

## Section 2: INTRODUCTION

### Table of Contents

Section 2: INTRODUCTION .....	1
List of Figures .....	2
2 INTRODUCTION .....	3
2.1 Introduction .....	3
2.2 Methodology .....	4
2.3 Screening for EIAR .....	4
2.3.1 EIA Screening .....	5
2.4 Definition of EIA/EIAR .....	5
2.5 Information to be included in EIAR .....	6
2.6 Legislation and Guidelines .....	6
2.7 Factors to be considered in EIAR .....	7
2.8 Structure of Environmental Impact Assessment Report .....	7
2.9 Identification of Impacts .....	8
2.10 Cumulative Impacts with other projects .....	11
2.11 List of Contributors .....	13
2.12 Competency of Contributors .....	14
2.13 Baseline Information .....	15
2.14 Technical Difficulties .....	15

## List of Figures

Figure 2.1: Location of Application Site [www.openstreetmap.org](http://www.openstreetmap.org) .....3

## 2 INTRODUCTION

### 2.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared to accompany a planning application submitted on behalf of PJ McDermott to Donegal County Council Consent for a Large-Scale Residential Development (LRD) on a site a Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The proposed development provides for a residential development of 188 units, with associate site development works and services, including roads, infrastructure, landscaping and open space.

The proposed development represents the second phase of residential development of an overall landholding of 15.7ha owned by Mr McDermott and is located approximately 1.55km to the north of Main Street, Letterkenny and is situated on the eastern side of the Grange (road) from where access to the site is currently provided and is proposed, while future vehicular and pedestrian links are proposed to lands to the immediate south and to the north and east to the Windyhall road/northern link road.

The site of the proposed development subject to this application is 10.2ha gross area and a net area of 8.1ha for the residential development that excludes planted buffers and the main access road through the site that together measure 2.1ha. The proposed crèche formed part of the Phase 1 application and is accessible from both the proposed access to this Phase 2 site and the Phase 1 site.

Phase 1 of this overall residential development, which consists of 82 houses and 8 apartments (90 residential units) and crèche with a gross floor area of 1,067sqm on a site with a gross area of 5.5ha, is located to the immediate south and was the subject of a decision to grant permission from Donegal County Council on 15<sup>th</sup> March 2023 under planning reg ref. 22/51204. The decision has been appealed to An Bord Pleanala under appeal ref. ABP-316160-23 (PL05E.316160) and a decision on the appeal is due on 1<sup>st</sup> August 2023.

The two sites have a combined gross site area of 15.7ha and would accommodate a total of 278 residential units. The location of the site and overall development area is shown in Figure 2.1 below.

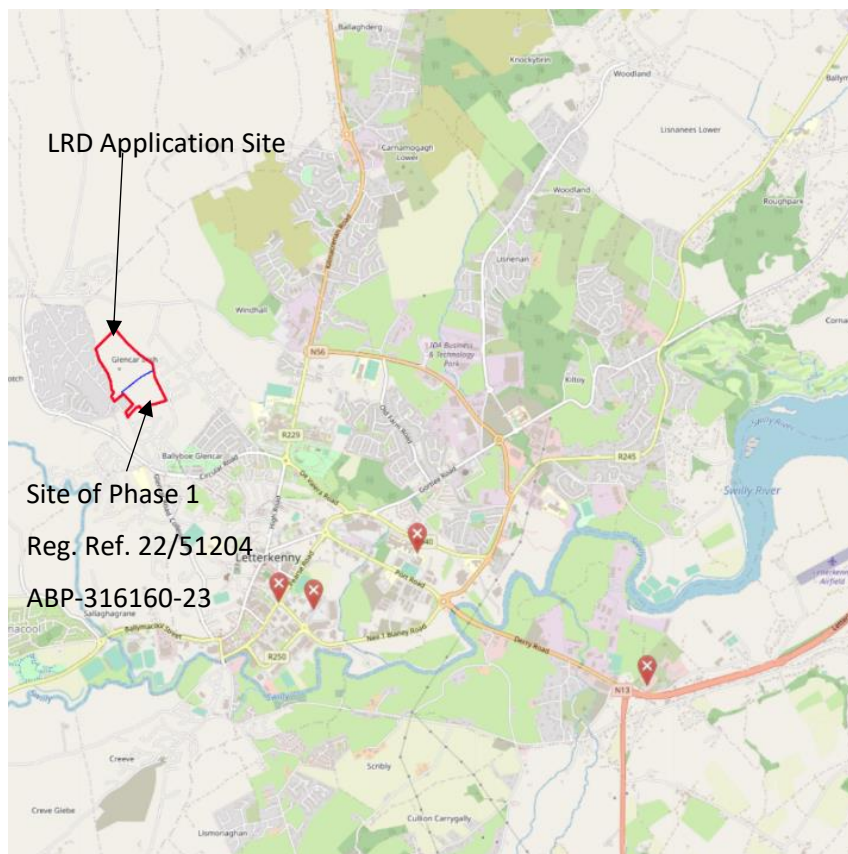


Figure 2.1: Location of Application Site [www.openstreetmap.org](http://www.openstreetmap.org)

## 2.2 Methodology

The applicant PJ McDermott is applying for planning permission for a period of 10 years for the proposed development comprising of the following as per the public notices:

Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total)

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission) The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange (also proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) together with the proposed development of 90 units (82 house and 8 apartments) and a crèche in Phase 1 of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in section 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is presented with the EIAR.

## 2.3 Screening for EIAR

As part of the request for an LRD Meeting, in a submission lodged with Donegal County Council in July 2022, in advance of the LRD Meeting, it was stated at Section 18 of the accompanying Planning Report that:-

Item (10)(b) of Schedule 5 to Part 2 of the Planning and Development Regulations 2001 (as amended) provides that mandatory EIA is required for the following classes of development:-

- Construction of more than 500 dwelling units

The proposed development consists of 200 residential units on a site of 4.2863ha. Therefore, Mandatory EIA is not required in respect of the proposed development.

For all sub-threshold developments listed in Schedule 5 Part 2, where no EIAR is submitted or EIA determination requested, a screening determination is required to be undertaken by the competent authority subject to criteria outlined in the regulations.

With regard to the criteria, the conclusions reached in respect of the AA screening Report it is not considered, having regard to the proposed scale of development at 200 residential units, relative to the threshold of 500 units that the proposed development would be considered likely to cause a significant impact on the environment.

The adjacent Phase 1 development that is subject to a separate planning application consists of 90 units, so that the combined total number of units is 290 and will not in combination require the preparation of a EIAR.

It is therefore concluded that, based on the nature, size and location of the development, and the findings of the AA Stage 1 Screening Report there is no real likelihood of significant effects on the environment. The need for EIA is therefore considered to not be necessary.

In response to the above submission, the LRD Opinion stated: -

**(e) Environmental Impact Assessment:**

Although the proposed LRD development and adjacent residential development currently being assessed under planning reference number 22/ 51204 have a combined numbers of residential units of 290 which is well below the prescribed 500 unit limit for an environmental impact assessment [EIA closed bracket as set out in schedule 5: part 2, ten of the planning and development regulations 2001 [as a member] a screening for EIA should accompany the LRD application for permission.

### **2.3.1 EIA Screening**

The area stated in the pre application LRD submission referred to a site area of 4.2863 hectares, which is incorrect and actually refers to the net area of the phase one development of the south, not to the site of the application submitted for consideration through LRD planning application process and subject to this EIAR.

The total combined site area of the two proposed phases of development on Mr. McDermott's landholding is 15.7ha and the following Item (10)(b)(iv) of Schedule 5 to Part 2 of the Planning and Development Regulations 2001 (as amended) provides that mandatory EIA is required for the following class of development:-

#### **10. Infrastructure projects**

Item (10)(b) of Schedule 5 to Part 2 of the Planning and Development Regulations 2001 (as amended) provides that mandatory EIA is required for the following class of development:-

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

On the basis that the proposed development constitutes 'Urban Development' and is located on a site of more than 10ha, it has been concluded that mandatory EIA is required.

### **2.4 Definition of EIA/EIAR**

Article 1 of Directive 2011/92/EU has been amended in Directive 2014/52/EU to provide the following definition of Environmental Impact Assessment (EIA) at Paragraph 2(g): -

(g) "Environmental impact assessment" means a process consisting of:

(i) The preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);

(ii) The carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) The integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."

This EIAR contains a statement of the effects, if any, which the proposed development is anticipated to have on relevant aspects of the environment.

## 2.5 Information to be included in EIAR

Directive 2014/52/EU introduced a new definition for Environmental Impact Assessment Report (EIAR) and Paragraph 1 of Article 5 has been replaced with the following description of information that is required to be included in an EIAR. It states: -

*"Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least:*

*(a) a description of the project comprising information on the site, design, size and other relevant features of the project;*

*(b) a description of the likely significant effects of the project on the environment;*

*(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment; (d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*

*(e) a non-technical summary of the information referred to in points (a) to (d); and*

*(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."*

The objectives of this EIAR are to: -

- Describe the project and identify a baseline against which impacts can be assessed;
- Identify and/or predict the significant impacts of the proposed development;
- Identify what mitigation should be incorporated into the development in order to reduce or eliminate impacts;
- Interpret and communicate the information regarding potential impacts of the proposed development in both technical and non-technical terms;
- Assist the Competent Authority in the decision making process in respect of the planning application for 188 residential units.

## 2.6 Legislation and Guidelines

This EIAR has been prepared in accordance with the requirements of the following legislation:-

- EIA Directive 85/337/EC (as amended by Council Directive 97/11/EC, Directive 2003/35/EC, Directive 2009/31/EC, Directive 2011/92/EU and Directive 2014/52/EU)
- European Communities (Environmental Impact Assessment Regulations. 1989, (as amended) (S.I. 349 of 1989)
- Planning and Development Act 2000 (No 30 of 2000) (as amended)

- Planning and Development Regulations 2001 (S.I. 600 of 2001) (as amended)
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018)

In addition to the legislative provisions, a series of advice notes and guidelines have been published to inform the preparation of EIAR and this EIAR was prepared having regard to the following: -

- Advice Notes on Current Practice in the preparation of Environmental Impact Statements; 2003;
- Advice Notes for Preparing Environmental Impact Statements Draft September 2015;
- Draft Revised Guidelines on the Information to be contained in Environmental Impact Assessments Reports (Directive 2011/92/EU as amended by 2014/52/EU)(September 2017);
- Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (The European Commission) 2017,
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, - published by the Department of Housing, Planning and Local Government (DoECLG) (August 2018).
- Guidelines on the Information to be contained in Environmental Impact Assessments Reports (May 2022);

Other publications specific to individual technical sections are referred to in the individual sections of the EIAR.

## 2.7 Factors to be considered in EIAR

Article 3 of Directive 2014/52/EU sets out the issues that must be considered in the EIAR being: -

*1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*

*(a) population and human health;*

*(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*

*(c) land, soil, water, air and climate;*

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

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

All of the above factors are assessed in this EIAR.

## 2.8 Structure of Environmental Impact Assessment Report

The EIAR has been prepared in a 'Grouped Format' structure under the following headings: -

- 1.0 Non-Technical Summary
- 2.0 Introduction
- 3.0 Consideration of Alternatives
- 4.0 Description of Development

- 5.0 Population and Human Health
- 6.0 Biodiversity
- 7.0 Land, Soils & Geology
- 8.0 Water
- 9.0 Noise and Vibration
- 10.0 Air
- 11.0 Climate
- 12.0 Material Assets - Traffic
- 13.0 Landscape and Restoration
- 14.0 Cultural Heritage
- 15.0 Interactions

The level of detail of the individual topics has been determined in each case, based on the likelihood of impacts occurring in the context of the nature of the proposed development.

This structure of each of the above relevant sections generally address the following matters: -

- description of the existing environment,
- methodology;
- description of likely significant impacts from the proposed development;
- proposed mitigation measures;
- monitoring;
- cumulative impacts;
- residual impacts.

## 2.9 Identification of Impacts

Section 3.7. of the 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (May 2022) states that 'The main purpose of an EIAR is to identify, describe and present an assessment of the likely significant effects of a project on the environment. ' and 'To ensure that the EIA adds value to the consent process it is necessary to focus on those effects that are probable or likely to occur.

Each of the technical Sections of this EIAR assesses the potential impacts of the proposed development against the baseline information gathered as part of the preparation of the individual sections and the impacts are described by reference to the terminology set out in Table 3.4 from the EPA Guidelines (May 2022) 'Descriptions of Effects', which is reproduced below.



Table 3.4 Descriptions of Effects	
<p><b>Quality of Effects</b></p> <p>It is important to inform the non-specialist reader whether an effect is positive, negative or neutral.</p>	<p><b>Positive Effects</b></p> <p>A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities)</p>
	<p><b>Neutral Effects</b></p> <p>No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error</p>
	<p><b>Negative/Adverse Effects</b></p> <p>A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance)</p>
<p><b>Describing the Significance of Effects</b></p> <p>‘Significance’ is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see Determining Significance).</p>	<p><b>Imperceptible</b></p> <p>An effect capable of measurement but without significant consequences.</p>
	<p><b>Not Significant</b></p> <p>An effect which causes noticeable changes in the character of the environment but without significant consequences</p>
	<p><b>Slight Effects</b></p> <p>An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.</p>
	<p><b>Moderate Effects</b></p> <p>An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends</p>
	<p><b>Significant Effects</b></p> <p>An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.</p>
	<p><b>Very Significant</b></p> <p>An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.</p>
	<p><b>Profound Effects</b></p> <p>An effect which obliterates sensitive characteristics</p>

<p><b>Describing the Extent and Context of Effects</b></p> <p>Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.</p>	<p><b>Extent</b></p> <p>Describe the size of the area, the number of sites and the proportion of a population affected by an effect</p>
	<p><b>Context</b></p> <p>Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)</p>
<p><b>Describing the Probability of Effects</b></p> <p>Descriptions of effects should establish how likely it is that the predicted effects will occur so that the CA can take a view of the balance of risk over advantage when making a decision.</p>	<p><b>Likely Effects</b></p> <p>The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.</p>
	<p><b>Unlikely Effects</b></p> <p>The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.</p>
<p><b>Describing the Duration and Frequency of Effects</b></p> <p>‘Duration’ is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.</p>	<p><b>Momentary Effects</b></p> <p>Effects lasting from seconds to minutes.</p>
	<p><b>Brief Effects</b></p> <p>Effects lasting less than a day</p>
	<p><b>Temporary Effects</b></p> <p>Effects lasting less than a year</p>
	<p><b>Short-term Effects</b></p> <p>Effects lasting one to seven years.</p>
	<p><b>Medium-term Effects</b></p> <p>Effects lasting seven to fifteen years</p>
	<p><b>Long-term Effects</b></p> <p>Effects lasting fifteen to sixty years.</p>
	<p><b>Permanent Effects</b></p> <p>Effects lasting over sixty years</p>
	<p><b>Reversible Effects</b></p> <p>Effects that can be undone, for example through remediation or restoration</p>
	<p><b>Frequency of Effects</b></p> <p>Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)</p>

## 2.10 Cumulative Impacts with other projects

It was noted in section 2.3 above that this proposed development of 188 residential units forms Phase 2 of an overall residential development of 278 residential units, with 90 residential units and a Crèche of 1,067sqm. proposed on the lands located to the immediate south of this proposed development. That application is currently subject to a third party appeal to An Bord Pleanála under appeal ref. PL05E.316160 following from the issuing of a decision of Donegal County Council to grant permission under reg. ref. 22/51204. A decision on the appeal is due on 1<sup>st</sup> August 2023. The two sites are proposed to be connected via two no proposed pedestrian and vehicular connections and Phase 2 will rely upon connections to piped services located in the proposed Phase 1 development. The two developments will also share access from The Grange (road), which is located to the immediate west and will both benefit from the use of the proposed creche which will have capacity for 160 children.

A number of other planned residential projects have also been noted and are addressed in section 5 'Population and Human Health'.

Section 3.5.7 of the 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (May 2022) titled 'Description of Other Related Projects: states that: -

The description includes other projects ...may result in significant effects. Some of these may require parallel separate consent. Omission of such projects or components may be referred to as project splitting where they are 'integral' to the primary project (i.e. they are required for the primary project to operate)

Section 3.7.3 of the Guidelines refers to 'Cumulative Effects' and states that: -

The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects. While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects. It can also be prudent to have regard to the likely future environmental loadings arising from the development of zoned lands in the immediate environs of the proposed project.

The proposed development is located on land zoned 'Primarily Residential' in Map 12.1B of the Donegal County Development Plan 2018-2024, which is the statutory plan in force at the time of the preparation of this Environmental Impact Assessment Report (EIAR), while the phase 1 development that is currently under appeal is located on land zoned 'Primarily Residential' and 'Education Opportunity', with all of the residential element located within the 'Primarily Residential' zoned area.

The LRD opinion issued by Donegal County Council made the following comments regarding road capacity: -

The Planning Authority cannot pre-empt the findings of future traffic assessments such as Road Safety Audits in determining the capacity of the junction where the Glencar Road, the Old Glencar Road and the Dr McGinley Road converge however it is of the opinion that the capacity does not exist to cater for the proposed LRD no. of residential units. This matter was raised during the LRD meeting of 14th Ult. and it was suggested that the LRD planning application should be a phased development with the initial 60% of constructed residential units being permitted to access from the Old Glencar Road and the remaining 40% of dwellings only being constructed once a second means of access connecting the LRD site to the Windyhall Road has been provided. The Planning

Authority also advised at the LRD meeting that the duration of the permission should be for a period of 10 years.

Traffic, access and road capacity issues are addressed in Section 12 - Material Assets Traffic of the EIAR which considers the cumulative impacts of the proposed 90 residential units and crèche development that is currently subject to an appeal as well as the proposal that only 60% of the proposed dwellings would be permitted to be built and access onto the Grange, with the balance of 40% being built upon connection of the site to the proposed Northern Relief Road/Windyhall Road upgrade as per the comments of the Planning Authority in the LRD opinion. It also considers the 'worst case scenario' with all 288 residential units accessing the Grange.

Notwithstanding the current land use zoning, since the LRD pre-application process commenced and the LRD Opinion was issued in November 2022 in respect of this site/proposed development, the 'Letterkenny Plan and Local Transport Plan 2023-2029 has been published in draft form and the Chief Executives report on Submissions has also been published. It is noted that the zoning of the lands subject to this EIAR (and proposed development of 188 residential units) was proposed to be changed from 'Primarily Residential' to 'Strategic Residential Reserve' in the new Plan.

The Chief Executive's report on submissions referring specifically to the area of land subject to this proposed Phase 2 development, makes specific comments about transport and traffic issues as well as community facilities: -

In addition to the 87 (should be 90) units permitted on the subject lands, the landowner in this instance has entered into discussions with the Council under the 'Large Scale Residential Development' provisions of planning legislation, in respect of a further circa c.200 houses on the lands marked as Phase 2 on Map 1 above. Whilst the current zoning of 'Primarily Residential' on the 'Phase 2' lands is acknowledged, as indeed are the provisions of the 'Development Plan Guidelines for Planning Authorities' (which state that 'zoned housing land in an existing development plan, that is serviced and can be developed for housing within the life of the new development plan under preparation, should not be subject to de-zoning'), concerns nonetheless arise in relation to the servicing requirements for the overall extent of residential development planned at this location, particularly in relation to the need for the strategic 'northern relief road' to be delivered in order to facilitate the extent of development proposed on the 'Phase 2' lands. Concerns also arise in relation to the level of community facilities generally in Glencar and whether same are adequate to cater for an additional circa 300 dwellings (this latter point in something that has been raised by Members on numerous occasions during the preparation of the Draft LAP). On balance, and having regard to (i.) the existing dense concentration of residential development in the Glencar area; (ii.) the need to provide for balanced development throughout the town; (iii.) the revised housing land supply targets recommended by the OPR; and (iv.) the consideration that the northern relief road would be required to adequately cater for the traffic movements likely to be generated by c.300 dwellings at this location, it is recommended that the 'Primarily Residential' zoning at Glencar be revised to include the site subject of planning ref. 22/51204 (i.e. the area denotated as Phase 1 on Map 1 above) but that the remainder of the lands subject of the submission remained zoned as 'Strategic Residential Reserve' as per the originally published Draft LAP.

A meeting was held on 10<sup>th</sup> May 2023 between the officials and Elected Members of Donegal County Council to discuss the Chief Executives Report on submissions including that referenced above in respect of the site subject to this EIAR and the Elected Members decided to reinstate the 'Primarily Residential' zoning on the lands. This proposal will be the subject to public consultation as a proposed Material Amendment to the draft plan and will be placed on public display in the near future.

The final 'Letterkenny Plan and Local Transport Plan will be adopted later in 2023 at which time the land use zoning will be confirmed.

The cumulative impacts aspects of the matters raised in the Chief Executive’s Report are addressed in the ‘Population and Human Health’ and ‘Material Assets - Traffic’ Sections of the EIAR.

## 2.11 List of Contributors

Details of the study team are given below: -

Table 2.2 EIAR Team		Contributors
Section		
1.0	Non-Technical Summary	Joe Bonner Town Planning Consultants Ltd Greentrack Environmental Consultants SW Consultancy – Transport Planning and Engineering Horizon Archaeology Ltd
2.0	Introduction	Joe Bonner Town Planning Consultants Ltd
3.0	Consideration of Alternatives	MH Associates Architects Joe Bonner Town Planning Consultants Ltd
4.0	Description of Development	MH Associates Architects Joe Bonner Town Planning Consultants Ltd
5.0	Population and Human Health	Joe Bonner Town Planning Consultants Ltd
6.0	Biodiversity	Greentrack Environmental Consultants
7.0	Land, Soils & Geology	Greentrack Environmental Consultants
8.0	Water	Greentrack Environmental Consultants
9.0	Noise and Vibration	Greentrack Environmental Consultants
10.0	Air	Greentrack Environmental Consultants
11.0	Climate	Greentrack Environmental Consultants
12.0	Material Assets – Traffic	SW Consultancy – Transport Planning and Engineering
13.0	Landscape and Restoration	Greentrack Environmental Consultants MH Associates Architects
14.0	Cultural Heritage	Horizon Archaeology Ltd
15.0	Interactions	Joe Bonner Town Planning Consultants Ltd Greentrack Environmental Consultants MH Associates Architects Horizon Archaeology Ltd

These specialist contributors have either prepared individually or co-authored sections in accordance with the methodology described in the EPA’s ‘Guidelines on the Information to be contained in Environmental Impact Assessment Reports’ (May 2022), and ‘advice notes on current practice (in the preparation of Environmental Impact Statements)’ as well as from past experience of preparing Environmental Impact Statements and EIAR’s to accompany planning applications for residential developments and other forms of development.

## 2.12 Competency of Contributors

The following persons contributed to the preparation of the rEIAR.

### **Joe Bonner – Planning Consultant** (Sections 1,2,3,4,5 &15)

Joe Bonner Town Planning Consultant (B.A. MRUP, MIPI, Dip Env Eng, Dip Proj Mgt) who has over 22 years planning experience as both a Local Authority Planning Officer and as a planning consultant. Joe has managed and contributed to the preparation of EIS's/EIAR's for a range of residential, commercial, retail, quarry and industrial planning applications, including several for large residential developments that have been submitted to Local Authorities throughout the country and to An Bord Pleanála. Joe is a Corporate Member of the Irish Planning Institute.

### **John Masterson – Director, M H Associates** (Sections 3, 4 & 13)

John is a member of the RIAI with over 40 years extensive experience in all aspects of Architecture, Design & Planning.

He has been involved in large scale developments including commercial, industrial, educational and particularly residential both in Donegal & Northern Ireland.

### **Kieran O'Donnell –Associate, M H Associates** (Sections 3, 4 & 13)

Kieran is a Senior Architectural Technician / Designer with over 30 years' experience and has been a key member of M H Associates since 1991 and has worked in the majority of major projects completed.

### **Aaron Morrow – Architectural Technician, M H Associates** (Sections 3, 4 & 13)

Aaron holds a BSc in Architectural Technology from Letterkenny ATU. He has been involved in all aspects of planning applications, fire issues etc from conception to completion.

### **Supriya Shankar Nayak – Architectural Technician, M H Associates** (Sections , 4 & 13)

Supriya holds a MSc. in Urban Design and Planning from University College Dublin. She has contributed to the planning & presentation drawings included in this application and EIAR.

### **Shannen McEwan, Greentrack Environmental Consultants Ltd** (Sections 1, 6 & 15)

Shannen holds a BSc. (Hons) Environmental Science with a Diploma in Professional Practice from the University of Ulster. She has been involved in all aspects of Appropriate Assessment, Natura Impact Statement and Environmental Impact Assessment preparation since 2017. Shannen is an Associate Member of the Institution of Environmental Sciences.

### **Colin Farrell, Greentrack Environmental Consultants Ltd** (Sections 1, 7, 8, 9, 10 , 11 & 15)

Colin holds a BSc. (Hons) Geochemistry from Reading University and an MSc. in Applied Environmental Sciences from QUB. Colin has been involved in all aspects of site investigations, hydrological and hydrogeological investigations, and flood risk assessments to inform Environmental Impact Assessment Reports for Greentrack over the last 15 years.

### **Simon Warke** (Section 1, 12 & 15)

Simon Warke has an undergraduate degree and MSc in Infrastructural Engineering from the University of Ulster, is a Chartered Engineer and a Fellow of the Chartered Institution of Highways and Transportation (FCIHT). He has over 20 no. years' experience in the area of traffic, transportation and civil engineering, specialising in development control work, Transport Assessments, Travel Plans and Environmental Impact

Assessments. He has the experience necessary to robustly consider this Material Assets-Traffic chapter of the proposal.

**Dermot Nelis BA ArchOxon AIFA MIAI (Sections 1, 14 & 15)**

This Cultural Heritage Section has been prepared by Dermot Nelis. Dermot graduated from Queen's University Belfast, and after gaining extensive fieldwork experience undertook postgraduate studies at the University of Oxford in archaeological consultancy and project management.

Dermot has completed over 180 Licensed fieldwork programmes and has prepared more than 250 archaeological, architectural and cultural heritage desk-based reports and Environmental Impact Assessment Reports. He is a Senior Archaeologist with over 25 years' experience in cultural resource management and Licensed fieldwork. Dermot has detailed experience in archaeological assessment, specialising in fieldwork in urban, rural and brownfield environments and the production of cultural heritage reports. Dermot has completed numerous heritage assessments in County Donegal, including large-scale test trenching and monitoring programmes.

**Colm Flynn BA Heritage Studies (Archaeology and Heritage Management) (Sections 1 & 14)**

Colm Flynn is a Senior Archaeologist with over 20 years of experience in cultural resource management and licensed fieldwork. He has a BA in Heritage Studies (Archaeology and Heritage Management) from Galway-Mayo Institute of Technology and has been a licence eligible archaeologist in the Republic of Ireland since 2006, and in Northern Ireland since 2016. He is a Member of the Institute of Archaeologists of Ireland (MIAI). Colm has detailed experience in archaeological assessment, specialising in fieldwork in urban, rural and brownfield environments and the production of cultural heritage reports.

## **2.13 Baseline Information**

An Environmental Impact Statement was previously prepared and submitted in respect of an application for 418 residential units on the entire landholding encompassing both Phases 1 and 2 under planning reg. ref. 08/80150 (ABP PL66.231894). Planning permission was granted by An Bord Pleanála on 31<sup>st</sup> May 2010.

The Inspectors Report in respect of the EIS stated: -

It is considered that the submitted Environmental Impact Statement in conjunction with the EIS Addendum Statement received, is adequate and complies with the requirements of Article 94 and Schedule 6 of the Planning and Development Regulations 2001.

The information provided in the 2008 EIS has provided some relevant baseline information in respect of several of the sections of this EIAR, but considering the amount of time that has passed since that EIS was prepared, as well as significant changes in legislation, guidelines and EIAR reporting requirements in the intervening 15 years, many gaps in the baseline information needed to be addressed within the technical sections of this EIAR and this has been achieved by way of the gathering of entirely new information through a combination of desk studies, field work and surveys carried out by the subject matter experts preparing the EIAR sections, thereby providing a baseline from which impacts could be determined and assessed and any necessary mitigation measures recommended.

Additional information had been gathered in 2021 and early 2022 as part of the preparation of the Phase 1 planning application for 90 residential units on the site to the immediate south and that information has also informed the preparation of this EIAR.

## **2.14 Technical Difficulties**

No significant difficulties were experienced in compiling the information necessary for the preparation of this EIAR.

## SECTION 3 CONSIDERATION OF ALTERNATIVES

### Table of Contents

SECTION 3 CONSIDERATION OF ALTERNATIVES.....	1
List of Figures .....	2
3 CONSIDERATION OF ALTERNATIVES .....	3
3.1 Introduction .....	3
3.2 Methodology.....	3
3.3 Existing Environment .....	3
3.4 Consideration of Alternatives.....	5
3.4.1 Do Nothing Scenario .....	5
3.3.2 Alternative Locations .....	6
3.3.3 Alternative Layouts .....	7
3.3.4 Alternative Design.....	15
3.3.5 Alternative Processes.....	17
3.3.6 Alternative Mitigation Measures .....	17
3.5 Environmental Effects .....	17



## List of Figures

Figure 3.1: Site Location and Overall landholding of PJ McDermott .....	4
Figure 3.2: Site Layout Plan of previously permitted development 08/80150 .....	6
Figure 3.3: Site Layout Plan of previously permitted development 08/80150 .....	9
Figure 3.4: Site Layout Plan submitted as part of initial proposed pre application LRD submission ...	11
Figure 3.5: Revised Phased 1 Site Layout Plan submitted in response to RFI on 22/51204 .....	12
Figure 3.6: Final LRD Site Layout Plan .....	13
Figure 3.7: Proposed Phasing Plan .....	14

## 3 CONSIDERATION OF ALTERNATIVES

### 3.1 Introduction

Annex IV(2) of the amended EIA Directive 2014/52/EU requires that an EIAR contains ‘a description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons the option chosen, taking into account the effects of the proposed development on the environment.

This section has been prepared by MH Associates Architects and Joe Bonner Town Planning Consultant. Details of the competencies of the authors are set out in section 2 of the EIAR.

In preparing this section particular regard has been had to the ‘Guidelines on the Information to be Contained in Environmental Impact Statements (2022)’. The Guidelines set out six different types of alternative that can be considered in EIAR being: -

do-nothing alternative, alternative locations, alternative layouts, alternative design, alternative processes and alternative mitigation measures.

Section 3.4.1 of the EPA Guidelines (May 2022) states that: -

In some instances some of the alternatives described (above) will not be applicable.

This section provides an outline of the reasonable alternatives studied by the developer and traces the evolution of the alternative options that were considered, in particular in respect to the different layout options and provides a rationale for selecting the final layout with respect to its environmental impacts, while noting that the final layout was also influenced by the pre application comments of the Planning Authority set out in the LRD Opinion as well as the request for further information and the decision of the Planning Authority in respect of the adjacent Phase 1 application for 90 residential units and a creche (planning reg. ref. 22/51204 appeal reference ABP.316160).

### 3.2 Methodology

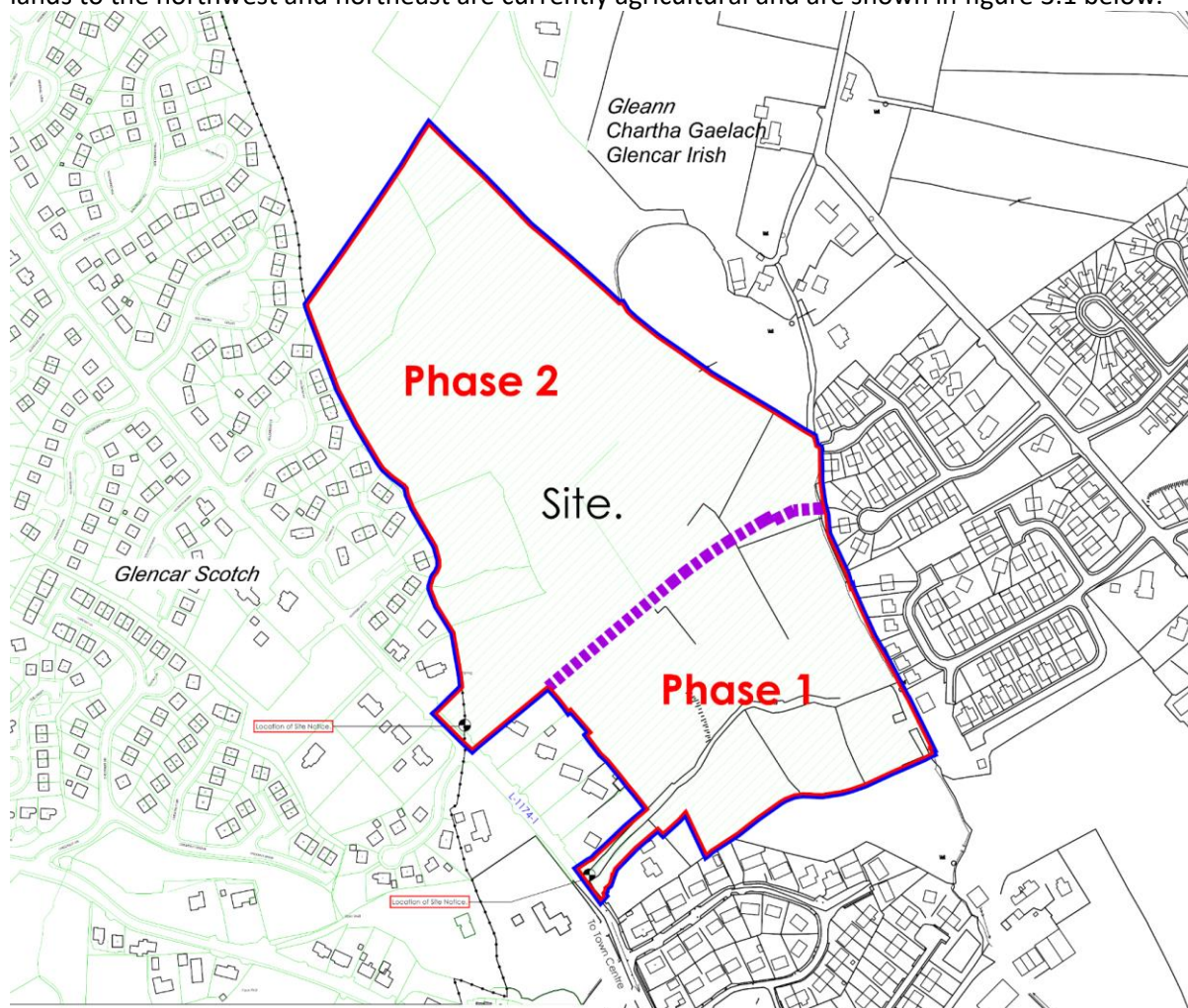
The methodology for the description of the consideration of alternatives traces the evolution after design of the proposed development from the initial review of the previously permitted development from 2010 for 418 residential units that was permitted covering the entire site of this LRD and the adjacent phase one site to the immediate south under DCC planning reg. ref. 08/80150 - ABP Ref PL66.231894), as well as taking into consideration environmental matters including topography (landscape), residential amenity (population), retention of existing wooded area (biodiversity), open space (human health), attenuation (water) as well as issues that arose in the pre-planning discussions with the Planning Authority including the LRD Opinion and in the request for and response to the request for further information in respect of the phase one development (planning reg. Ref. 22/51204)

### 3.3 Existing Environment

The 10.2ha site consists of a large agricultural field rising uphill from the lowest point at the proposed site entrance from the Grange road on the southwestern corner at an elevation of c120mOD before rising uphill in a northern and eastern direction to an elevation of c150mOD over the first 250m, before continuing to rise north-westwards for a further c225m to an elevation of c165mOD at the north eastern/rear end of the site.

The existing adjacent land uses to the west and part of the eastern boundary consist of existing residential developments, while the immediately adjacent lands to the south are currently the subject to a third party appeal (ABP.316160), in respect of the proposed Phase 1 development also submitted by Mr McDermott for 90 residential units and a crèche with a floor area of 1,067sqm. Phase 1 was

subject to a decision to grant permission by Donegal County Council under reg. ref. 22/51204). The lands to the northwest and northeast are currently agricultural and are shown in figure 3.1 below.



**Figure 3.1: Site Location and Overall landholding of PJ McDermott**

Under Planning Reg. Ref. 08/80150 (ABP PL66 231894) permission was granted in 2010 by An Bord Pleanála for the development of 418 residential units on the combined site of this proposed Phase 2 development and the adjacent Phase 1 site to the south. In granting permission the Board's 'Reasons and Considerations' stated: -

Having regard to the location of the site on zoned and serviced lands, to the pattern of development in the area, to the layout of the scheme, as revised in response to the concerns of An Bord Pleanála, including the mix of uses and residential accommodation proposed, it is considered that the proposed development would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health, and would be acceptable in terms of traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Due to the economic recession, the effects of which were felt in Donegal for a lot longer than other parts of the country, very few multi-house developments were carried for a period of almost 10 years, and the grant of permission issued by An Bord Pleanála was never implemented, with the grant of permission expired in 2015. An application for an extension of duration in 2020 was refused as it was outside of the life of the permission and following that, Mr McDermott acquired the landholding.

### 3.4 Consideration of Alternatives

#### **3.4.1 Do Nothing Scenario**

A 'Do-nothing Alternative' describes the evolution of the environment of the site in the event that the proposed development does not proceed and the site remains as it is at present, as an agricultural field.

Under this scenario, the land may be improved by the clearing of scrub to improve its agricultural value or the uncontrolled spread of scrub and gorse through the site may continue, reducing the agricultural value of the land.

Under a 'do-nothing' scenario, the site of the proposed development would remain in its current greenfield condition and it would not achieve the objective of the sites 'Primarily Residential' land use zoning. As a consequence, there would be a negative/adverse effect on population, as the failure to deliver housing on 'Primarily Residential' zoned land would fail to address the significant lack of new housing of houses in Letterkenny.

Under the 'do nothing' scenario, the site would remain undeveloped and there would be no increase in the level of traffic, utilisation of piped services, or waste production, while the land would remain as a greenfield site and would have a neutral impact on the environment including on biodiversity, but in terms of housing delivery, it would fail to deliver the housing objectives of the National Planning Framework, Regional Spatial and Economic Strategy and the Donegal County Development Plan, each of which seeks to increase the urban housing stock, the which would have a negative impact on population and human health.

A 'do-nothing' scenario wherein the previously permitted development or any alternative proposal is not developed, is considered to be an inappropriate and unsustainable approach that would result in the inefficient use of already zoned land, particularly at a time the 'Development Plan Guidelines for Planning Authorities' states that 'zoned housing land in an existing development plan, that is serviced and can be developed for housing within the life of the new development plan under preparation, should not be subject to de-zoning'. Effectively the Government is advising or instructing Planning Authorities that zoned and services lands should not be dezoned but should be prioritised for development, while a recent Government Circular (PL04/2023) has removed the requirement for developers to pay development contributions in respect of residential developments commenced on site between the 25th of April 2023 and the 24th of April 2024 and which are completed no later than 31st of December 2025. This measure has been introduced in order to enhance the delivery of new housing around the country.

A 'do nothing' approach would not deliver any of the potential new houses and apartments proposed in this Phase 2 development or the adjacent Phase 1 development and is anticipated to result in a neutral impact on the environment in relation to material assets, water, land, air, climate, cultural heritage, biodiversity and landscape but would have a negative impact on population and human health.

Part of the land previously subject to a grant of permission for 418 units is now the subject of a separate planning application (phase 1, on appeal), which if granted would change that part of the landholding from agricultural to residential.



subject of a third party appeal following a decision to grant from the Planning Authority was designed as a public housing scheme to the specification and requirements of Donegal County Council and the site layout and housing typologies were also subject to approval from the Department of Housing, before the planning application was lodged in July 2022.

Mr McDermott's vision for the Phase 2 LRD lands is to build a development of highly energy efficient A2 rated houses that are attractive to live in while being respectful of the adjacent residential developments in terms of protection of amenities and this is to be achieved through an appropriately scaled and laid out development. The site is located in the northern suburbs of Letterkenny town, with existing access available to the west and provisions have been made for future access to the planned improved road network to the north, for which a Special Development contribution of €450,000 has been applied to the Phase 1 application (by condition), while pedestrian connections via a footpath is available to Letterkenny Town centre, with future connections provided for. An existing local bus service operates along the nearby road Glencar Road and provision has been made for a new bus route on the Grange in the Chief Executive's Report in respect of submissions to the Draft Letterkenny Plan and Local Transport Plan 2023-2029.

The Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities were published in 2009 promote higher residential densities at appropriate locations, including in suburban locations, subject to high quality standards of design and layout. The site is considered to be located in an area described as "Outer Suburban / 'Greenfield'" and Paragraph 5.11 of the Guidelines state that: -

The greatest efficiency in land usage on such lands will be achieved by providing net residential densities in the general range of 35-50 dwellings per hectare and such densities (involving a variety of housing types where possible) should be encouraged generally. Development at net densities less than 30 dwellings per hectare should generally be discouraged in the interests of land efficiency, particularly on sites in excess of 0.5 hectares.

This LRD site and that of the adjacent proposed Phase 1 development (under appeal) have been subject to a previous grant of permission for 418 residential units and notwithstanding that the Draft Letterkenny Plan and Local Transport Plan 2023-2029 proposed to change the zoning of the Phase LRD site from 'Primarily Residential' to 'Strategic Residential Reserve', the 'Development Plan Guidelines for Planning Authorities' state that 'zoned housing land in an existing development plan, that is serviced and can be developed for housing within the life of the new development plan under preparation, should not be subject to de-zoning'. The basis for the Chief Executive recommendation to change the zoning is based on concerns about traffic and community facilities both of which are addressed in the 'Traffic and Transport' and 'Population and Human Health' sections of this EIAR. As the site is currently appropriately zoned land in an urban area to facilitate housing within the largest town in County Donegal, where there is significant demand and need for additional housing, alternative locations have not been considered.

It is also note that on 10<sup>th</sup> May 2023, the Elected Members of Donegal County Council voted to retain the zoning of the site as 'Primarily Residential' and this 'Material Alteration' to the draft Letterkenny Plan and Local Transport Plan 2023-2029 will be subject to public consultation in the near future.

As a zoned and serviced site in an urban area, that is owned by the applicant, no alternative locations were considered.

### **3.3.3 Alternative Layouts**

The design process has been led by John Masterson and Kieran O'Donnell of MH Associates Architects and has been an iterative process with several different layouts generated throughout the process, taking into account site constraints including access options, topography, landscape, residential amenity and the comments of the Planning Authority during the pre-application consultation process.

This section should be read together with the Architectural Design Statement prepared by MH Associates, which addresses the final selected layout in detail, with changes coming in particular following the issuing of the LRD opinion on the initial proposed layout and changes that arose following the issuing of a request for further information in respect of the adjacent Phase 1 development. The site layout as proposed has been extensively reviewed and it is considered that the layout responds in an appropriate manner to the technical requirements of the County Development Plan, the 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas' (2009) and 'Sustainable Urban Housing: Design Standards for New Apartments' (2022), as well as to the requirements, constraints and opportunities presented by the site, including topography, while paying particular attention to potential impacts to the existing and proposed adjacent residential developments.

The evolution of the site design starts with a review of the previously permitted layout (granted by Donegal County Council and then by An Bord Pleanála in 2010 (see Figure 3.2 above and 3.3 below) followed by the initial layout submitted to the Planning Authority in March 2022 as part of the request for a S247 LRD meeting, which was also submitted as the proposed LRD layout of 200 residential units as part of the official LRD submission in July 2022 (Figure 3.4). Further amendments were made in response to the request for further information in respect of the Phase 1 application reg. ref. 22/51204 that affected the proposal for 8 houses close to the entrance from the Grange (road) and the proposed houses were replaced by the relocated crèche permitted as part of Phase 1. These changes and the provision of two access roads incorporating cycle-lanes and footpaths linking Phase 1 and the proposed LRD site are shown in Figure 3.5. The selected layout is the final outcome of the changes required and requested through consultation with the Planning Authority including, the LRD Opinion and the need to comply with technical requirements (see Figure 3.6).

### **3.3.3.1 Option No 1: Layout Permitted in 2010 for 218 units and crèche**

Following the acquisition of the land by the applicant, a review of the previously permitted layout was carried out by MH Associates taking into account the prevailing pattern of development and the nature of housing demand in the area and it was determined that the development as previously permitted was not an appropriate form of development to meet current local housing needs or demands and it was concluded that alternative schemes would need to be considered. The previously permitted development is shown in image 3.3 below.

The previously permitted layout consisted of a large number of apartments, in a suburban area of Letterkenny town, where market demand was determined not to exist for such units to the extent permitted outside of the town centre and it was concluded that the previous layout would not be viable and would not cater for the requirements in the area. The conclusions of the MH Associates assessment of the previous permitted development were confirmed in the housing typologies identified as being required by Donegal County Council in respect of the Phase 1 application which consists of 82 houses and 8 apartments.

The original proposal granted permission in 2010 included a significant number of apartments, for which there is little demand in suburban areas of Letterkenny, whereas demand exists primarily for own door houses and this was a key factor in seeking to amend the design from that which was permitted in the grant of permission issued in 2010 by An Bord Pleanála.

After a review by MH Associates, a number of key design features from the previous layout were considered important to retain including the points of access onto the Grange, the concept of planted buffers around the boundaries adjacent to existing neighbouring developments, the location of the crèche on lands zoned 'Education Opportunity', the location of the public open spaces at the south of the site and the general configuration of the spine roads leading from the entrance to the more elevated norther part of the landholding.

