,453

14.23 The results of the traffic survey at the L3169 Junction are summarised in Table 14-2. From the survey data, the peak hours at the junction have been established as: -

- 07:45hrs to 08:45hrs – Weekday AM Peak Hour
- 15:45hrs to 16:45hrs – Weekday PM Peak Hour