The density of the development was considered to be high relative to adjacent development and did not reflect the pattern of existing developments in the area.

The public open space was to be provided in a series of small spaces dispersed throughout the site.

The permitted 2010 layout for the entire landholding (Phases 1 and the LRD Phased 2) is shown in Figure 3.2 above, while the site subject to the proposed Phase 2 LRD application is shown as Figure 3.3.



Figure 3.3: Site Layout Plan of previously permitted development 08/80150



### **3.3.3.2 Option No 2: Initial Layout proposed in conjunction with adjacent Phase 1**

The initial layout proposal from November 2021, at which point the two proposed phases of development were being designed in tandem, shows two independent vehicular/pedestrian access points to the two phases of development at the same locations as the access points were previously proposed and permitted in 2010.

The crèche to serve the overall development site was also proposed in the same location as in 2010, while the Phase 1 layout was designed and laid out with house/ apartment types (90 in total) agreed based on known demand and need, following discussions with the Housing Section of Donegal County Council, as the Phase 1 development is proposed to be acquired by Donegal County Council as a social housing development, subject to agreement at a later date and was also subject to approval by the Department of Housing for funding before being submitted for planning. The Phase 1 site will have 82 houses and 8 apartments reflecting a much higher demand for houses than apartments in the area.

The previously proposed vehicular connection between the two phases had been omitted with a pedestrian connection provided to serve as a means of connection for children accessing the crèche and persons accessing the future proposed bus route to be facilitated in the LRD Phase 2 site.

The previous permitted development had three storey apartments in the phase 1 area, while the current proposal had a mix of 1 and 2 storey houses, with the 1 storey bungalows backing onto the existing private houses that access directly onto the Grange at the western end of the Phase 1 site, but separated by means of planted buffers.

The proposed layout would have provided for 10 no cul-de-sacs of different lengths with no proposed connections to the zoned lands to the north and east although it could have been feasible to provide access via two of the proposed turning heads (cul-de-sac's) at the northern and eastern sides of the Phase 2 development area.

The proposal had two bus stops and a roundabout was proposed in the centre of the site from where local busses would be able return back to the Grange (road) and continue onwards on their routes around the town.

Eight houses were to be located on the lands close to the site entrance from the Grange, where five houses had previously been proposed in 2010.

The public open space would consist of a large central area on the more level area in the middle of the site as well as the more steeply sloping lands to the north of the access road upon entering the Phase 2 site, as well as a densely planted sloping embankment located between the two separate Phases of development.

The LRD proposal that was submitted to the Planning Authority seeking the provision of a LRD Opinion was for 200 residential units and the proposed layout plan as submitted to Donegal County Council in July 2022 at the same time that the Phase 1 application was submitted for planning. Then layout of the proposed Phase 2 from July 2022 is shown in Figure 3.4.



Figure 3.4: Site Layout Plan submitted as part of initial proposed pre application LRD submission

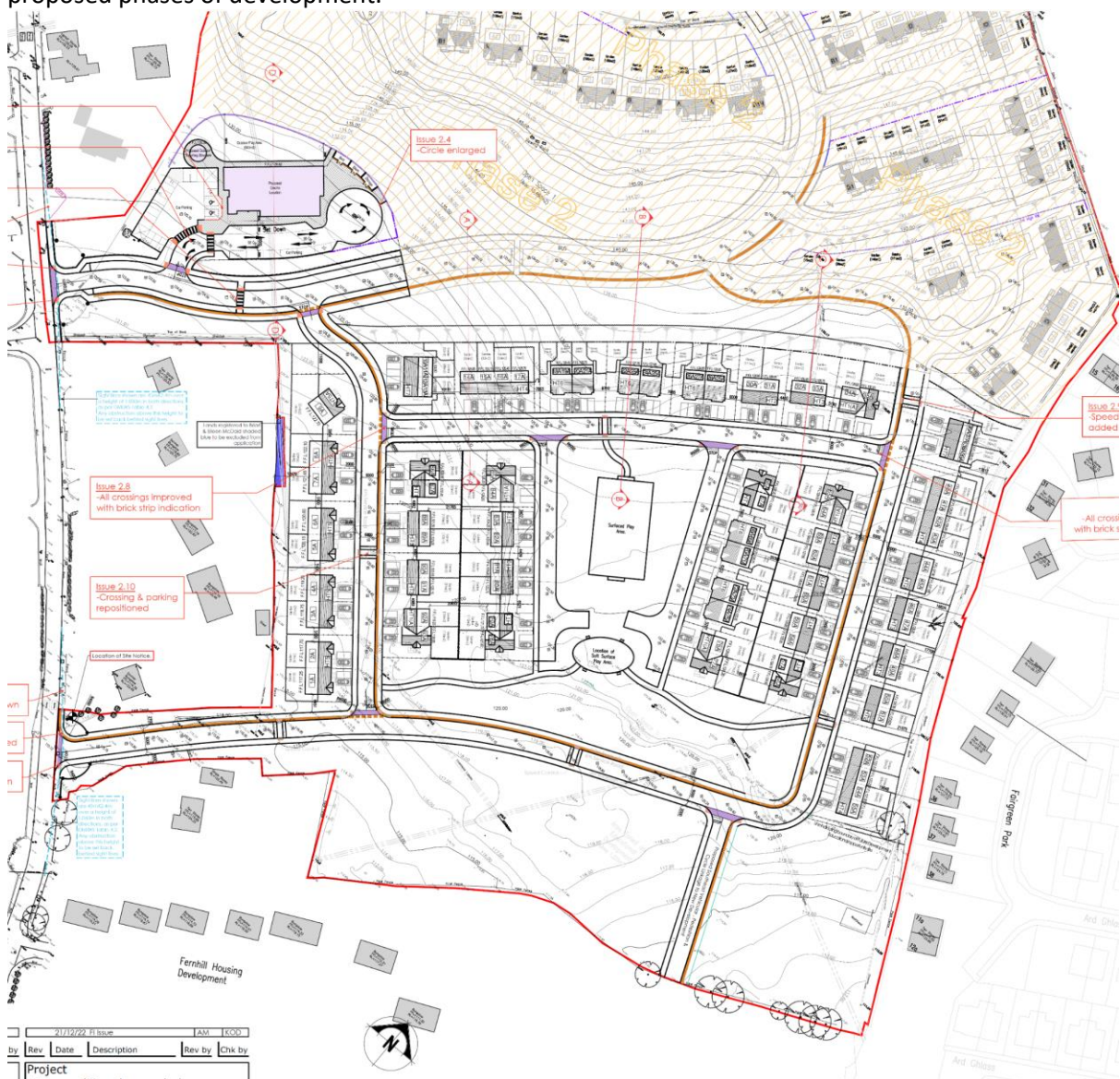
**3.3.3.3 Option No 3: Amendments following request for Further Information on Phase 1 (22/51204)**

The request for further information issued in respect of the Phase 1 development sought a number of amendments to the layout of Phase 1 that affected the proposed Phase 2 LRD site including: -

- That the crèche, which is proposed to serve both the Phase 1 site and the Phase 2 LRD site, as well as having capacity for attendees living outside of the overall landholding, should be relocated further north within the overall landholding. As a result of relocating the crèche, eight of the 200 proposed houses in the Phase 2 LRD site were displaced.
- Two no vehicular and pedestrian access points were required to be provided between the Phase 1 and Phase 2 developments, whereas originally only a pedestrian connection was proposed.

The amendments to the site layout that resulted from the above proposals are shown in Figure 3.5 and have also resulted in amendments to the originally proposed roads layout in the proposed Phase 2 LRD site, in particular it affected the proposed layout of houses at the south eastern end of the site.

The proposed cyclepaths are also indicated by orange lines in Figure 3.5 and run between the two proposed phases of development.



**Figure 3.5: Revised Phased 1 Site Layout Plan submitted in response to RFI on 22/51204**

**3.3.3.4 Option No 4: Selected Opinion – Following LRD Meeting and Opinion**

A LRD meeting was held on 14<sup>th</sup> October 2022 at which consideration of access, permeability and connectivity were discussed in respect of Option No 2 which was submitted to Donegal County Council in July 2022.

Following from the LRD Opinion a number of key amendments to the final phase 2 LRD application can be summarised as follows: -

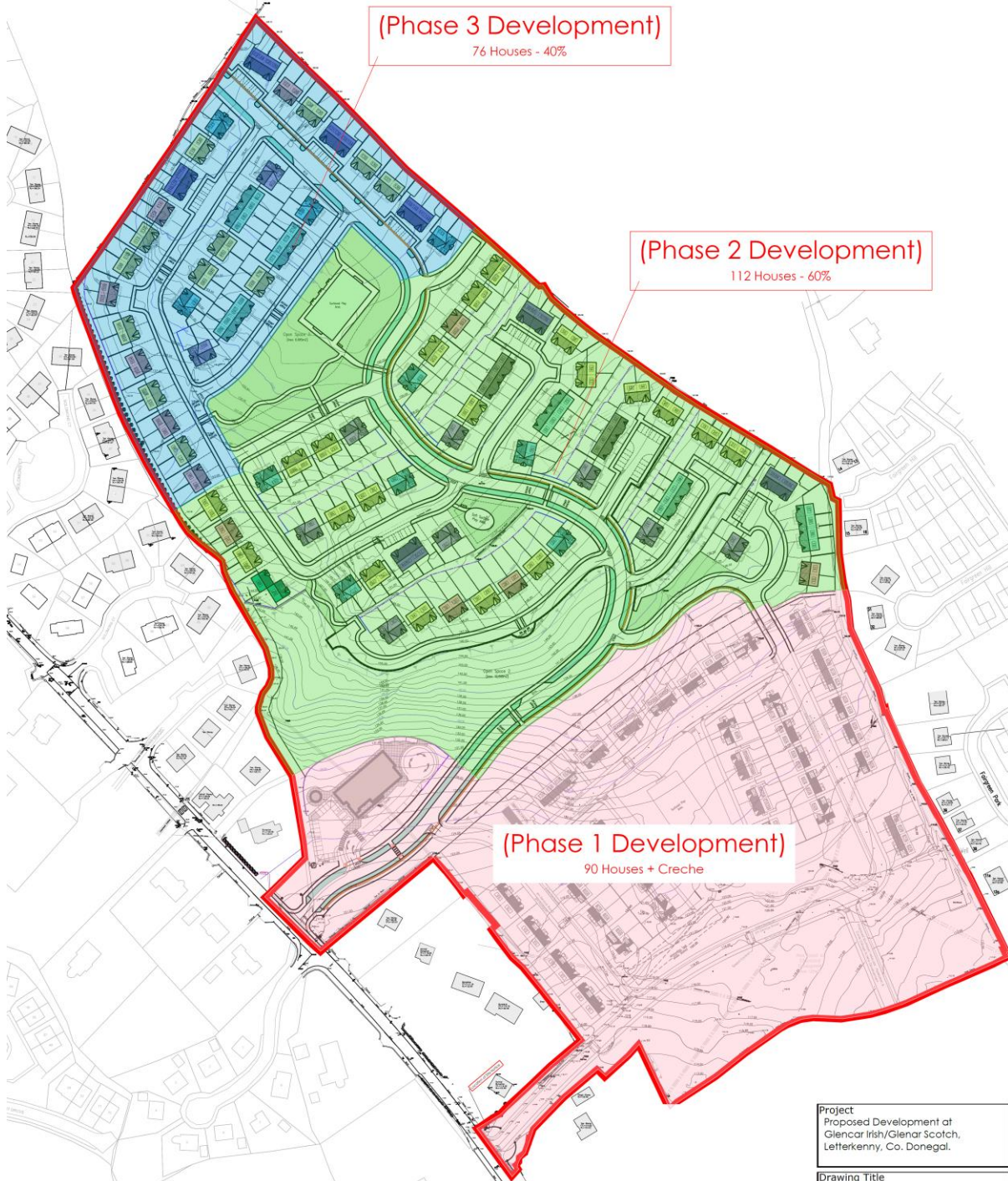
- Crèche relocated resulting the omission of 8 houses.
- 2 No. vehicular (car/bike) and pedestrian links created to/from Phase 1.
- The main through access road has been extended to the northern corner for future access with a link also available to the east and will incorporate three bus stops.
- An additional amenity space has been added as soft play area in the centre of the site
- The number of dwellings reduced from 200 to 188.

The final LRD layout is shown in Figure 3.6.



Figure 3.6: Final LRD Site Layout Plan

It is proposed to complete the LRD development in two phases of 60% in the first phase (112 units) and 40% of units in the second phase (76 units) as requested by the Planning Authority in the LRD. The public open spaces will all be completed as part of the first phase of development. The phasing plan was requested by the Planning Authority in the LRD Opinion as it expressed concerns about the level of traffic movements that would occur on the Grange if the entire 188 unit development is built before the Northern Link Road / Windyhall road is upgraded. The conclusions of the Traffic and Transport assessment (see Material Assets - Traffic section 12.0) is that there is sufficient capacity in the local road network (the Grange/Dr McGinley Road junction) to cater for the traffic generated by the entire 188 unit LRD development and the adjacent Phase 1 development of 90 units and crèche, prior to the opening of the new link to the upgraded Windyhall Road. Nevertheless the development is proposed to be developed in two phases as per Figure 3.6, which also shown Phase 1 (separate application). Together Phases 2 and 3 (in Figure 3.7) constitute the LRD application site, while Phase 1 refers to the separate development currently subject to a third party appeal.



**Figure 3.7: Proposed Phasing Plan**  
 Joe Bonner Planning

The protection of residential amenity and the potential visual impact off the development key considerations and the laying out of the proposed development add enough respect a series of tree lined buffers running southwest to north east have been incorporated into the design and will be located between the back gardens of houses that share back garden and boundaries in the central part of the site, while planted buffers will also be located how long do western boundary shared with Solomons Court and Hunters Wood as well as to the east along the boundary with the houses on Fairgreen. This landscaping will create a series of visual buffers as the site progresses, reducing any potential negative visual impact of the development when viewed from outside of the site.

Ground level will be reduced in places throughout the site to provide level platforms to facilitate the siting of houses.

### **3.3.4 Alternative Design**

The proposed residential development has been prepared to adhere to the requirements and technical standards set out in a number of key documents and guidelines being: -

- Part B; Appendix 3: Development Guidelines and Technical Standards of the Donegal County Development Plan 2018-2024
- Quality Housing for Sustainable Communities (2007)
- “Urban Design Manual – A best practice guide (2009)
- Sustainable Urban Housing: Design Standard for New Apartments – Guidelines for Planning Authorities (2022),
- Design Manual for Urban Roads and Streets (DMURS)
- Residential Densities in Towns and Villages, as set out in Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009).

The final layout has been designed by MH Associates, with the topography being a key consideration and influence in the design and layout of the development, as well as the consequent impact of the placement and orientation of buildings on the residential amenities of neighbouring properties, in terms of potential visual impact, potential for overlooking and proximity.

Noting that the density of the proposed development is lower than that previously permitted in 2010, a 2021 government policy change in the form of ‘Circular Letter: NRUP 02/2021’ which was issued on 21<sup>st</sup> April 2021 by the Department of Housing, Local Government and Heritage, has provided for flexibility in terms of density in settlements including Letterkenny and addresses: -

*Residential Densities in Towns and Villages, as set out in Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009).*

The circular was addressed to both Local Authorities and An Bord Pleanála and confirms that one solution does not work for all settlements or sites and that each site needs a degree of flexibility, in order to achieve what is an appropriate level of development for that particular site, with the ultimate objective of ensuring that any proposed development assimilates with its surroundings without conflict. The flexibility provided for in the Circular was considered to be applicable to the market demands in suburban Letterkenny and notes that: -

The NPF also acknowledges that there is a need for more proportionate and tailored approaches to residential development. This means that it is necessary to adapt the scale, design and layout of housing in towns and villages, to ensure that suburban or high density urban approaches are not applied uniformly and that development responds appropriately to the character, scale and setting of the town or village.

The Circular then addressed specific settlement types, including that which this LRD site falls into, being: -

### **Development at the Edge of Larger Towns**

It starts off by repeating Paragraph 5.11 of the ‘Sustainable Residential Development in Urban Areas’ Guidelines before providing a context that is relevant to the proposed LRD application and the adjacent Phase 1 development to the south. It states: -

While the Sustainable Residential Development Guidelines clearly encourage net densities in the 35-50 dwellings per hectare range within cities and larger towns, net densities of 30-35 dwellings per hectare may be regarded as acceptable in certain large town contexts and net densities of less than 30 dwellings per hectare, although generally discouraged, are not precluded in large town locations.

These ‘outer suburban’ provisions apply to cities and larger towns, and the Sustainable Residential Development Guidelines define larger towns as having a population in excess of 5,000 people. Large towns therefore range from 5,000 people up to the accepted city scale of 50,000 people. Given the very broad extent of this range and variety of urban situations in Ireland, it is necessary for An Bord Pleanála and Planning Authorities to exercise discretion in the application and assessment of residential density at the periphery of large towns, particularly at the edges of towns in a rural context.

The topography of this site is a key factors in the net density of 23.2 units per ha in an area that is in need for suburban housing for families in Letterkenny that are not being provided in any significant quantities in the town, despite a requirement of 2,300 new homes in the town between 2023 and 2029. A similar density has been permitted on the adjacent site to the south (under appeal).

The final design as proposed in this LRD application has been informed by a need to provide an appropriate density in the context of the “Sustainable Residential development in Urban Areas - Guidelines for Planning Authorities”, but at the same time provide a good mix of housing types that deliver for the needs and demands of the local market in an urban environment and which will help reduce pressure on demands for single houses in the open countryside within close proximity to the town of Letterkenny. The designers considered that the proposed development including that of the adjacent Phase 1 application (on appeal) would have a positive long term impact on human health due to the provision of a range of quality open spaces areas that will incorporate a range of active and passive recreational spaces including playing pitches in both Phases of the development with soft play areas for younger children and seating areas for older persons located around the site. Positive environmental impacts will also be introduced by the provision of a dedicate cycle lane along the central spine road and future provision will also be made for busses to serve the development and eventually link to the adjacent land to the north and east thereby providing a high degree of potential permeability between the proposed development as that of future adjacent developments.

The landscaping plan has sought to incorporate as many of the existing mature trees as possible into the scheme and these will be supplemented by the provision of additional tree and hedging buffers along the perimeter of the site as well as between rows of houses (see figure 4.6) that will give a distinctive character to the development that is not present in other local residential developments.

Having considered all options including topography, density, amenities of adjacent residential development, as well as traffic projections, access and future access to adjacent lands, as well as the market demands for new housing in the area, that is confirmed in respect of the adjacent Phase 1 development, where the Donegal County Council sought 82 houses and 8 apartments to fulfil some of the identified social housing needs in Letterkenny, the range of house types proposed in this LRD development reflect what the market is looking for and with all matters considered, the applicant and MH Associates Architects are of the opinion that the final proposed LRD layout and house types are the most appropriate form of design for this site.

### **3.3.5 Alternative Processes**

The proposed development constitutes a residential development on lands zoned 'Primarily Residential' that is services and is deemed suitable for residential development and standard house construction methods will be implemented. No alternative process of construction has been considered as part of the preparation of this EIAR.

### **3.3.6 Alternative Mitigation Measures**

Mitigation measures are considered in each of the technical sections of this EIAR, by the subject matter experts that prepared the individual sections with a view to avoiding, minimising or eliminating potential impacts on the environment.

In the case of each technical section of the EIAR no significant residual impacts were predicted and therefore alternative mitigation is not considered necessary.

## **3.5 Environmental Effects**

The development and assessment of alternative layouts for this LRD application has been an iterative process, that commenced with a review of the previously permitted and higher density development of 418 residential units which was granted permission by An Bord Pleanála in 2010. The final design and layout was heavily influenced by the topography of the overall landholding, of which this proposed LRD application constitutes the second of two proposed Phases of development.

A number of elements of the originally permitted development (2010) have been retained, in particular access points from the Grange while the general alignment of the main roads into and through the landholding was and has influenced the evolution of the current proposal as has the location of the previously permitted open space areas at the southern end of the site. The design and layout was also influenced by the request for further information in respect of the Phase 1 application (reg. Ref. 22/51204) and by the LRD opinion issued by the Planning Authority in November 2022.

Environmental factors also influenced the layout in the form of the need to maintain biodiversity and reduce potential visual impacts while seeking the retention where possible of existing mature trees throughout the overall landholding. Additional planting will enhance the biodiversity of the site through the creation of a series of planted buffers along site boundaries and between rows of the proposed houses which will also act to reduce visual impact and the impacts will likely be significant, positive and permanent on the landscape provided that the landscaping is managed and retained. The planting of the proposed landscape buffers will occur in a phased manner as the various stages of the development are completed, first on the lower levels and then later at the higher elevations, and means that the potential visual impact of the proposed development will be significantly reduced and the second phase of this proposed LRD development will have limited visibility by the time it is due to be constructed.

The integration of the proposed development with the adjacent Phase 1 and future developments to the east and north will be beneficial for population and human health by way of increased levels of permeability, as will the provision of cycle and footpaths, while the population will also benefit from large private open spaces in the form of private gardens, planted buffers and the provision of the formal playing areas and benches located around the site. Human health, air and climate will also benefit from the provision of car charging points at each property to facilitate the use of electric vehicles as will the absence of fireplaces as all houses will be A2 rated and have air to water heating systems installed.

The provision of cycle lanes and bus stops that can facilitate public transport in the future will have positive environmental effects on Material Assets – Traffic.

None of the alternative layouts considered would have significantly different environmental impacts in respect of Land and Soils, Water, Noise and Vibration, or Cultural Heritage.



## SECTION 4 DESCRIPTION OF DEVELOPMENT

### Table of Contents

4	DESCRIPTION OF DEVELOPMENT .....	3
4.1	Introduction .....	3
4.2	Description of the Existing Environment .....	3
4.3	Site Planning History .....	5
4.4	Description of Proposed Development (the project) .....	5
	4.4.1 Topography .....	9
	4.4.2 Connectivity .....	9
4.5	Construction Phase .....	11
	4.5.1 Construction Phases .....	11
	4.5.2 Site Setup .....	12
	4.5.3 Construction Compound .....	12
	4.5.4 Site Management .....	12
	4.5.5 Excavation and creation of site levels .....	12
	4.5.6 Site Access and Haul Routes .....	12
	4.5.7 Working hours .....	13
	4.5.8 Construction Methods and Stages .....	13
4.6	Other Nearby Developments .....	13

## List of Figures

Figure 4.1: Site Location (from <a href="http://www.googlemaps.com">www.googlemaps.com</a> ) .....	4
Figure 4.2: Site Location to northwest of Letterkenny town centre (from <a href="http://www.openstreetmap.org">www.openstreetmap.org</a> )	4
Figure 4.3: Site Location Map off proposed LRD site what phase one also shown to the South .....	8
Figure 4.4 Proposed LRD Site Layout and proposed adjacent development (21/51204) to the south .	9
Figure 4.5 Proposed LRD Site Layout and proposed adjacent development (21/51204) to the south	10
Figure 4.6: Proposed Phasing Plan .....	11

## List of Tables

Table 4.1: Planning History of Application Site .....	5
Table 4.2: Key Site Statistics.....	6
Table 4.3: House Types, Floor areas and Maximum Potential Population .....	7
Table 4.4: Proposed hours of working on site.....	13
Table 4.5: Other relevant development.....	13

## 4 DESCRIPTION OF DEVELOPMENT

### 4.1 Introduction

PJ McDermott is applying to Donegal County Council for a 10 year planning permission to provide for a residential development of 160 houses and 28 apartments (188 units in total) and associated site development works and services on a site of 10.2 hectares within an overall landholding of 15.7 hectares at Glencar Irish and Glencar Scotch, Letterkenny, County Donegal.

This section of the EIAR provide information required by Schedule 6 to the Planning and Development Regulations 2001 (as amended) regarding the following: -

- (a) a description of the proposed development, including, in particular—
  - (i) a description of the location of the proposed development,

The preparing of the EIAR has been informed by the planning policy context at a National, Regional and County level including the Donegal County Development Plan 2018-2024 as well as Government Guidelines and legislation and these documents are addressed in a separate 'Planning Report and Statement of Consistency' that accompanies the planning application.

In addition, Annex IIA requires information on the physical characteristics of the whole project and Recital (22) to the Directive provides that EIA and screening procedures should take account of *“the impact of the **whole project** in question, including, where relevant, its subsurface and underground, during the construction, operational and, where relevant, demolition phases.”*

This section has been prepared with contributions from the following consultants: -

- MH Associates Architects
- TS McLaughlin Structural Engineers
- Joe Bonner Town Planning Consultant

The experience and qualifications of the contributors to this section are included in Section 2 – Introduction.

### 4.2 Description of the Existing Environment

The site of the proposed Phase 2 LRD residential development extends to 10.2 gross (within a larger landholding of 15.7ha) and is located in the suburb of Glencar c1.55km to the north of Main Street, Letterkenny. The location of the overall landholding of 15.7ha is identified in Figures 4.1 and 4.2 by a red line boundary, which shows the LRD site to the north of the blue line as well as the adjacent site upon which a separate application for Phase 1 was submitted on 13th July 2022 (reg. ref. 22/51204) in respect 82 houses and 8 apartments on the southern part of the landholding. The Phase 1 application was subject to a decision to grant permission by the Planning Authority and is currently the subject of a third party appeal (ABP-316160-23) and the appeal has a decision date of 1st August 2023.



### 4.3 Site Planning History

The site of the proposed development has been the subject to a number of applications in the past, which are summarised in Table 4.1 below, starting with the earliest application. The first application refers to the overall landholding encompassing the two phases, while the second application is the most recent and has been subject to a decision of Donegal County Council to grant permission that is now the subject of a third party appeal on the southern part of the landholding (Phase 1).

**Table 4.1: Planning History of Application Site**

Site	Planning Ref	Application Type	Description of Development	Applicant	Decision
1	08/80150	Permission	418 residential units, creche and associated site works including parking / drop off area, also all associated site works as follows:- construction of 2no. entrances off the Old Glencar Road to service proposed site, provision of 2no. underground storm attenuation systems, provision of temporary underground foul primary treatment system prior to discharge to existing foul sewer	PJ Sweeney & Geoffrey House	Decision to Grant by DCC 29 <sup>th</sup> October 2008
	ABP PL66 231894				3 <sup>rd</sup> Party Appeal Granted By Bord Pleanala 31 <sup>st</sup> May 2010
	20/50607	Extension of Duration		Ciaran Sweeney	Refused by DCC 9 <sup>th</sup> July 2020
2	22/51204	Permission	90 residential units and creche with a floor are of 1087sqm	PJ McDermott	Decision to grant DCC 9 <sup>th</sup> March 2023
	ABP- 316160- 23				Appealed Decision due 1 <sup>st</sup> August 2023

The originally permitted development never proceeded and the 2020 application for an Extension of Duration was refused on the grounds that the original grant of permission had expired in 2015.

Figure 4.3 shows the previously permitted layout for 418 residential units, a crèche and two access points to the site from the Grange.

### 4.4 Description of Proposed Development (the project)

The proposed development is described in the public notices as: -

Planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. houses and 7 No. apartment blocks containing 28 No. apartments.(188no. residential units in total) comprising:-

House Type A – 4 Bed Semi-Detached (64no. units)

House Type B – 3 Bed Semi-Detached (22no. units)

House Type B1 – 3 Bed Semi-Detached (20no. units)

House Type B1H – 3 Bed Semi-Detached (20n. units)

House Type C – 3 Bed Terraced Block (6no. Blocks – 24no. units)

House Type D – 2 Bed Terraced Block (2no. Blocks – 8no. units)

Apartment Type E – 2 Bed Apartments (7no. Blocks – 28no. units)

House Type F – 2 Bed Semi-Detached (2no. units)

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission). The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes.

The development will also include new vehicular entrance from the Grange (also proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and future adjacent developments as well as facilitating future connection to the proposed upgraded Northern Strategic Link / Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

Table 4.2 sets out details of Key Site Statistics.

<b>Table 4.2: Key Site Statistics</b>	
<b>Gross Site Area</b>	10.2ha
<b>Net Site Area</b>	8.1ha
<b>No of Units</b>	188
<b>No of houses</b>	160
<b>No of apartments</b>	28
<b>Unit mix – 2 beds</b>	38 (20.2%)
– 3 beds	86 (45.75%)
– 4 beds	64 (34.05%)
<b>Total Gross Floor Area</b>	22,008.52sqm
<b>Plot Ratio</b>	0.2717
<b>Net Site Coverage</b>	13.56%
<b>Net Density</b>	23.2 units per ha
<b>Building heights</b>	2 x 1 storey 186 x 2 storey
<b>Public Open Space</b>	17,683sqm
<b>% Public Open Space (of gross site area)</b>	17.33%
<b>% Public Open Space (of net site area)</b>	21.83%
<b>Car Parking</b>	2 spaces per house 1.5 spaces per apartment
<b>Bike parking</b>	Private parking at each unit Collective parking at Open Space areas

Table 4.3 provides details of the 11 no house types and 2 no apartment types, their floor areas and the maximum potential population that could be accommodated in each unit.

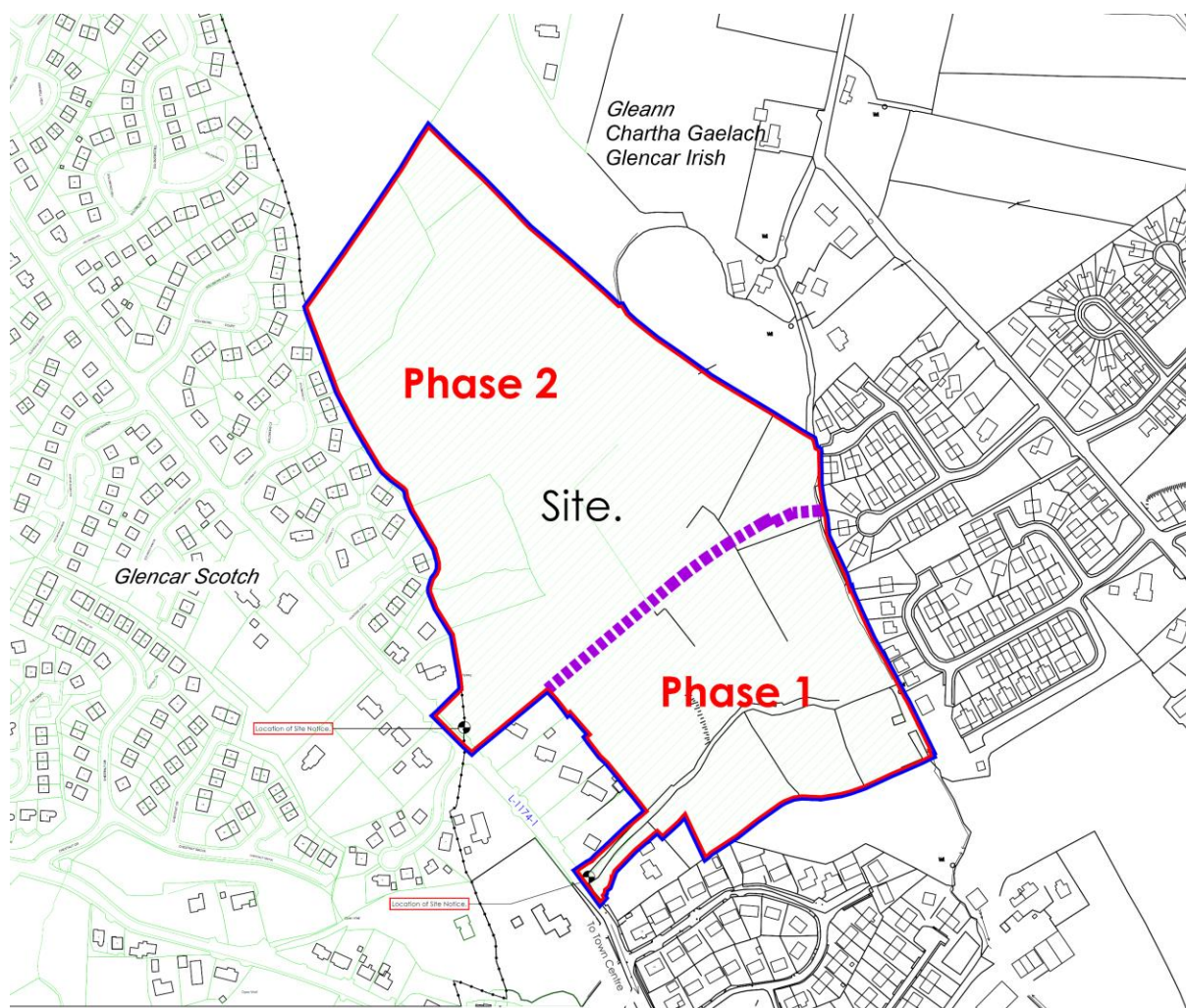
**Table 4.3: House Types, Floor areas and Maximum Potential Population**

No	House type	Description	No of units	No of persons	Max population	Floor area
1	House Type A	4 bed semi-detached house	64	6	384	133.50m <sup>2</sup>
2	House Type B	3 bed semi-detached house	22	5	110	118.20m <sup>2</sup>
3	House Type B1 End Block (Unit 1)	3 bed semi-detached house	10	5	50	124.36m <sup>2</sup>
4	House Type B1 End Block (Unit 1)	3 bed semi-detached house	10	5	50	118.20m <sup>2</sup>
5	House Type B1 End Block handed (Unit 1)	3 bed semi-detached house	10	5	50	124.36m <sup>2</sup>
6	House Type B1 End Block handed (Unit 2)	3 bed semi-detached house	10	5	50	118.20m <sup>2</sup>
7	House Type C	3 bed end of terrace house	12	5	60	107.26m <sup>2</sup>
8	House Type C	3 bed mid-terrace house	12	5	60	113.56m <sup>2</sup>
9	House Type D	2 bed end of terrace house	4	4	16	94.62m <sup>2</sup>
10	House Type D	2 bed mid-terrace house	4	4	16	99.93m <sup>2</sup>
11	Apt. Type E.	2 bed Ground Floor Apartment	14	4	56	83.11m <sup>2</sup>
12	Apt Type E	2 bed First Floor Apartment	14	4	56	83.11m <sup>2</sup>
13	House Type F	2 bed Semi-detached bungalow	2	4	8	79.69m <sup>2</sup>
		TOTAL	188		964	

The proposed development of 188 dwellings will be located in the northern part of the applicant's overall landholding, with a separate application for Phase 1 having been submitted on 13<sup>th</sup> July 2022 (reg. ref. 22/51204) in respect 82 houses and 8 apartments on the southern part of the landholding. The combined developments propose to construct a total of 278 residential units..

An extract from the Site Location Map is shown in Figure 4.3 below, with the proposed LRD application site referred to as Phase 2 LRD, while it also outlines the site of the Phase 1 housing development (reg. ref. 22/51204 (ABP-316160-23)).

The two adjacent sites of Phases 1 and 2 are located between existing housing developments to the south, east and west. While the majority of the proposed 188 LRD units will be served by site specific surface and foul water sewers, due to the site topography, units 1-12 in the south-eastern corner will connect by gravity to the proposed surface water and foul sewer in the adjacent Phase 1 development (if permitted following appeal).

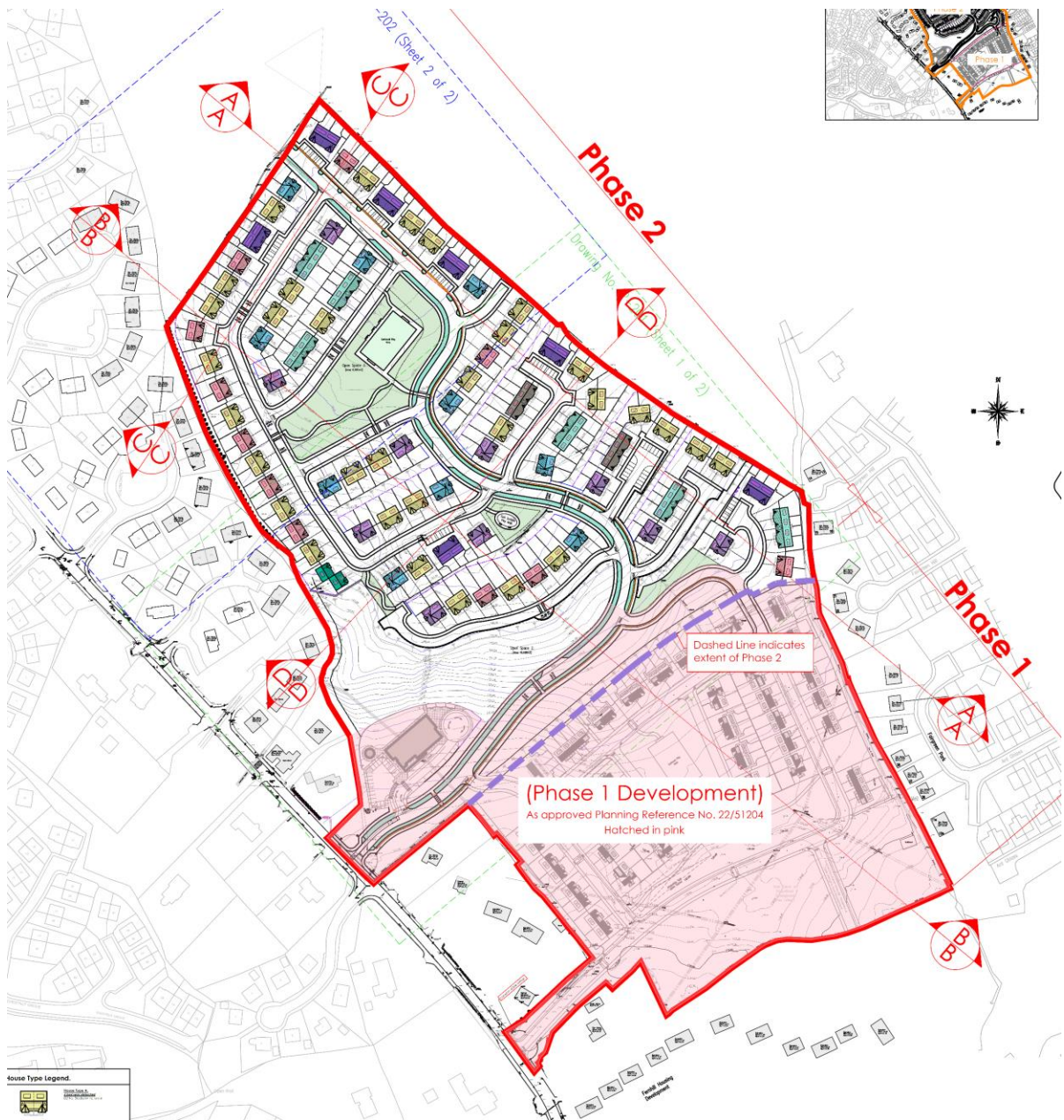


**Figure 4.3: Site Location Map of proposed LRD site what phase 1 site also shown to the South**  
(from [www.openstreetmap.org](http://www.openstreetmap.org))

The LRD site has a gross site area of 10.2ha and a net area of 8.1ha that excludes planted buffers, open spaces and the main access road through the site that will function as a future distributor road to other lands to the north and east. The crèche which has been permitted on the northern side of the access road will be delivered as part of the Phase 1 development, if permitted on appeal.

Figure 4.4 is a copy of the Site Layout Plan showing the proposed LRD site layout and Phase 1 to the south (reg. ref. 22/51204 - ABP-316160-23). The developments will be connected by two vehicular (car and bicycle) and pedestrian access points at the south-eastern boundary of the LRD site, while each site will have the capacity to independently develop the northernmost of the proposed vehicular accesses, from the Grange (Road), at the same location where a vehicular access was previously permitted by both the Planning Authority and Bord Pleanala in 2010 for a development of 418 residential units on the same overall landholding (see planning history - Section 4.3 above).





**Figure 4.4 Proposed LRD Site Layout and proposed adjacent development (21/51204) to the south (MH Associates)**

**4.4.1 Topography**

The ground rises uphill slowly at first in a easterly direction for c250m from the point where the proposed site access is located, which has an elevation of 120mOD to approximately 140mOD and then rises sharply in towards the north to a plateau at c150mOD before continuing uphill towards the highest point of the site which is in the northern most corner with an elevation of c166mOD. The site survey has informed the preparation of the application and this EIAR.

**4.4.2 Connectivity**

The site access will be from the Grange via the point where the Phase 1 access was permitted in March 2023 by Donegal County Council and it will serve as the primary access to the crèche and this Phase 2 site. A series of vehicular and pedestrian connections are also proposed to the south (to Phase 1), that in turn makes provision to connect to zoned lands located further south, while provision has also been made for direct access to lands to the north and east in the future and the applicant has engaged with the adjoining landowners with a view to securing the ability to provide access to the north and to the

Windyhall Road / Northern Lind Road upgrade at some time in the future, subject to separate planning applications.

A condition was attached to the Phase 1 decision to grant permission (now on appeal) to charge a special development contribution of €5,000 per unit (€450,000 in total) to facilitate the upgrading of the Windyhall Road and a similar condition in respect of this LRD application would generate an additional €940,000 giving a total contribution of the two phases of development of €1,390,000. The proposed connections to third party lands that will in turn connect to the upgraded road are shown in Figure 4.5.



**Figure 4.5 Proposed LRD Site Layout and proposed adjacent development (21/51204) to the south**  
(MH Associates)

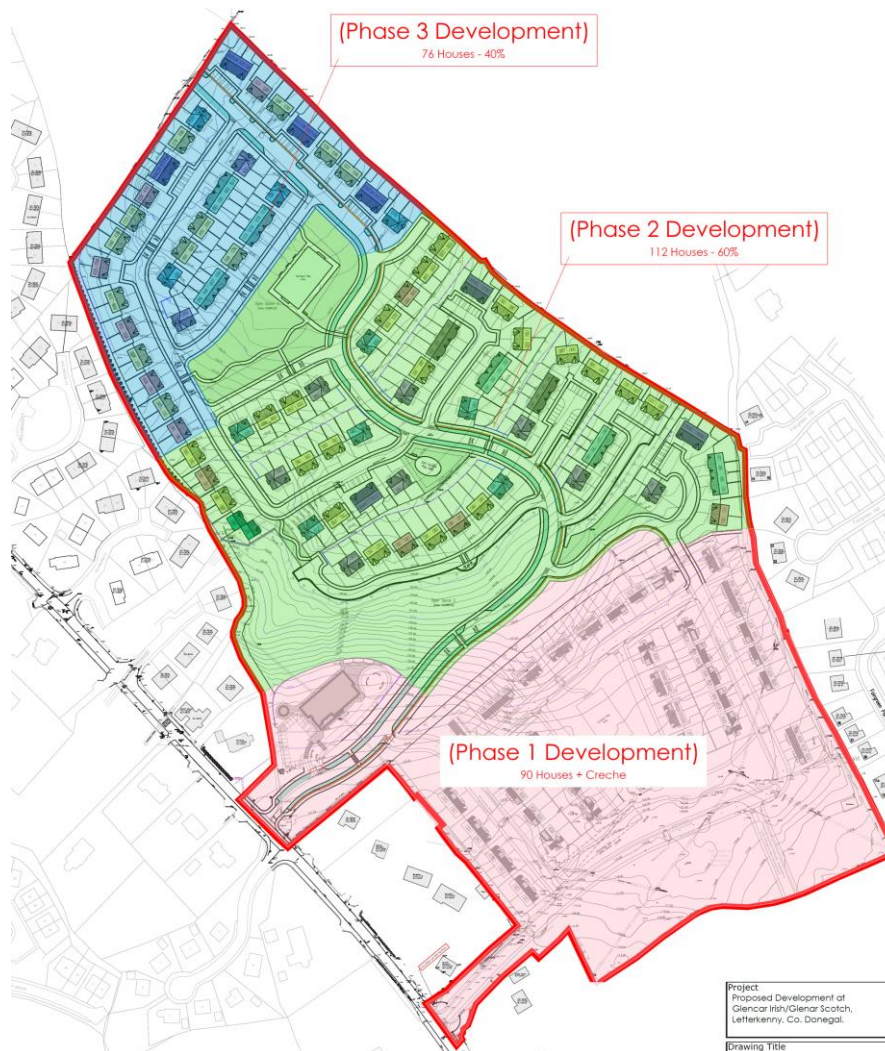
**4.5 Construction Phase**

An outline Construction, Environmental and Traffic Management Plan (OCETMP) has been prepared by MH Associates and forms part of the planning application documentation. Much of the specific detail regarding the construction phase of the development is not known at this stage of the process, and will only become clear prior to the commencement of the construction phase. For that reason, the OCETMP has been prepared in an outline form and will be finalised a later stage.

A significant element of the OCETMP will be to implement the requirements and mitigation measures set out in this EIAR. The appointed contractor will update the OCETMP to reflect current standards, requirements and obligations prior to the commencement of construction and it can be submitted to the Planning Authority for approval by way of a condition attached to the grant of permission, which would be a standard form of planning condition.

**4.5.1 Construction Phases**

It is proposed to complete the LRD development in two phases of 60% in the first phase (112 units) and 40% of units in the second phase (76 units) as suggested by the Planning Authority in the LRD Opinion. The public open spaces will all be completed as part of the first phase of the development. The phasing plan was requested by the Planning Authority in the LRD Opinion as it expressed concerns about the potential level of traffic movements that would occur on the existing road network if the entire 188 unit development is built before the Northern Link Road / Windyhall road is upgraded. Phase 1 in Figure 4.6 refers to the separate Phase 1 application (on appeal) while Phases 2 and 3 in Figure 4.6 constitutes the LRD application site.



**Figure 4.6: Proposed Phasing Plan**

#### **4.5.2 Site Setup**

The overall phasing for the entire landholding currently proposes that the adjacent phase 1 development, which is subject to a separate planning application (currently under appeal), would include the construction of the site entrance from the Grange road, meaning that the access would be in situ at the time that the LRD development commences, but the applicant will also have the capacity to construct the entrance as part of the proposed LRD application.

The initial construction stage phase of the proposed development is currently envisaged to include: -

- Carry out pre development surveys including bat, badger and any other surveys deemed necessary as part of the mitigation measures required in the technical sections of this EIAR.
- Construct the access route to and set up the site compound
- Engage with ESB and Irish Water in respect to the location of all existing services and agree routes for the diversion of overhead lines and points of connection to existing piped services.

#### **4.5.3 Construction Compound**

The construction compound will be located at the southern end of the access road, at the point where access to units 1 to 12 is proposed to be located. It will consist of: -

- Site office
- Canteen/ drying room
- WC
- 3 no storage containers
- Mortar silo
- Site hoardings
- Construction parking
- Temporary wheel wash

#### **4.5.4 Site Management**

The contractor will be responsible for all construction plant and machinery, health and safety, workers welfare, storage of materials, waste segregation, handling and disposal, the site compound, traffic management including vehicles operating permanently on the site and those accessing and egressing the site for the purpose of collections and deliveries, all stages of the construction process including the protection all amenities of adjacent properties flora and fauna.

#### **4.5.5 Excavation and creation of site levels**

The site will be cleared in a series of phases according to the Construction Plan to be determined by the contractor. Cut and fill calculations have indicated that there will be a surplus of material on site, requiring removal off site to a suitable licenced facility. It has been calculated that there will be an excess of 7,313m<sup>3</sup> of material on site to be exported. The retained material will be managed on site in accordance with the mitigation measures set out in the technical section of this EIAR.

It will be the responsibility of the contractor to ensure that a Construction Waste Management section of the CETMP (Construction, Environmental and Traffic Management Plan) is prepared in accordance with the requirements of 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' and that all waste, including excavated material generated by the site clearance, is removed to a facility with an appropriate form of waste license. The traffic volumes generated by the removal of this waste off site, which will be staggered over the duration of the build, should also be addressed in the final CETMP.

#### **4.5.6 Site Access and Haul Routes**

Access to the site will be via the vehicular access proposed onto the Grange, which may or may not already be partially constructed as part of the phase 1 development to the south. The haul road to and through the site will be built on the footprint of the roads proposed to serve the dwellings.

#### **4.5.7 Working hours**

The proposed hours of working on site are as per Table 4.4.

**Table 4.4: Proposed hours of working on site**

Day / Times
Monday to Friday 07:00 – 19:00hrs
Saturday 08:00 – 14:00hrs
Sunday and Bank Holidays Closed

#### **4.5.8 Construction Methods and Stages**

The methods of construction of the foundations will be either raft foundation or strip foundation, depending on the conditions of the ground, which will be determined when the site has been cleared and appropriate levels attained.

The main foul and surface water drainage as well as the watermain and conduits for telecommunications and electrical connections will be installed in the main roads as part of the construction of the road network along with the footpaths on cycle paths and/or in public open spaces.

Underground services on the individual sites will be installed in conjunction with the construction of the houses and apartments, and the construction of the shells of the buildings will be followed by the completion of external finishes, followed by the installation of first fix mechanical and electric fittings, followed by the completion internal finishes including the installation of sanitary and kitchen facilities as well as all second fix mechanical and electrical equipment.

The final phase of each stage of the development will be the commissioning of all the services and the occupation of the houses and apartments.

#### **4.6 Other Nearby Developments**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined. A summary of the relevant grants of permission are presented in Table 4.2 below.

**Table 4.5: Other relevant development**

Planning Ref No.	Applicant	Development Description	Location	Comment
2251204  On appeal to Ab Bord Pleanala Decision due 1 <sup>st</sup> August 2023	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers,	Immediately south of application site	This application refers to the phase one application which has been referred to numerous times earlier in this section. The application is currently on appeal, and if permitted, is

Planning Ref No.	Applicant	Development Description	Location	Comment
		connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.		scheduled to be the first phase of development carried out on the overall landholding consisting of Phases 1 and 2.
1950809  Granted on appeal by ABP 307152-20	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	This site is located approximately 50 meters north after the paused access from the Grange. The structures her completed as of May 2023, put on the external road surfacing remaining to be completed. This development will be completed and established by the time that the proposed LRD development would commence on site
1851939  Granted by DCC 05/06/2019	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	This site has not yet commenced development despite have a grant of permission for almost 4 years.

The cumulative effects of these three developments are considered in the technical sections of the EIAR.

## Section 5: POPULATION AND HUMAN HEALTH

### Table of Contents

Section 5: POPULATION AND HUMAN HEALTH.....	1
List of Figures.....	2
List of Tables.....	2
5 POPULATION AND HUMAN HEALTH.....	3
5.1 Introduction .....	3
5.1.1 Statement of Authority.....	3
5.2 Assessment Methodology .....	3
5.3 Consultations.....	4
5.4 Receiving Environment.....	4
5.4.1 Profile Study Area .....	4
5.4.2 Population Changes.....	8
5.4.3 Small Area Population Profile.....	8
5.4.4 Local Electoral Area Population - Age Profile.....	10
5.4.5 Recent Trends not accounted for in Census 2022 .....	10
5.4.6 Housing and average household size.....	10
5.4.7 Employment .....	11
5.4.8 General Health .....	11
5.5 Sensitive Receptors and adjacent land uses.....	15
5.6 Risk of Major Accident of Disasters .....	16
5.7. Characteristics of the Proposed Development .....	16
5.7.1 Construction and Operational Impacts.....	16
5.8 Cumulative Impacts.....	18
5.9 Mitigation Measures .....	20
5.10 Residual Effects .....	20
5.11 Monitoring .....	21
5.12 Difficulties Encountered .....	21

## List of Figures

Figure 5.1: Location of Application Site in Letterkenny ED Letterkenny Urban within it [www.cso.ie](http://www.cso.ie) .....5

Figure 5.2: Approximate Location of Application Site partially within in Letterkenny Census Town [www.cso.ie](http://www.cso.ie) .....6

Figure 5.3: Approximate Location of Application Site partially within in Letterkenny Census Town [www.cso.ie](http://www.cso.ie) .....7

Figure 5.4 Small Area 057106018 & adjacent Small Areas adapted from Census 2016 SAPS Maps [www.cso.ie](http://www.cso.ie)9

Figure 5.5 Schools in Letterkenny [www.cso.ie](http://www.cso.ie).....13

Figure 5.6 Ballyboe park relative to site [www.googlemaps.com](http://www.googlemaps.com) .....14

## List of Tables

Table 5.1: National, County and Local Population 2006, 2011, 2016 and 2022 .....8

Table 5.2 Population change in ‘Small Area 057106019’ and adjacent small areas between 2011 and 2016....9

Table 5.3 Age Profile of Letterkenny Rural Electoral Division and Ireland in 2016.....10

Table 5.4 Housing Profile of in Census 2016 .....10

Table 5.6 Principal Economic Status of residents of Letterkenny town in Census 2016.....11

Table 5.7 General Health of residents of Letterkenny town in Census 2016.....11

Table 5.8: Other relevant developments.....19



## 5 POPULATION AND HUMAN HEALTH

### 5.1 Introduction

Population and Human Health are a very significant elements of the “environment” and potential impacts of a development on the status of human health or on the socio-economic status of the population must be comprehensively addressed. The principal concern in this respect is that people should experience no significant diminution in any aspect or aspects of “quality of life” as a consequence of the proposed development .

The (May 2022) EPA ‘Guidelines on the Information to be contained in Environmental Impact Assessment Reports state that: -

In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc

Although referred to in this section potential impact on Human Health is largely dealt with under the other headings of this EIAR including Air, Climate, Noise and Vibration, Water, Material Assets – Traffic and Landscape .

#### **5.1.1 Statement of Authority**

Joe Bonner Town Planning Consultant (B.A. MRUP, MIPI, Dip Env Eng, Dip Proj Mgt) who has over 22 years planning experience as both a Local Authority Planning Officer and as a planning consultant. Joe has managed and contributed to the preparation of EIS’s/EIAR’s for a range of residential, commercial, retail, quarry and industrial planning applications, including several for large residential developments that have been submitted to Local Authorities throughout the country and to An Bord Pleanála. Joe is a Corporate Member of the Irish Planning Institute.

### 5.2 Assessment Methodology

This section has been carried out in accordance with the requirements of the following: -

- The 2014 EIA Directive
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022)

The 2022 EPA Guidelines lists the following matters to be considered under ‘Population and Human Health’.

- Employment
- Settlement patterns
- Land use patterns
- Baseline population
- Demographic trends
- Human health (considered with reference to other headings, such as water and air)
- Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of Landscape

Sensitive receptors have been identified by the EPA in 2015 Advice notes to include: -

- neighbouring landowners,
- homes,
- schools and rehabilitation workshops,
- hospitals,
- hotels and holiday accommodation etc.
- commercial buildings

This assessment has been carried out by way of a desk based study in which the following information sources were consulted: -

- Population and Economic data published on [www.cso.ie](http://www.cso.ie)
- OSI aerial photographs and Maps
- [www.epa.ie](http://www.epa.ie)
- [www.tii.ie](http://www.tii.ie)
- Planning application records and Development Plans available on [www.donegalcoco.ie](http://www.donegalcoco.ie)

Following from the desk based study it was possible to consider the spatial location of population in the area and the potential sensitivity of the population and the likely significant impacts of the proposed development on those receptors.

A number of site visits were carried out on the site and to the surrounding area between November 2021 and May 2023 to gain an understanding of the site and its context in particular the built environment and human context.

The potential impact or effect on identified population and human health assets is classified according to the Environmental Protection Agency Guidelines (May 2022) which is set out in Section 2 Introduction.

Where appropriate, mitigation and monitoring measures have been proposed.

### **5.3 Consultations**

As part of the LRD application process several pre-application consultation meetings were held with Donegal County Council and the feedback provided at those meetings and in the LRD Opinion have been taken into account as part of the design process for the development.

### **5.4 Receiving Environment**

#### **5.4.1 Profile Study Area**

The site lies within the Letterkenny Rural Electoral Division that surrounds the Letterkenny Urban ED, while it is partially located within the Census defined town area of Letterkenny and for the purposes of this assessment all of these areas are considered, as well as that of the county of Donegal and the state in order to provide context.

It is noted that the only some preliminary census data for Census 2022 has been published but detailed information is not yet available so the information that is provided in this section does not fully take into account the population changes in the last 7 years since April 2016 or the impact on population change as a

result of a significant increase in refugees arriving in the country from Ukraine and from other countries in the intervening period, particularly since Census 2022 was carried out.

Figure 5.1 shows the approximate location of the LRD site in the context of the Letterkenny Rural ED, with the Phase 1 site also shown to the immediate south. Figure 5.2 shows the site in the context of the Census town boundary, while Figure 5.3 is a close up of the site in the context of the Census town boundary.

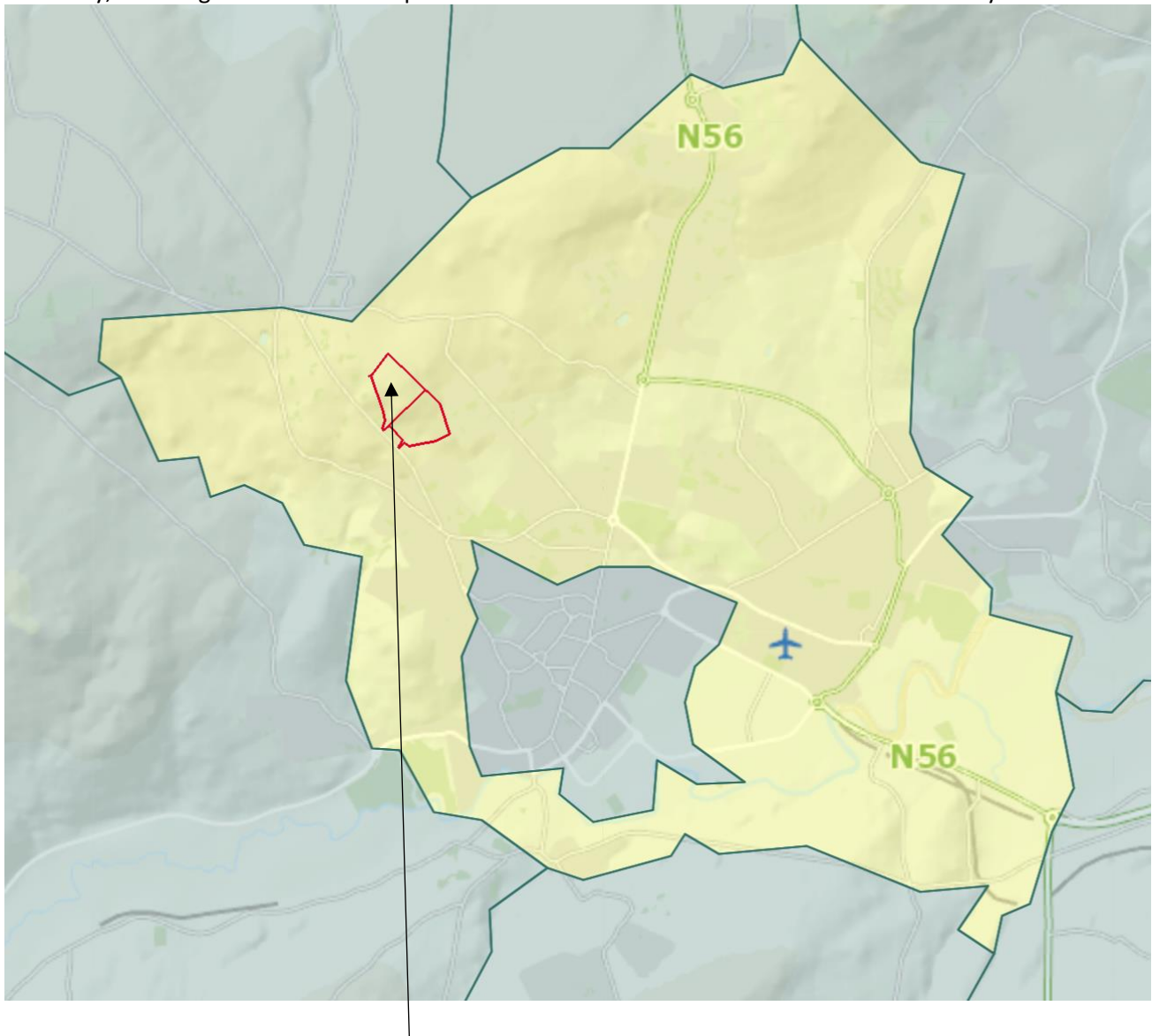


Figure 5.1: Location of Application Site in Letterkenny ED Letterkenny Urban within it [www.cso.ie](http://www.cso.ie)

The census boundary captures the majority of the built up extent of the town as of 2016, but is irregular in shape and provides a good perspective of how the town has developed as well as identifying areas where infill developments would help to consolidate and complete the build out in particular areas of the town, such as at this site at Glencar Irish and Glencar Scotch.

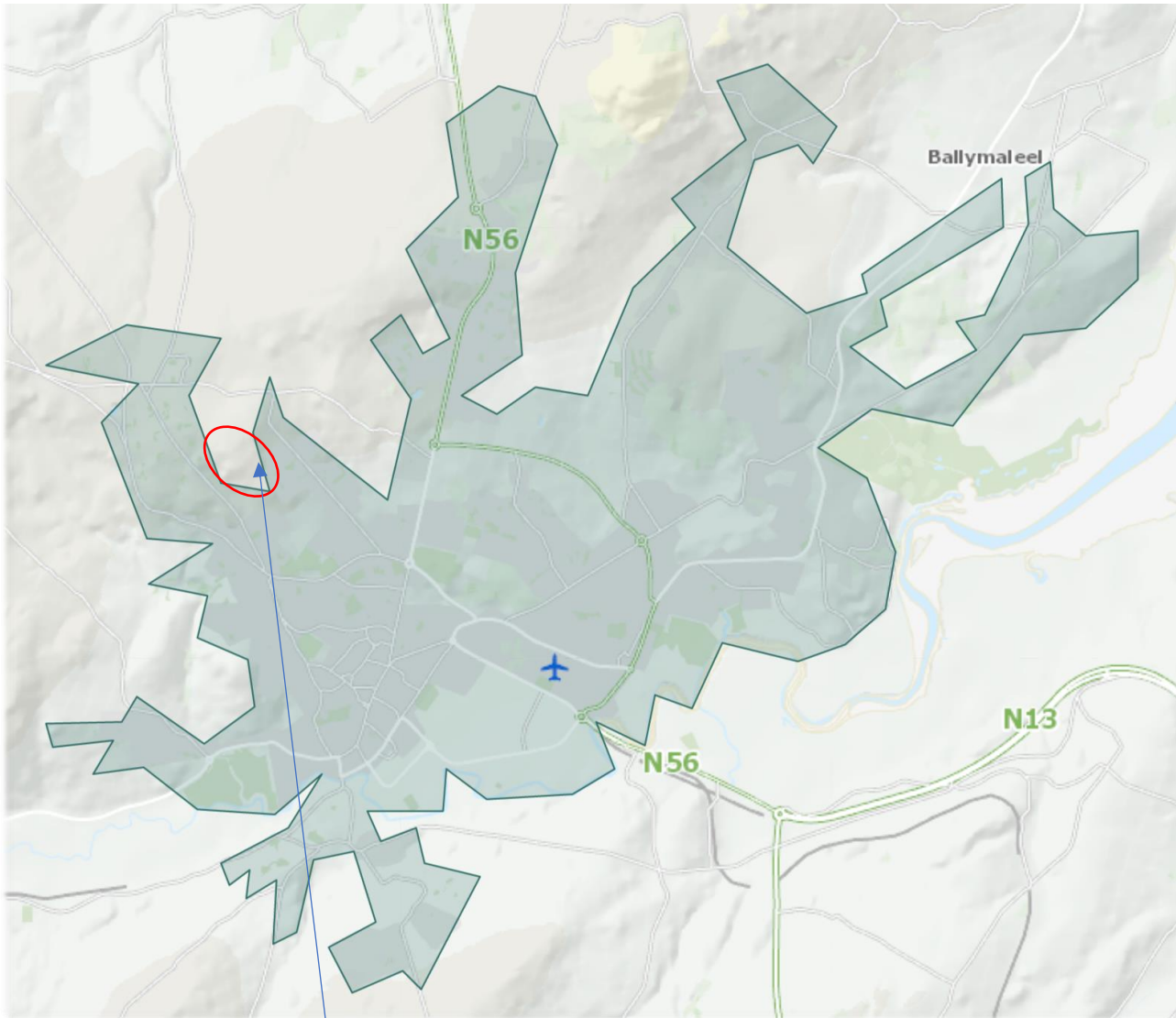


Figure 5.2: Approximate Location of Application Site partially within in Letterkenny Census Town [www.cso.ie](http://www.cso.ie)

The majority of the site is currently outside of the Census town boundary although part of the Phase 1 site (for 90 residential units and crèche to the immediate south) is within the census town boundary, although the land remains undeveloped at this time.

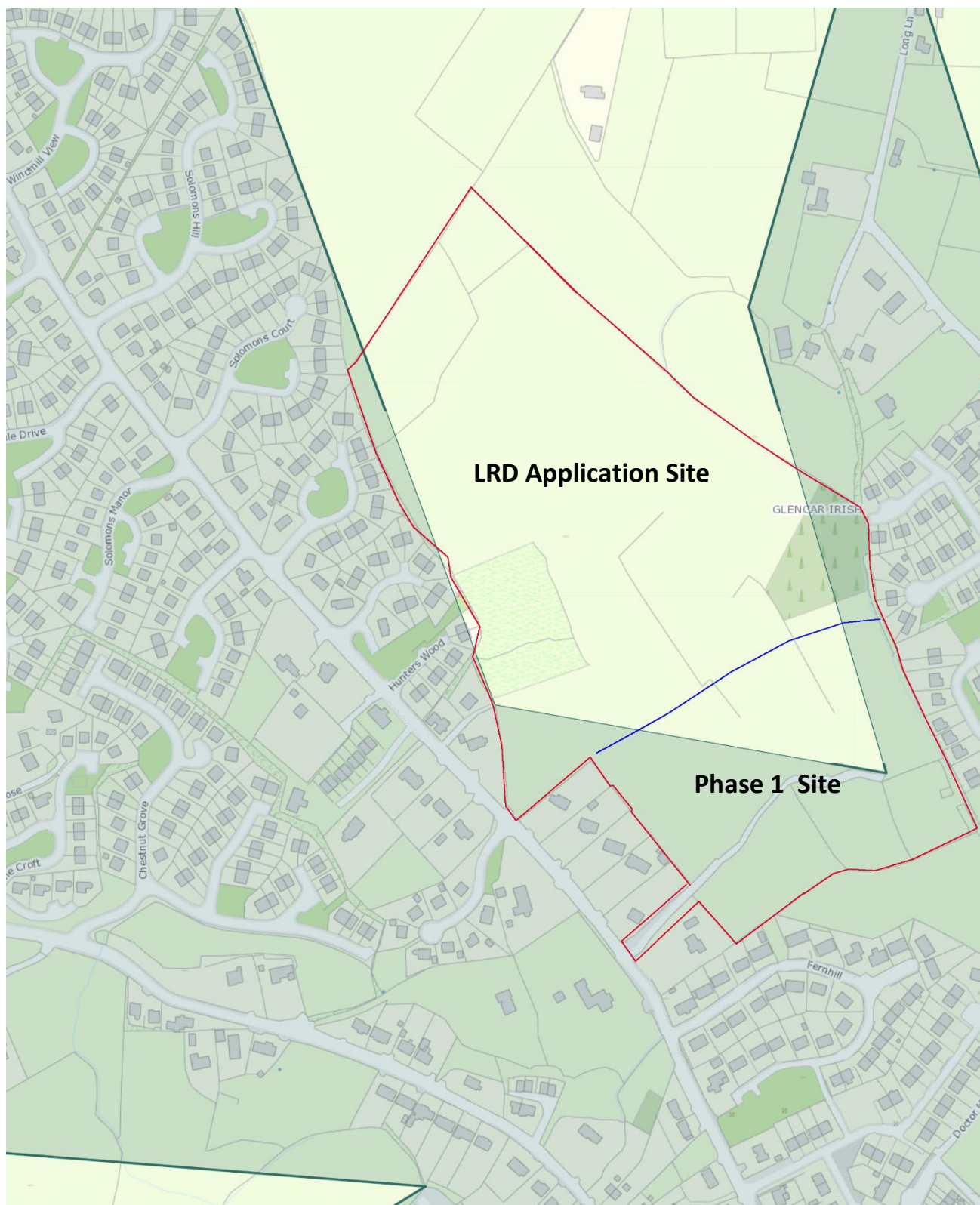


Figure 5.3: Approximate Location of Application Site partially within in Letterkenny Census Town [www.cso.ie](http://www.cso.ie)

### 5.4.2 Population Changes

The population figures presented in Table 5.1 show increases in the national population in all intercensal periods since 2006, with the total population growing by 20.84% since 2006. The county Donegal population grew by 12.90% in the same period having fallen between 2011 and 2016.

The recorded population of Letterkenny town decreased between 2011 and 2016, which was a period marked by high levels of outward migration due to recession and high unemployment, while the preliminary Census 2022 data for this metric is not available at present and does not accurately reflect the inward migration experienced since 2016, which is reflected in the preliminary Electoral District results.

In the 11 years since 2011, the population of Letterkenny Rural ED, where the site is located, grew by 863 persons or 7.68%, while Letterkenny Urban ED grew by a significant 31.59%, which is well above the county and national levels of growth, suggesting that the town centre and immediate surrounds have become a much more attractive place to live than in the previous years. Notwithstanding the significant increase in town centre population the majority of urban dwellers continue to live in the suburbs of Letterkenny.

**Table 5.1: National, County and Local Population 2006, 2011, 2016 and 2022**

	2006	2011	2016	2022 (Prelim)
<b>Ireland</b>	4,239,848	4,588,252 (+8.21%)	4,761,865 (+3.78%)	5,123,536 (+7.60%)
<b>Donegal</b>	147,264	161,137 (+9.42%)	159,192 (-1.22%)	166,321 (+4.47%)
<b>Letterkenny Census Town</b>		19,588	19,274 (-1.60%)	N/A
<b>Letterkenny Rural ED</b>		11,235	11,398 (+1.45%)	12,098 (+6.14%)
<b>Letterkenny Urban ED</b>		1,931	2,199 (+13.87%)	2,541 (+15.55%)

### 5.4.3 Small Area Population Profile

The Letterkenny Rural Electoral Division is divided into a large number of Small Areas and the site of the proposed LRD development and the residential zoned part of Phase 1 (for 90 units) to the south are located in 'Small Area '057106018' in the in 2016 Census and had a total population of 209 persons, which represented Fairgreen Park and Fairgreen Hill to the immediate east. The population had dropped from 269 in 2011, which suggests that the area boundaries may have been adjusted in the 2016 Census.

The overall population of the 10 small areas fell by only 0.60% (or 16 persons) between 2011 and 2016. whereas the countywide population fell from 161,137 in 2011 to 159,192 in 2016 representing a fall of 1.21%. Of that 1,945 fall I population, 860 was in urban areas and 1,085 in rural areas.

Table 5.2 shows the growth in population in the Small Area where the site of the proposed LRD and the adjacent Phase 1 development are located (Figure 5.4) and also shows adjacent Small Areas in the 2011-2016 period, all of which are identified in Figure 5.4 by reference to the number in column 1 of Table 5.2.

**Table 5.2 Population change in 'Small Area 057106019' and adjacent small areas between 2011 and 2016**

Map Ref.	Small Area	2011 Population	2016 Population	Percentage Change
1	057106018	269	209	-22.3%
2	057106019	235	203	-13.62%
3	057106038	309	305	-1.29%
4	057106014	217	194	-10.60%
5	057106016	210	212	+0.95%
6	057106035	185	187	+1.08%
7	057106031	318	333	+4.72%
8	057106032	245	250	+2.04%
9	057106041	303	350	+15.51%
10	057106040	383	415	+8.35%
	TOTAL	2,674	2,658	-0.60%



**Figure 5.4 Small Area 057106018 & adjacent Small Areas adapted from Census 2016 SAPS Maps [www.cso.ie](http://www.cso.ie)**

#### **5.4.4 Local Electoral Area Population - Age Profile**

In 2016, the population of Letterkenny town was 19,274 and 54.86% of the population in the Electoral Division where the site is located fell within the Adult age cohort (24-64 years), which is similar to but slight above the national average of 53% for this age range. The School Age (5-18 years) cohort is slightly below the national average by 0.49% while and Older Adults (65+) cohort are representing only 73% of the national average equivalent, suggesting that Letterkenny is a young and growing town, particularly in the suburban areas. The number of pre-school aged children living in 'Letterkenny ED' in 2016 was above the national average, suggesting that there would be a high demand for school places in the years ahead. These numbers are 7 years old at this stage and cannot be relied upon to any great extent as an accurate representation of current trends.

**Table 5.3 Age Profile of Letterkenny Rural Electoral Division and Ireland in 2016**

Age	Letterkenny Rural Electoral Area	E.A % of total	Ireland	Ireland % of total
Pre-school (0-4 years)	1,583	8.21%	331,515	6.96%
School age (5-18 years)	3,632	18.84%	920,281	19.33%
College/young adult (19-24 years)	1,602	8.31%	331,208	6.95%
Adults (25-64 years)	10,573	54.86%	2,541,294	53.37%
Older Adults (65 + years)	1,884	9.78%	637,576	13.39%
Total	19,274	100%	4,761,865	100%

#### **5.4.5 Recent Trends not accounted for in Census 2022**

The CSO estimate that the population of County Donegal increased by 3,447 in 2022, and on a pro rata basis two thirds of this growth would not be included in the Census.

As of February 2023 it was estimated by the CSO that 701 people from Ukraine had moved to the Letterkenny Electoral District. A significant number of those persons will have settled in Letterkenny and added to the demands on services in the town, including housing, schools and health facilities.

#### **5.4.6 Housing and average household size**

Table 5.4 provides details of the number of households in different catchments, being within the Letterkenny Census Town Electoral Divisions and the Small Area where the site is located. It also details the average household sizes in each area.

**Table 5.4 Housing Profile of in Census 2016**

Area	Households	Population	Ave household size	% house
Letterkenny Census Town	7,471	18,782	2.51 persons	87.35%
Letterkenny Rural ED	4,258	10,882	2.55 persons	91.54%
Letterkenny Urban ED	1,031	2,003	1.94 persons	50.92%
Small Area 057106018	75	208	2.77 persons	93.33%

The lowest number of houses and consequently the highest number of apartments are located in the Urban Electoral Area with approximately half of all homes being apartments and half houses. The average occupancy is higher outside of the urban area reflecting the presence of larger family homes than in the urban area, although the occupancy levels are below the potential rates of occupancy based on the number of bedspaces. There is a higher bedspace occupancy in the urban area as most units there are smaller than in the suburban area which captures a lot of the Letterkenny Rural ED.



### 5.4.7 Employment

In 2016 15,044 persons over the age of 18 were recorded in the town with 51.58% in employment, 13.11% students and 12.41% retired. A further 4.55% were deemed unable to work due to permanent sickness or disability with 1.38% seeking a first regular job. 6.23% look after the home or family while the balance of 10.32% were deemed to be unemployed. Table 5.6 reproduces from the Census 2016 data showing the number associated with these percentages.

**Table 5.6 Principal Economic Status of residents of Letterkenny town in Census 2016**

Principal Status	Economic	Males	Females	Both Sexes
At Work		3,920	3,841	7,761
Looking for first regular job		105	103	208
Unemployed having lost or given up previous job		881	672	1,553
Student		960	1,012	1,972
Looking after home/family		78	860	938
Retired		909	958	1,867
Unable to work due to permanent sickness or disability		351	333	684
Other		22	39	91
<b>Total</b>		<b>7,226</b>	<b>7,818</b>	<b>15,044</b>

The live register stood at 350,000 in April 2016, while in April 2023 it is at 180,500, almost half of that in 2016.

### 5.4.8 General Health

Census 2016 collected information in respect of 'Population by general health and Sex' the result so which are set out for Letterkenny town in Table 5.7.

**Table 5.7 General Health of residents of Letterkenny town in Census 2016**

Letterkenny health (2016)	Male	% Male	Female	% female	Total	% Total
Very Good	5,480	58.45%	5,726	57.84%	11,206	58.14%
Good	2,614	27.88%	2,831	28.60%	5,445	28.25%
Fair	765	8.16%	856	8.65%	1,621	8.42%
Bad	151	1.61%	150	1.52%	301	1.56%
Very Bad	28	0.30%	40	0.40%	68	0.35%
Not Stated	337	3.60%	296	2.99%	633	3.28%
<b>Total</b>	<b>9,375</b>	<b>100%</b>	<b>9,899</b>	<b>100%</b>	<b>19,274</b>	<b>100%</b>

The self-evaluation of health status indicates that in 2016, the residents of Letterkenny considered themselves to be a relatively health with 86.39% of people declaring themselves in 'good' or 'very good health while less than 2% (1.91%) declared themselves to be in 'bad' or 'very bad' health. The percentage of males and female are similar across all categories.

The nationwide results were 1.6% of persons who declared 'bad' or 'very bad' health, while 87% declared that they were in 'good' or 'very good' health.

#### **5.4.9 Local Amenities / Community Facilities**

Chapter 4 of the Guidelines 'Planning for Sustainable Neighbourhoods' sets out a list of community facilities that need to be considered when new residential development are being planned. They are set out under five headings: -

- Schools
- Childcare
- Community Centres
- Healthcare Facilities
- District/Neighbourhood Centre uses

##### **5.4.9.1 Health and Education**

Section 14.5.2 of the draft Letterkenny Plan and Local Transport Plan 2023-2029 that as published in January 2023 states that: -

With regard to health services, Letterkenny has a wide range of facilities including Letterkenny University Hospital; child, family and community mental health services; addiction and counselling services; GP clinics and dental practitioners. Likewise, the town is well served in terms of educational institutions, being home to the third level Atlantic Technological University (ATU), four secondary schools and eight primary schools that serve the town's population. Going forward, the Letterkenny Plan identifies opportunities for new school construction should same be required, facilitates the appropriate expansion of the University Hospital through suitable land-use zoning and supports the provision of new healthcare and childcare facilities at appropriate locations throughout the town (the provision of childcare is expanded upon in Section 14.6 below).

Figure 5.6 shows the location of the site relative to primary and secondary schools in the town and the four secondary schools are located between 1.1 and 1.75km from the site. A number of the primary schools are located closer to the site.

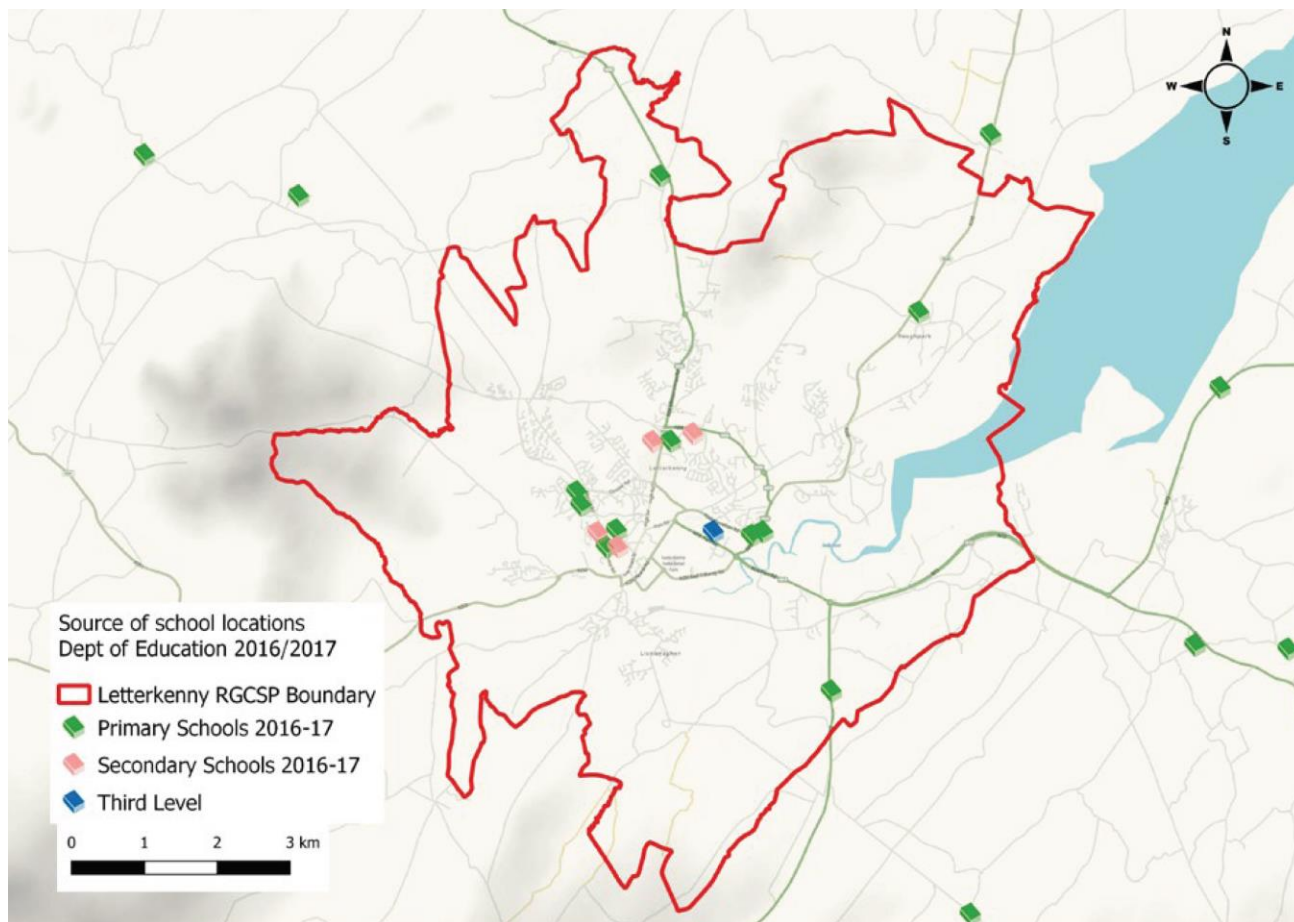


Figure 5.5 Schools in Letterkenny

[www.cso.ie](http://www.cso.ie)

### 5.4.9.1 Public Parks and Community Facilities

The draft Letterkenny Plan and Local Transport Plan 2023-2029 states that: -

In terms of public green spaces, Letterkenny offers three very attractive and well maintained parks; namely Ballymacool Park, Bernard McGlinchey Park and Ballyboe Park, the latter of which has potential to better serve the Glencar area as discussed at Section 14.2 above (of the draft plan)

Section 14.2 continues: -

#### 14.2 Community Facilities at Glencar

Notwithstanding the extent of services available in Letterkenny, this Plan recognises that some of the most densely populated parts of the town, (and most notably the Glencar area, which contains approximately 3,000 dwellings) are lacking in terms of certain community and recreational facilities. In terms of the sequential development of Letterkenny, areas such as Glencar are considered to be ideal, being located close to the town centre and already having a certain level of neighbourhood services. However, significant levels of additional residential development in Glencar would not be appropriate without ensuring that commensurate levels of community and recreational facilities are delivered in parallel with new homes. Specific actions for the Glencar area in this regard are therefore set out below.

#### Action GC-A-1

Donegal County Council will explore all options and potential funding and delivery mechanisms, (including but not limited to the use of planning conditions and development contributions) to secure the provision of appropriate community facilities for the Glencar area commensurate with levels of

new residential development, subject to compliance with all relevant policies and standards contained in this plan and the CDP. These will include :

- i. The re-imagining of Ballyboe Park, including provision of a children’s play-park;
- ii. The provision of a football pitch and associated ancillary area sufficient to meet local league standards;
- iii. The provision of a community building that would accommodate changing rooms for the football pitch and space for community/youth gatherings/events;
- iv.
  - a. Development of a detailed Active Travel (walking and cycling) action plan for the broader Glencar/Long Lane area, with e.g. links down to schools on College Road also incorporated;
  - b. Development of the relevant section of the key active travel link from Glencar to Long Lane to Windyhall;

Ballyboe Park, that lies c 650m south of the site, is shown outlined in yellow in Figure 5.7

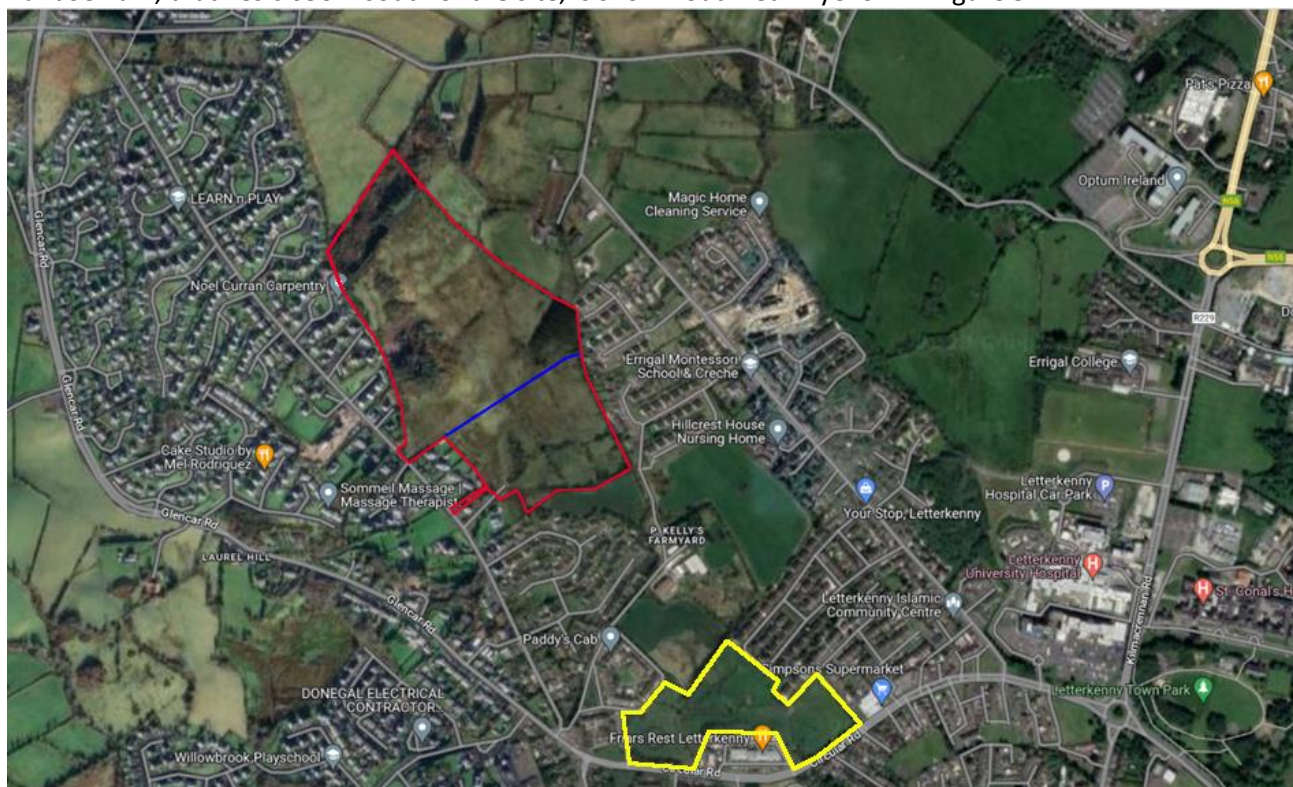


Figure 5.6 Ballyboe park relative to site

[www.googlemaps.com](http://www.googlemaps.com)

#### 5.4.9.2 Neighbourhood and District Centres

Two retail and commercial centres are located in close proximity to the site which can be accessed without the need to travel into the town centre and offer a wide range of services for residents. The first is Glencar Shopping Centre located immediately adjacent to Ballyboe Park. It accommodates the following businesses: -

- Glencar Service Station, Car Wash and Spar Shop
- Glencar Cabs
- The Glencar Inn
- Friars Rest Café
- Healthwise Pharmacy

- The Glencar Business Centre that includes
  - Glencar Fuels
  - Intensity Fitness
  - LK Pets
  - Washing Well laundrette and Dry Cleaning
  - Rara Nails
  - JLash Lash Technician
  - Sunset Tanning
  - ECA Donegal
  - Ridha's Barbers
  - Boyle Sports Bookmakers

Simpson's supermarket is also located c100m south of the Glencar Shopping Centre.

The above facilities are located c 800m south from the entrance to the proposed development site.

The Cillanoir Business and Retail Complex is located at Killylastin c950m to the north of the site entrance. It accommodated the following businesses, that would be easily accessible by residents of the site without need to travel into Letterkenny town centre.

- Costcutter convenience store
- Apple green fuel station
- Car wash facility
- Car valeting centre
- Donaghy's Bar and Restaurant
- Hairdresser and Beauty Salon
- Take Away / Fish and Chip Shop
- Pentacost Church
- 4 Apartments

## 5.5 Sensitive Receptors and adjacent land uses

The EPA Advice notes identify the following 'Population and Human Health' receptors that could be affected by the proposed development: - neighbouring landowners, homes, schools and rehabilitation workshops, hospitals, hotels and holiday accommodation etc., commercial buildings.

The sensitive receptors located adjacent to the site are identified to include the following: -

Residential - Private one off houses to the south of the proposed access,  
Hunters Wood and Solomons Court to the west  
Fairgreen Hill to the east

One off houses and agricultural lands to the north and east

No other sensitive receptors are located adjacent to the site.

## 5.6 Risk of Major Accident of Disasters

Annex IV The 2014 EIA Directive states that EIA needs to assess: -

“the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or natural disasters which are relevant to the project concerned.”

Annex IV also requires that an EIAR should contain: -

*“A description of the likely significant effects of the project on the environment resulting from, ... (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);”*

Two key considerations for EIA are set out in the ‘*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*’ being: -

- The potential of the project to cause accidents and/or disasters, including implications for human health, cultural heritage, and the environment;
- The vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters (e.g. flooding) and man-made disasters (e.g. technological disasters).

The site of the proposed development is an existing agricultural landholding located in a suburban part of Letterkenny town and the method of construction is set out in detail in Section 5 -Description of Development. A series of mitigation measures have been proposed as part of the Outline Construction, Environmental and Traffic Management Plan for the site, which will prevent, minimise or mitigate all potential significant effects.

Surface water from the site is to be piped, with a significant attenuation system proposed to address any potential heavy rain incidences and to ensure that water leaving the site does so at Greenfield runoff rates calculated by TS McLaughlin structural engineers who designed the surface water system.

The proposed houses will be built to an A2 energy rating (NZEB), will not have chimneys and at two stories in height are not considered to pose a significant risk of fire.

The site is located in a mature suburban residential part of Letterkenny town, is not located near to any Seveso sites and in terms of the proposed project, it is considered that neither the proposed development itself nor any other sites would give rise to likely or significant effect that would raise the potential for major accidents or disasters to occur.

## 5.7. Characteristics of the Proposed Development

A detailed description of the project is provided in Section 4 – Description of Development, that includes an outline description of the construction phase of the development, which would be typical of a residential developments being carried out in an urban area, including the clearing of the site to create levels for the construction of 188 residential units, as well as several areas of public open space, the attenuation tank, retaining walls, roads, cyclepaths, footpaths and the laying underground of all services.

### 5.7.1 Construction and Operational Impacts

Impacts or effects can be identified from detailed information about a project, the nature of the area affected, and the range of ‘population and human health’ resources potentially affected.

Many of the potential impacts on population and human health have been addressed in other section of the EIAR and will not be repeated in this section.

The following construction and operational related impacts have been identified.

#### **5.7.1.1 Population change**

During the construction phase, the population of the area may increase as a result of workers relocating to the area in order that they have ease of access to their place of work and to reduce the need to travel over long distances. The impact would be considered to be short-term and not significant, taking into account the occupancy level of houses in the Letterkenny rural ED area, which suggests that the existing housing stock is under occupied. A lack of available accommodation for workers could have a negative impact on the timing of the delivery of the development.

The provision of 188 new residential units, on a zoned and serviced urban site in close proximity to Letterkenny town centre will have a permanent and positive impact on the population.

#### **5.7.1.2 Employment and Economy**

The construction phase of the development will create opportunities for local persons to be employed, in a range of manual and technical construction roles. The construction phase is projected to last approximately five years and would generate positive, moderate, short-term impacts in terms of local employment opportunities directly on the site as well as creating employment through increased use of local retail and hospitality facilities located approximate to the site, both by day workers and those who move to the area for the duration of the construction phase. Other indirect employment opportunities will arise for local business such as builders merchants, retailers, and quarry operators supplying products and materials to the site.

During the operational phase of the development, the future residents will contribute to the local economy by way of shopping for convenience and comparison goods as well as using other retail and commercial services in the town and this will have a long-term positive impact.

#### **5.7.1.3 Land Use**

The proposed development would change the current land use from greenfield agricultural to residential, in close proximity to Letterkenny town centre and to a range of existing services. The change in the land use will have short term negative/neutral impacts on adjacent residences, and the severity of those impacts will change, depending on what part of the site the construction is being carried out on any particular time. A series of mitigation measures have been proposed including the erection of acoustic barriers during construction to reduce any potential noise impacts associated with the change of the land use, while the landscape section addresses potential negative impacts from the proposed construction works on land use by way of the installation of landscaped buffers in conjunction with the development of each section of housing. The impact of construction on existing land use is considered to be short term, permanent and negative.

Following completion of the development the land use will have changed from greenfield agricultural to residential and any potential significant impacts have been identified and assessed under other sections including biodiversity, water, air, land, soils and geology. With mitigation measures, any residual impacts were deemed to be imperceptible in respect of land.

#### **5.7.1.3 Human Health**

The construction phase will have an impact on those residents located closest to the site, and many of the potential impacts have been addressed in the other technical sections of this EIAR.

The water section identified potential human health impacts associated with the accidental pollution from hydrocarbons or silt entering one of the local water bodies.

Air Quality has the potential to be affected by dust from site clearance works and from uncovered construction traffic particularly during dry weather conditions. Dust monitoring has been proposed as a means of mitigation, if required. The impact is assessed to be temporary and not significant.

Noise is a significant cause for complaints by residents during construction and a series of mitigation measures including the erection of acoustic barriers along the sensitive parts of the site boundaries within 20-60m of houses and use all equipment in a manner that will reduce noise are proposed to reduce as much as possible any potential noise impacts.

Potential risks of accidents including serious injury and death of persons working on the site, are matters that must be taken into consideration and addressed in the health and safety plan for the site. The outline construction, environmental and traffic management plan (OCETMP), references the responsibilities of contractor to ensure the health and safety of all persons on the site and those on the public road adjacent thereto who may be impacted by traffic movements in the form of HGV's entering and exiting the site and using the local road network to haul construction materials to the site and/or to remove waste from the site. The first stage of the site works will involve the securing of the site boundaries and the construction of a site compound. Following the implementation of all required health and safety measures the potential adverse effects on human health from the construction phase are considered to be unlikely, neutral and short term.

#### **5.7.1.4 Health and Education**

It is noted that the land zoned 'Education Opportunity' at the southern end of the applicants land holding, to the south of the houses proposed in phase 1, has been amended to 'Primarily Residential' zoning in the draft Letterkenny Plan and Local Transport Plan 2023-2029. Material amendments to the plan have been voted on by the Elected Members and it was not proposed to reinstate the 'Education Opportunity' zoning. This indicates that the Planning Authority has confirmed confirm that there is no requirement for any additional school buildings in the local area.

It is noted that Errigal College has recently lodged a planning application for a new school building, while Scoil Colmcille has also opened a new school campus May 2023. A search of the planning register indicates that other schools have applied for and been granted permission for extensions and temporary accommodation arrangements, while Coláiste Ailigh's new school campus is another recent addition to the secondary educational offer in the town. It is considered that the impact of the proposed development of the capacity of on educational facilities will be neutral.

The impact of the additional population on the health service will be long term and negative as the local Letterkenny Hospital regularly has to deal with overcrowding. This can only be addressed at a government level.

#### **5.7.1.5 Public Parks and Community Facilities**

Through a series of proposed connections, including to the proposed Phase 1 site to the south which in turn has made provision to connect to other underdeveloped and 'Primarily Residential' zoned lands to the south, it will be possible to connect directly to Ballyboe Park without traveling along the Grange (road).

The application also includes a Mobility Management Plan that provides for increased cycle usage and these cycle lanes will be accessible to residents of the development and future developments as a means of cycling to school.

The application also proposes a new vehicular and pedestrian route to the Windyhall road upgrade and the development contribution was conditioned in respect thereof on the phase one application.

## **5.8 Cumulative Impacts**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined. A summary of the relevant grants of permission are presented in Table 5.8 below.



**Table 5.8: Other relevant developments**

Planning Ref No.	Applicant	Development Description	Location	Cumulative Impact Assessment
2251204  On appeal to Ab Bord Pleanala  Decision due 1 <sup>st</sup> August 2023	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	<p>This application refers to the phase 1 application also by Mr McDermott. The application is currently on appeal, and if permitted, is scheduled to be the first phase of development carried out on the overall landholding consisting of Phases 1 and 2.</p> <p>It is not intended that the two schemes would be under construction at the same time as there are insufficient numbers of workers to carry to developments of this scale in the region.</p> <p>The development will be completed consecutively rather than concurrently with the result that the potential impacts identified in this EIAR will extend over longer period meaning some effects may be classes as medium term rather than short term.</p>
1950809  Granted on appeal by ABP 307152-20	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom	70 m west of application site	<p>This site is located approximately 50 meters north after the paused access from the Grange. The structures are completed as of</p>

Planning Ref No.	Applicant	Development Description	Location	Cumulative Impact Assessment
		and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal		May 2023, with only the external road surfacing remaining to be completed. This development will be completed and established by the time that the proposed LRD development would commence on site
1851939  Granted by DCC 05/06/2019	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	This site has not yet commenced development despite have a grant of permission for almost 4 years.  The duration of the grant of permission will have almost expired by the time that works would be ready to commence on this site

The cumulative effects of these three developments are considered in the technical sections of the EIAR.

## 5.9 Mitigation Measures

Mitigation measures regarding aspects of human health are addressed under other headings of this EIAR.

No likely significant negative effects have been identified with respect to population, however, the following mitigation measures are considered necessary.

- Control working hours from 07:00-19:00 Monday to Friday and 08:00-14:00 on Saturdays;
- Appoint a liaison officer on site as a point of contact for members of the local community to liaise with and to deal with any issues that may arise during construction.
- Complete the Construction Environmental and Traffic management Plan prior to the commencement of development and adjust it as necessary for changing circumstances as the development progresses.

Health and Safety mitigation measures will be addressed in the Construction Environmental and Traffic Management Plan to be finalised following the issuing of a grant of permission and will include.

## 5.10 Residual Effects

There will be no residual effect on the population and human health resource after mitigation measures have been implemented.

### **5.11 Monitoring**

The adherence to the operation hours will be monitored through the planning enforcement system if breaches occur.

### **5.12 Difficulties Encountered**

The absence of up to date Census record leaves gaps in baseline information that may not accurately reflect the population trends.

## SECTION 6: BIODIVERSITY

### Table of Contents

SECTION 6: BIODIVERSITY .....	1
List of Figures .....	2
List of Maps .....	2
List of Photographs .....	2
List of Tables .....	2
6 BIODIVERSITY .....	3
6.1 Introduction .....	3
6.2 Requirements for Ecological Impact Assessment .....	6
6.2.1 National Legislation .....	6
6.2.2 National Policy .....	6
6.2.3 European Legislation .....	7
6.3 Guidance Documents .....	8
6.4 Statement of Authority .....	9
6.5 Methodology .....	9
6.5.1 Desk Study .....	9
6.5.2 Scoping .....	9
6.5.3 Field Study .....	10
6.5.4 Impact and Effect Assessment Methodology .....	12
6.6 Establishing the Baseline .....	15
6.6.1 Desk Study .....	15
6.6.2 Field Study .....	26
6.6.3 Identification of Key Ecological Receptors .....	36
6.7 Ecological Impact Assessment .....	38
6.7.1 Do Nothing Scenario .....	38
6.7.2 Effects on Designated Sites .....	38
6.7.3 Potential Invasive Species Threat .....	39
6.7.4 Likely Significant Effects During Construction Stage .....	39
6.7.5 Likely Significant Effects During Operational Stage .....	45
6.8 Cumulative Impact Assessment .....	48
6.8.1 Operation of the new housing development .....	49
6.8.2 Existing Habitats and surrounding land uses .....	49
6.8.3 Assessment of Cumulative Effects .....	50
6.9 Determination of Environmental Impact Significance Pre-mitigation .....	51
6.9.1 Summary of Mitigation Measures Proposed .....	53
6.9.2 Determination of Environmental Impact Significance Post mitigation .....	58
6.10 Interactions .....	58
6.11 Conclusion .....	58
APPENDIX I: Botanical Survey Data Sheet .....	59
APPENDIX II: Bird Survey .....	61
References: .....	64

## List of Figures

Figure 6.1: Site Layout Northern Section	4
Figure 6.2: Site Layout Southern section	5
Figure 6.3: Stands of salmonberry noted throughout the subject site.	12
Figure 6.4: Nationally Designated Sites Proximal to The Proposed Development	18
Figure 6.5: Bat Suitability Index for Relevant Hectads	21
Figure 6.6: Habitats within the subject site	26
Figure 6.7: Adjacent habitats to the subject site	30
Figure 6.8: Location of potential setts identified along the northern boundary	31
Figure 6.9: Location of the active Badger sett near the western boundary	32
Figure 6.10: Species of bat recorded and the location of calls recorded	36
Figure 6.11: Proposed phasing of the development	50

## List of Maps

Map 6.1: Location of subject site within Hectad C11	19
---	----

## List of Photographs

Photograph 6.1: GS4 habitat within the subject site	27
Photograph 6.2: Scrub habitat.	27
Photograph 6.3: Treeline along the western site boundary	28
Photograph 6.4: Mixed broadleaf woodland bordering stand of conifers.	28
Photograph 6.5: Conifer woodland towards the SE site boundary	29
Photograph 6.6: Drainage Ditch along the eastern boundary	30
Photograph 6.7: Entrance to a sett observed onsite.	33
Photograph 6.8: Badger recorded onsite.	34
Photograph 6.9: Red Fox foraging around the northern boundary	35

## List of Tables

Table 6.1 Magnitude of Impacts	14
Table 6.2 Impact Determination for Nationally Designated Sites.	16
Table 6.3 Mammal Records	19
Table 6.4 Bat Records	20
Table 6.5: Breakdown of All Bats Suitability Index by Species	21
Table 6.6: National Biodiversity Data Centre and Bird Atlas of Ireland records in Hectad C11	22
Table 6.7: Amphibians and Reptiles	24
Table 6.8 Invasive Species in Hectad C11	24
Table 6.9: Habitats on Site and surrounding environs	26
Table 6.10: Badger activity noted along the northern boundary.	31
Table 6.11: Badger activity noted along the Western boundary	32
Table 6.12: Mammal activity noted within the site	34
Table 6.13 Identification of KERs	37
Table 6.14: Cumulative Effects	49

## 6 BIODIVERSITY

### 6.1 Introduction

This section assesses the likely significant effects (both alone and cumulatively with other projects) that the proposed development may have on Biodiversity, Flora and Fauna and sets out the mitigation measures proposed to avoid, reduce, or offset any potential significant effects that are identified. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Acts 1976 to 2018 (as Amended), EU Habitats Directive 92/43/EEC as amended and EU Birds Directive 2009/147/EC.

The full description of the proposed development is provided in Chapter 4 of this EIAR.

This chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance, and policy context applicable to Biodiversity, Flora and Fauna.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.
- This is followed by an Assessment of Effects which are described regarding each phase of the development: construction phase, operational phase, and decommissioning phase. Potential Cumulative effects in combination with other projects are also fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity, Flora and Fauna.

The following defines terms utilised in this chapter:

- For the purposes of this EIAR, the term '*subject site*' will refer to the site proposed for Phase 2 as outlined above and illustrated in Figure 6.1 and Figure 6.2
- "Key Ecological Receptor" (KER) is defined as a species or habitat occurring within the zone of influence of the development upon which likely significant effects are anticipated.
- "Zones of Influence" (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOI's differ depending on the sensitivities of habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.

The Site Layout is provided in Figure 6.1 with the proposed site phasing shown Figure 6.2 (Southern section).



**Figure 6.1: Site Layout Plan**

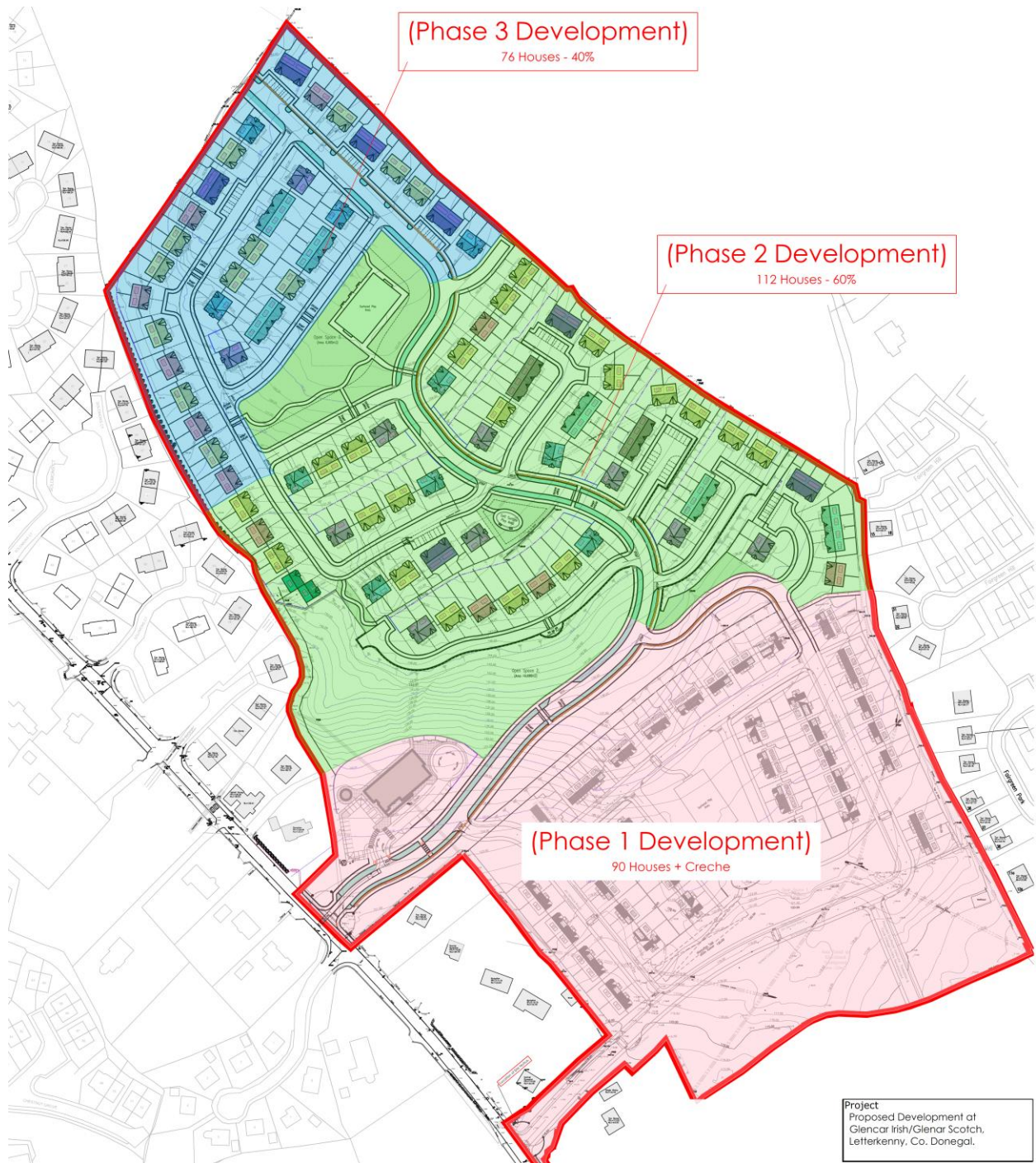


Figure 6.2: Proposed phasing of the site



## 6.2 Requirements for Ecological Impact Assessment

National and European legislation and Policy set out the requirement for the ecological impact assessment of development.

### 6.2.1 National Legislation

The Wildlife Acts (1976/2000) provides legal protection to various species from anthropogenic interference with licensing providing the only derogation. The 2000 amendment set out the designation of NHAs and pNHAs. This designation is to provide protection to species and habitats found therein. pNHAs were first proposed in 1995 but have yet to be statutorily approved (some have been designated NHA – mostly peat bogs in the midlands). However, the NPWS considers pNHAs of significant value for flora and fauna. NHAs, pNHAs and the species therein are considered Key Ecological Receptors in this assessment.

Rare plant species are afforded protection from cutting, picking and damage and their habitats are protected from alteration, interference, and damage under The Flora Protection Order 1999. Any rare plant species listed are considered Key Ecological Receptors in this assessment.

### 6.2.2 National Policy

The United Nations Convention on Biological Diversity (CBD) places an obligation on U.N member states to develop national strategies and action plans for the conservation and sustainable use of biodiversity. Out of this requirement the Irish National Biodiversity Action Plan was formed. Both the current National Biodiversity Action Plan 2017-2021<sup>1</sup> and draft 4<sup>th</sup> National Biodiversity Action Plan 2023 - 2027<sup>2</sup> expand on the targets set out in the previous iteration. The principle aim of the current plan is to conserve biological diversity in Ireland. The plan highlights the following measures as significant in the context of the principal objective of mainstreaming biodiversity in decision making across all sectors of the economy:

- “Incorporate into legislation the requirement for consideration of impacts on biodiversity to ensure that conservation and sustainable use of biodiversity are considered in all relevant plans and programs and relevant new legislation.
- Public and Private Sector relevant policies will use best practice in Strategic Environmental Assessment (SEA), Appropriate Assessment (AA) and other assessment tools to ensure proper consideration of biodiversity in policies and plans;
- All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.
- Strengthen ecological expertise in local authorities and relevant Government Departments and agencies.
- Local Authorities will review and update their Biodiversity and Heritage Action Plans.
- Local Authorities will review and update their Development Plans and policies to include policies and objectives for the protection and restoration of biodiversity.
- Develop a Green Infrastructure at local, regional, and national levels and promote the use of nature-based solutions for the delivery of a coherent and integrated network.
- Continue to produce guidance on the protection of biodiversity in designated areas, marine and the wider countryside for Local Authorities and relevant sectors.
- Integrate Natura 2000 and Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritised Action Framework and this NBAP.
- Develop a Natural Capital Asset Register and national natural capital accounts by 2020, and integrate these accounts into economic policy and decision-making.

<sup>1</sup> <https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf>

<sup>2</sup> <https://www.gov.ie/pdf/?file=https://assets.gov.ie/233057/f1a92f68-e668-498d-a56c-df777a19b549.pdf#page=null>

- Initiate natural capital accounting through sectoral and small-scale pilot studies, including the integration of environmental and economic statistics using the framework of the UN System of Experimental-Ecosystem Accounting (SEEA).
- Establish a national Business and Biodiversity Platform under the CBD's Global Business Partnership; Ensure Origin Green produces tangible benefits for biodiversity with increased emphasis on conservation and restoration of biodiversity.
- Implement actions from Ireland's Biodiversity Climate Change Sectoral Adaptation Plan.
- Identify and take measures to minimise the impact of incentives and subsidies on biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity.
- Establish and implement mechanisms for the payments of ecosystem services including carbon stocks, to generate increased revenue for biodiversity conservation and restoration.
- Develop and implement a National Biodiversity Finance Plan to set out in detail how the actions and targets of this NBAP will be delivered from 2017 and beyond; and Monitor the implementation of the Plan.

These measures and the content of the National Biodiversity Action Plan 2017-2021 are considered throughout this assessment.

### **6.2.3 European Legislation**

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna) formed a basis for the designation of Special Areas of Conservation (SAC's). Similarly, Special Protection Areas are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). Collectively, SACs and SPAs are referred to as Natura 2000 sites. In general terms, they are of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. Under Article 6(3) of the Habitats Directive an Appropriate Assessment must be undertaken for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An Appropriate Assessment is an evaluation of the potential impacts of a plan or project on the conservation objectives of a Natura 2000 site, and the development, where necessary, of mitigation or avoidance measures to preclude negatives effects.

The main aim of the EU Habitats Directive is to "contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies". The Directive was originally transposed into Irish law by the European Communities (Natural Habitat) Regulations, S1 94/1997. However, two judgments of the Court of Justice of the EU (CJEU) – notably cases C-418/04 and C-183/05 - found that Ireland had not adequately transposed the two Directives. Therefore, Part 6 of the European Communities (Birds and Natural Habitats) Regulations 2011 - 2021 now the relevant part dealing with the protection of flora and fauna since the revocation of the European Habitats Regulations of 1997. This consolidates the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in CJEU judgments.

Article 6 (3) of the Habitats Directive states that:

*"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public".*

As such any project likely to have a significant effect, either individually or in combination with other plans or projects, upon the conservation objectives of a Natura 2000 site must undergo an assessment of its implications on relevant Natura 2000 sites.

A separate Stage 1 AA Screening Report has been prepared to examine the potential effects of this development on the Natura 2000 network and to inform appropriate assessment by the consent authority. Furthermore, the species and habitat protected under European legislation are considered key ecological receptors in this assessment. This AA screening assessment was submitted as part of the pre-application LRD consultations and Donegal County Council, the Competent Authority, having assessed the Stage 1 AA Screening assessment, determined that a Stage 2 AA was not required.

The EIA Directive (85/337/EEC) is in force since 1985 and applies to a wide range of defined public and private projects, which are defined in Annexes I and II:

- **Mandatory EIA:** all projects listed in Annex I are considered as having significant effects on the environment and require an EIA (e.g. long-distance railway lines, motorways and express roads, airports with a basic runway length  $\geq 2100$  m, installations for the disposal of hazardous waste, installations for the disposal of non-hazardous waste  $> 100$  tonnes/day, waste water treatment plants  $> 150.000$  p.e.).
- **Discretion of Member States (screening):** for projects listed in Annex II, the national authorities have to decide whether an EIA is needed. This is done by the "screening procedure", which determines the effects of projects on the basis of thresholds/criteria or a case-by-case examination. However, the national authorities must take into account the criteria laid down in Annex III. The projects listed in Annex II are in general those not included in Annex I (railways, roads waste disposal installations, wastewater treatment plants), but also other types such as urban development projects, flood-relief works, changes of Annex I and II existing projects)

The EIA Directive of 1985 has been amended three times, in 1997, in 2003 and in 2009:

- Directive 97/11/EC brought the Directive in line with the UN ECE Espoo Convention on EIA in a Transboundary Context. The Directive of 1997 widened the scope of the EIA Directive by increasing the types of projects covered, and the number of projects requiring mandatory environmental impact assessment (Annex I). It also provided for new screening arrangements, including new screening criteria (at Annex III) for Annex II projects, and established minimum information requirements.
- Directive 2003/35/EC was seeking to align the provisions on public participation with the Aarhus Convention on public participation in decision-making and access to justice in environmental matters.
- Directive 2009/31/EC amended the Annexes I and II of the EIA Directive, by adding projects related to the transport, capture and storage of carbon dioxide (CO<sub>2</sub>).

The initial Directive of 1985 and its three amendments have been codified by DIRECTIVE 2011/92/EU of 13 December 2011. Directive 2011/92/EU has been amended in 2014 by DIRECTIVE 2014/52/EU.

### 6.3 Guidance Documents

Guidance from the National Roads Authority forms the basis of both survey techniques and assessment methodology. The documents 'NRA Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2' (NRA, 2009) and 'NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009)' were initially designed in the context of assessing the development of roads. However, the guidelines follow standardised techniques and are considered good practice in terms of ecological assessment.

Guidance documents that informed this assessment include:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2019). Guidelines for Ecological Impact Assessment.
- Chartered Institute of Ecological and Environmental Management (CIEEM) (2012). Preliminary Ecological Appraisal.
- Fossitt JA (2000). A Guide to Habitats in Ireland.
- The Heritage Council (2011) Habitat Survey Guidelines: A Standard Methodology for Habitat Survey and Mapping in Ireland.
- Environmental Protection Agency (EPA) 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (May 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)
- Guidelines for assessment of Ecological Impacts of National Road Schemes, (NRA, 2009). Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2009).
- Environmental Assessment and Construction Guidelines (NRA, 2006).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (Environmental Protection Agency (EPA), 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017)
- Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (August 2017).
- Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

#### **6.4 Statement of Authority**

This section of the EIAR has been compiled by Shannen McEwen, Ecologist with Greentrack. Shannen holds a B.Sc. (Hons) Environmental Science with a Diploma in Professional Practice from the University of Ulster. She has been involved in all aspects of Environmental Impact Assessment, Appropriate Assessment and Ecological Impact Assessment since 2017. Shannen is an Associate Member of the Institution of Environmental Sciences.

#### **6.5 Methodology**

Prior to assessing the ecological impact of a development, the environmental baseline must first be described. Baseline ecological conditions were assessed in line with CIEEM (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine'. The baseline was assessed through desk and field survey methodology which are described in the following sections.

##### **6.5.1 Desk Study**

The desk study was informed by the following resources

- EPA Map Viewer
- Donegal County Council Map Viewer
- NPWS Map Viewer
- NPWS records
- Inland Fisheries Reports
- National Biodiversity Data Centre records and map viewer
- Geohive.ie

##### **6.5.2 Scoping**

This EIAR was commissioned by the applicant to facilitate a new planning application to be submitted to the Consent Authority on this subject site. This EIAR will be open for comment by any concerned party throughout the statutory consultation determination stage.

### **6.5.3 Field Study**

Multiple field surveys were carried out as part of this assessment from August 2022 – April 2023. The following section describes the surveys carried out, the timing of the surveys and the guidance followed.

#### **6.5.3.1 Site walkover**

A multidisciplinary site walkover was carried out on multiple site visits spanning an eight month period from August 2022 – April 2023. The purpose of this exercise was to understand the context of the site and act as a ‘ground-truthing exercise’ to confirm any insights inferred from desk study as to the nature of the site.

Annotations were marked on a sample map indicating the approximate location of any significant features noted such as important habitat, plant species or signs of important fauna. Incidental sightings of birds and invasive species were also noted, as relevant. Information collected during site walkovers informed the survey work.

#### **6.5.3.2 Habitat Survey and Botanical Survey**

Following the multidisciplinary site walkovers, a more in-depth Phase 1 habitat survey was conducted on 03/08/2022. All habitats were classified according to Fossitt (2000)<sup>3</sup>. A botanical survey was conducted during the site visit and quadrats were placed at various locations throughout the subject site. The botanical survey was conducted adhering to NRA (2009) guidelines for ecological surveys<sup>4</sup>. The habitat and botanical studies were conducted in tandem to provide an understanding of the ecological baseline of the subject site. Data gathered from habitat and botanical surveys was used to produce a thematic map illustrating the relative position and scale of habitats in the subject site and surrounding environs. Guidelines from the Heritage Council were followed, and classifications were designated according to Fossitt’s. However, the position and scale of habitats shown are approximate and should be considered only as a broad representation of the study area. Figure 6.5 in section 6.6.2 shows the habitats within the site boundary.

#### **6.5.3.3 Mammal Surveys**

The information gathered from desk study methods in addition to ecological surveys informed the focus of targeted terrestrial fauna surveys. Relevant surveys as detailed below were conducted within the footprint of the development.

##### ***6.5.3.3.1 Badger Survey***

A dedicated badger survey was undertaken on 22/02/2023. The survey covered the entire footprint of the development site. The survey intended to identify any potential signs of badger such as setts/tracks/latrines. The survey was conducted with respect to NRA guidelines (2009). Results can be found in section 6.6.2.2.1.

##### ***6.5.3.3.2 Otter Survey***

An otter survey for the site was deemed to be unnecessary after conducting a thorough site walkover due to the lack of supporting habitat onsite.

##### ***6.5.3.3.3 Other mammals***

Any evidence of mammals that were not the subject of dedicated surveys was noted during site walkovers.

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<sup>3</sup> J. Fossitt. (2000) A Guide to Habitats in Ireland. The Heritage Council, Dublin

<sup>4</sup> National Roads Authority - Guidelines for Assessment of Ecological Impacts of National Roads Schemes <https://www.tii.ie/technical-services/environment/planning/Guidelines-for-Assessment-of-Ecological-Impacts-of-National-Road-Schemes.pdf>

#### **6.5.3.3.4 Bat Survey**

Bat conservation trust and CIEEM bat survey good practice guidelines<sup>5</sup> were followed throughout site investigation for bats. A tree survey was conducted on 19/04/2023 to identify any potential roosting features. Binoculars were used to inspect trees from the ground to the canopy for any signs of bat activity including natural holes, cracks/splits in major limbs, loose bark, hollows/cavities, dense epicormic growth and bird and bat boxes. A bat emergence and activity survey was undertaken on 26<sup>th</sup> April 2023 which covered the entire site footprint with emphases placed on the areas of woodland/scrub throughout the site. Results can be found in section 6.6.2.2.3. Further rationale behind the field survey methodology is provided in Section 6.6.2.

#### **6.5.3.4 Bird Survey**

Multiple bird observation reports were conducted over a four month period (Nov 22 - March 23) encompassing the entire footprint of the subject site. Lands within, and adjacent to, the proposed development boundary were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and sound, and the general location was recorded. Physical parameters such as weather conditions and the presence of any disturbance factors were also noted. Guidelines from the following were considered:

- CIEEM Bird census and survey techniques, Gregory RD, Gibbons DW and Donald PF (2004)
- CIEEM Guidance for bird surveys in relation to development, Good practice guidance for birds, Keith Ross and James Latham
- Common bird census (CBC) methodology
- British Trust for Ornithology's (BTO's) Survey (WeBS) methodology
- Birdwatch Ireland Countryside Bird Survey manual

Results can be found in section 6.6.2.2.4

#### **6.5.3.5 Amphibian and Reptile Survey**

An amphibian and reptile survey was carried out on 10/04/2023. This involved searching for basking animals on banks, piles of wood or laying out artificial refuges like corrugated iron sheets which were bedded down well into the vegetation and searching under refugia such as logs and large stones. No amphibians or reptiles were noted throughout the survey or throughout the multiple walkovers conducted for phase 2.

#### **6.5.3.6 Invasive Species Surveys**

Several extensive stands of Salmonberry were noted throughout multiple site walkovers which are shown in Figure 6.3 below. Focus was placed on any third schedule species listed in the European Communities Birds and Natural Habitats Regulations 2011. Treatment of the Salmonberry stands within the site is discussed further in section 6.7.3

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<sup>5</sup> Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.



**Figure 6.3: Stands of salmonberry noted throughout the subject site.**

#### **6.5.3.7 Field Survey Limitations**

The whole site was accessible which allowed the site to be thoroughly surveyed during the multiple walkovers conducted. However, antisocial behaviour is a current issue experienced at the site which prevented survey work from being undertaken on a number of occasions. Several youths were spotted setting fire to a number of Gorse bushes within the site during a site walkover in late April 2023. Additionally, Greentrack had cameras set up within the woodland near the western boundary to record Badger activity which were significantly damaged in late April/early May. Cans and bottles also litter the woodland area near the northern site boundary.

#### **6.5.4 Impact and Effect Assessment Methodology**

This sub section will describe the methodology followed to identify key ecological receptors (KER) and their significance before describing the methodology followed to characterise impacts and effects on identified KERs.

##### **6.5.4.1 Identification of Key Receptors**

The culmination of desk/field survey and discussion with relevant bodies (NPWS, Inland Fisheries etc.) informed the identification of Key Ecological Receptors. Target receptors that were found to likely occur with the zone of impact of development were identified. The target receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive
- Qualifying Interests (QI) of Special Areas of Conservation (SAC)/ Special Protection Areas (SPA) within the likely zone of impact
- Species protected under the Wildlife Acts 1976-2019
- Species protected under the Flora Protection Order 2015

#### **6.5.4.2 Assessing the Importance of Receptors**

Ecological evaluation and impact assessment methodologies in the following sections have implemented guidance from the NRA. An outline for this methodology is provided in 'Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)'. This methodology follows the same modality as the assessment criteria described by CIEEM (2018).

This guidance provides a scale of importance for features in a geographical context. Importance ranges from:

- International/European
- National
- Regional (County)
- Local (High Value)
- Local (Low Value)

Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Ecological receptors considered to be of International, National, Regional or Local (Higher Value) are to be considered KERs provided a pathway for significant effects exist thereon. Ecological receptors of Local importance (Lower Value) are not considered KERs.

#### **6.5.4.3 Characterising impacts and effects on Key Ecological Receptors**

Once the Baseline has been established, impact on KERs can be assessed and mitigation/compensation or enhancement measures can be put in place to negate any negative effect. Impacts will be characterised according to CIEEM guidance (2019) in addition to EPA guidance (May 2022) document 'Guidelines on the information to be contained in environmental impact assessment reports. The following criteria was used to characterise impacts:

- **Magnitude** relates to the quantum of effect, for example the number of individuals affected by an activity. Described in Table 6.1
- **Extent** should also be predicted in a quantified manner and relates to the area over which the effect occurs.
- **Duration** is intended to refer to the time during which the effect is predicted to continue, until recovery or re-instatement.
- **Reversibility** should be addressed by identifying whether an effect is ecologically reversible either spontaneously or through specific action; and,
- **Timing/frequency** of effects in relation to important seasonal and/or life-cycle constraints should be evaluated. Similarly, the frequency with which activities (and associated effects) would take place can be an important determinant of the effect on receptors.

#### **6.5.4.4 Assessing the significance of effect**

The ecological significance of effects is described using guidance provided in section 5 of CIEEM guidelines (2019). When assessing ecological impacts, a 'significant effect' can be described as an effect that supports or undermines biodiversity conservation objectives for important ecological features. Effects can be considered significant at a variety of geographic scales from international to local.

Any assessment of effect should take account of:



- construction and operational phases.
- direct, indirect, and synergistic effects.
- and those that are temporary, reversible, and irreversible.

The EPA provides the following terminology to describe duration of effects:

- Momentary effects - Effects lasting from seconds to minutes.
- Brief effects - Effects lasting less than a day.
- Temporary effects - Effects lasting less than a year.
- Short-term – 1 to 7 years
- Medium term – 7 to 15 years
- Long term – 15 to 60 years
- Permanent – over 60 years
- Reversible effects - Effects that can be undone, for example through remediation or restoration.

When determining significance, consideration is given to whether:

- Any processes or key characteristics of key ecological receptors will be removed or changed.
- There will be an effect on the nature, extent, structure, and function of important ecological features.
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

The language suggested by the EPA (2017) to describe the magnitude of effects is outlined in Table 6.1.

**Table 6.1 Magnitude of Impacts**

<b>Magnitude</b>	<b>Description</b>
<b>No change</b>	No discernible change in the ecology of the affected feature.
<b>Imperceptible effect</b>	An effect capable of measurement but without noticeable consequences.
<b>Not Significant</b>	An effect which causes noticeable changes in the character of the environment but without significant consequences.
<b>Slight effect</b>	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
<b>Moderate effect</b>	An effect that alters the character of the environment that is consistent with existing and emerging trends.
<b>Significant effect</b>	An effect which, by its character, its magnitude, duration or intensity alters a sensitive aspect of the environment.
<b>Very Significant effect</b>	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
<b>Profound effect</b>	An effect which obliterates sensitive characteristics

Effects on Key ecological receptors can be of varying quality as described by the EPA (2017) they can be one of the following:

- **Negative** - A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
- **Neutral** - No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
- **Positive** - A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

The following are key considerations when determining significance:

- Integrity
- Conservation Status

**Integrity** refers to the essential unity of a site in terms of its ecological structure and function. NRA (2009) describes integrity as *“the coherence of ecological structure and function, across the entirety of a site, that enables it to sustain all the ecological resources for which it has been valued. Impacts resulting in adverse changes to those ecological structures and functions would be significant.”*

### **Conservation Status**

An impact on the conservation status of a habitat or species is considered significant if it will result in a change in conservation status. According to CIEEM (2018) Guidelines, the definition for conservation status in relation to habitats and species are as follows:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure, and functions as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

- Its natural range, and areas it covers within that range, are stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.
- The conservation of a species is favourable when:
  - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
  - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
  - There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the NRA/CIEEM methodologies, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e., local, county, national, international).

#### **6.5.4.5 Incorporating Mitigation**

Section 6.6 of this EIAR assesses the potential effects of the proposed development to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation. The primary mitigation employed should be mitigation by avoidance.

## **6.6 Establishing the Baseline**

The following sections provide the results from desk and field studies and describe the baseline ecological conditions at the subject site.

### **6.6.1 Desk Study**

This section describes the results of review of available public information including:

- EPA Map Viewer
- Donegal County Council Map Viewer
- NPWS Map Viewer

- NPWS records
- Inland Fisheries Reports
- National Biodiversity Data Centre records and map viewer
- Geohive.ie
- A collection of relevant reports and records

#### 6.6.1.1 Designated Sites

The impacts of the proposed development on European sites are examined in the accompanying Stage 1 Screening Report for Appropriate Assessment. As per EPA guidance (2022) this biodiversity chapter will not repeat the information provided in the AA Screening Report but instead will incorporate the key findings provided in the report.

The AA Screening Report identified the following Natura 2000 sites as susceptible to threat from the proposed development in the absence of mitigation:

- **Lough Swilly SAC**
- **Lough Swilly SPA**

Several nationally designated sites occur within 15km of the proposed development. These include Proposed Natural Heritage Areas (pNHAs). No designated Natural Heritage Areas (NHAs) were noted within the 15km radius. Table 6.2 provides proximal Nationally Designated Sites and a preliminary impact determination for each.

**Table 6.2 Impact Determination for Nationally Designated Sites.**

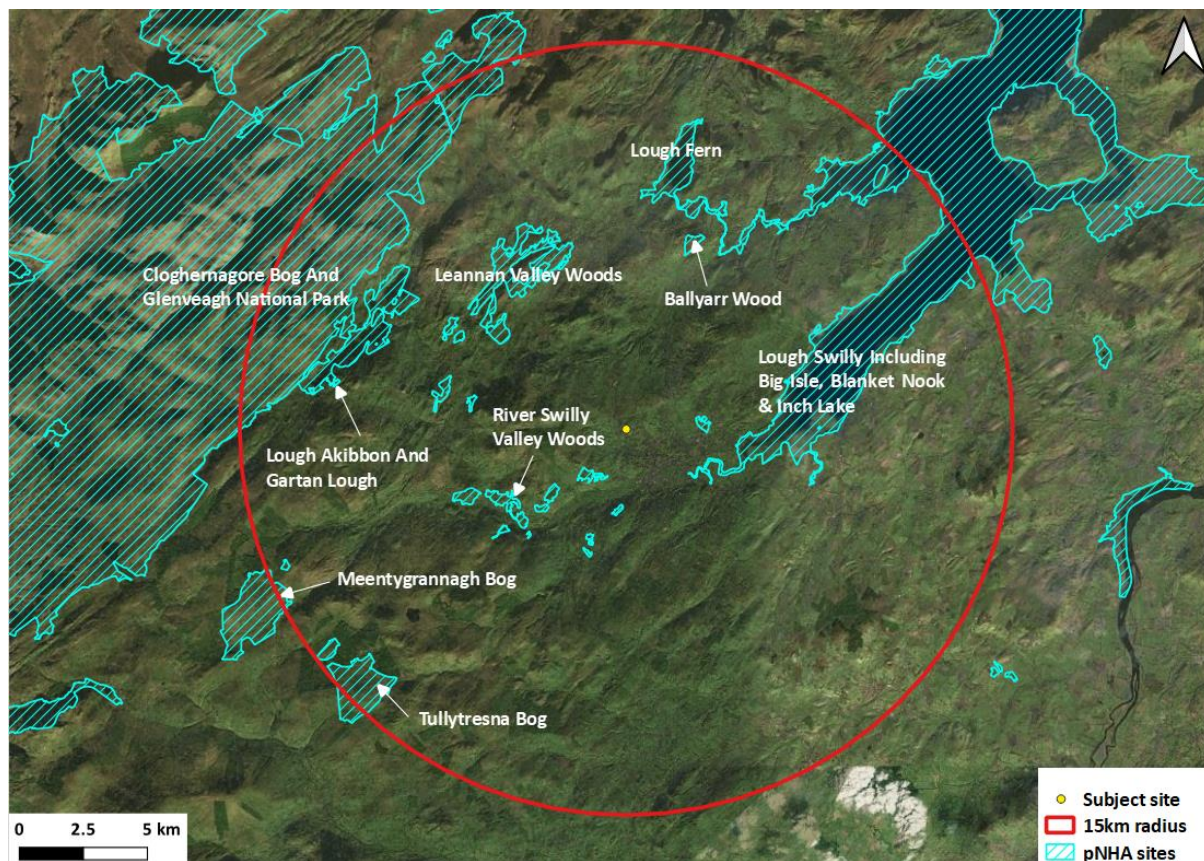
Designated Site	Minimum Distance from Proposed Development	Impact Determination
<i>pNHAs</i>		
<b><i>Lough Akibbon and Gartan Lough</i></b>	1.48km N	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Leannan Valley Woods</i></b>	1.15km E	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Ballyarr Wood</i></b>	12.09km NE	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Cloghernagore Bog and Glenveagh National Park</i></b>	3.04km NW	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Meentygrannagh Bog</i></b>	7.68km SW	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Tullytresna Bog</i></b>	9.85km S	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>River Swilly Valley Woods</i></b>	4.27km SE	No direct avenue of connectivity exists to this nationally designated site.

Designated Site	Minimum Distance from Proposed Development	Impact Determination
		Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Lough Swilly Including Big Isle, Blanket Nook &amp; Inch Lake</i></b>	11.33km E	A source-pathway-receptor link to this pNHA exists through surface water drainage from the subject site entering a series of stormwater sewers/drains, and open and culverted urban drains throughout Letterkenny and then entering the River Swilly and the Swilly Estuary further downstream. In the absence of mitigation, the proposed development has the potential to cause deterioration in surface water quality during the construction, operational and decommissioning phases, potentially affecting downstream aquatic receptors. <b>This pNHA is therefore within the likely zone of impact, and further assessment was deemed to be required.</b>
<b><i>Muckish Mountain</i></b>	12.98km NW	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Drumeasan Bog</i></b>	14.51km N	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>
<b><i>Lough Fern</i></b>	11.81km NE	No direct avenue of connectivity exists to this nationally designated site. Therefore, no avenue for impacts on these receptors exists and <b>no further assessment is required.</b>

The following nationally designated sites have been identified as potentially susceptible to impact from the proposed development:

- Lough Swilly Including Big Isle, Blanket Nook & Inch Lake

As this site forms part of a designated Natura 2000 site (Lough Swilly Including Big Isle, Blanket Nook & Inch Lake is fully contained within both Lough Swilly SAC & SPA), impacts from the proposed development were jointly assessed in the accompanying AA Screening Report. Figure 6.4 below shows the subject site in relation to pNHA sites within a 15km radius.



**Figure 6.4: Nationally Designated Sites Proximal to The Proposed Development** (Created using QGIS software)

### 6.6.1.2 Flora and Fauna records and Implications for Field Study

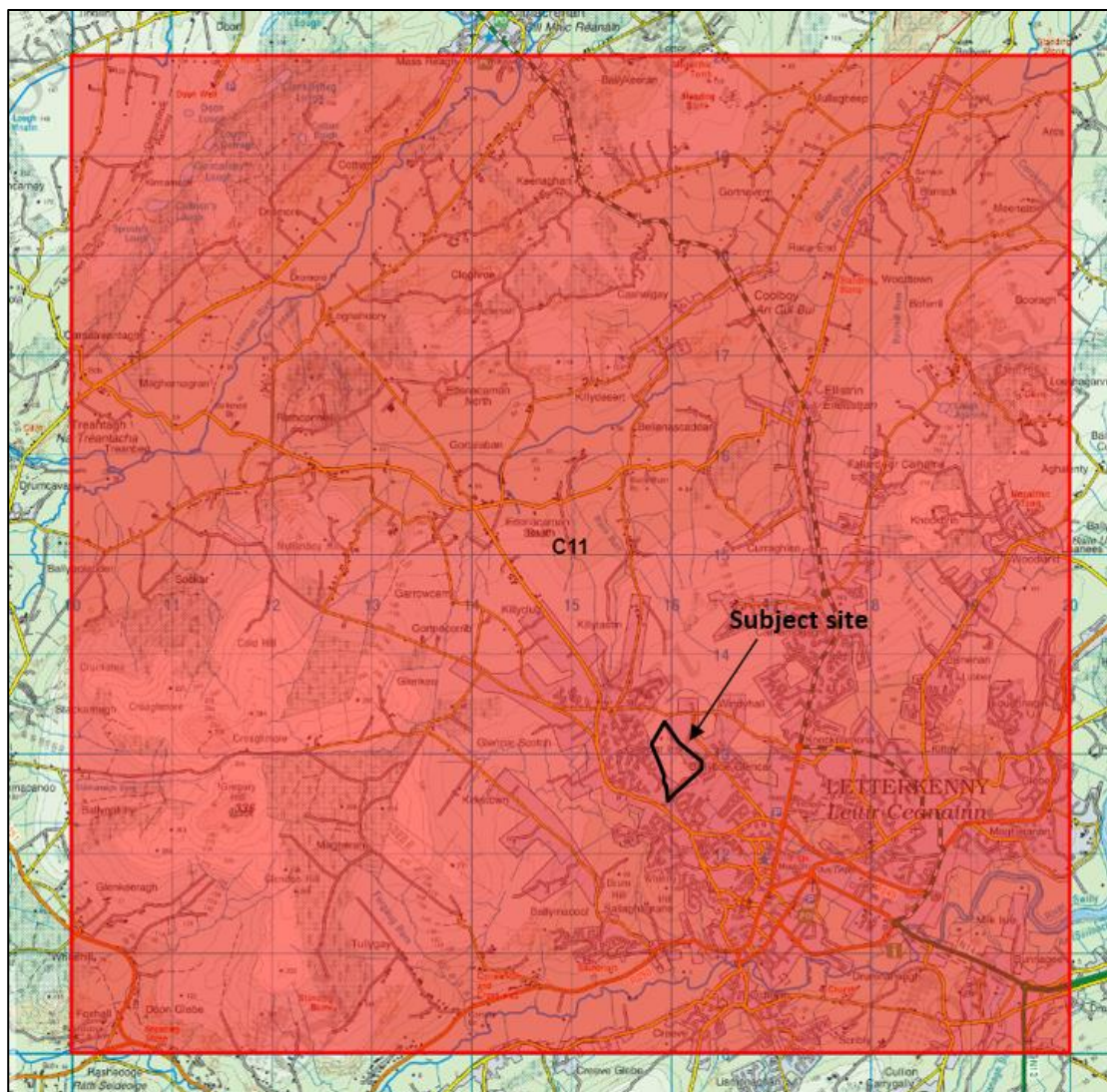
#### 6.6.1.2.1 Mammals

Mammals are important members of food chains and food webs, as grazers and as predators. Mammals are typically important for maintaining services and functions associated with sustaining a balanced ecosystem including engineering aspects of their environment, seed dispersal, and maintaining balance in their communities.

Mammal observation records from Hectad C11<sup>6</sup> (site of proposed development) and adjacent Hectad of C01 were searched to establish a more comprehensive picture of the landscape and supporting habitat for mammal species (excluding bats). Hectads are a unit of land area (10km<sup>2</sup> x 10km<sup>2</sup>) which highlight how widely distributed particular species of flora and fauna are. Map 6.1 shows the location of subject site within Hectad C11 with Table 6.3 providing details of mammal records proximal to the subject site. Data was accessed through the National Biodiversity Data Centre<sup>7</sup>. The dataset accessed was the Atlas of Mammals in Ireland 2010-2015 and Mammals of Ireland 2016-2025.

<sup>6</sup> National Biodiversity Data Centre - <https://maps.biodiversityireland.ie/Map>

<sup>7</sup> National Biodiversity Data Centre - <https://maps.biodiversityireland.ie/Dataset>



Map 6.1: Location of subject site within Hectad C11 CYAL50313729 © Ordnance Survey Ireland/Government of Ireland.

Table 6.3 Mammal Records

Species Name	Legislative Status	Record Count	Date of Last Record
<b>Hectad C11</b>			
<i>American mink (Mustela vison)</i>		4	05/11/1990
<i>Grey squirrel (Sciurus carolinensis)</i>		8	05/03/2019
<i>Eurasian badger (Meles meles)</i>	Wildlife Acts	56	06/06/2018
<i>Eurasian pygmy shrew (Sorex minutis)</i>	Wildlife Acts	1	28/10/1992
<i>Pine Marten (Martes martes)</i>	Annex II Habitats Directive, Wildlife acts	1	07/06/2021
<i>Red deer (Cervus elaphus)</i>	Wildlife Acts	4	18/05/2012
<i>Red fox (Vulpes vulpes)</i>		6	20/04/2018
<i>Otter (Lutra lutra)</i>	Annex II Habitats Directive, Wildlife acts	15	01/02/2015
<i>European Rabbit (Oryctolagus cuniculus)</i>		2	06/06/2018

<b>Fallow Deer</b> ( <i>Dama dama</i> )		1	31/08/2012
<b>Irish hare</b> ( <i>Lepus timidus hibernicus</i> )		2	17/05/2012
<b>Irish stoat</b> ( <i>Mustela erminea Hibernica</i> )		2	11/05/2018
<b>West European hedgehog</b> ( <i>Erinaceus europaeus</i> )	Wildlife acts	14	17/05/2021
<b>Hectad C01</b>			
<b>Eurasian badger</b> ( <i>Meles meles</i> )	Wildlife Acts	52	31/12/2013
<b>Otter</b> ( <i>Lutra lutra</i> )	Annex II Habitats Directive, Wildlife acts	39	06/09/2010
<b>House Mouse</b> ( <i>Mus musculus</i> )		2	24/11/2011
<b>Irish hare</b> ( <i>Lepus timidus hibernicus</i> )		7	18/05/2018
<b>Irish stoat</b> ( <i>Mustela erminea Hibernica</i> )		1	01/05/1993
<b>Pine Marten</b> ( <i>Martes martes</i> )	Annex II Habitats Directive, Wildlife acts	3	06/10/2021
<b>Red deer</b> ( <i>Cervus elaphus</i> )	Wildlife Acts	8	18/07/2018
<b>Red fox</b> ( <i>Vulpes vulpes</i> )		9	12/11/2015
<b>West European hedgehog</b> ( <i>Erinaceus europaeus</i> )	Wildlife acts	5	27/07/2020
<b>American mink</b> ( <i>Mustela vison</i> )		3	28/09/1997
<b>Brown Rat</b> ( <i>Rattus norvegicus</i> )		1	06/05/2011
<b>Grey squirrel</b> ( <i>Sciurus carolinensis</i> )		5	23/10/2014
<b>European Rabbit</b> ( <i>Oryctolagus cuniculus</i> )		2	10/11/2011
<b>Red Squirrel</b> ( <i>Sciurus vulgaris</i> )	Wildlife Acts	2	16/10/2014

Desk research indicated historical mammal activity in the Hectad of the subject site. Moreover, desk research informed that further investigation of mammal activity within the subject site was required.

#### 6.6.1.2.2 Bats

Records from Hectad C11 (site of proposed development) and the adjacent Hectad of C01 were searched to establish a more comprehensive picture of the landscape and supporting habitat for bat species. Table 6.4 presents data of the most recent bat records in proximal Hectads. Figure 6.4 shows the location of Hectads C11 and C01 in relation to the subject site and illustrates the location of the subject site in relation to these and gives the Bat suitability index for each area.

**Table 6.4 Bat Records**

Species Name	Count	Date of Last Record
<b>Hectad C11</b>		
<b>Daubertons bat</b> ( <i>Myotis daubentonii</i> )	15	28/08/2012
<b>Soprano pipistrelle</b> ( <i>Pipistrellus pygmaeus</i> )	14	17/05/2021
<b>Hectad C01</b>		
<b>Daubertons bat</b> ( <i>Myotis daubentonii</i> )	1	17/09/2009
<b>Lesser noctule</b> ( <i>Nyctalus leislerlei</i> )	14	21/07/2013
<b>Soprano pipistrelle</b> ( <i>Pipistrellus pygmaeus</i> )	52	23/08/2014
<b>Brown long eared bat</b> ( <i>Plecotus auratus</i> )	1	20/07/2007
<b>Pipistrelle bat</b> ( <i>Pipistrellus pipistrellus</i> )	33	23/08/2014

Hectad C11 (which includes the Subject Site) has an all-Bat Suitability index of ranging from 26.33 – 38.89. This index was accessed through the National Biodiversity Data Centre and is calculated based on research by Lundy et al. (2011)<sup>8</sup>. The index ranges on a scale from 0 to 59 depending on the suitability of the habitats and resources available. Figure 6.5 illustrates the total bat suitability index for all bat species. A more detailed breakdown per species is presented in Table 6.5.

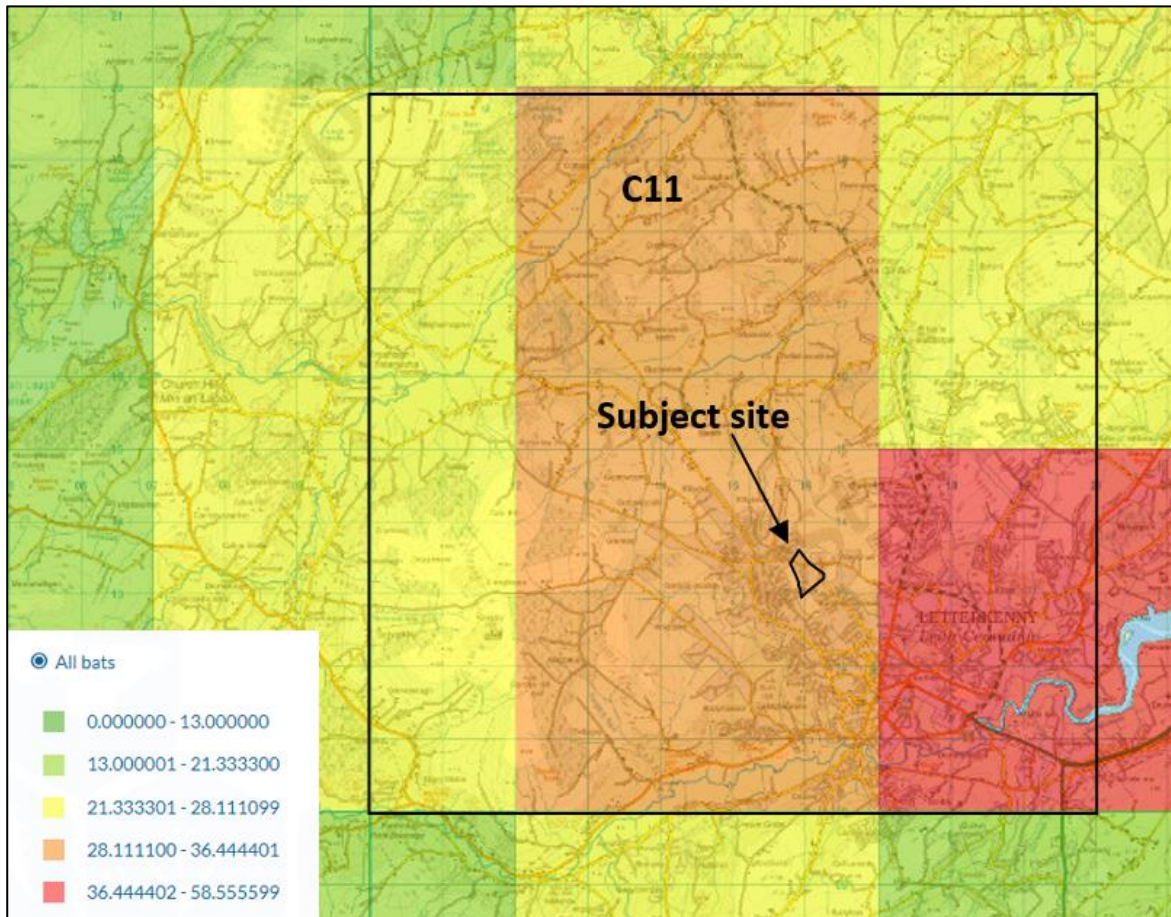


Figure 6.5: Bat Suitability Index for Relevant Hectads

Table 6.5: Breakdown of All Bats Suitability Index by Species

	C11	C01
<b>All Bats</b>	30.56	20.11 – 26.33
<b>Soprano pipistrelle</b>	30.56	26.33
<b>Brown long-eared bat</b>	32.89	26.33
<b>Common pipistrelle</b>	30.56	20 – 26.33
<b>Lesser horseshoe</b>	32.89	26.33
<b>Leislars bat</b>	30.56	20 – 26.33
<b>Whiskered bat</b>	32.89	20 – 26.33
<b>Daubertons bat</b>	30.56	20 – 26.33
<b>Nathusius pipistrelle</b>	30.56	20
<b>Natters bat</b>	30.56	20 – 26.33

This table has been created using data sourced from the National bat database of Ireland and Irelands BioBlitz by the National Biodiversity data centre.

<sup>8</sup> Lundy, M.G., Aughney, T., Montgomery, W.I., & Roche, N., (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland.



Based on consideration of historical records of bats in Hectad C11 and C01, and the characteristics of bat species recorded, it was deemed necessary to conduct a tree survey for potential bat roosting features. Greentrack conducted a tree survey to identify potential roosting on 19/04/2023. Binoculars were used to inspect trees from the ground to the canopy for any signs of bat activity including natural holes, cracks/splits in major limbs, loose bark, hollows/cavities, dense epicormic growth and bird and bat boxes. A bat emergence and activity survey was undertaken on 26<sup>th</sup> April 2023 which covered the entire site footprint with emphases placed on the areas of woodland/scrub throughout the site. Results can be found in section 6.6.2.2.3.

#### 6.6.1.2.4 Birds

A search for all other avian records in Hectad C11 was conducted using a combination of data from the National Biodiversity Data Centre and the Bird Atlas of Ireland 2007-2011. The Bird Atlas of Ireland 2007-2011 collates data from the survey of bird distribution, in summer and winter, over the four-year period between 2007 and 2011. The survey work was carried out by Bird Watch Ireland. A total of 92 avian species have been recorded in this area. The activity of bird species in the area of the proposed development suggested a dedicated bird survey was required to determine avian activity throughout the footprint of the proposed development. Records of bird species in Hectad C11 are provided in Table 6.7 below.

Table 6.6:

National Biodiversity Data Centre and Bird Atlas of Ireland records in Hectad C11

Species Name	Scientific Name
Barn Owl	<i>Tyto alba</i>
Barn Swallow	<i>Hirundo rustica</i>
Black-billed Magpie	<i>Pica pica</i>
Blackcap	<i>Sylvia atricapilla</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
Black-headed Gull	<i>Larus ridibundus</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Bohemian Waxwing	<i>Bombycilla garrulus</i>
Carrion Crow	<i>Corvus corone</i>
Chaffinch	<i>Fringilla coelebs</i>
Coal Tit	<i>Periparus ater</i>
Common Blackbird	<i>Turdus merula</i>
Common Bullfinch	<i>Pyrrhula pyrrhula</i>
Common Buzzard	<i>Buteo buteo</i>
Common Chiffchaff	<i>Fulica atra</i>
Common Coot	<i>Loxia curvirostra</i>
Common Cuckoo	<i>Cuculus canorus</i>
Common Grasshopper Warbler	<i>Locustella naevia</i>
Common Kestrel	<i>Falco tinnunculus</i>
Common Kingfisher	<i>Alcedo atthis</i>
Common Linnet	<i>Carduelis cannabina</i>
Common Moorhen	<i>Gallinula chloropus</i>
Common Pheasant	<i>Phasianus colchicus</i>
Common Raven	<i>Corvus corax</i>
Common Redshank	<i>Tringa totanus</i>
Common Sandpiper	<i>Actitis hypoleucos</i>
Common Shelduck	<i>Tadorna tadorna</i>
Common Snipe	<i>Gallinago gallinago</i>

Species Name	Scientific Name
Common Starling	<i>Sturnus vulgaris</i>
Common Swift	<i>Apus apus</i>
Common Whitethroat	<i>Sylvia communis</i>
Common Wood Pigeon	<i>Columba palumbus</i>
Corncrake	<i>Crex crex</i>
Eurasian Collared Dove	<i>Streptopelia decaocto</i>
Eurasian Curlew	<i>Numenius arquata</i>
Eurasian Jackdaw	<i>Corvus monedula</i>
Eurasian Jay	<i>Garrulus glandarius</i>
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>
Eurasian Siskin	<i>Carduelis spinus</i>
Eurasian Sparrowhawk	<i>Accipiter nisus</i>
Eurasian Teal	<i>Anas crecca</i>
Eurasian Tree Sparrow	<i>Passer montanus</i>
Eurasian Treecreeper	<i>Certhia familiaris</i>
Eurasian Woodcock	<i>Scolopax rusticola</i>
European Goldfinch	<i>Carduelis carduelis</i>
European Greenfinch	<i>Carduelis chloris</i>
European Robin	<i>Erithacus rubecula</i>
Fieldfare	<i>Turdus pilaris</i>
Glaucous Gull	<i>Larus hyperboreus</i>
Goldcrest	<i>Regulus regulus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Great Cormorant	<i>Phalacrocorax carbo</i>
Great Tit	<i>Parus major</i>
Grey Heron	<i>Ardea cinerea</i>
Grey Partridge	<i>Perdix perdix</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Greylag Goose	<i>Anser anser</i>
Gyr Falcon	<i>Falco rusticolus</i>
Hedge Accentor	<i>Prunella modularis</i>
Herring Gull	<i>Larus argentatus</i>
Hooded Crow	<i>Corvus cornix</i>
House Martin	<i>Delichon urbicum</i>
House Sparrow	<i>Passer domesticus</i>
Iceland Gull	<i>Larus glaucoides</i>
Lesser Redpoll	<i>Carduelis cabaret</i>
Long-eared Owl	<i>Asio otus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Mallard	<i>Anas platyrhynchos</i>
Meadow Pipit	<i>Anthus pratensis</i>
Merlin	<i>Falco columbarius</i>
Mew Gull	<i>Larus canus</i>
Mistle Thrush	<i>Turdus viscivorus</i>
Northern Lapwing	<i>Vanellus vanellus</i>
Northern Wheatear	<i>Oenanthe oenanthe</i>
Red Grouse	<i>Lagopus lagopus</i>

Species Name	Scientific Name
Redwing	<i>Turdus iliacus</i>
Rock Pigeon	<i>Columba livia</i>
Rook	<i>Corvus frugilegus</i>
Sand Martin	<i>Riparia riparia</i>
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
Sky Lark	<i>Alauda arvensis</i>
Song Thrush	<i>Turdus philomelos</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Stonechat	<i>Saxicola torquata</i>
Tree Pipit	<i>Anthus trivialis</i>
Whinchat	<i>Saxicola rubetra</i>
White Wagtail	<i>Motacilla alba</i>
White-throated Dipper	<i>Cinclus cinclus</i>
Whooper Swan	<i>Cygnus cygnus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Wood Warbler	<i>Phylloscopus sibilatrix</i>
Yellowhammer	<i>Emberiza citrinella</i>

#### 6.6.1.2.4 Amphibians and Reptiles

Table 6.7 provides records for amphibians and reptiles that have been recorded within Hectad C11. Data was accessed through the National Biodiversity Data Centre.

**Table 6.7: Amphibians and Reptiles**

Species Name	Scientific Name
Common Frog	<i>Rana temporaria</i>

#### 6.6.1.2.5 Rare and Protected Plant Species

There are no rare or protected species recorded within the Hectad according to data supplied by the National Biodiversity Data Centre. Any incidental sightings during field survey were to be recorded.

#### 6.6.1.2.6 Invasive Species

Invasive species recorded in Hectad C11 are presented in Table 6.8. Data was accessed through the National Biodiversity Data Centre. Only species recorded in the last 20 years are shown.

**Table 6.8 Invasive Species in Hectad C11**

Species Name	Scientific Name
<b>Vertebrates</b>	
American Mink	<i>Mustela vison</i>
Fallow Deer	<i>Dama dama</i>
European Rabbit	<i>Oryctolagus cuniculus</i>
Grey Squirrel	<i>Sciurus carolinensis</i>
<b>Invertebrates</b>	
Flatworm (Turbellaria)	<i>Arthurdendyus triangulatus</i>
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>
<b>Flora</b>	
Black Currant	<i>Ribes nigrum</i>
Giant Hogweed	<i>Heracleum mantegazzianum</i>
Himalayan Knotweed	<i>Persicaria wallichii</i>
Indian Balsam	<i>Impatiens glandulifera</i>

Species Name	Scientific Name
Japanese Knotweed	<i>Fallopia japonica</i>
Rhododendron	<i>Rhododendron ponticum</i>
Salmonberry	<i>Rubus spectabilis</i>
Sycamore	<i>Acre pseudoplatanus</i>

### 6.6.1.3 Baseline Hydrology

A hydrological walkover survey, including detailed mapping and baseline monitoring/sampling, was undertaken by Colin Farrell of Greentrack on various dates between August 2022 and March 2023. The field assessments included a detailed site walkover survey, water features survey, and an inspection of all relevant hydrological features, such as existing drainage ditches, groundwater contributions and inflows/outflows from the site.

The subject site is located within the Water Framework Directive (WFD) Catchment 39 Lough Swilly and falls within Swilly\_SC\_010 WFD sub-catchment. Incident rainfall on the northern and western part of the site is directed into either a drainage channel running along the north-western boundary or a drainage channel in the southwest of the site. These drainage channels feed into the Glencar Irish and Glencar Scotch streams which are tributaries of the watercourse known locally as 'Roger's Burn' (EPA code: IE\_NW39SO20300, segment 39\_1278). Drainage in the eastern part of the site flows into the small watercourse flowing along the eastern boundary of the site and is a tributary of the Sprack Burn (EPA code: IE\_NW39SO020300, segment 39\_2948).

Site drainage, surface water runoff and water management within the current site are schematically represented in Figures 8.4 and 8.5 within chapter 8 of this EIAR. Dominant flow direction in the region is south towards the River Swilly.

The EPA website was visited to check if there were any monitoring stations on the watercourses leading from the site. There are no monitoring stations on Rodger's Burn or Sprack Burn or downstream of the site on the River Swilly.

### 6.6.1.4 Conclusions from Desk Study

This desk study exercise provided information about the existing environment in Hectad C11 of the proposed development in addition to adjoining Hectad C01. The desk study identified the following designated sites as susceptible to impact from the proposed development:

- **Lough Swilly SAC**
- **Lough Swilly SPA**

Moreover, the desk study found that a variety of flora, fauna and ecological receptors required further investigation. Protected faunal species including Badger, Bat and Bird Species occur in the vicinity of the proposed development and were deemed to require further investigation. Invasive species were also recorded within Hectad C11. Salmonberry (*Rubus spectabilis*) was observed during site investigations in and around the subject site. Best practice will be followed in all aspects of construction and operation of the proposed development as the further spread of invasive species on or from the site could negatively affect local biodiversity.

Desk research identified a variety of avian species recorded in the vicinity of the proposed development. Further investigation of avian species was deemed necessary.

Desk research identified the subject site falls within the North-western River Basin District, Water Framework Directive (WFD) Catchment 39 Lough Swilly and falls within WFD sub-catchments Swilly\_SC\_010. Further assessment is required to ensure no deterioration in water resource quality occurs as a result of the proposed development.

**6.6.2 Field Study**

**6.6.2.1 Habitat Survey and Botanical Survey**

The following habitats listed in Table 6.9 were recorded within the subject site during a Phase 1 habitat survey and classified according to Fossitt (2000). Habitat classification was informed by results from the dedicated botanical survey. Full details of the botanical survey are provided in Appendix 6.1.

**Table 6.9: Habitats on Site and surrounding environs**

Habitat Type	
WD1	Mixed Broadleaf Woodland
WD3	Conifer Woodland
GS4	Wet grassland
WL1	Hedgerows
WL2	Treelines
WS1	Scrub
FW4	Drainage ditches

The habitats recorded are illustrated in Figure 6.6 with a legend of habitat details. A brief outline of the characteristics of habitats on site is provided in the remainder of this section. However, position and scale of habitats shown are approximate only and should be considered only as a broad representation of the study area.



**Figure 6.6: Habitats within the subject site**

This map was created on QGIS software using data collected during site visits according to Fossitts guide to habitats in Ireland

### 6.6.2.1.1 Habitats

#### GS4 Wet Grassland

The predominant habitat on site is GS4 Wet Grassland. The grassland is characterised by an abundance of Bents (*Agrostis* spp.), Rye grass (*Lolium* spp.) and Rushes (*Juncus* spp.). The sward is short and compact in places likely from grazing by livestock with the herbaceous component including Buttercups (*Ranunculus repens*), Yorkshire fog (*Holcus lanatus*), Thistles (*Cirsium arvense*, *C. vulgare*), Cocks foot (*Dactylis glomerata*) and silver weed (*Potentilla anserina*). C. 75,000m<sup>2</sup> of GS4 habitat will be lost within the subject site to accommodate the proposed development. The loss of this habitat will not be significant as it is not rich in biodiversity and is very common within the surrounding environs.



Photograph 6.1: GS4 habitat within the subject site

#### WS1 Scrub

Some sections of hedgerow along the site perimeter have gone unmanaged and have widened out into areas of scrub dominated by gorse. This habitat was observed dispersed over the site, with areas dominant around the boundaries and woodland areas. Scrub onsite predominantly consists of gorse and bramble which are of poor ecological value. Most areas of scrub within the site will be removed to accommodate the proposed development.



Photograph 6.2: Scrub habitat

### WL1 and WL2 – Hedgerows and Treelines

Most of the site boundary consist of hedgerows and treelines. These borders are very overgrown and have become dominated heavily by gorse and bramble. Tree species include Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*) Hawthorn (*Crataegus monogyna*), Willow (*Salix* spp.) Mountain ash (*Sorbus acuparia*) and Hazel (*Corylus avellana*). The species present within these hedgerows and treelines are commonly occurring and widespread throughout the surrounding areas. The majority of vegetation around the site boundaries will be retained as part of the proposal and incorporated into planted buffers around part of the sites western and south eastern perimeter.



**Photograph 6.3: Treeline along the western site boundary**

### WD1 – Mixed Broadleaf Woodland

Broadleaf trees occur throughout the site, with most found in the western and southern portion of the site. Mountain Ash (*Sorbus acuparia*), Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*) and Gorse (*Ulex europaeus*) were all noted within the footprint.



**Photograph 6.4: Mixed broadleaf woodland bordering stand of conifers.**

**WD4 - Conifer plantation**

Conifer woodland forms the Northern and south eastern site boundaries and also occurs sporadically along the western boundary. The majority of conifers within the site are Sitka Spruce (*Picea sitchensis*) with Lodgepole Pine (*Pinus contorta*) and Corsican pine (*Pinus nigra*) also noted in the western portion of the site. The stand of Sitka Spruce in the southeast are proposed to be removed as part of the proposal. Most of the mixed conifer stand in the western portion of the site is to remain.



**Photograph 6.5: Conifer woodland towards the SE site boundary**

**FW4 Drainage Ditch**

Open drainage channels were noted along the eastern boundary, southern boundary and along the northern portion of the western boundary. Analysis of the EPA's flow network dataset and data obtained from site visits indicate that there are two pathways for surface water exiting the subject site. General surface water flow is to the southeast and southwest of the subject site. Both of these channels flow offsite into the River Swilly.

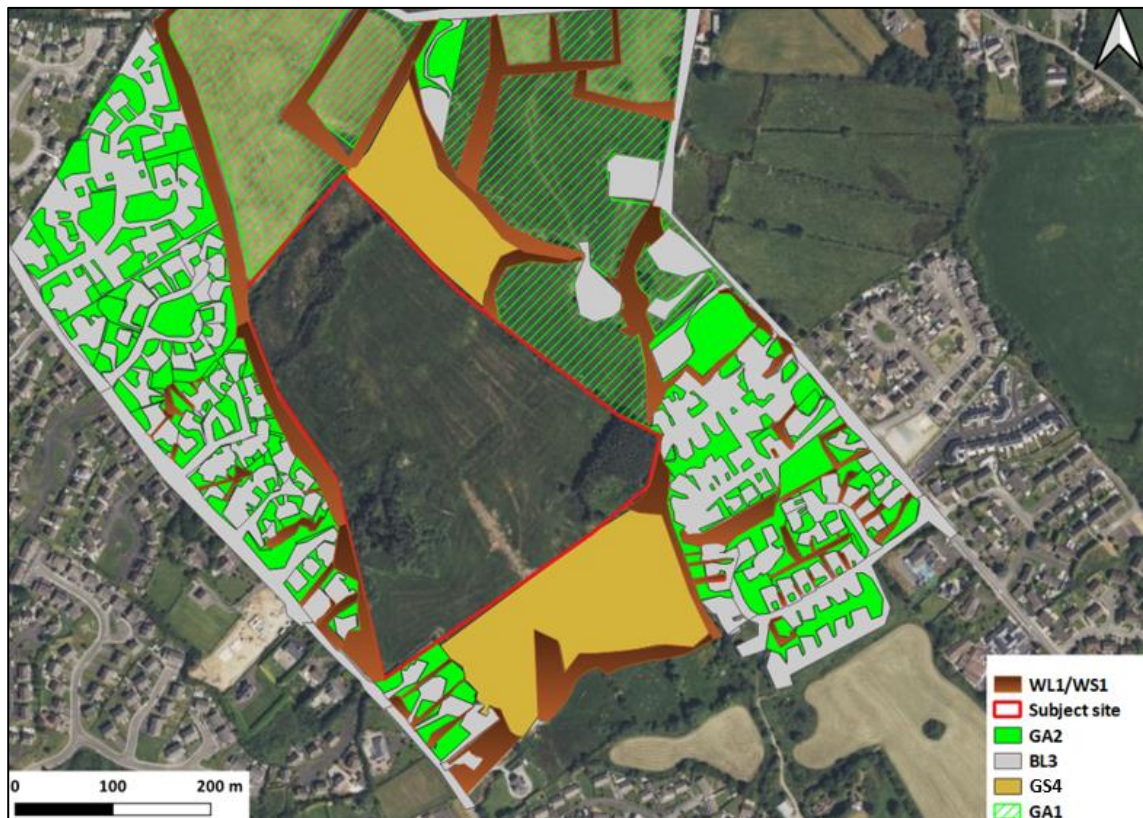




**Photograph 6.6: Drainage Ditch along the eastern boundary**

**Habitats within the surrounding environs**

The habitats located within the subject site are also common within the surrounding environs. The land surrounding the application site is mainly housing developments to the west and east and a planned development to the south. To the north and northeast lies agricultural land with sporadic farmsteads. Further to the north there are more housing developments. Figure 6.7 below shows the land use around the subject site.



**Figure 6.7: Adjacent habitats to the subject site**

This map was created on QGIS software using data collected during site visits according to Fossitts guide to habitats in Ireland

### 6.6.2.2 Mammal Survey

Dedicated and incidental mammal surveys were carried out with particular focus on hotspots of mammal activity identified during the initial multidisciplinary site walkover.

#### 6.6.2.2.1 Badger

During the site walkover, a number of potential burrows/setts were discovered in the earth bank which forms part of an old field boundary at the edge of the forested area near the northern boundary (within phase 3 works area – see figure 6.2) and within an area of dense woodland along the western site boundary (within phase 2 works area – see figure 6.2).

A Reolink Go PT Plus camera was set up on 23/02/23 which initially recorded the potential setts along the northern boundary. The northern setts were chosen to be monitored first due to the more open location and evidence of animal activity (latrines and Badger fur caught in barbed wire fence near the potential sett). Two Badgers were noted foraging through the area within a 24-hour period but were not actively using the potential setts. No further Badger activity was recorded in the area. The camera was in place for a period of 6 weeks within this area and the potential setts were deemed to be inactive after 4 weeks of no recorded activity. Figure 6.8 shows the location of potential setts identified with Table 6.10 highlighting any activity noted.



Figure 6.8: Location of potential setts identified along the northern boundary

Table 6.10: Badger activity noted along the northern boundary.

13/03/23	
Species noted	Type of sign observed
Badger	One live animal observed on camera
14/03/23	
Species noted	Type of sign observed
Badger	One live animal observed on camera

The camera was moved to a location near the western boundary (figure 6.8) on 10/04/2023 and at the time of writing, the sett along the western boundary is currently active with a pair of Badgers noted entering and existing the sett on multiple occasions. Old bedding material has been disposed of outside the entrance and a series of well-worn paths which lead away from the sett entrance have also been noted. The area of woodland towards the western site boundary where the active Badger sett is located will be retained and will not be subjected to any clearance works.

Figure 6.9 below shows the location of the active Badger sett near the western boundary with Table 6.11 highlighting the Badger activity noted onsite. Photograph 6.7 shows the entrance to the active sett along the western boundary whilst Photograph 6.8 shows one of the Badgers recorded onsite.



**Figure 6.9: Location of the active Badger sett near the western boundary**

**Table 6.11: Badger activity noted along the Western boundary**

11/04/23	
Species noted	Type of sign observed
Badger	Two live animals observed on camera
13/04/23	
Species noted	Type of sign observed
Badger	Two live animals observed on camera
16/04/23	
Species noted	Type of sign observed
Badger	One live animal observed on camera digging trench outside sett entrance
20/04/23	
Species noted	Type of sign observed

Badger	Two live animals observed on camera
<b>21/04/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	Two live animals observed on camera
<b>26/04/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	Two live animals observed on camera
<b>27/04/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	One live animal observed on camera
<b>28/04/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	One live animal observed on camera
<b>01/05/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	One live animal observed on camera
<b>02/05/23</b>	
<b>Species noted</b>	<b>Type of sign observed</b>
Badger	One live animal observed on camera



Photograph 6.7: Entrance to a sett observed onsite



**Photograph 6.8: Badger recorded onsite**

**6.6.2.2.2 Other Mammal Evidence/Activity**

Red fox tracks and droppings were observed during multiple site visits with one live fox recorded on two occasions foraging within the forested area to the north of the site. Field mice were also noted foraging within the woodland along the northern boundary. No other mammal presence was noted during any of the site visits.

**Table 6.12: Mammal activity noted within the site**

24/02/23	
Species noted	Type of sign observed
Field mouse	Two live animals observed on camera
25/02/23	
Species noted	Type of sign observed
Red Fox	One live animal observed on camera
02/03/23	
Species noted	Type of sign observed
Field mouse	One live animal observed on camera
23/03/23	
Species noted	Type of sign observed
Red Fox	One live animal observed on camera

Photograph 6.9 below shows the Red Fox foraging around the northern boundary on 25<sup>th</sup> February 2023.



**Photograph 6.9: Red Fox foraging around the northern boundary**

#### **6.6.2.2.3 Bat**

Tree inspections throughout the subject site did not reveal any signs of bats but a small number of trees contained suitable roosting features which were mainly within the woodland near the western boundary. A bat emergence and activity survey was undertaken on 26<sup>th</sup> April 2023 which covered the entire site footprint with emphases placed on the areas of woodland/scrub throughout the site. The survey began 15 minutes prior to sunset (20:45) and lasted until 22:45. The survey was undertaken during favourable weather conditions (dry and calm, approx. 12°C) using an Elekon Batscanner. Visual observations were taken with the aid of a powerful LED torch (Warrior X Pro 2100 Lumens Tactical Light).

Three bat species were recorded during the survey. Species recorded were Common Pipistrelle, Leisler's bat and Soprano Pipistrelle which are the three most common bat species in Ireland. The level of bat activity for these three species was at a low level within the proposed development area with a total of 13 calls recorded throughout the entire survey with the majority of these occurring within the woodland area to the west of the site. This woodland is to be retained as part of the development. The potential suitability of trees due for removal to support roosting bats is primarily considered negligible/low as most trees for removal do not contain any suitable roosting features for bats. The open field area of the study site is of lower value for bats due to the lack of woody/vegetated features. Taking the above into consideration, the subject site is higher local importance for bats in general.

Figure 6.10 below shows the species of bat recorded and the location of calls recorded.



**Figure 6.10: Species of bat recorded and the location of calls recorded**

#### 6.6.2.4 Bird Survey

Multiple bird observation reports were conducted over 4 months (Nov 22 - March 23) encompassing the entire footprint of the subject site. The site boundaries recorded the most bird activity. The site boundaries of mature vegetation provide good cover, foraging and habitat connectivity. Several species of bird were recorded during the survey including:

- Jackdaw
- Crow
- Rook
- Robin
- Blackbird
- Song thrush
- Mistle thrush
- Wren
- Blue tit
- Great tit
- Starling
- Goldfinch
- Wood Pigeon
- Collared dove
- Pied wagtail

No protected bird species were noted during any of the site visits undertaken. Vegetation around the site boundaries will be retained as part of the proposal.

#### 6.6.3 Identification of Key Ecological Receptors

Table 6.13 lists all identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). This table also

provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors. These ecological receptors are considered in Section 6.7 of this report and mitigation/ measures will be incorporated into the proposed development where required, to avoid potential significant impacts on the features.

**Table 6.13 Identification of KERs**

Ecological Feature / Species	Reason for Consideration as KER	KER Yes/No
Designated Sites	<p><b>Nationally Designated Sites</b> The following nationally designated sites have been identified as requiring further assessment.</p> <ul style="list-style-type: none"> <li>Lough Swilly Including Big Isle, Blanket Nook &amp; Inch Lake</li> </ul> <p>This site is of <b>National Importance</b>.</p>	Yes
	<p><b>International/European Sites</b> The following nationally designated sites have been identified as requiring further assessment:</p> <ul style="list-style-type: none"> <li>Lough Swilly SAC</li> <li>Lough Swilly SPA</li> </ul> <p>These sites are of <b>International Importance</b>.</p>	Yes
Aquatic Habitats and Species	<p><b>Streams</b> The Glencar Irish, Glencar Scotch and Sprackburn stream which drains the site and the aquatic species therein are assigned <b>local importance (Higher value)</b>. These flow into the River Swilly via Rogers Burn which is designated under Lough Swilly SAC &amp; SPA which are both of <b>International Importance</b>.</p>	Yes
	<p><b>Drainage ditches</b> This habitat has been assigned <b>local importance (lower value)</b></p>	No
Grassland Habitat	The grassland habitat within the site has been assigned as <b>local importance (lower value)</b> . C. 75,000m <sup>2</sup> of GS4 habitat will be lost with the proposed development. This habitat is not rich in biodiversity and common within the surrounding environs. Removal of the grassland habitat could have a wider impact on the hydrology of the surrounding area and has been designated as a KER for this reason.	Yes
Woodland Habitat	This habitat has been assigned <b>local importance (higher value)</b> due to avenues of connectivity it provides to local wildlife and the bird activity within this habitat. Hedgerows and treelines are also included as KERs due to the potential for direct impact from disturbance to species this habitat supports.	Yes
Scrub	This habitat has been assigned <b>local importance (lower value)</b>	No
Badger	A badger set has been identified on site.	



Ecological Feature / Species	Reason for Consideration as KER	KER Yes/No
	This population is assigned <b>local importance (higher value)</b> This species is a KER as it occurs near an area which will be cleared to accommodate the proposal and could experience disturbance.	Yes
<b>Bat</b>	Bat presence was identified during survey and site investigation.  Bat species occurring on site and the habitats including the hedgerows and treelines that span the site boundaries at the are assigned <b>Local Importance (Higher Value)</b> , these are considered a KER.	Yes
<b>Otter</b>	Otter presence was not identified on site. Drainage ditches occurring within the site are too narrow and shallow to support the needs of otters	No
<b>Deer/Fox/Other Mammals</b>	Evidence of these mammal species was observed on site. Collectively these species are assigned <b>local (higher value)</b> and are assessed as a KER under other mammals	Yes
<b>Birds and bird habitat</b>	Bird species occurring on site and the habitats including the woodland and hedgerows/treelines that span the site boundaries are assigned <b>Local Importance (Higher Value)</b> , these are considered a KER.	Yes
<b>Amphibians/Reptiles</b>	Amphibian and reptile presence was not identified on site and therefore not considered a KER.	No

## 6.7 Ecological Impact Assessment

### 6.7.1 Do Nothing Scenario

If the proposed development is not granted planning permission, it is considered that there would be no change or resulting impact on the nature of the application site. The site would remain as undeveloped land and there would be no impact or change to the biodiversity of the proposed development site. The site is used for agriculture and is currently grazed by sheep and horses which would more than likely continue going forward under the do-nothing scenario. The site could also be taken over by scrub species if it was left unmanaged by the landowner which could prompt the further spread of invasive species.

### 6.7.2 Effects on Designated Sites

None of the elements of the proposed development are located within the boundaries of any National or European designated sites. There will be no direct effects on any designated site because of the site clearance, construction and operational phase of the project. One nationally designated site was identified as being within the zone of influence and as KERs, Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA. This pNHA is designated as a European Site under the Lough Swilly SAC & SPA. In relation to European sites, a Stage 1 Appropriate Assessment Screening Report has been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment Screening for the proposed development in compliance with Article 6(3) of the Habitats

Directive. The AA Screening Report addresses all concerns relating to water quality, pollution from dust/noise etc as the pNHA is covered under the Lough Swilly SAC & SPA.

As per the EPA Guidance (2022), “a biodiversity section of an EIAR, for example should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process” but it should “refer to the findings of the separate assessment in the context of likely significant effects on the environment”. This section provides a summary of the key assessment findings regarding Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

The AA Screening Report concluded:

*“Following the assessment detailed in this AA Screening Report and screening determination in section 6, it is concluded based on the examination, analysis, and evaluation of relevant information that the possibility that the proposed development will have a significant effect on Natura 2000 sites may be excluded. Therefore Stage 2 Appropriate Assessment is not required. This conclusion was reached based on objective information and in view of best scientific knowledge.”*

Based on the findings of the separate AA Screening Report for the proposed development, it concluded that the proposed development would have no significant negative effects on the integrity of the following sites if all mitigation measures outlined within this EIAR are implemented in full

- Lough Swilly SAC
- Lough Swilly SPA

### **6.7.3 Potential Invasive Species Threat**

Multiple extensive stands of Salmonberry were noted during multiple site walkovers as shown in figure 6.3. The stands of Salmonberry may be treated prior to the commencement of construction by a licenced/certified professional. The control of Salmonberry will follow the “Mid Ulster Council Non-Native Invasive Plant Species Control Guidelines”<sup>9</sup> document and advice notes by WM Associates attached as appendix III to this section of the EIAR. Best practice<sup>10</sup> should also be followed in all aspects of construction and operation of the proposed development as the introduction of invasive species on site could negatively affect local biodiversity. Therefore, it is recommended as a means of Invasive species mitigation that the following measures are implemented:

- Good construction site hygiene will be employed to prevent the spread of these species with vehicles thoroughly cleaned down prior to entering the subject site. All clean down must be undertaken in areas with no potential to result in the spread of invasive species.
- Any material that is imported onto any site will be verified by the ECoW to be free from any invasive species listed on the ‘Third Schedule’ of Regulations 49 & 50 of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). This will be carried out by searching for rhizomes and plant material.

### **6.7.4 Likely Significant Effects During Construction Stage**

This section examines the likely significant effects on KERs from the proposed development during the site clearance works and entire construction stage. Where likely significant effects are predicted appropriate mitigation will be suggested to avoid/reduce the significance of the effect on KERs.

<sup>9</sup> <https://mid-ulster.cmis>

ni.org/MidUlster/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=5G0dVhPyGyEXTHwgBof0YU7mRq7%2BgCxlulFFfygd6JdvsGVONgXWQ%3D%3D&rUzWRPf%2BZ3zd4E7Ikn8Lyyw%3D%3D=pwRE6AGJFLDNlh225F5QMaQWctPHwdhUfCZ%2FLUQzgA2uL5jNRG4jdQ%3D%3D&mCTIbCubSffXsDGW9IXnlg%3D%3D=hFfIUdN3100%3D&kCx1AnS9%2FpWZQ40DXFvdEw%3D%3D=hFfIUdN3100%3D&uJovDxwdjMPOyV%2BAJvYtyA%3D%3D=ctNJff5vVA%3D&FgPIIEJYlotS%2BYGoBi5oIA%3D%3D=NHdURQburHA%3D&d9QjJ0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJff5vVA%3D&WGewmoAfeNR9xqBux0r1Q8Za60lavYmz=ctNJff5vVA%3D&WGewmoAfeNQ16B2MHuCPMRKZMwaG1PaO=ctNJff5vVA%3D

<sup>10</sup> <http://invasivespeciesireland.com/invasive-plant-management/setting-your-priorities/>

**Assessment of Potential Effects on Rivers/Streams and Sensitive Aquatic Faunal Species**

<b>Description of effect</b>	This assessment considers the Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn which all drain the site. Improper water management during the construction stage could give rise to sediment/hydrocarbon laden runoff entering the watercourses leading to a decrease in water quality. Any change in water quality could deleteriously affect sensitive aquatic faunal species. Soil/overburden removal, earth moving and site construction activities and improper maintenance of machinery all have the potential to generate suspended sediment/hydrocarbons within the surface water runoff
<b>Characterisation of unmitigated effect</b>	Effects during construction are characterised as short-term negative on this KER
<b>Assessment of significance prior to mitigation</b>	Due to the proximity of the site to this receptor and the indirect discharge which occurs this effect prior to mitigation is deemed moderately adverse.
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● An Ecological Clerk of Works (ECOW's) must be appointed for the site who will advise on the appropriate implementation of the mitigation measures outlined within the EIAR.</li> <li>● Prior to the commencement of any clearance works, silt fences must be erected along the banks of the watercourse flowing along the eastern site boundary and the watercourse along the north-western site boundary. This silt fence must be constructed using "Terrastop" silt fencing (Terrasilt GR180) or equivalent. The bottom of this fence must be placed in a 100mm x 100mm trench backfilled and compacted, burying 150mm of the fence in "L" shape.</li> <li>● The silt fencing must be inspected regularly by the site foreman for tears.</li> <li>● Removal of overburden must be in accordance with demand and must be controlled to reduce the risk of runoff containing silt.</li> <li>● Stockpiles will be located, arranged and managed so that the risk to receiving water and other receptors, from silt and contaminate runoff is minimised. Stockpiles of soil must be contained by a silt fence.</li> <li>● All stockpiled materials will be located a minimum of 50m from water courses during the construction phase.</li> <li>● Any overburden that will not be recycled on site must be removed off site to an approved waste facility or a site which is planning compliant.</li> <li>● Robust surface water capture drains leading to temporary settlement pond system with discharge to surface water through silt bags. Indicative locations and sizing of settlement ponds is shown in Figure 8.10 within section 8. Location and sizing of temporary treatment systems to be agreed prior to commencement of works and written into final CEMP document.</li> <li>● Drains and silt traps must be maintained throughout all excavation and works, ensuring that they are clear of sediment build-up and are not severely eroded.</li> <li>● Clearance works must cease in periods of heavy rainfall denoted by a Met Eireann status orange warning.</li> <li>● Brash mats must be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in</li> </ul>

	<p>which surface water ponding can occur. Brush mat renewal must take place when they become heavily used and worn.</p> <ul style="list-style-type: none"><li>● Strict control of the site boundaries must be enforced by the Site Manager, including minimal land clearance and restrictions on the use of machinery near waterbodies.</li><li>● All plant and machinery must be serviced before being mobilized to site.</li><li>● No refuelling of machinery or overnight parking of machinery is permitted in areas adjacent to watercourses or on-site drainage infrastructure.</li><li>● On-site refuelling must only take place at distances greater than 50 meters from nearest watercourses or site drainage infrastructure. Refuelling must be undertaken by direct filling from a delivery truck or using a mobile double skinned fuel bowser and will only take place in designated bunded areas.</li><li>● Drip trays must be used for all re-fuelling operations. Best practice for refuelling incorporated into the CEMP for the site.</li><li>● Only dedicated trained and competent personnel will carry out refuelling operations.</li><li>● Regular inspections and maintenance scheduling for all plant and vehicles to minimise the potential for malfunction or leak.</li><li>● Emergency response procedures must be in place in the unlikely event of spillages of fuels or lubricants. Site staff must be familiar with emergency procedures and all staff on-site must be fully trained in the use of equipment to be used on-site.</li><li>● Emergency spill kit with oil boom, absorbers etc. must be kept on site for use in the event of an accidental spillage/leak.</li><li>● Regular visual monitoring of all surface waters onsite for any surface sheen or sign of potential hydrocarbon pollution must be undertaken.</li><li>● No bulk storage of fuels or lubricants to occur on site. Small quantities of fuel lubricants, if stored on site, must be stored in bunded storage tanks with bunded volumes to be not less than either (1) 110% of capacity of the largest tank/drum in the bunded area, or (2) 25% of the total volume of substance that could be stored within the bunded area.</li><li>● Where possible precast concrete must be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work must be carried in dry conditions out to avoid any contamination of the receiving water environment.</li><li>● All ready-mixed concrete must be delivered to the proposed development site by truck. Batching of wet-cement products is forbidden onsite</li><li>● No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.</li><li>● Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. Washout must be to a dedicated concrete washout unit.</li></ul>
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	<ul style="list-style-type: none"> <li>● No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.</li> <li>● Use weather forecasting to plan dry days for pouring concrete.</li> <li>● Ensure concrete pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event.</li> </ul>
<b>Residual effect</b>	No residual effect on this KER exists after mitigation during the construction stage

**Assessment of Potential Effects on Birds and other fauna**

The table below mainly focuses on the potential impacts from dust/noise from the construction works which could cause a disturbance to any birds/mammals which may be nesting/foraging within/near the site. Clearance of potential habitat for birds/other fauna is assessed on page 48 of this chapter.

*Assessment of Potential Effects on Birds and other fauna*

<b>Description of effects</b>	Dust/noise from the construction works could cause a disturbance to any birds/mammals which may be nesting/foraging within/near the site.
<b>Characterisation of unmitigated effect</b>	The effect is characterised as short-term negative.
<b>Assessment of significance prior to mitigation</b>	Prior to mitigation this effect is considered significant at a local scale as it would disrupt any birds or other fauna which could be nesting/foraging within the area
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● The timing of operations optimised in relation to meteorological conditions</li> <li>● A water bowser/sprayer must be available at all times to minimise dust during dry and windy conditions</li> <li>● Speed restrictions of 15 kph maintained to limit generation of fugitive dust (within site and access roads)</li> <li>● Any site roads with the potential to give rise to dust must be regularly watered, as appropriate, during dry and/or windy conditions.</li> <li>● The designated public roads outside the site and along the main transport routes to the site must be regularly inspected by Site Management for cleanliness and cleaned as necessary.</li> <li>● Material handling systems and material storage areas must be designed and laid out to minimise exposure to wind.</li> <li>● Daily inspection of construction sites to examine dust measures and their effectiveness must be undertaken.</li> <li>● When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.</li> <li>● All vehicles leaving the construction areas of the site will pass through a wheel cleansing located within the central compound area prior to entering the local road network.</li> <li>● All construction activity must be undertaken in line with BS 5228 - 1:2009+A1 2014 which includes guidance on several aspects of construction site practices such as: (a) Selection of quiet plant, (b) Control of noise sources, (c) Screening, (d) Hours of work.</li> <li>● Plant used at the site must have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. Any plant that is used intermittently must be shut down when not in use to minimise noise levels.</li> </ul>

	<ul style="list-style-type: none"> <li>● The best means practical, including proper maintenance of plant, must be employed to minimise the noise produced by on-site operations.</li> <li>● As far as reasonably practicable, sources of significant noise should be enclosed.</li> <li>● All vehicles and mechanical plant must be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.</li> <li>● Compressors must be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which must be kept closed whenever the machines are in use and all ancillary pneumatic tools must be fitted with suitable silencers.</li> <li>● Operating procedures have included training to reduce drop heights when loading and unloading materials. For concrete mixers, control measures must be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.</li> <li>● The external site boundaries must be vegetated with a mixture of native shrubs and trees which will act as an acoustic barrier for the site (See section 13 of this EIAR for full landscaping details).</li> </ul>
<b>Residual effect</b>	No residual effects are envisaged after the implementation of mitigation on this KER

#### ***Assessment of Potential Effects on Badgers***

<b>Description of effect</b>	A number of potential badger setts have been identified within the site footprint with an active sett currently located near the western boundary. The proposed clearance works could potentially remove supporting habitat for the badger.
<b>Characterisation of unmitigated effect</b>	The effect is characterised as long-term negative
<b>Assessment of significance prior to mitigation</b>	The effect is assessed as significant at a local scale as it could disrupt an active badger sett
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● An Ecological Clerk of Works (ECoW) must be appointed to the project for the construction phase. The ECoW must employ a suitably qualified Badger Specialist who can advise on the implementation of each of the measures proposed.</li> <li>● Separate pre-construction badger surveys must be carried out in advance of the works for phase 2 and phase 3 (see figure 6.2) respectively to ensure that there are no new badger setts within 30m of the proposed works area. This must be conducted by an experienced Badger surveyor at least 3 - 4 months prior to any construction works commencing on the site.</li> <li>● Should any new active or inactive badger setts be identified within 30m of the proposed works for either phase 2 or phase 3, it will be necessary to apply for a derogation licence from NPWS to proceed with the affected works.</li> <li>● Should the pre-construction Badger survey confirm no activity within the identified setts along the northern boundary (located within phase 3 of works) or any newly discovered setts, the entrances may be initially soft blocked (entrance is lightly blocked with vegetation and a</li> </ul>

	<p>layer of soil) under the supervision of the Badger specialist to confirm that the sett is inactive.</p> <ul style="list-style-type: none"> <li>● If all entrances remain undisturbed for approx. five days, the sett must be destroyed immediately using a mechanical digger, under licence from NPWS. All works must be carried out under supervision from the ECoW.</li> <li>● If the setts along the northern boundary (phase 3) are confirmed to be active after the pre-construction survey, guidelines and mitigation measures within the “Treatment of Badgers prior to the construction of national road schemes” document<sup>11</sup> by Transport Infrastructure Ireland must be strictly adhered to for the safe exclusion/evacuation of Badgers.</li> <li>● Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS.</li> <li>● All contractors/operators on site must be made fully aware of the procedures pertaining to the setts on site by the ECoW.</li> </ul> <p>As the Badger sett located near the western boundary (phase 2 of proposed works) is within an area of woodland which is to be retained, the following mitigation measures will apply.</p> <ul style="list-style-type: none"> <li>● The woodland area near the western boundary where the active sett has been identified is to be retained and must not be subjected to any clearance works.</li> <li>● The active badger sett near the western boundary must be clearly delineated and the extent of bounds prohibited for mechanical activity clearly marked by fencing/bunting and signage prior to works beginning, this must be done in consultation with the appointed ECoW.</li> <li>● No heavy machinery must be used within 30m of badger setts (unless carried out under licence)</li> <li>● Lighter machinery (generally wheeled vehicles) must not be used within 20m of a sett entrance.</li> <li>● Light work, such as digging by hand or scrub clearance must not take place within 10m of sett entrances.</li> <li>● During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.</li> <li>● Should any security fencing need to be erected around the area, a badger access hole (at least 40mm in diameter) must be provided in each fence segment so as to maintain access to foraging routes.</li> <li>● The use of noisy plant and machinery in the vicinity of the sett protection zone must cease at least two hours before sunset.</li> <li>● Security lighting must be directed away from the setts.</li> <li>● Trenches must be covered at the end of each working day or include a means of escape for any animal should they fall in (Badgers will continue to use their traditional foraging routes even when construction has commenced).</li> </ul>
<p><b>Residual effect</b></p>	<p>No residual effects are envisaged after the implementation of mitigation on this KER.</p>

<sup>11</sup> <https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf>

### ***Assessment of Potential Effects on Grassland and boundary vegetation***

The assessment of potential effects on the grassland vegetation and woodland vegetation to be cleared during construction stage will be jointly assessed with the potential effects during operational stage. This will allow for a more precise assessment on the entire impact on this receptor.

#### **6.7.5 Likely Significant Effects During Operational Stage**

This section examines the likely significant effects on KERs from the proposed development during the operational stage. Where likely significant effects are predicted appropriate mitigation will be suggested to avoid/reduce the significance of the effect on KERs.

#### ***Assessment of Potential Effects on Rivers/Streams and Sensitive Aquatic Faunal Species***

<b>Description of effect</b>	(This assessment considers the Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn Stream) Insufficient water management would result in water of poor quality being discharged to the identified watercourses. This could arise from a variety of operational processes.
<b>Characterisation of unmitigated effect</b>	The characterisation of effects on this KER is assessed as long-term negative in the absence of mitigation
<b>Assessment of significance prior to mitigation</b>	The assessment of this effect is moderate adverse due to the indirect discharge that will occur to the identified watercourses.
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that supply to all the streams post development is the same or less than pre-development levels.</li> <li>● An appropriately sized hydrocarbon interceptor must be in place immediately upstream of the attenuation tank to ensure that there is no hydrocarbon pollution in the surface waters leaving the site.</li> <li>● The site will avail of SuDs</li> <li>● In addition to SuDS, an attenuation tank will be provided to store excess surface water during a storm event for slow release.</li> <li>● Flow rate must be restricted to greenfield runoff rates using a vortex flow control device.</li> </ul>
<b>Residual effect</b>	No residual effect is envisaged on this KER

#### ***Assessment of Potential Effects on Grassland/Woodland***

<b>Description of effects</b>	Over the 5 – 10 year period of the proposed development, c. 75,000m <sup>2</sup> of grassland habitat and c. 20,000m <sup>2</sup> of woodland habitat will be lost within the subject site. Removal of the grassland habitat could have a wider impact on the hydrology of the surrounding area
<b>Characterisation of unmitigated effect</b>	The removal of the both the grassland and woodland represents the removal of an ecological receptor of local importance (lower level). The characterisation of effects on this KER is assessed as long-term permanent negative in the absence of mitigation and compensation.
<b>Assessment of significance prior to mitigation</b>	Prior to implementing mitigation by design in addition to other mitigation measures this effect is assessed as significant.
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● Pre-construction bat and bird surveys must be undertaken before any works commence for phase 2 and phase 3 of the development. The entire site footprint must be covered under the survey.</li> </ul>



	<ul style="list-style-type: none"><li>● As the bat survey did not result in evidence of bat roosts within trees proposed for clearance, felling works can proceed at these locations under the supervision of an experienced bat ecologist who must be present in the unlikely event that any roosting bats are identified during the works. The works must be carried out in as sensitive a manner as possible to minimise noise and vibration disturbance.</li><li>● The entire site must be thoroughly walked by the ECoW's prior to works commencing to confirm that there are no birds nesting within the areas for clearance and to give any resting animals warning and opportunity to escape safely.</li><li>● Areas of vegetation which are to be retained, particularly to the west of the site where the most biodiversity exists pre-development must be clearly outlined and must not be subjected to any clearance works.</li><li>● Protective fencing must be erected to protect areas of trees/scrub that are to remain on site to specification laid out in BS 5837 (2012) 'Trees in relation to design, demolition and construction'.</li><li>● Clearance of woodland/hedgerows and trees are forbidden to take place from March 1st to August 31st, as per the Wildlife Act 1976 as amended 2000.</li><li>● Supplementary planting must be undertaken along the site boundaries to strengthen the ecological corridors provided by the current boundary vegetation.</li><li>● All plants and trees must be purchased from a source compliant with the plant health regulation 2016/2031/EU. All bare-root planting works will be carried out during the dormant season (November to March). Any trees that fail must be replaced during the next dormant planting season.</li><li>● Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that quantity and rate of supply of water leaving the site will be the same or less than pre-development Greenfield runoff rates.</li><li>● The current habitat of wet grassland is not rich in biodiversity and the loss of this will be offset by the creation and maintenance of planted buffers, enhancement of open areas, supplementary planting of the boundaries and landscaping works proposed within the site. It is expected that the landscaping measures will lead to overall increased biodiversity for the site.</li><li>● Areas of grassland with the open areas must be managed to maximise insect prey for bats and other species. The grassland mix must be as species rich as possible (suitable to the soil type) and ideally include dandelion, dock, hawkweeds, plantains, chickweed, fat hen, mouse-ear, and other herbaceous plants.</li><li>● The comprehensive landscape design proposal created by MH Associates must be fully implemented as soon as practical with input from the ECoW in relation to providing bag foraging routes and wildlife corridors (see section 13 of this EIAR for full detail on proposed landscaping).</li><li>● Landscaping proposals to promote and enhance the biodiversity within the development must include the following:</li></ul>
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	<ul style="list-style-type: none"> <li>● Establishing wildlife corridors to support and enhance the habitat for a diversity of wild creatures (birds, bats, hedgehogs, toads etc.).</li> <li>● Hedges: Provide flowers and fruits for wildlife, nesting opportunities for birds and cover for hedgehogs. Hedgerows within the site must be interplanted with specific species as advised by the ECoW. Supplementary planting of hedgerows will further strengthen commuting/foraging corridors used by bats. Species such as hawthorn, blackthorn, hazel must be considered for planting.</li> <li>● Wood Piles: Can be used to create habitats for amphibians, invertebrates and bryophytes micro-habitats by leaving piles of dead wood or recumbent dead logs within the mature tree areas.</li> <li>● Pollinators: A variety of wildflowers and shrubs are proposed in the planting plan that provide shelter as well as nectar and pollen to feed butterflies and bees. The plant selection is based on recommendations within the All-Ireland Pollinator Plan (2021-2025).</li> </ul> <p>The invasive species, Salmonberry has been noted in multiple locations around the site. The following mitigation will be implemented to eradicate the site from Salmonberry and prevent the spread of it into the surrounding environs.</p> <ul style="list-style-type: none"> <li>● The stands of Salmonberry currently onsite may be treated by a licenced/certified professional in advance of the construction works under supervision of the appointed ECoW.</li> <li>● Prior to any treatment, areas containing Salmonberry must be fenced off and warning signage erected.</li> <li>● Salmonberry may be treated with foliar applications or stem injections of glyphosate throughout the growing season. Treatments must only be carried out by a licenced/certified professional under supervision from the ECoW.</li> <li>● Alternatively, stands can be cut to the ground in the winter with a brush cutter. Cut canes can be left on site until they are clearly dried out and brittle. Salmonberry will regenerate vigorously the following year and can be treated with a foliar application from Mid-June onwards. This is the most effective way at killing a mature plant in a single season.</li> <li>● Subsequent revisits must be carried to ensure no new seedling establishment or resprouting from the stumps. New seedlings and small plants are easily killed with a single Glyphosate application.</li> <li>● Prior to any construction works commencing, the ECoW must walk the entire site footprint to ensure that no new stands of Salmonberry are present onsite. The site must be mapped accordingly and the contractor made aware of any remaining stands of invasive species throughout the site.</li> <li>● Contaminated soil may be reused onsite once it has been treated and is confirmed to be free from invasive species. The ECoW will advise on the best treatment option for contaminated soil within the site.</li> </ul>
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<b>Residual effect</b>	c. 75,000m <sup>2</sup> of grassland habitat and c. 20,000m <sup>2</sup> of woodland habitat will be lost within the subject site over a 5 – 10 year period. The loss of this habitat represents a slight adverse effect at a site level after mitigation. Additionally, the attenuation system for this site has been specifically sized to deal with the additional runoff generated from site stripping so there is no risk of flooding occurring within the site nor in the surrounding environs due to the removal of the grassland habitat.
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***Assessment of Potential Effects on Birds and other fauna***

<b>Description of effects</b>	Standard day to day operation of the housing development could generate an increase in noise and excessive outdoor lighting which could disrupt local wildlife
<b>Characterisation of unmitigated effect</b>	This effect is characterised as long term in the absence of mitigation. The magnitude is determined to be moderate.
<b>Assessment of significance prior to mitigation</b>	Prior to mitigation this effect is considered moderately adverse
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>● Bat and bird boxes to be erected throughout the subject site to provide roosting opportunities. Location of same to be advised by the ECoW's.</li> <li>● Lighting proposals for the operational phase must adhere to the following guidance:                         <ul style="list-style-type: none"> <li>● Bats &amp; Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010);</li> <li>● Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020); and</li> <li>● Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2018).</li> </ul> </li> <li>● All proposals for lighting must be reviewed and agreed with the ECoW and must ensure no light spill above 3 Lux directly into surrounding woodland vegetation, copses of trees, hedgerows, scrub or waterbodies / watercourses.</li> <li>● If necessary, the ECoW shall recommend adjustments to directional lighting (e.g. through cowls, shields or louvres) to restrict light to those areas where it is needed, importantly along linear habitat features to ensure long-term suitability for foraging and commuting bats.</li> <li>● The external site boundaries must be vegetated with a mixture of native shrubs and trees which will act an acoustic barrier for the site (See section 13 of this EIAR for full landscaping details). Additionally, the supplementary planting of the boundaries will eliminate any potential gaps within the current boundary vegetation which may allow light to penetrate through.</li> </ul>
<b>Residual effect</b>	No residual effect is envisaged on this KER

**6.8 Cumulative Impact Assessment**

The Proposed Development was considered in combination with other plans and projects in the area that could result in cumulative impacts on the Key Ecological Receptors (KERs) identified in Section 6.6.5 of this report. Records from Donegal County Council planning registry were considered to identify projects

that had potential to generate cumulative impacts on KERS. A summary of the findings is presented in Table 6.14 below.

**Table 6.14: Cumulative Effects**

Planning Ref No.	Applicant	Development Description	Location	Potential Cumulative Impact
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Biodiversity impact will be similar to this application but smaller in scale.  This development has been cumulatively considered with Phase 2 in section 6.8.3 below.
1950809 (ABP 307152-20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	Biodiversity impact will be similar to this application but on a smaller scale
1851939	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	Biodiversity impact will be similar to this application.

The main areas that give rise to cumulative impacts in relation to this proposal area as follows:

#### **6.8.1 Operation of the new housing development**

The following were considered in this assessment of cumulative impacts on KERs:

- Loss of habitat – this is represented by the proposed new development area of 10.2Ha within the site. As discussed above, this habitat loss represents a slight negative effect at a site level after mitigation.
- Section 13 of the EIAR outlines landscaping plans which add to the habitat cover and biodiversity of the subject site which act as a positive in combination impact of KER's.
- The water management system outlined in Section 8 will also act as a positive in combination impact on KER's

#### **6.8.2 Existing Habitats and surrounding land uses**

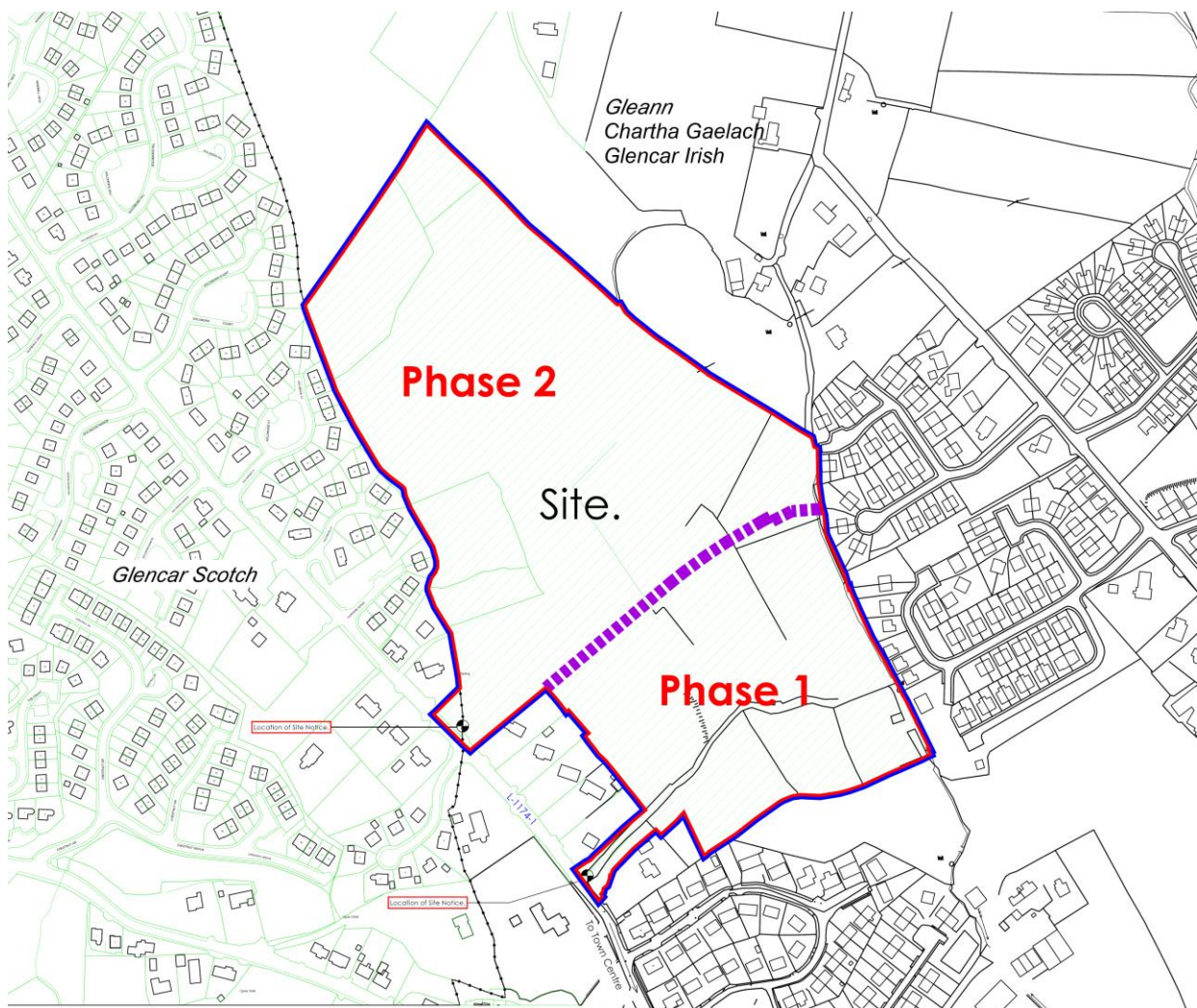
This proposal will have no significant in combination effect with current land use and habitats within the wider area in which the subject site is located. The land immediately surrounding the application site is

typical of that in a site close to the edge of a town boundary. It is surrounded by housing developments to the west and east and the planned Phase 1 development to the south. To the north and northeast lies agricultural land with sporadic farmsteads. Further to the north there are more housing developments.

Direct and indirect socio-economic impacts will arise from the economic activity and employment from the proposed development. Chapters 7-12 of this EIA assesses the cumulative effects of the subject site in relation to land, soils, geology, water, air, noise, climate and traffic. Mitigation Measures are detailed in the relevant sections of this EIA to ameliorate cumulative impacts from the proposed development on the above listed respectively.

### **6.8.3 Assessment of Cumulative Effects**

The combined development of the current application and Phase 1 of the development are considered together. Phase 1 is similar in nature and is smaller in scale to the current application and is shown below in Figure 6.11.



**Figure 6.11: Proposed phasing of the development** This Map was provided by MH Associates.

Phase 2 of the proposed development is linked to Phase 1. Phase 1 comprises (1) the construction of a housing development consisting of 82no. dwellings and 2no. apartment blocks (90no. residential units in total). (2) Construction of proposed creche and associated site works. (3) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission).

Phase 1 is located at the site adjacent to the south of the subject site. A Stage 1 Screening Report for Appropriate Assessment was prepared for Phase 1. The Stage 1 AA screening report concluded, based on the examination, analysis, and evaluation of relevant information, the proposed development will have no significant negative effect on Natura 2000 sites.

A small proportion of the overall stormwater drainage, servicing accommodation units 1-12, is proposed to be directed into the stormwater system for the Phase 1 development. A comprehensive surface water drainage report has been produced by T.S McLaughlin Structural Engineers for both phases of the development. There is sufficient design capacity for attenuation and hydrocarbon interception available in the Phase 1 development to cope with the additional input from Phase 2. Therefore, the design of the surface water drainage systems will ensure that Phase 2 will not combine with Phase 1 to culminate in significant hydrological impacts to any European Site (see chapter 8 of this EIAR for full details).

If the additional phase 1 development proceeds to construction, there would be a moderate adverse cumulative impact to biodiversity before mitigation on the site with a further loss of habitat. Habitat within the Phase 1 area is the same as the current habitats within the subject site (GS4 Wet Grassland, WD1 Mixed Broadleaved Woodland, WD3 Conifer woodland, and WS1 Scrub). C. 110,000m<sup>2</sup> of habitat would potentially be lost taking into consideration both phases of development. As discussed above, this habitat loss would represent a slight adverse effect after mitigation.

A landscaping and restoration plan has been prepared for the subject site to offset the impact that the development will have on habitat within the subject site and to aid in screening the development. Landscaping proposals for the site are discussed in full detail in section 13 of this EIAR.

#### 6.9 Determination of Environmental Impact Significance Pre-mitigation

Impact	Receptor	Description of Impact (Character/Magnitude / Duration/Probability/ Consequences) Negligible to High	Existing Environment (Significance/ Sensitivity) Negligible to High	Significance Imperceptible to Profound
Loss of habitat from site clearance works	Wildlife within the surrounding environs	Medium	Medium	Moderate
Dust from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Medium	Medium	Moderate
Noise from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Medium	Medium	Moderate
Surface Water Quality Impacts from	Glencar Irish Stream, Glencar	Medium	Medium	Moderate

<p>Suspended Sediment Load</p>	<p>Scotch and Burn, Swilly Lough Stream Sprack Lough SAC, Swilly SPA</p>			
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### 6.9.1 Summary of Mitigation Measures Proposed

#### Summary of Mitigation Measures proposed to protect aquatic environment – should be read in conjunction with ch.8

- An Ecological Clerk of Works (ECoW's) must be appointed for the site who will advise on the appropriate implementation of the mitigation measures outlined within the EIAR.
- Prior to the commencement of any clearance works, silt fences must be erected along the banks of the watercourse flowing along the eastern site boundary and the watercourse along the north-western site boundary. This silt fence must be constructed using "Terrastop" silt fencing (Terrasilt GR180) or equivalent. The bottom of this fence must be placed in a 100mm x 100mm trench backfilled and compacted, burying 150mm of the fence in "L" shape.
- The silt fencing must be inspected regularly by the site foreman for tears.
- Removal of overburden must be in accordance with demand and must be controlled to reduce the risk of runoff containing silt.
- Stockpiles will be located, arranged and managed so that the risk to receiving water and other receptors, from silt and contaminate runoff is minimised. Stockpiles of soil must be contained by a silt fence.
- All stockpiled materials will be located a minimum of 50m from water courses during the construction phase.
- Any overburden that will not be recycled on site must be removed off site to an approved waste facility or a site which is planning compliant.
- Robust surface water capture drains leading to temporary settlement pond system with discharge to surface water through silt bags. Indicative locations and sizing of settlement ponds is shown in Figure 8.10 within section 8. Location and sizing of temporary treatment systems to be agreed prior to commencement of works and written into final CEMP document.
- Drains and silt traps must be maintained throughout all excavation and works, ensuring that they are clear of sediment build-up and are not severely eroded.
- Clearance works must cease in periods of heavy rainfall denoted by a Met Eireann status orange warning.
- Brash mats must be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal must take place when they become heavily used and worn.
- Strict control of the site boundaries must be enforced by the Site Manager, including minimal land clearance and restrictions on the use of machinery near waterbodies.
- All plant and machinery must be serviced before being mobilized to site.
- No refuelling of machinery or overnight parking of machinery is permitted in areas adjacent to watercourses or on-site drainage infrastructure.
- On-site refuelling must only take place at distances greater than 50 meters from nearest watercourses or site drainage infrastructure. Refuelling must be undertaken by direct filling from a delivery truck or using a mobile double skinned fuel bowser and will only take place in designated bunded areas.
- Drip trays must be used for all re-fuelling operations. Best practice for refuelling incorporated into the CEMP for the site.
- Only dedicated trained and competent personnel will carry out refuelling operations.
- Regular inspections and maintenance scheduling for all plant and vehicles to minimise the potential for malfunction or leak.
- Emergency response procedures must be in place in the unlikely event of spillages of fuels or lubricants. Site staff must be familiar with emergency procedures and all staff on-site must be fully trained in the use of equipment to be used on-site.
- Emergency spill kit with oil boom, absorbers etc. must be kept on site for use in the event of an accidental spillage/leak.



- Regular visual monitoring of all surface waters onsite for any surface sheen or sign of potential hydrocarbon pollution must be undertaken.
- No bulk storage of fuels or lubricants to occur on site. Small quantities of fuel lubricants, if stored on site, must be stored in bunded storage tanks with bunded volumes to be not less than either (1) 110% of capacity of the largest tank/drum in the bunded area, or (2) 25% of the total volume of substance that could be stored within the bunded area.
- Where possible precast concrete must be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work must be carried in dry conditions out to avoid any contamination of the receiving water environment.
- All ready-mixed concrete must be delivered to the proposed development site by truck. Batching of wet-cement products is forbidden onsite
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. Washout must be to a dedicated concrete washout unit.
- No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure concrete pour site is free of standing water and plastic covers will be ready in case of a sudden rainfall event.
- Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that supply to all the streams post development is the same or less than pre-development levels.
- An appropriately sized hydrocarbon interceptor must be in place immediately upstream of the attenuation tank to ensure that there is no hydrocarbon pollution in the surface waters leaving the site.
- The site will avail of SuDs
- In addition to SuDS, an attenuation tank will be provided to store excess surface water during a storm event for slow release.
- Flow rate must be restricted to greenfield runoff rates using a vortex flow control device.

#### **Summary of Mitigation Measures for protection of Badgers**

- An Ecological Clerk of Works (ECoW) must be appointed to the project for the construction phase. The ECoW must employ a suitably qualified Badger Specialist who can advise on the implementation of each of the measures proposed.
- Separate pre-construction badger surveys must be carried out in advance of the works for phase 2 and phase 3 (see figure 6.2) respectively to ensure that there are no new badger setts within 30m of the proposed works area. This must be conducted by an experienced Badger surveyor at least 3 - 4 months prior to any construction works commencing on the site.
- Should any new active or inactive badger setts be identified within 30m of the proposed works for either phase 2 or phase 3, it will be necessary to apply for a derogation licence from NPWS to proceed with the affected works.
- Should the pre-construction Badger survey confirm no activity within the identified setts along the northern boundary (located within phase 3 of works) or any newly discovered setts, the entrances may be initially soft blocked (entrance is lightly blocked with vegetation and a layer of soil) under the supervision of the Badger specialist to confirm that the sett is inactive.
- If all entrances remain undisturbed for approx. five days, the sett must be destroyed immediately using a mechanical digger, under licence from NPWS. All works must be carried out under supervision from the ECoW.
- If the setts along the northern boundary (phase 3) are confirmed to be active after the pre-construction survey, guidelines and mitigation measures within the "Treatment of Badgers prior

to the construction of national road schemes” document<sup>12</sup> by Transport Infrastructure Ireland must be strictly adhered to for the safe exclusion/evacuation of Badgers.

- Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS.
- All contractors/operators on site must be made fully aware of the procedures pertaining to the setts on site by the ECoW.

As the Badger sett located near the western boundary (phase 2 of proposed works) is within an area of woodland which is to be retained, the following mitigation measures will apply.

- The woodland area near the western boundary where the active sett has been identified is to be retained and must not be subjected to any clearance works.
- The active badger sett near the western boundary must be clearly delineated and the extent of bounds prohibited for mechanical activity clearly marked by fencing/bunting and signage prior to works beginning, this must be done in consultation with the appointed ECoW.
- No heavy machinery must be used within 30m of badger setts (unless carried out under licence)
- Lighter machinery (generally wheeled vehicles) must not be used within 20m of a sett entrance.
- Light work, such as digging by hand or scrub clearance must not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.
- Should any security fencing need to be erected around the area, a badger access hole (at least 40mm in diameter) must be provided in each fence segment so as to maintain access to foraging routes.
- The use of noisy plant and machinery in the vicinity of the sett protection zone must cease at least two hours before sunset.
- Security lighting must be directed away from the setts.
- Trenches must be covered at the end of each working day or include a means of escape for any animal should they fall in (Badgers will continue to use their traditional foraging routes even when construction has commenced).

#### Summary of Mitigation Measures for protection of birds and other wildlife

- The timing of operations optimised in relation to meteorological conditions
- A water bowser/sprayer must be available at all times to minimise dust during dry and windy conditions
- Speed restrictions of 15 kph maintained to limit generation of fugitive dust (within site and access roads)
- Any site roads with the potential to give rise to dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site must be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Material handling systems and material storage areas must be designed and laid out to minimise exposure to wind.
- Daily inspection of construction sites to examine dust measures and their effectiveness must be undertaken.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.
- All vehicles leaving the construction areas of the site will pass through a wheel cleansing located within the central compound area prior to entering the local road network.

<sup>12</sup> <https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf>

- All construction activity must be undertaken in line with BS 5228 -1:2009+A1 2014 which includes guidance on several aspects of construction site practices such as: (a) Selection of quiet plant, (b) Control of noise sources, (c) Screening, (d) Hours of work.
- Plant used at the site must have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. Any plant that is used intermittently must be shut down when not in use to minimise noise levels.
- The best means practical, including proper maintenance of plant, must be employed to minimise the noise produced by on-site operations.
- As far as reasonably practicable, sources of significant noise should be enclosed.
- All vehicles and mechanical plant must be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors must be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which must be kept closed whenever the machines are in use and all ancillary pneumatic tools must be fitted with suitable silencers.
- Operating procedures have included training to reduce drop heights when loading and unloading materials. For concrete mixers, control measures must be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- The external site boundaries must be vegetated with a mixture of native shrubs and trees which will act as an acoustic barrier for the site (See section 13 of this EIAR for full landscaping details).

#### **Summary of Mitigation Measures for removal of grassland/woodland habitat**

- Pre-construction bat and bird surveys must be undertaken before any works commence for phase 2 and phase 3 of the development. The entire site footprint must be covered under the survey.
- As the bat survey did not result in evidence of bat roosts within trees proposed for clearance, felling works can proceed at these locations under the supervision of an experienced bat ecologist who must be present in the unlikely event that any roosting bats are identified during the works. The works must be carried out in as sensitive a manner as possible to minimise noise and vibration disturbance.
- The entire site must be thoroughly walked by the ECoW’s prior to works commencing to confirm that there are no birds nesting within the areas for clearance and to give any resting animals warning and opportunity to escape safely.
- Areas of vegetation which are to be retained, particularly to the west of the site where the most biodiversity exists pre-development must be clearly outlined and must not be subjected to any clearance works.
- Protective fencing must be erected to protect areas of trees/scrub that are to remain on site to specification laid out in BS 5837 (2012) ‘Trees in relation to design, demolition and construction’.
- Clearance of woodland/hedgerows and trees are forbidden to take place from March 1st to August 31st, as per the Wildlife Act 1976 as amended 2000.
- Supplementary planting must be undertaken along the site boundaries to strengthen the ecological corridors provided by the current boundary vegetation.
- All plants and trees must be purchased from a source compliant with the plant health regulation 2016/2031/EU. All bare-root planting works will be carried out during the dormant season (November to March). Any trees that fail must be replaced during the next dormant planting season.
- Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that quantity and rate of supply of water leaving the site will be the same or less than pre-development Greenfield runoff rates.
- The current habitat of wet grassland is not rich in biodiversity and the loss of this will be offset by the creation and maintenance of planted buffers, enhancement of open areas, supplementary planting of the boundaries and landscaping works proposed within the site. It is expected that the landscaping measures will lead to overall increased biodiversity for the site.

- Areas of grassland with the open areas must be managed to maximise insect prey for bats and other species. The grassland mix must be as species rich as possible (suitable to the soil type) and ideally include dandelion, dock, hawkweeds, plantains, chickweed, fat hen, mouse-ear, and other herbaceous plants.
- The comprehensive landscape design proposal created by MH Associates must be fully implemented as soon as practical with input from the ECoW in relation to providing bag foraging routes and wildlife corridors (see section 13 of this EIAR for full detail on proposed landscaping).
- Landscaping proposals to promote and enhance the biodiversity within the development must include the following:
  - Establishing wildlife corridors to support and enhance the habitat for a diversity of wild creatures (birds, bats, hedgehogs, toads etc.).
  - Hedges: Provide flowers and fruits for wildlife, nesting opportunities for birds and cover for hedgehogs. Hedgerows within the site must be interplanted with specific species as advised by the ECoW. Supplementary planting of hedgerows will further strengthen commuting/foraging corridors used by bats. Species such as hawthorn, blackthorn, hazel must be considered for planting.
  - Wood Piles: Can be used to create habitats for amphibians, invertebrates and bryophytes micro-habitats by leaving piles of dead wood or recumbent dead logs within the mature tree areas.
  - Pollinators: A variety of wildflowers and shrubs are proposed in the planting plan that provide shelter as well as nectar and pollen to feed butterflies and bees. The plant selection is based on recommendations within the All-Ireland Pollinator Plan (2021-2025).

The invasive species, Salmonberry has been noted in multiple locations around the site. The following mitigation will be implemented to eradicate the site from Salmonberry and prevent the spread of it into the surrounding environs.

- The stands of Salmonberry currently onsite may be treated by a licenced/certified professional in advance of the construction works under supervision of the appointed ECoW.
- Prior to any treatment, areas containing Salmonberry must be fenced off and warning signage erected.
- Salmonberry may be treated with foliar applications or stem injections of glyphosate throughout the growing season. Treatments must only be carried out by a licenced/certified professional under supervision from the ECoW.
- Alternatively, stands can be cut to the ground in the winter with a brush cutter. Cut canes can be left on site until they are clearly dried out and brittle. Salmonberry will regenerate vigorously the following year and can be treated with a foliar application from Mid-June onwards. This is the most effective way at killing a mature plant in a single season.
- Subsequent revisits must be carried to ensure no new seedling establishment or resprouting from the stumps. New seedlings and small plants are easily killed with a single Glyphosate application.
- Prior to any construction works commencing, the ECoW must walk the entire site footprint to ensure that no new stands of Salmonberry are present onsite. The site must be mapped accordingly and the contractor made aware of any remaining stands of invasive species throughout the site.
- Contaminated soil may be reused onsite once it has been treated and is confirmed to be free from invasive species. The ECoW will advise on the best treatment option for contaminated soil within the site.

**6.9.2 Determination of Environmental Impact Significance Post mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude / Duration/Probability/ Consequences)</b> Negligible to High	<b>Existing Environment (Significance/ Sensitivity)</b> Negligible to High	<b>Significance</b> Imperceptible to Profound
Loss of habitat from stripping and construction works	Wildlife within the surrounding environs	Low	Medium	Imperceptible
Dust from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Negligible	Low	Imperceptible
Noise from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Negligible	Low	Imperceptible
Surface Water Quality Impacts from Suspended Sediment Load	Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn, Lough Swilly SAC, Lough Swilly SPA	Medium	Medium	Imperceptible

**6.10 Interactions**

Interactions between biodiversity and other aspects of the EIAR (water, air, landscaping etc.) are discussed in detail within section 16 of this EIAR.

**6.11 Conclusion**

This ecological impact assessment of the proposed application concludes that construction of the new housing development will have no significant residual effects assuming the mitigation measures outlined in this section are strictly adhered to.

## APPENDIX I: Botanical Survey Data Sheet

**Botanical survey**

**Applicant:** PJ McDermott

**Surveyor:** Shannen McEwen

**Site Location:** Glencar Irish, Letterkenny, Co. Donegal

**Size of site:** c. 10.2Ha

**Date of survey:** 03/08/2022

**Soil Type:**

Mineral	Peat	Sandy
<b>X</b>		

**Figure 1: Location of quadrats**



Ground Cover of vegetation: <i>Estimate % cover</i>														
D=Dominant >50%		A=Abundant 25-50%					F=Frequent 5-25%					O=Occasional <5%		
S a m p l e N o .	Name of plant species	Numbers of individuals in Section and %										No of areas species present	F r e q u e n c y ( %)	Abundan ce (%)
		1	2	3	4	5	6	7	8	9	10			
1	Bent grass	F	O		F			O	O	O	O	7	70	1.5 – 7.5
2	Bracken					F	F					2	20	1 - 5
3	Bramble		O	O	O							3	30	0.3 – 1.5
4	Bushvetch			O								1	10	0.1 – 0.5
5	Cock's foot	O						O	O	O		4	40	0.4 - 2
6	Creeping buttercup	O						O	O		O	4	40	0.4 - 2
7	Dandelion	O							O		O	3	30	0.3 – 1.5
8	Dock								O		O	2	20	0.2 – 1
9	Gorse		F	F	F						O	4	40	1.6 – 8
10	Herb Robert		O			O						2	20	0.2 - 1
11	Ivy		F			F	F					3	30	1.5 – 7.5
12	Meadow-grass					O		O	O	O		4	40	0.4 - 2
13	Nettle		O	F		F	F					4	40	1.6 - 8
14	Rush	D						D	D	D	A	5	50	22.5 – 45
15	Rye grasses	A	O		A		O	D	D	D	D	8	80	25.2 – 51
16	Silverweed				O			O	O	O		4	40	0.4 - 2
17	Thistle		O	O							O	3	30	0.3 – 1.5
18	Yorkshire fog							O	O	O		3	30	0.3 – 1.5

## APPENDIX II: Bird Survey

Multiple bird observation reports were conducted over 4 months (Nov 22 - March 23) encompassing the entire footprint of the subject site. The site boundaries recorded the most bird activity. The site boundaries of mature vegetation provide good cover, foraging and habitat connectivity. The results of this are attached below.

<b>Site Name:</b>	PJ McDermott
<b>Date:</b> <b>Start time:</b> <b>End time:</b>	22/11/2022 09.30 13.30
<b>Counter:</b>	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster)
<b>Weather:</b>	Cloud cover: 33-66%, Rain: 2, Wind: 2, Visibility: 1.
<b>Activity:</b>	No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird				2
Blue tit			1	
Coal tit	1			
Wood pigeon	4			
Dunnock			2	
Goldfinch			1	1
Great tit	1			
Hooded crow	1	2		
Jackdaw			1	2
Long tailed tit			1	
Meadow pipit			1	3
Collared dove	2			
Pied wagtail	1		2	2
Robin			1	3
Siskin			1	
Song thrush	1			2
Stonechat			2	
Wren				8



<b>Site Name:</b>	PJ McDermott
<b>Date:</b> <b>Start time:</b> <b>End time:</b>	11/01/2023 10.00 14.00
<b>Counter:</b>  <b>Weather:</b>  <b>Activity:</b>	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster)  Cloud cover: 66-100%, Rain: 3, Wind: 2, Visibility: 2. Very cold and wet.  No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird	1			2
Blue tit				1
Crow	3			4
Goldcrest				2
Goldfinch				1
Great tit				1
Hooded crow	4			
Jackdaw	8		5	
Long tailed tit				1
Mistle thrush				3
Robin	1			2
Rook	4		18	2
Song thrush	1			1
Wood pigeon				4
Wren				3

<b>Site Name:</b>	PJ McDermott
<b>Date:</b> <b>Start time:</b> <b>End time:</b>	14/03/2023 12.00 16.00
<b>Counter:</b>  <b>Weather:</b>  <b>Activity:</b>	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster)  Cloud cover: 33-66%, Rain: 1, Wind: 1, Visibility: 1.  No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird	10			2
Blue tit			1	2
Crow	5		2	2
Dunnock	1			2
Goldcrest				1
Great tit	5			1
Jackdaw	6		4	
Long tailed tit				4
Mistle thrush	1			2
Pied wagtail	1			1
Robin			1	2
Rook	12		12	2
Song thrush				2
Wren				6

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## Section 7: LAND, SOILS & GEOLOGY

### Table of Contents

<b>List of Figures</b> .....	2
<b>List of Photographs</b> .....	2
<b>List of Tables</b> .....	2
<b>7 LAND, SOILS AND GEOLOGY</b> .....	<b>3</b>
7.1 Introduction .....	3
7.1.1 Project Description .....	3
7.2 Methodology .....	3
7.2.1 References .....	4
7.3 Impact Assessment Methodology .....	4
7.4 Existing Environment .....	4
7.4.1 Site Description & Location .....	4
7.4.2 Topography and Drainage .....	6
7.4.3 Soils .....	7
7.4.4 Bedrock Geology .....	10
7.4.5 Geological Heritage .....	11
7.4.6 Radon .....	11
7.4.7 Geohazards .....	12
7.5 Characteristics of the Proposed Development .....	12
7.5.1 Construction Phase .....	12
7.5.2 Operational Phase .....	13
7.6 Impact Assessment .....	13
7.6.1 Construction Impacts – Preparation for Extraction .....	13
7.6.2 Operational Impacts .....	15
7.6.3 Cumulative Impacts .....	15
7.6.4 Do Nothing Option .....	16
7.7 Mitigation Measures .....	17
7.8 Monitoring .....	17
7.8.1 Construction Phase .....	17
7.8.2 Operational Phase .....	18
7.9 Residual Impacts .....	18
7.10 Technical Difficulties .....	18
7.11 Determination of Significance of Impact Pre-mitigation .....	18
7.12: Summary of Mitigation Measures .....	18
7.13 Determination of Significance of Impact Following Mitigation .....	20
7.14 Impact Assessment Conclusion .....	20

## List of Figures

Figure 7.1: Location of Subject site .....5  
 Figure 7.2: Site Layout .....6  
 Figure 7.3: Soil on the application site .....7  
 Figure 7.3: Location of soil profile pits .....8  
 Figure 7.4: Radon Levels.....12

## List of Photographs

Photograph 7.1: Soil profile 1.....**Error! Bookmark not defined.**  
 Photograph 7.2: Soil profile 2 .....9  
 Photograph 7.3: Soil profile 3 .....9  
 Photograph 7.4: Soil profile 4 .....9  
 Photograph 7.5: Outcropping bedrock in the northern part of the site. ....10  
 Photograph 7.6: Outcropping bedrock in the western part of the site. ....**Error! Bookmark not defined.**

## List of Tables

Table 7.1: Summary of soil profiles .....8  
 Table 7.2: Soil/Subsoil/Bedrock re-use.....13  
 Table 7.3: Cumulative Effects .....15  
 Table 7.4: Determination of Significance of Impact Pre-mitigation.....18  
 Table 7.5: Summary of Mitigation Measures .....18  
 Table 7.6: Determination of Significance of Impact Following Mitigation .....20

## 7 LAND, SOILS AND GEOLOGY

### 7.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) describes the natural characteristics of the site and surrounding area in terms of land, soils and geology. An assessment is made of the potential impacts associated with the proposed development and the activities that will be undertaken. Mitigation measures are proposed where required, to reduce any potential impacts identified.

This section was prepared by Colin Farrell of Greentrack. The authors competencies are set out in Section 2 – Introduction.

#### 7.1.1 Project Description

The developer PJ McDermott Ltd is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

*Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total).*

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission). The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange (also proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) together with the proposed development of 90 units (82 house and 8 apartments and a creche) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is presented with the EIAR.

### 7.2 Methodology

The assessment is focussed on formations and features associated with the soils and geological succession within the study area. The assessment of the potential impact of the development was carried out according to the methodology specified by the Environmental Protection Agency (EPA) and the Institute of Geologists of Ireland guidelines for Geology in Environmental Impact Statements. All available mapping data from the Geological Survey of Ireland (GSI) and EPA was consulted.

The assessment involved:

- Site walkovers and the examination of soil trial pits and geological material on site
- Desktop reviews on all available literature available regarding the soils and geology of the site and surrounding area.

### **7.2.1 References**

- *Geology of North Donegal*; Geological Survey of Ireland (Long & McConnell), 1997
- *GSI Mapping*: online
- *Existing Site Survey – Drawing No. 5122 – P 101*

### **7.3 Impact Assessment Methodology**

The nature of the potential environmental impacts on the land, soil and geology is based on the matrix presented in Table 3.4 of Section 2, Introduction, of this EIAR. This table is derived from the EPA Guidelines on information to be included in Environmental Impact Assessment Reports (May 2022) and outlines how the potential environmental effects of the project are described in terms of:

- Quality
- Significance
- Extent and context
- Probability
- Duration and frequency
- Type

### **7.4 Existing Environment**

#### **7.4.1 Site Description & Location**

The application site is 10.2 ha gross area and a net area of 8.1 ha for the residential development that excludes planted buffers and the main access road through the site that together measure 2.1 ha. The site is currently in predominantly agricultural use. There are several blocks of coniferous forest on site and some significant areas of scrub. The site is part of a south facing slope within the town boundary of Letterkenny. The site is approximately 1.55 km northwest of the centre of Letterkenny and is accessed directly off the local road, L-1174, with plans in the last phase of development to create a new access to the local road, L1152, to the north.

The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site (currently under appeal to An Bord Pleanála), and other housing developments further south. To the north and northeast of the site is agricultural land with sporadic farmsteads.

The application site location is outlined in Figure 7.1 and the site layout is shown in Figure 7.2.



Figure 7.1: Location of Subject site

YAL50313729 © Ordnance Survey Ireland/Government of Ireland





**Figure 7.2: Site Layout**

(Extract from drawing 5122-P-200 supplied by MH Associates Ltd)

#### **7.4.2 Topography and Drainage**

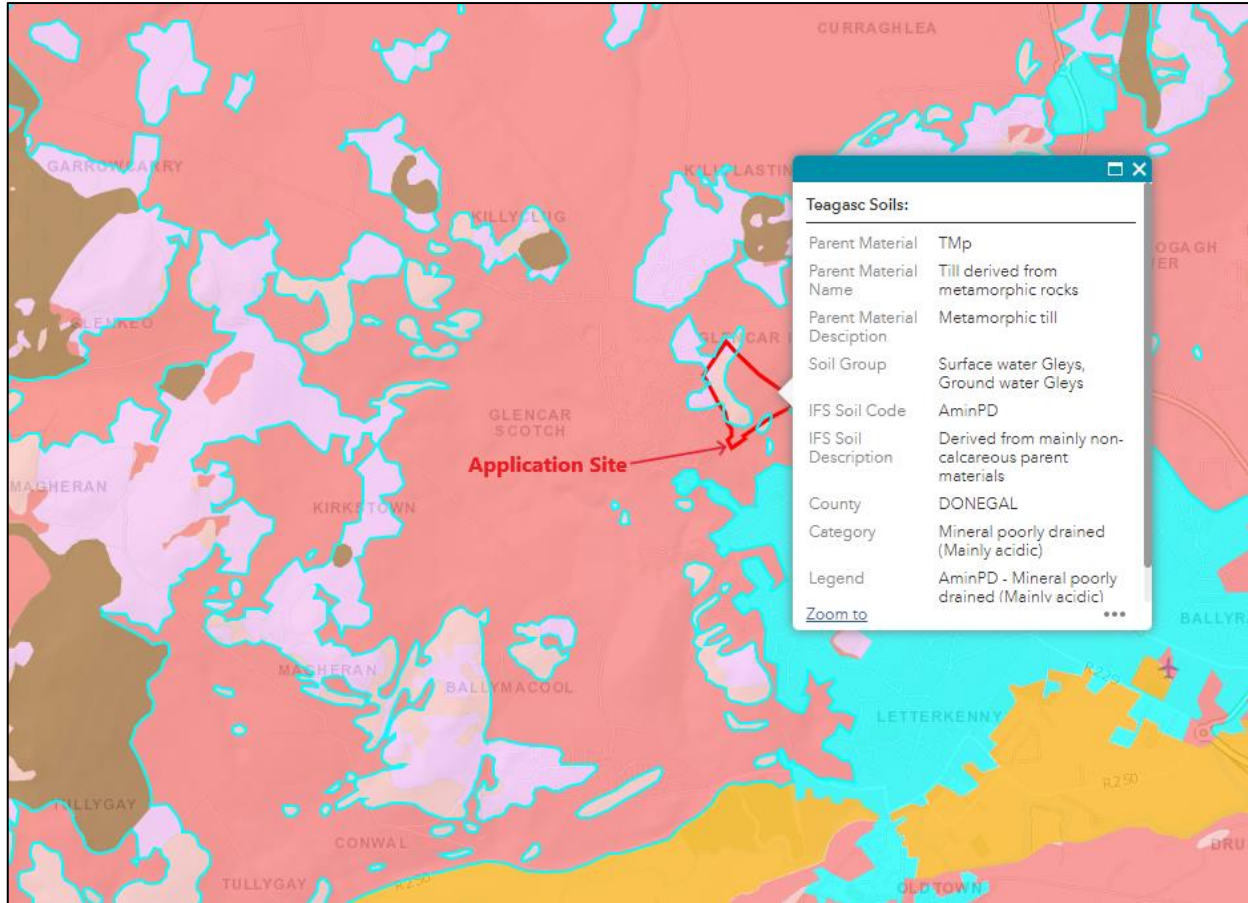
The site is steeply sloped in parts. The lowest point of the site is at the entrance on the southwestern point at 120 mOD. The site rises steeply to approximately 150 mOD in the central portion of the site and rises at a gentler gradient until the topographical high point of the site at approximately 168 mOD towards the northern corner of the site. From the highest point of the site the gradient slopes gently towards the northwest boundary which lies at approximately 162 mOD.

There is a small stream flowing along the eastern boundary of the site which is eventually piped some 300 m from the site and this watercourse eventually flows into Lough Swilly approximately 1.5 km south of the application site. There is also a small open drain flowing towards the southwest corner of the site. From this point surface water is piped underneath the L-1174 into the public stormwater system. There is also a small open shallow drain in the northwest of the site. This drain does not appear to have any well-defined outflow.

**7.4.3 Soils**

From the GSI mapviewer there is a significant portion of the site with bedrock at or near the surface. On the ground there are a few exposures of bedrock but most of this area that is mapped as bedrock are areas with thin soils. The remainder of the site is classified as Amin PD which is described as a poorly drained mineral soil (mainly acidic). A small portion of the site in the southwest would have been categorised as Amin DW which is described as deep well drained mineral soil (mainly acidic).

Figure 7.3 shows an extract from the GSI web viewer depicting the soil classification on the application site.



**Figure 7.3: Soil on the application site**

(Taken from GSI web viewer)

An onsite assessment of the soil type was carried out on 16<sup>th</sup> February 2023. Soil pits were dug in various places throughout the site. Figure 7.3 below shows the locations of the soil profile pits.



**Figure 7.4: Location of soil profile pits**

(Created using QGIS)

At each location a soil pit was dug to examine the upper soil profile and carry out an assessment. A summary of the findings of each soil profile is shown below in Table 7.2 below.

**Table 7.1: Summary of soil profiles**

Soil profile	Photograph	Colour	Vegetation	Composition/Texture	Comment
1	7.1	Mid brown	Not present	Silty clay loam, most particles are silt sized, very few stones in upper 50 cm.	Clay fraction estimated at 25%
2	7.2	Purple-brown upper 40cm then orange-brown layer at 40 cm	Minor root material present in upper layer	Silty clay, there are small gravel-cobble sized sub-angular stones through the profile	Clay fraction estimated at 40%
3	7.3	Mid-dark brown	Undecayed vegetation present through profile	Wet organic profile, early stage peaty soil	Bedrock at approximately 20 cm
4	7.4	Dark grey/brown in upper layer. Light grey layer at 30 cm and light brown layer at base of profile	Minor root material present in upper layer	Clay rich soil. Thin layer of light grey clay at 40 cm with more permeable subsoil underneath.	Poor drainage associated with this soil type



**Photograph 7.1: Soil profile 1**



**Photograph 7.3: Soil profile 3**



**Photograph 7.2: Soil profile 2**



**Photograph 7.4: Soil profile 4**

It is noted that the soil profile changes within the site broadly in line with the GSI assessment. The GSI lists the soils as poorly drained mineral soils in most of the central and eastern parts of the site. In soil profiles 1 & 2, the soils were seen to be mineral soils and of reasonable depth. There appears to be an increase in clay content on progression northwards through the site. Profile 3 is very thin and bedrock encountered within 20 cm of the ground level. The soil is wet, organic with undecayed vegetation and becoming peaty.

#### **7.4.4 Bedrock Geology**

The area is underlain by Precambrian meta-sedimentary rocks of the Dalradian series which are assigned to the Termon Formation. The Termon Formation comprises of banded semi-pelitic and psammitic schists. The lowermost semi-pelitic schists are typically dark and graphitic and interbedded with thin units of dolomitic marble and lenses of psammite. The semi-pelitic schists become greenish and calcareous upwards and are interbedded with thin greenish psammitic units (Long and McConnell 1997).

There are a few outcrops of bedrock on site particularly to the west of the site and in the northern part of the site. Most of the outcrops are partially covered with vegetation. Many of the outcrops on site are obscured by the conifer plantation in the western part of the site. Photograph 7.5 below shows the outcropping bedrock in the northern part of the site and photograph 7.6 shows outcrops in the western part of the site.



**Photograph 7.5: Outcropping bedrock in the northern part of the site.**



**Photograph 7.6: Outcropping bedrock in the western part of the site.**

#### **7.4.5 Geological Heritage**

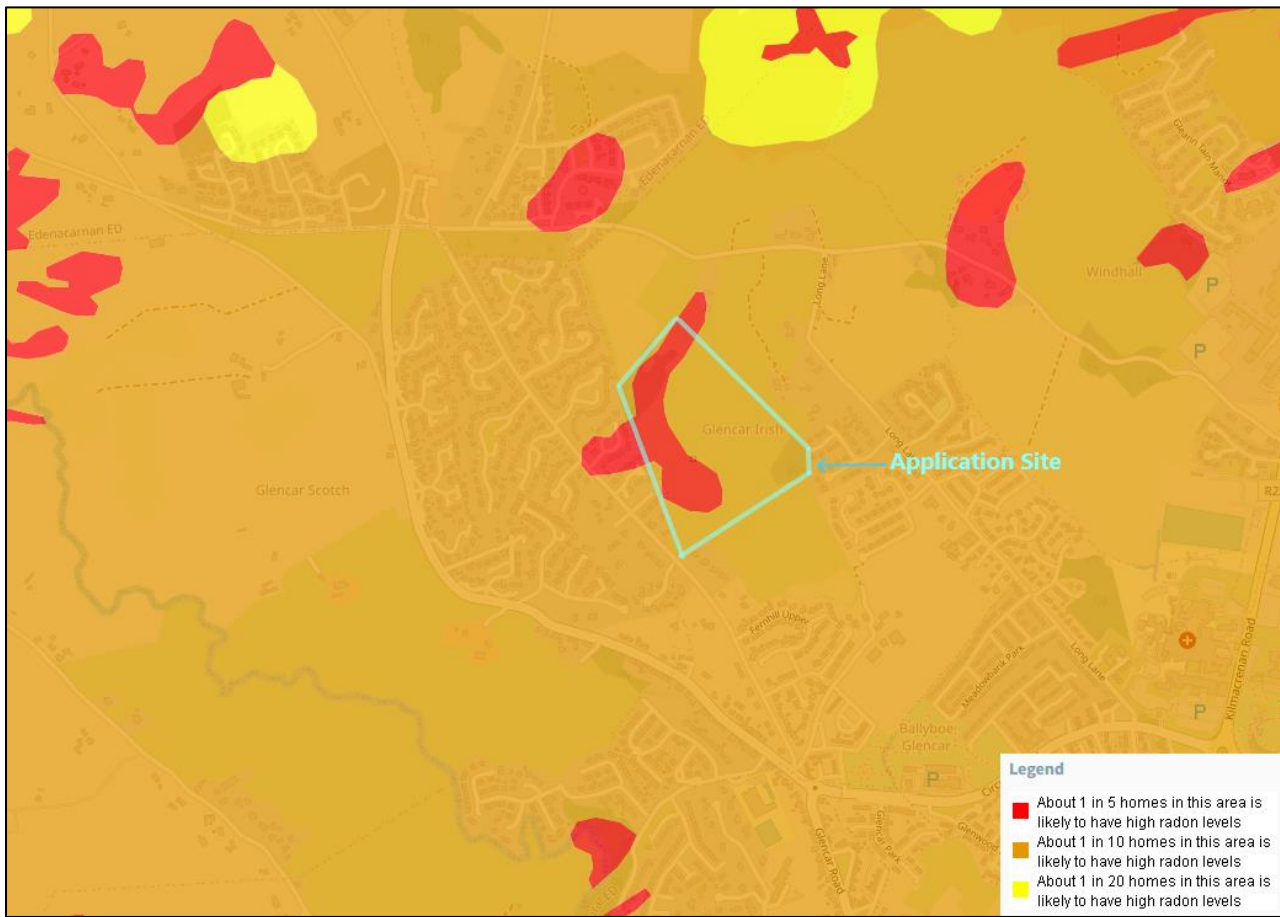
Geology is recognised as a fundamental component of natural heritage. In 1998, the Geological Survey of Ireland (GSI) established the Irish Geological Heritage (IGH) Programme, which is a partnership between the GSI and the National Parks and Wildlife Service. Under the IGH Programme, important geological sites to be conserved as Natural Heritage Areas (NHA) are identified. Those not selected for NHA designation are being promoted as County Geological Sites (CGS). There are approximately 114 Irish Geological Heritage (IGH) sites in County Donegal.

The nearest County Geological Site is Lough Swilly (IGH site code ND015) located approximately 3 km to the southeast of the application site. The geological features of interest of Lough Swilly are the long wide fjord bordered by high bold cliffs in the north, passing to gentler coastal slopes and shallow flats in its southern reaches.

#### **7.4.6 Radon**

The Site is mapped by the EPA (EPA, 2023) as being in an area where “about 1 in 10 homes in this area is likely to have high radon levels” and “about 1 in 5 homes in this area is likely to have high radon levels”. Figure 7.4 below shows the estimated radon levels for the site and surrounding area.

The EPA cite the reference level for radon as 200 Bq/m<sup>3</sup> and a High Radon Area where more than 10% of homes may have more than the reference level of radioactivity. Some of the site will be considered a High Radon Area however, it is noted that a high radon level can be found in any home, in any part of the country.



**Figure 7.4: Radon Levels**

(Taken from EPA Mapviewer)

**7.4.7 Geohazards**

The GSI (GSI, 2023) records for karst features indicate that there are no karst features near the proposed development Site. The closest karst feature (enclosed depression) is located approximately 35 km to the southwest of the site.

The Site is located within an area of “Low” and “Inferred Low” Landslide susceptibility classification (GSI, 2022). There is no recorded landslide within a 10 km radius of the proposed development site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. There are six permanent broadband seismic recording stations in Ireland operated by DIAS. Records since 2010 show that the majority of recorded seismic events were associated with quarry blasts and no recent events have been recorded within 2km of the Proposed Development Site. On the 7th April 2019 at 23:58:19 local time an earthquake of magnitude 2.4 occurred in Donegal. The location of the epicentre was offshore in Donegal Bay near Killybegs. The event was felt widely by members of the public around the Killybegs area in the southwest of Co. Donegal. Events of this nature are not uncommon in the region, however earthquakes with magnitudes larger than 2 are recorded only every few years onshore Ireland or near it’s coast. (On 6th May 2023 an earthquake with a magnitude measuring 2.5 was recorded at Glenveagh, Co Donegal, at a depth of 5km.)

**7.5 Characteristics of the Proposed Development**

**7.5.1 Construction Phase**

The construction phase of the Proposed Development will include:

- Groundworks and excavation will be required to reduce levels to construct the Proposed Development including foundations, utilities and roads.

- The site is steeply sloped in places, and it is envisaged that cut and fill techniques will be used to lessen gradients and it is intended that all suitable excavated materials will be reused on site. Any materials required to be removed from site will be sent to an authorised facility using licenced hauliers.
- The proposed development will include the importation of aggregates for the construction of utilities and roads, where there is a net shortfall of excavated material onsite.
- Foundations solutions will be designed to suit ground conditions.
- Use of temporary welfare facilities for the duration of the Construction Phase.
- Suitable temporary attenuation and surface water treatment systems will be in place for construction activities to treat all surface water before discharge off-site. These will be designed onsite by the engineering and construction team and written into the CEMP.
- Noise abatement and dust control measures will be employed by the applicant for all activities on site.
- It is anticipated that there will be two phases of development for the project, the first phase constructing approximately 112 accommodation units in the southern and central areas of the site accounting for 60% of the overall development and the remaining accommodation units constructed in the northern part of the site as a second phase (76 houses and 40% of overall development).

Further details on the characteristics of development are provided in *Section 4, Description of Development*, of this EIAR.

**7.5.2 Operational Phase**

The Site will be a residential development during the Operational Phase. There will be no excavation of soil or bedrock during the Operational Phase of the Proposed Development.

**7.6 Impact Assessment**

There is a defined construction phase associated with the proposed development as the site is currently a greenfield site.

**7.6.1 Construction Impacts – Preparation for Extraction**

**7.6.1.1 Loss of Land**

Construction will involve a certain amount of site clearance of topsoil, sub-soil and bedrock to create the correct levels for site infrastructure. Most of the bedrock, sub-soils and soils will be re-used within the site. The estimated volumes of topsoil, subsoil and rock re-use on site is shown in Table 7.2 below.

**Table 7.2: Soil/Subsoil/Bedrock re-use.**

Material	Stripped/Cut m3	Re-used on Site m3	Net export m3
Topsoil, subsoil and bedrock	57,410.6	50,197.3	7,213.3

Material exported from the site will be sent to a licenced facility, authorised to accept soil and stone.

Stone materials imported to the site will be natural stones sourced from local quarries or materials that have been approved as by-products by the EPA in accordance with the EPA’s criteria for determining a material is a by- product, per the provisions of article 27(1) of the European Communities (Waste Directive) Regulations, 2011.

The majority of imported materials will be granular in nature and used in the construction of road pavement foundations, drainage and utility bedding and surrounds. Materials will be brought to site and placed in their final position in the shortest possible time. All excavation to accommodate imported material will be precisely co-ordinated to ensure no surplus material is brought to site beyond the engineering requirement.



The proposed development will result in a land take from greenfield undeveloped lands to mixed use residential. The site will be developed in accordance with the zoning objective of Donegal County Council Development Plan (2018-2024). The change of land use and land take will result in a “negative” “significant” and “permanent” impact on the land with the loss of predominantly greenfield land.

#### **7.6.1.2 Soil Quality**

The excavation and re-use of soil onsite and removal of any surplus soil during construction will be subject to control procedures which will include soil quality test to ensure suitability for use on-site and for removal offsite in accordance with engineering and environmental specifications for the proposed development. Environmental soil testing will be undertaken prior to any potential contaminated material being removed from the site.

The excavation of soils for reuse at the Proposed Development will result in the exposure of materials to various elements including weather and construction traffic. Soils pending reuse onsite will be stockpiled in a controlled manner with a potential ‘negative’, ‘slight and ‘long-term’ impact on the natural strength of the material.

#### **7.6.1.3 Accidental Spillages/Leaks**

There is potential for accidental spillages or leaks occurring from construction plant and vehicles on the application site. The risk of a potential spillage is low. A pollution spill kit will be available to deal with any potential spillages/leaks arising. Refuelling of on-site vehicles will be carried out in a dedicated re-fuelling area where appropriate spill kits are available. Refuelling of static plant will be carried out by a licenced fuel contractor or by mobile bunded bowser adhering to pollution prevention protocols and using drip trays. Oils and lubricants will be stored in a bunded area, and there will be no bulk storage of fuel on the site.

There is a potential risk associated with the use of cementitious materials during construction of subsurface structures (such as foundations) on the underlying soil and geology at the proposed development. It is considered that this may result in a ‘negative’, ‘slight’ and ‘long-term’ impact on existing quality of soil within a localised area underlying the proposed Development. The potential accidental release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary containment or a materials’ handling accident on the proposed development could potentially result in a ‘negative’, ‘moderate’, ‘long-term’ impact on the receiving soil and geology depending on the nature of the incident.

There is a potential risk associated with spillage of untreated foul water to ground during emptying of the welfare facilities on site. All removal and disposal of wastewater from the site welfare facilities, will be carried out by a fully permitted waste collector. In the event of handing error and failure of containment measures, there is a potential ‘negative’ ‘slight’ and ‘medium-term’ impact on the existing quality of soil within a localised area underlying the site.

#### **7.6.1.4 Imported Aggregates**

The proposed development will include the importation of aggregates during the construction phase. In order to minimise the requirement to import virgin quarried materials, recycled aggregates will be used where available and subject to meeting specified design requirements and all current construction and environmental legislation. This will include, where suitable, by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011 and other applicable statutory requirements. All imported material will require certification from suppliers that the imported soils and other fill/landscaping materials are free of Invasive Species.

The potential impacts of the importation of aggregate may also include loss of attribute and changes in the geological regime at the source site. It is anticipated that the required aggregates identified for importation onsite will have a ‘neutral’, ‘imperceptible’ and ‘permanent’ impact on the source site taking account of the

fact that the statutory consent process would have required the necessary environmental impacts to be assessed and mitigated as appropriate at the source site.

### **7.6.2 Operational Impacts**

During the operational phase of the of the Proposed Development there is no potential for any direct adverse impact on the receiving land, soil and geological environment at the site taking account of the proposed design measures for the proposed development. Design and construction in accordance with current building regulations will ensure that the site will be suitable for use for the operational phase as a residential development.

There is no identified potential human health impact associated with the soil and geological environment at the Site.

#### **7.6.2.4 Accidental Spillages/Leaks**

There will be no bulk storage of petroleum hydrocarbon-based fuels used during the operational phase. All trafficked areas will be paved and connected to the surface water drainage network and therefore in an unlikely scenario of an accidental spill from a vehicle there will be no discharge or potential impact to the ground and receiving land, soil, and geology environment.

### **7.6.3 Cumulative Impacts**

The application site must also be considered in association with other developments located within or close to the application site.

#### **7.6.3.1 Other Developments**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined for likely cumulative impacts to land, soils and geology. A summary of the findings are presented in Table 7.3 below.

**Table 7.3: Cumulative Effects**

<b>Planning Ref No.</b>	<b>Applicant</b>	<b>Development Description</b>	<b>Location</b>	<b>Potential Cumulative Impact</b>
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Land take and loss of soils/geology will be similar to this application.
1950809 (ABP 307152- 20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road,	70 m west of application site	Land take and loss of soils/geology will be similar to this application

Planning Ref No.	Applicant	Development Description	Location	Potential Cumulative Impact
		footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal		but on a smaller scale
1851939	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	Land take and loss of soils/geology will be similar to this application.

**7.6.4 Do Nothing Option**

If the proposed development is not granted planning permission, it is considered that there would be no change or resulting impact on the nature of the application site. The site would remain as undeveloped land and there would be no impact or change to the land, soil and geology of the proposed development site.

## 7.7 Mitigation Measures

The following mitigation measures are proposed to minimise the impacts of the proposed development on the land, soils, and geology of the application site:

- A Construction and Environmental Management Plan (CEMP) will be prepared from the outline CEMP and incorporating all the mitigation measures highlighted in various sections of the EIAR. The CEMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place on site. The CEMP will be a fluid working document and subject to change and upgrade as the development proceeds.
- The importation of aggregates shall be subject to management and control procedures which shall include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the proposed development.
- Oils and lubricants are stored in a bunded area, and there will be no bulk storage of fuel.
- Refuelling of plant on site will be carried out using a fully bunded bowser or by licenced fuel contractor with mobile tanker. On-site refuelling will only take place at distances greater than 50 meters from nearest water courses or site drainage infrastructure.
- Drip trays used for all refuelling operations. Best practice for refuelling is incorporated into the Outline CEMP for the site.
- Regular inspections and maintenance scheduling take place for all plant and vehicles to minimise the potential for malfunction or leak.
- An emergency spill kit with oil boom, absorbers etc. kept on site for use in the event of an accidental spillage/leak.
- Only emergency maintenance will be carried out on site.
- Where possible precast concrete will be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving soil and geological environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.
- All ready-mixed concrete shall be delivered to the Proposed Development Site by truck. There will be no batching of wet-cement products on Site.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
- Overburden material will be protected from exposure to wind by storing the material in the lower more sheltered regions of the Site.
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.
- Stockpiles will not be located near Site boundaries or sensitive receptors and a setback of 50m will be maintained from watercourses.
- Minimal soil handling to retain maximum soil structure for effective re-use.
- The removal and disposal of wastewater from Site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.

## 7.8 Monitoring

### 7.8.1 Construction Phase

Routine monitoring and inspection during refuelling and concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.

Materials management and waste audits will be carried out at regular intervals.

Construction activities will be carried out in accordance with the final CEMP

Sediment control will be monitored on a daily basis.

**7.8.2 Operational Phase**

Ongoing regular operational monitoring of the SuDs measures will be undertaken throughout the lifetime of the Operational Phase of the Proposed Development.

**7.9 Residual Impacts**

Residual impacts are those that remain after the implementation of the mitigation measures. There will be a permanent negative effect with the land loss and loss of soil and geology with this proposed development.

The extent and significance of the residual impacts is summarised in Table 7.6

**7.10 Technical Difficulties**

There were no technical difficulties encountered.

**7.11 Determination of Significance of Impact Pre-mitigation**

**Table 7.4: Determination of Significance of Impact Pre-mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/Duration/Probability/Consequences) Negligible - High</b>	<b>Existing Environment (Significance / Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Hydrocarbon, cementitious and other contamination through accidental spillages/leaks/poor work practices	Local bedrock geology & soils/subsoils	Low-Medium	Low	Slight
Loss of land/soils/subsoils due to excavation and construction	Soils/subsoils	High	Low	Moderate
Loss of bedrock geology	Bedrock geology	High	Low	Moderate

**7.12: Summary of Mitigation Measures**

**Table 7.5: Summary of Mitigation Measures**

<b>Summary of Mitigation Measures</b>
A Construction and Environmental Management Plan (CEMP) will be prepared following from the Outline CEMP. The CEMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place on site.
The importation of aggregates shall be subject to management and control procedures which shall include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the proposed development.
Oils and lubricants will be stored in a bunded area, and there will be no bulk storage of fuel.

Summary of Mitigation Measures
Refuelling of plant on site will be carried out using a fully bunded bowser or by licenced fuel contractor with mobile tanker. On-site refuelling will only take place at distances greater than 50 meters from nearest water courses or site drainage infrastructure.
Drip trays used for all refuelling operations. Best practice for refuelling is incorporated into the CEMP for the site.
Regular inspections and maintenance scheduling will take place for all plant and vehicles to minimise the potential for malfunction or leak.
An emergency spill kit with oil boom, absorbers etc. will be kept on site for use in the event of an accidental spillage/leak.
Only emergency maintenance will be carried out on site.
Where possible precast concrete will be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving soil and geological environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.
All ready-mixed concrete shall be delivered to the Proposed Development Site by truck. There will be no batching of wet-cement products on Site.
No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the Site.
Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.
Stockpiles will not be located near Site boundaries or sensitive receptors and a setback of 50m will be maintained from watercourses.
Minimal soil handling to retain maximum soil structure for effective re-use.
The removal and disposal of wastewater from Site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.

### 7.13 Determination of Significance of Impact Following Mitigation

**Table 7.6: Determination of Significance of Impact Following Mitigation**

Impact	Receptor	Description of Impact (Character/Magnitude/ Duration/Probability/ Consequences) Negligible - High	Existing Environment (Significance / Sensitivity) Negligible -High	Significance Imperceptible - Profound
Hydrocarbon, cementitious and other contamination through accidental spillages/leaks/poor work practices	Local bedrock geology & soils/subsoils	Low-Medium	Low	Imperceptible
Loss of land/soils/subsoils due to excavation and construction	Soils/ subsoils	High	Low	Slight
Loss of bedrock geology	Bedrock geology	High	Low	Moderate

### 7.14 Reinstatement

Upon completion of the development, the site will consist of a residential development site and no reinstatement is proposed.

### 7.15 Impact Assessment Conclusion

There will be an inevitable moderate permanent negative impact due to the extraction of bedrock geology.

The impact of the loss of soils is assessed as slight due to the mitigation measures in place. The other activities associated with the project have no negative effects on the land, soils and geology when the mitigation measures are implemented.

## Section 8: WATER

### Table of Contents

<b>8 WATER.....</b>	<b>3</b>
8.1 Introduction .....	3
8.1.1 Objectives.....	3
8.2 Methodology.....	3
8.2.1 Desk Study.....	3
8.2.2 Site Investigations .....	4
8.2.3 Impact Assessment Methodology .....	4
8.2.4 Relevant Guidance .....	5
8.3 Development.....	5
8.3.1 Development Description.....	5
8.3.2 Water protection measures .....	6
8.4 Existing Environment.....	6
8.4.1 Site Description & Location .....	6
8.4.2 Topography and Drainage .....	8
8.4.3 Surface Water movement on site.....	9
8.4.4 Soils and Geology .....	11
8.4.5 Regional Hydrogeology.....	11
8.4.6 Hydrology .....	12
8.4.6.1 Existing Surface Water Quality .....	12
8.4.7 Flood Risk .....	13
8.5.8 Source Protection Areas and Groundwater Wells .....	15
8.5 Receiving Environment.....	15
8.5.1 Designated Areas.....	15
8.5.2 Water Framework Directive Status .....	16
8.6 Impact Assessment.....	16
8.6.1 Construction Phase Characteristics .....	16
8.6.2 Operational Phase Characteristics.....	17
8.6.3 Construction Phase Mitigation Measures .....	19
8.6.4 Operational Phase Mitigation Measures .....	24
8.6.5 Cumulative Impacts .....	25
8.6.6 Do Nothing Option .....	26
8.6.7 Determination of Environmental Impact Significance Pre-mitigation .....	27
8.6.8 Summary of Mitigation Measures Proposed .....	28
8.6.9 Determination of Environmental Impact Significance Following Mitigation .....	30
8.6.10 Conclusion.....	31
<b>Appendix 8.1: Certificates of Chemical Analysis .....</b>	<b>32</b>



## List of Figures

Figure 8.1: Location of Subject site .....	7
Figure 8.2: Site Layout .....	8
Figure 8.3: Topographic Map of the Application Site .....	9
Figure 8.3: Topographic Map of the Application Site .....	9
Figure 8.4: Surface water movement on site. ....	10
Figure 8.5: Hydrological Connections .....	10
Figure 8.6: Groundwater vulnerability .....	12
Figure 8.7: Sample points for water quality .....	13
Figure 8.8: Flood Risk in the area around the application site .....	14
Figure 8.9: Location of stormwater attenuation tank and hydrocarbon interceptor .....	18
Figure 8.10: Indicative locations and sizing of temporary settlement ponds for phased construction .....	21

## List of Tables

Table 8.1: Receptor Sensitivity Criteria .....	4
Table 8.2: Water Quality Analysis of Site Discharge .....	13
Table 8.3: WFD Status .....	16
Table 8.4: Cumulative Effects .....	25
Table 8.5: Determination of Environmental Impact Significance Pre-mitigation .....	27
Table 8.6: Summary of Mitigation Measures Proposed .....	28
Table 8.7: Determination of Environmental Impact Significance Following Mitigation.....	30

## 8 WATER

### 8.1 Introduction

This section of the Environmental Impact assessment Report (EIAR) assesses the impact which the proposed development may have on the hydrological and hydrogeological environment. The application site lies within the catchment of the River Swilly which flows through Letterkenny and into Lough Swilly. Lough Swilly is designated as a Special Area of Conservation (SAC code 002287).

This section was prepared by Colin Farrell of Greentrack. The authors competencies are set out in Section 2 – Introduction.

#### 8.1.1 Objectives

The objectives of the assessment are to:

- Identify likely significant effects of development at the site on surface water and groundwater.
- Produce a baseline study of the existing water environment (surface water and groundwater) in the area of the site;
- identify likely significant effects of the development on surface water and groundwater during the construction phase and operational phase of development.
- identify mitigation measures to avoid, remediate or reduce significant negative effects.

### 8.2 Methodology

The nature of the potential environmental impacts on surface water and groundwater is based on the matrix presented in Table 3.4 of Section 2, Introduction, of this EIAR. This table is derived from the EPA Guidelines on information to be included in Environmental Impact Assessment Reports (May 2022) and outlines how the potential environmental effects of the project are described in terms of:

- Quality
- Significance
- Extent and context
- Probability
- Duration and frequency
- Type

The overall study components comprised of a desk study reviewing all the available relevant information on the site followed by site assessments involving inspection of site features and chemical analysis of waters. Assessment of potential impacts on sensitive receptors by the proposed development was carried out. The methodology employed was 3-stage:

- Desk study
- Site assessment and analysis
- Impact assessment

#### 8.2.1 Desk Study

A desk study of the development site and surrounding area was completed prior to the undertaking of site walkover assessments. The desk study involved collecting all relevant geological, hydrological, hydrogeological and meteorological data for the study area. This included consultation with the following:

- Environmental Protection Agency database ([www.epa.ie](http://www.epa.ie))
- Geological Survey of Ireland - National Draft Bedrock Aquifer map
- Geological Survey of Ireland - Groundwater Database ([www.gsi.ie](http://www.gsi.ie))
- Met Eireann Meteorological Databases ([www.met.ie](http://www.met.ie))
- National Parks & Wildlife Services Public Map Viewer ([www.npws.ie](http://www.npws.ie))
- Water Framework Directive Map Viewer ([www.catchments.ie](http://www.catchments.ie))

- Bedrock Geology 1:100,000 Scale Map Series, Geology of North Donegal (Long and McConnell) Geological Survey of Ireland
- Geological Survey of Ireland - Groundwater Body Characterisation Report
- OPW Indicative Flood Maps ([www.floodmaps.ie](http://www.floodmaps.ie))
- Environmental Protection Agency – “Hydrotool” Map Viewer ([www.epa.ie](http://www.epa.ie))
- CFRAM Preliminary Flood Risk Assessment (PFRA) maps ([www.cfram.ie](http://www.cfram.ie))
- Department of Environment, Community and Local Government on-line mapping viewer ([www.myplan.ie](http://www.myplan.ie))

The study area, for the purposes of assessing the baseline conditions for the Water Chapter of the EIAR, extends beyond the site boundaries and includes receptors that may be potentially hydraulically connected to the proposed development site. Those outside of this radius but that are potentially hydraulically connected with the site were also considered. The extent of the wider study area was based on the Institute of Geologists of Ireland (IGI) Guidelines (IGI, 2013) that recommends a minimum distance of 2.0km radius from the proposed development site. The purpose of this increased search radius was to ensure that any potential hydrogeological / hydrological connections to sensitive receptors including habitats were identified.

### **8.2.2 Site Investigations**

A hydrological walkover survey, including detailed mapping and baseline monitoring/sampling, was undertaken by Colin Farrell of Greentrack on various dates between January and April 2023. The field assessments included a detailed site walkover survey, water features survey, and an inspection of all relevant hydrological features, such as existing drainage ditches, groundwater contributions and inflows/outflows from the site.

The hydrological walkover included the area south of the proposed development relating to Phase 1. Relevant hydrological links were noted and any hydrological features that may have a cumulative or in-combination effect were considered.

### **8.2.3 Impact Assessment Methodology**

Section 8.2 of this EIAR refers to the impact assessment methodology employed. In addition, the sensitivity of the water environment receptors was assessed on completion of the desk study and baseline study. Levels of sensitivity which are defined in Table 8.1 are then used to assess the potential effects that the proposal may have on the local baseline water environment (i.e. water receptors).

**Table 8.1: Receptor Sensitivity Criteria** (Adapted from [www.sepa.org.uk](http://www.sepa.org.uk))

<b>Sensitivity of Receptor</b>	<b>Description</b>
<b><i>Not Sensitive</i></b>	Receptor is of low environmental importance (e.g. surface water quality classified by EPA as A3 waters or seriously polluted), fish sporadically present or restricted). Heavily engineered or artificially modified and may dry up during summer months. Environmental equilibrium is stable and is resilient to changes which are considerably greater than natural fluctuations, without detriment to its present character. No abstractions for public or private water supplies. GSI groundwater vulnerability “Low” – “Medium” classification and “Poor” aquifer importance.
<b><i>Sensitive</i></b>	Sensitive Receptor is of medium environmental importance or of regional value. Surface water quality classified by EPA as A2. Salmonid species may be present and may be locally important for fisheries. Abstractions for private water supplies. Environmental equilibrium copes well with all natural fluctuations but cannot absorb some changes greater than this without altering part of its present character. GSI groundwater vulnerability “High” classification and “Locally” important aquifer.

<b>Very Sensitive</b>	Very sensitive Receptor is of high environmental importance or of national or international value i.e. NHA or SAC. Surface water quality classified by EPA as A1 and salmonid spawning grounds present. Abstractions for public drinking water supply. GSI groundwater vulnerability “Extreme” classification and “Regionally” important.
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### **8.2.4 Relevant Guidance**

The hydrological and hydrogeological descriptions and assessments in this EIAR are carried out in line with guidance contained in the following:

- Guidance on the preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU);
- Environmental Protection Agency (May 2022) - Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- Institute of Geologists Ireland (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- National Roads Authority (2009): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Eastern Regional Fisheries Board (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters;
- PPG1 - General Guide to Prevention of Pollution (UK Guidance Note);
- PPG5 – Works or Maintenance in or Near Watercourses (UK Guidance Note);
- CIRIA (Construction Industry Research and Information Association) 2006: Guidance on ‘Control of Water Pollution from Linear Construction Projects’ (CIRIA Report No. C648, 2006);
- CIRIA 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2006;
- Construction Industry Research and Information Association, 2015. Environmental Good Practice on Site Guide (CIRIA – C741).
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (DEHLG/EPA/GSI, 1999).

## **8.3 Development**

### **8.3.1 Development Description**

The applicant PJ McDermott is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

*Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total)*

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission) The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange 9aklso proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play

areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) and a crèche together with the proposed development of 90 units (82 house and 8 apartments) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is presented with the EIAR.

### **8.3.2 Water protection measures**

A number of measures have been proposed for the protection of surface and groundwater on the site. Protection from accidental pollution during construction activities is achieved by adhering to best practice in relation to mobile re-fueling of plant and vehicles and by robust fuel and lubricant storage measures.

Protection of the wider surface water environment has been achieved using temporary settlement ponds and silt fencing to ensure discharge to natural waters has acceptable levels of suspended sediment.

During the operational phase of development there is a hydrocarbon interceptor proposed to ensure stormwater leaving the site is treated, and there is also an attenuation system in place to ensure flood risk on the site and downstream of the site is not increased by development.

All the proposed mitigation measures are described in section 8.6 below.

## **8.4 Existing Environment**

### **8.4.1 Site Description & Location**

The application site is 10.2 ha gross area and a net area of 8.1ha for the residential development that excludes planted buffers and the main access road through the site that together measure 2.1ha. The site is currently in predominantly agricultural use. There are several blocks of coniferous forest on site and some significant areas of scrub. The site is part of a south facing slope within the town boundary of Letterkenny. The site is approximately 1.55 km northwest of the centre of Letterkenny and is accessed directly off the local road, L-1174, with plans in the last phase of development to create a new access to the local road, L1152, to the north.

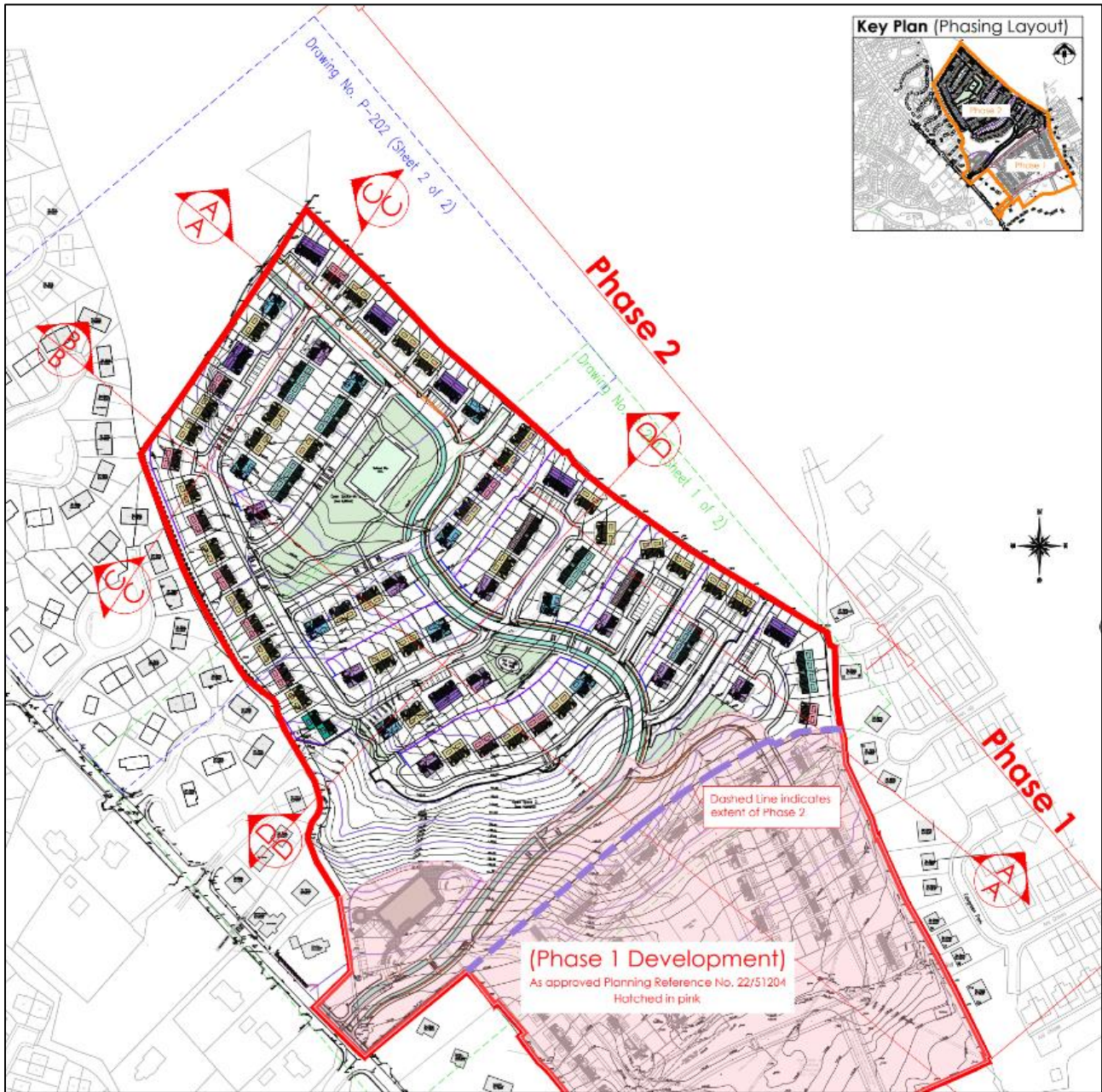
The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site (currently under appeal to An Bord Pleanála), and other housing developments further south. To the north and northeast of the site is agricultural land with sporadic farmsteads.

The application site location is outlined in Figure 8.1 and the site layout is shown in Figure 8.2.



Figure 8.1: Location of Subject site

CYAL50244901 © Ordnance Survey Ireland/Government of Ireland

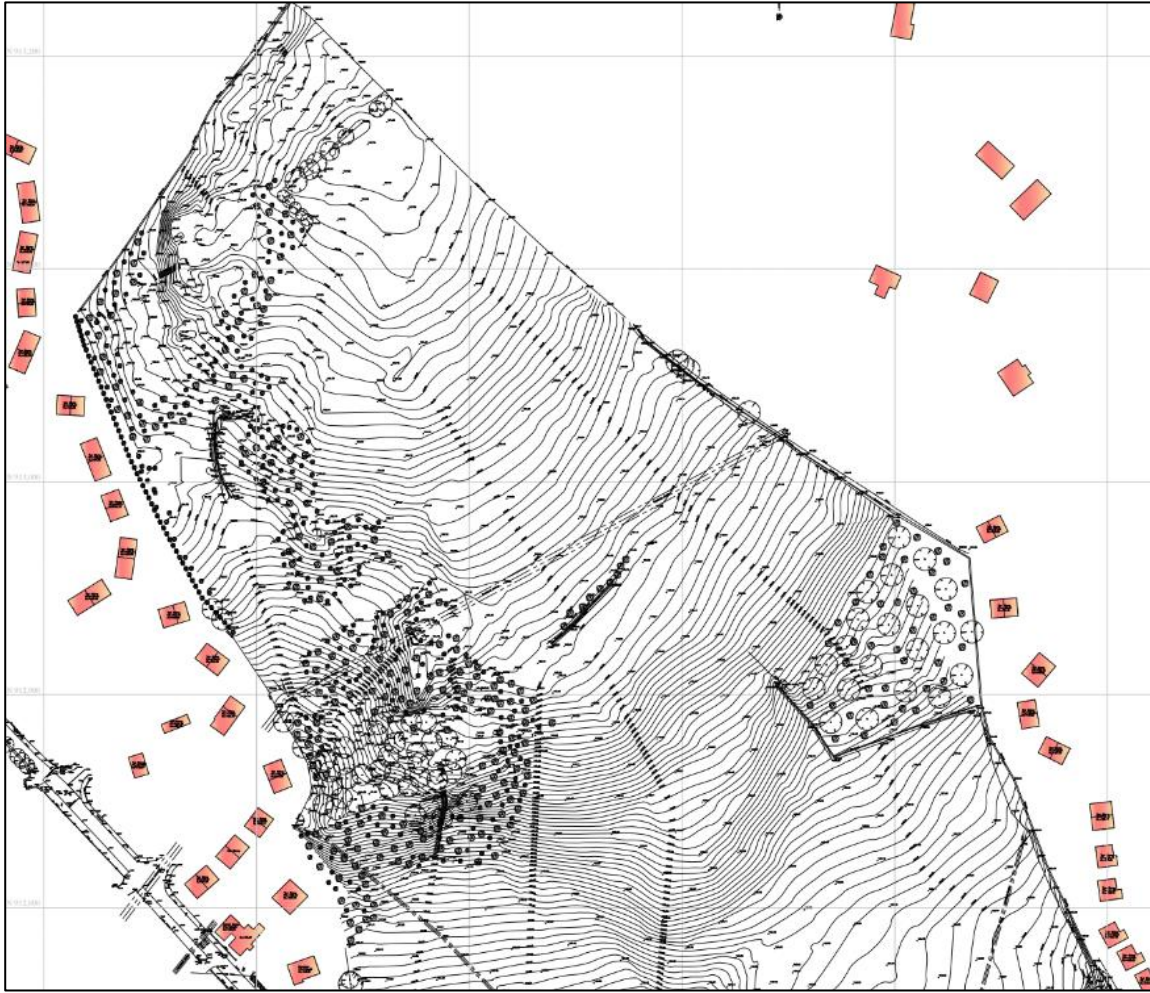


**Figure 8.2: Site Layout** (not to scale) (Extract from drawing 5122-P-200 supplied by MH Associates Ltd)

**8.4.2 Topography and Drainage**

The site is steeply sloped in parts. The lowest point of the site is at the entrance on the southwestern point at 120mOD. The site rises steeply to approximately 150 mOD in the central portion of the site and rises at a gentler gradient until the topographical high point of the site at approximately 168 mOD towards the northern corner of the site. From the highest point of the site the gradient slopes gently towards the northwest boundary which lies at approximately 162 mOD.

There is a small stream flowing along the eastern boundary of the site which is eventually piped some 300m from the site and this watercourse eventually flows into Lough Swilly approximately 1.5 south of the application site. There is also a small open drain flowing towards the southwest corner of the site. From this point surface water is piped underneath the L-1174 into the public stormwater system. There is also a small open shallow drain in the northwest of the site. This drain does not appear to have any well-defined outflow. A topographic map is presented in Figure 8.3 below.



**Figure 8.3: Topographic Map of the Application Site** (nts) (Extract from dwg 5122-P-101 supplied by MH Associates Ltd)

#### **8.4.3 Surface Water movement on site**

The current drainage flow directions for the site and surrounding areas were examined. Incident rainfall on the northern and western part of the site is directed into either a drainage channel running along the north-western boundary or a drainage channel in the southwest of the site. These drainage channels feed into the Glencar Irish and Glencar Scotch streams which are tributaries of the watercourse known locally as 'Roger's Burn' (EPA code: IE\_NW39SO20300, segment 39\_1278). Roger's Burn rises in Kirkstown Forest 2km west of Letterkenny and empties into the River Swilly at Sallaghagrane.

Drainage in the eastern part of the site flows into the small watercourse flowing along the eastern boundary of the site and is a tributary of the Sprack Burn (EPA code: IE\_NW39SO020300, segment 39\_2948). The Sprack Burn rises several hundred metre north of the application site and empties into the River Swilly immediately south of Letterkenny town centre.

The River Swilly is classified as a transitional waterbody at the point of confluence with both Rodger's Burn and Sprack Burn.

There is another small drainage channel in the western part of the site. Flow was observed to vary between very low and slow flow in this channel and the outflow from the channel appeared to discharge to ground. Surface water movement is shown in Figure 8.4 below. The hydrological link between the site and the River Swilly and the Lough Swilly SAC is shown in Figure 8.5 below.



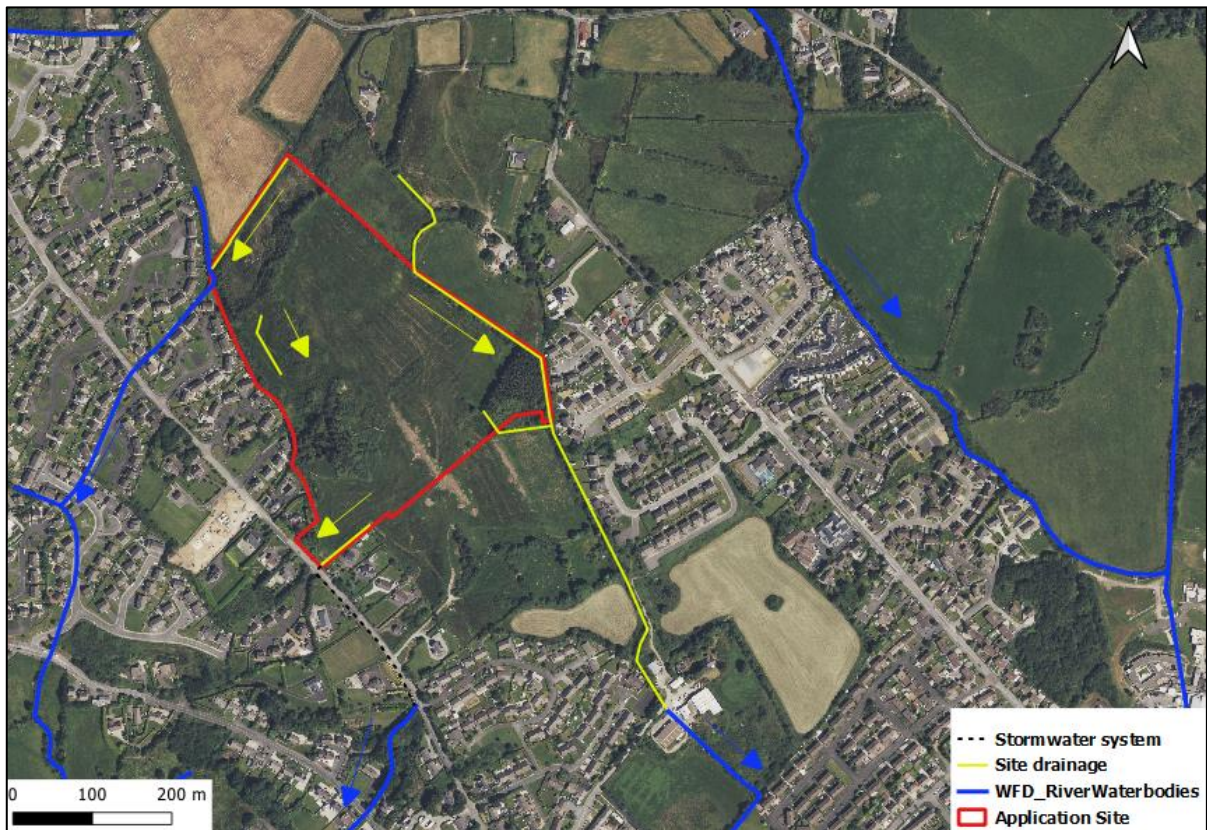


Figure 8.4: Surface water movement on site.

(Map created on QGIS)

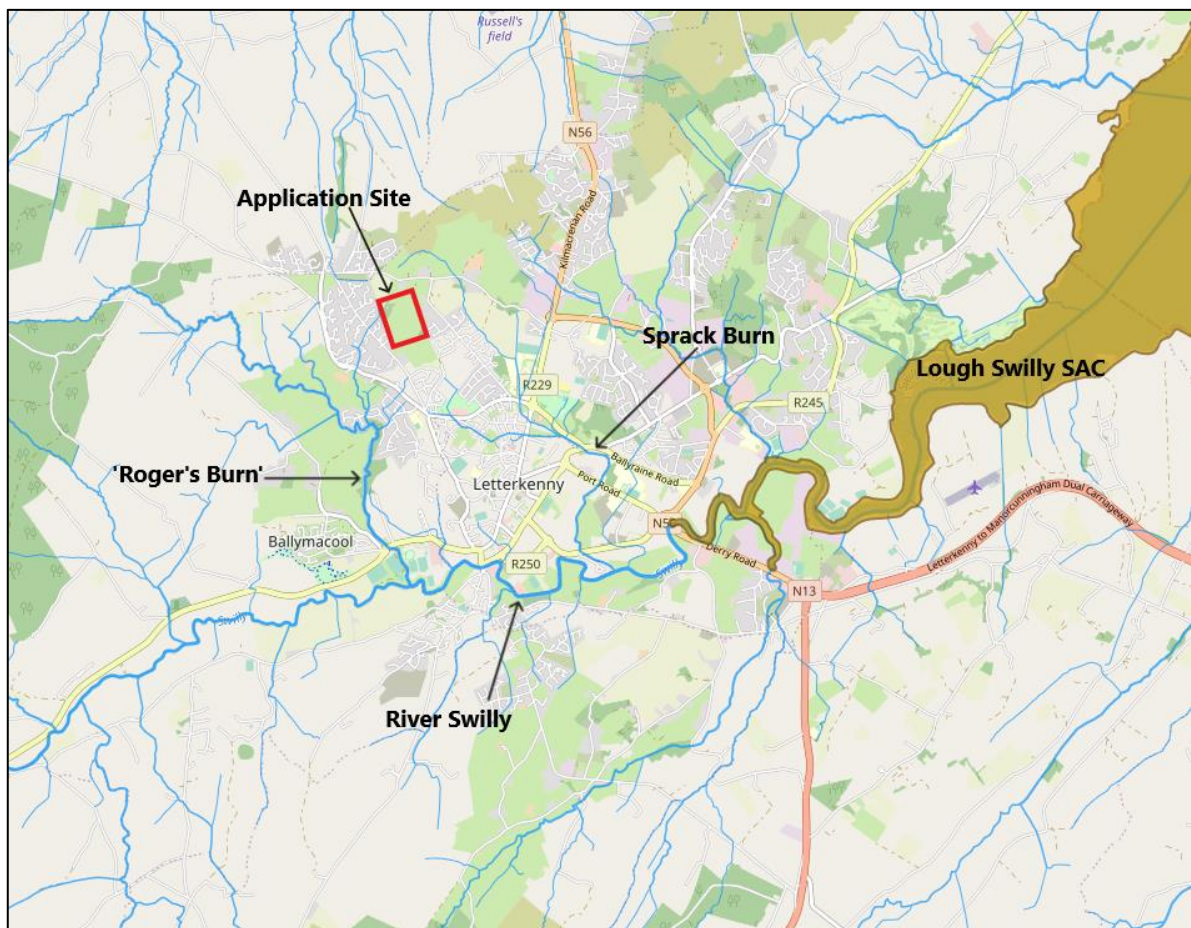


Figure 8.5: Hydrological Connections

(Base map taken from EPA Mapviewer)

#### **8.4.4 Soils and Geology**

The soils on the Site are mapped as a poorly drained mineral soil for the majority of the site and then a thin organic soil in areas of the site where the soil is thin and bedrock outcrops. The bedrock underlying the site are banded semi-pelitic and psammitic schists of the Termon Formation. The soils and geology are further assessed in Chapter 7. There are no karst features on site or within a 2km radius of the Site.

#### **8.4.5 Regional Hydrogeology**

##### ***8.4.5.1 Groundwater Recharge***

The GSI groundwater recharge map provides an estimate of the average amount of rainwater that percolates down through the subsoils to the water table over a year. The map accounts for rainfall that percolates diffusely through soils and subsoils. Groundwater recharge amounts are estimated by considering soil drainage, subsoil permeability, thickness and type, the ability of the aquifer to accept the recharge, and rainfall. The recharge to the aquifer is estimated as ranging between 51 - 100 mm/yr.

##### ***8.4.5.2 Aquifer Type***

The GSI have mapped the aquifer underlying the site as 'P1'. This is classified as a poor aquifer – bedrock which is generally unproductive except for local zones.

##### ***8.4.5.3 Groundwater Body***

The GSI mapped the underlying groundwater body as the Lough Swilly Groundwater Body. The Lough Swilly groundwater body (GWB) comprises a large area of 932 km<sup>2</sup>. Diffuse recharge will occur over the Lough Swilly GWB via rainfall infiltration to bedrock, the depth to bedrock is generally < 3m with subsoil absent to thin over most of the GWB. Due to the low permeability of some thicker peat subsoil deposits and the aquifers, a high proportion of the effective rainfall will quickly discharge to the streams in the GWB.

In the absence of inter-granular permeability, groundwater flow is expected to be concentrated in upper fractured and weathered zones and in the vicinity of fault zones. Unconfined groundwater flow paths are short (30-300 m), with groundwater generally following the topography and then discharging rapidly to seeps, small springs, streams and lakes.

##### ***8.4.5.4 Groundwater Vulnerability***

The vulnerability rating, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999). The publications state that 'as all groundwater is hydrologically connected to the land surface, it is the effectiveness of this connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is more vulnerable than groundwater that receives water (and contaminants) more slowly and in lower quantities. The travel time, attenuation capacity and quantity of contaminants are a function of the following natural geological and hydrogeological attributes of any area:

- The subsoils that overlie the groundwater.
- the type of recharge - whether point or diffuse
- The thickness of the unsaturated zone through which the contaminant moves.
- The GSI has assigned a groundwater vulnerability rating of 'Extreme' for the groundwater beneath most of the site and for 'rock at or near surface' for the remainder of the site. The classification of extreme indicates a subsoil thickness of 0-3m. Figure 8.6 below shows the groundwater vulnerability on site.



**Figure 8.6: Groundwater vulnerability**

(Taken from GSI Mapviewer)

**8.4.6 Hydrology**

The site is located within the Swilly Water Framework Directive (WFD) Sub catchment (Swilly\_SC\_0101) and the Swilly WFD River Sub basin (Swilly (Donegal)\_010).

There are 3 defined outflows from the current site (Figure 8.4):

- From the northwest to the Glencar Scotch Stream, Rodger’s Burn and River Swilly. Hydrological distance to Lough Swilly SAC is approximately 6.43 km.
- From the southwest to the Glencar Irish Stream, Rodger’s Burn and River Swilly. Hydrological distance to Lough Swilly SAC is approximately 6.15 km.
- From the southeast to a tributary of Sprack Burn, Sprack Burn and River Swilly. Hydrological distance to Lough Swilly SAC is approximately 4.38 km.

**8.4.6.1 Existing Surface Water Quality**

Two of the outflows from the site has been sampled and analysed for surface water quality. The third outflow from the southwest of the site did not have sufficient flow to be sampled effectively for water quality.

The two outflows that were sampled were the northern drainage ditch (Sample Point 1) along the north-western boundary of the site and the eastern stream (Sample Point 2) at the south-eastern corner of the site. The location of the sampling points is shown in Figure 8.7 below. Sampling was carried out on 25/02/23. Weather conditions were dry on the sampling date and average precipitation was noted in the days leading up to sampling with an average of 2.8 mm rainfall per day over the preceding 5 days. The results of the chemical analysis are presented in Table 8.2 below. The certificates of analysis are presented in Appendix 8.1.

An examination of these results shows that the outflow from the site is of high quality. Orthophosphate and Ammonia values are in the category of ‘high’ ecological status as defined in the Environmental Objectives Surface Water Regulations values (S.I. 272 of 2009) which is the best status possible to achieve in a range of (High-Good-Moderate- Bad-Poor). The values for pH are within the accepted range of 6-9, and suspended sediment values are lower than the 25 mg/L threshold specified in the Freshwater Fish Directive (2006/44/EC).

Conductivity results suggest less of an anthropogenic influence in the northern outflow than the south-eastern outflow. This is expected due to the proximity of the farmsteads and housing upstream of the eastern stream.

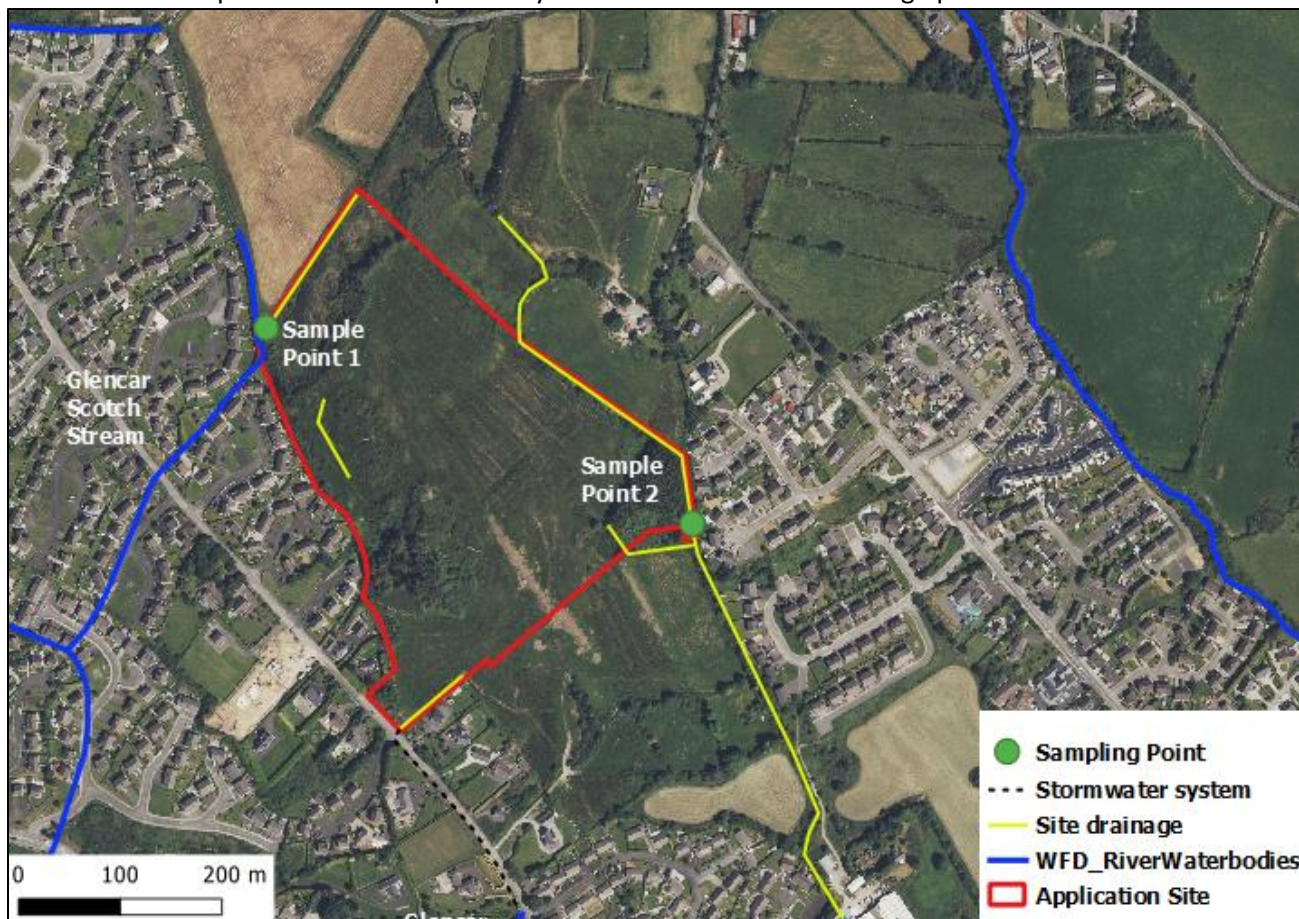


Figure 8.7: Sample points for water quality

Table 8.2: Water Quality Analysis of Site Discharge

Sampling Date	Sample Point	pH	SS mg/L	Conductivity $\mu\text{S/cm}$	Ammonia mg/L	Orthophosphate (as P) mg/L
25.02.2023	1	6.32	10	88	<0.01	<0.01
25.02.2023	2	7.08	<5	196	0.08	<0.01

**8.4.6.2 Q Values**

The EPA website was checked to assess if there were any monitoring stations on the watercourses leading from the site. There are no monitoring stations on Rodger’s Burn or Sprack Burn or downstream of the site on the River Swilly.

**8.4.7 Flood Risk**

An appraisal of the available flood maps (OPW) was made to determine if there was any flood risk at the site or if any of the proposed development activities, either during construction or on completion are likely to increase the risk of flooding either at the site or elsewhere. An examination of the flood maps (floodinfo.ie) for the area show the application site and surrounding area to be at low risk of river flooding events. The flood risk map in relation to the application site is shown below in Figure 8.8. The layers active are the low probability of flooding, 0.1% AEP (1 in a 1000 chance of occurring) and the high-end future scenario is also modelled. This

takes in the potential effects of climate change modelling, an increase in rainfall of 30% and sea level rise of 1,000mm. The coastal flooding layer is also activated with the high-end climate change model.

The site can be seen not to be at risk from pluvial, fluvial or coastal flooding.

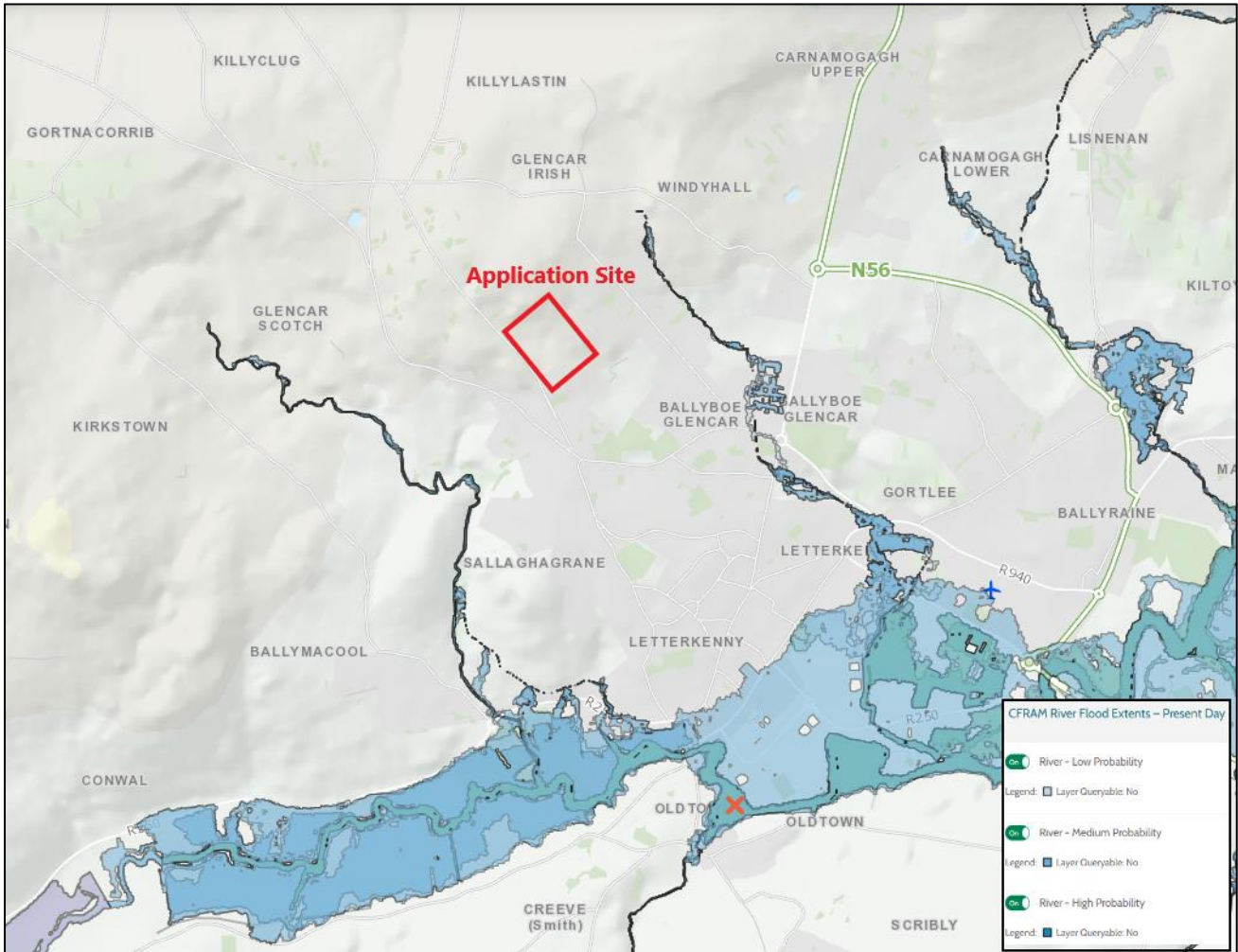


Figure 8.8: Flood Risk in the area around the application site

(Image from floodmaps.ie)

A comprehensive surface water drainage report has been produced by T.S McLaughlin Structural Engineers which proposes attenuation for the stormwater on site and limits the runoff from site to greenfield runoff rates. These mitigation measures will ensure that the proposed development will not increase the likelihood of flooding elsewhere.

A sustainable urban drainage system (SuDS) was designed for this development. Surface water drainage methods that take account of quantity, quality and amenity issues are collectively referred to as sustainable urban drainage systems. They are typically made up of one or more structures built to manage surface water run-off. The use of SUDS to control runoff also provides the additional benefit of reducing pollutants in the surface water by settling out suspended solids, and in some cases providing biological treatment. A stormwater management or treatment train approach assures that runoff quantity and quality is addressed. The following objectives of the treatment train provide an integrated and balanced approach to help manage the changes in stormwater runoff flows that occur as land is urbanised. 1) Source Control: conveyance and infiltration of runoff, and 2) Site Control: reduction in volume and rate of surface runoff, with some additional treatment provided.

The applicant has considered the use of all appropriate SuDS devices as part of the site SUDS strategy. T.S. McLaughlin Structural Engineers have prepared the design of storm drainage network and associated storm attenuation system and provided the following methodology used to calculate the size required for efficient

operation of these systems. A design summary report has been prepared to accompany the Planning Application for the proposed development, both to size the storm water run-off network and to limit this run-off into the receiving environment by designing a storm attenuation system, based upon a 1 in 100-year storm event, that limits this discharge rate to the pre-existing Greenfield run-off rate for the site in question. To size the storm water run-off network, the hard surfaced areas (roofs, roads, car parking and hardstanding) are multiplied by a factor based upon a design rainfall of 50mm/hr; this factor being 0.014 l/s/m<sup>2</sup>. To size the attenuation system, the predevelopment greenfield site run-off rate is calculated based upon the Institute for Hydrology Report IH124 for small catchments, utilizing the HR Wallingford software-based design tool, for the 1 in 1, 1 in 30 and 1 in 100-year return periods. In County Donegal, the Planning Authority normally requires the attenuation system to facilitate the 1 in 100-year event. This software also provides an estimate of the Qbar value for mean annual maximum flow rate used in the attenuation tank sizing calculation. Subsequently, the greenfield run-off rate is entered into the HR Wallingford software-based tool for estimation of the surface water storage volume required to be accommodated by the attenuation storage tank. This calculation includes a climate change factor of 1.4 and an urban creep factor of 1.1 to adequately provide for future trends. The storm drainage network consists of a series of stormwater drainage pipes which capture and divert storm water from the entire site to an appropriately sized attenuation system. Outflow from the attenuation system will run through further drainage pipes, a hydro brake will limit discharge to greenfield rates before stormwater enters the existing public stormwater sewer at the southwest of the subject site, or in the case of proposed units 1-12 to the permitted/proposed Phase 1 storm water attenuation system. Information received from the applicant states that the final design layout of Phase 2 makes it wholly impractical to direct the storm and foul for Phase 2 Units No's 1 to 12 into the Phase 2 systems, but rather it is a simple matter to tie these units into the Phase 1 systems. Both application sites are owned and under the control of the same applicant, so certainty exists in relation to the facilitation of this solution. The Phase 1 storm routing and attenuation will require slight modification, now that the Phase 2 attenuation is being wholly managed within Phase 2, and it is a simple matter to adjust the Phase 1 tank volume to accommodate the small addition of storm water arising from the P2 units 1 to 12.

The hydro brake will limit stormwater discharge rates to 108 L/sec.

Full details of storm water drainage and attenuation calculations can be found with the storm water drainage design summary report and drainage drawings which accompany the planning application.

#### **8.4.7.1 Flood History**

The nearest recorded historical flooding to the site is at Letterkenny University Hospital approximately 2 km southeast of the site and at Glencar approximately 1 km southeast of the site. There are no publicly available records/reports available relating to the flooding in Glencar.

#### **8.5.8 Source Protection Areas and Groundwater Wells**

A search for the nearest EPA source protection area to the site found that the nearest Source Protection Area is 11.5 km west in a separate hydrological catchment area in the townlands of Magherabeg/Veagh. There are several recorded groundwater wells within 3 km of the application site, the nearest being approximately 1.5 km northeast in Carnamuggagh, Letterkenny. The yield class of most of the nearby wells is given as either poor or unknown. There are no wells within 1 km of the site boundary or within the zone of influence of the site.

## **8.5 Receiving Environment**

### **8.5.1 Designated Areas**

The Lough Swilly SAC is located c2.53 km southeast of the site (site code 002287). There are direct hydrological links from the site to Lough Swilly SAC and the shortest of these links is approximately 4.38 km. Lough Swilly SPA is located c3.06 km southeast of the site (site code 004075). The Leannan River SAC is located c4.87 km to the northwest of the site. There is no hydrological link from the site to the Leannan River SAC.

From a hydrological perspective the designated sites that are connected by a surface or groundwater link is the Lough Swilly SAC and Lough Swilly SPA. Figure 8.5 shows the hydrological connections from the site to Lough Swilly SAC.

The qualifying interest of the Lough Swilly SAC are:

- Estuaries
- Coastal Lagoons
- Atlantic Salt Meadows
- Molina meadows on calcareous, peaty or clayey-silt-laden soils
- Old sessile oak woods with Ilex and Blechnum in the British Isles
- Otter

Any potential impact on hydrology due to activities connected (directly or indirectly) with the application site may have potential impact on these habitats/conservation interests. This issue is dealt with in detail in the Biodiversity section of this EIAR.

### **8.5.2 Water Framework Directive Status**

The WFD waterbody status for river, groundwater and coastal water bodies that have a potential hydraulic connection to the site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 8.3.

**Table 8.3: WFD Status**

Local Waterbody name	EU Waterbody	EU Code	Location from site	WFD status (2016-2021 period)	WFD 3 <sup>rd</sup> cycle Risk Status
<b>River waterbodies</b>					
Glencar Scotch Stream	Swilly (Donegal)_10	IE_NW_39S020300	Immediately downstream	Good	Review
Glencar Irish Stream	Swilly (Donegal)_10	IE_NW_39S020300	Immediately downstream	Good	Review
Sprack Burn tributary	Swilly (Donegal)_10	IE_NW_39S020300	Immediately downstream	Good	Review
River Swilly	Swilly (Donegal)_10	IE_NW_39S020300	Upstream	Good	Review
<b>Transitional waterbodies</b>					
Swilly Estuary	Swilly Estuary	IE_NW_220_0100	Approximately 4.4 km downstream	Poor	At Risk
<b>Groundwater bodies</b>					
Lough Swilly	Lough Swilly	IEGBNI_NW_G_059	Underneath site	Good	Not at Risk

## **8.6 Impact Assessment**

Soil/overburden removal, earth movement, rock breaking and excavation are all essential activities in the implementation of a housing development project. The characteristics required to carry out the proposed development are detailed below in the construction and operational phases of development.

### **8.6.1 Construction Phase Characteristics**

The Construction Phase of the proposed development will include:

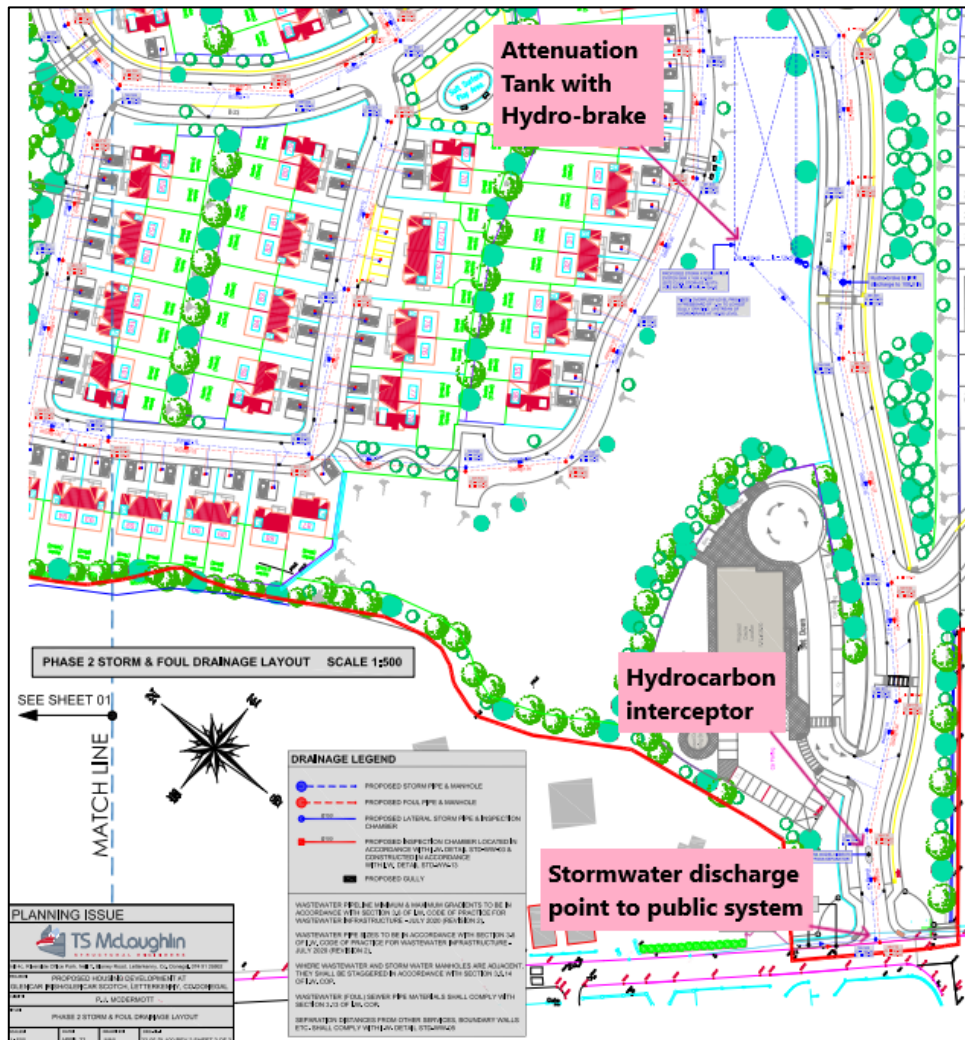
- Groundworks and excavation to reduce levels to construct foundations, utilities, and roads.
- Construction of new foul system for the proposed development and connection to existing Irish Water connection to the southwest of the site.

- Construction of new water supply network for the proposed development and connection to the existing Irish Water water main.
- Surface water storm network construction and construction of SuDs, cellular attenuation systems, hydrocarbon inceptor and hydro-brake flow control. Connection to new attenuation tank.
- Importation of aggregates for construction of utilities and roads.
- Importation of building and construction materials
- Construction of dwelling units and all associated infrastructure. Groundwater dewatering may be required if groundwater is encountered during excavation, water will be pumped from excavation to temporary settlement ponds prior to discharge through silt bags. Indicative placement of the temporary settlement ponds and water protection measures is shown in Figure 8.10.
- Installation of rainwater harvesting system (Kingspan rainwater system or similar)

### **8.6.2 Operational Phase Characteristics**

During operation, all storm water from the site will be directed through a separate gravity storm sewer. The site will avail of SuDs in addition to providing an attenuation tank. The SuDS will attenuate flow to greenfield runoff flows using a hydro-brake. Restriction of flow will be by a vortex flow control device, excess flow will be directed and attenuated within an 'EcoBloc Light' stormwater (or equivalent) attenuation system. The outfall from the attenuation tank will be to the public storm sewer at the southwest corner of the Phase 2 development. A hydrocarbon interceptor will be installed prior to stormwater leaving the site and entering the public stormwater sewer system. The hydrocarbon interceptor will cater for any accidental or wash down drainage from car parking areas. This public storm sewer discharges to the Glencar Irish Stream and ultimately to the River Swilly approximately 6.15 km hydrologically downstream of the site. The location of the attenuation tank, hydrocarbon interceptor and outflows are indicated in Figure 8.9 which is an extract from the drainage layout produced by T.S. McLaughlin Structural Engineers showing the southwest part of the development.





**Figure 8.9: Location of stormwater attenuation tank and hydrocarbon interceptor**  
 (Extract from drainage layout produced by TS McLaughlin)

Drainage drawings, 22-04-DL 100 REV 2 Sheets 1 & 2, show an extensive stormwater drainage system with one main discharge point to the public stormwater system in the southwest of the site. There are no stormwater discharges to the small watercourse along the northern boundary of the site and no stormwater discharges to the small watercourse flowing along the eastern boundary of the site.

A small proportion of the overall stormwater drainage, servicing accommodation units 01-12, is directed into the stormwater system for the Phase 1 development. A similar attenuation tank with hydro-brake and hydrocarbon interceptor is planned in the Phase 1 development. Information received from the applicant states that the final design layout of Phase 2 makes it wholly impractical to direct the storm and foul for Phase 2 Units No’s 1 to 12 into the Phase 2 systems, but rather it is a simple matter to tie these units into the Phase 1 systems. Both application sites are owned and under the control of the same applicant, so certainty exists in relation to the facilitation of this solution. The Phase 1 storm routing and attenuation will require slight modification, now that the Phase 2 attenuation is being wholly managed within Phase 2, and it is a simple matter to adjust the Phase 1 tank volume to accommodate the small addition of storm water arising from the P2 units 1 to 12. Also, the main foul header for Phase 1 is a Ø225 sewer which IW state is suitable for between 20 and 330 units, depending on gradient (IW COP for Wastewater Infrastructure – Table within Clause 3.6). The addition of P2 units 1 to 12 into the P1 total of 93 units clearly has no bearing on the Phase 1 foul system capacity.

Foul water from the proposed development will be connected to the existing Irish Water foul sewer network in the southwest of the site that eventually is treated at Letterkenny WWTP. Confirmation of pre-connection enquiry was received from Irish Water on the 28<sup>th</sup> October 2021 (Ref: CDS21006089). The wastewater connection is 'Feasible without infrastructure upgrade by Irish Water'. The Irish water site-specific comments for the wastewater connection note: "The proposed connection to the Irish Water network can be facilitated at this moment in time".

- Foul water drainage and water supply infrastructure will be designed and constructed to comply with current standards and guidelines:
- BS EN 752-4: 'Drain and sewer systems outside buildings. Hydraulic design and environmental considerations' 'BS8302 Code of practice for building drainage' (guidance only)
- Technical Guidance Document H Drainage.
- Wastewater Disposal Arna Fhoilsiu ag Oifig an tSolathair.

Proposed units 1-12 will connect to the Foul Water network in the Phase 1 development to the immediate south (under appeal to An Bord Pleanála).

The construction of foul and surface water will comply with current construction regulations and IW guidance including the Code of Practice for Wastewater Infrastructure and Code of Practice for Water Infrastructure.

Water supply to the Proposed Development will be provided by connection to the mains Irish Water supply. Confirmation of pre-connection enquiry was received from Irish Water on the 28<sup>th</sup> October 2021 (Ref: CDS21006089). The wastewater connection is 'Feasible without infrastructure upgrade by Irish Water'. The Irish water site-specific comments for the wastewater connection note: "The proposed connection to the Irish Water network can be facilitated at this moment in time".

### **8.6.3 Construction Phase Mitigation Measures**

The potential impacts to surface waters and groundwaters are assessed, and existing and proposed mitigation measures are outlined.

Common factors to all mitigation measures are the production and implementation of the Construction and Environmental Management Plan (CEMP). The CEMP will be implemented by the main contractor responsible for construction to ensure site-specific procedures and mitigation measures are affected. Mitigation measures will address the main activities of potential impact which include:

- Control and management of water and surface runoff.
- Management and control of materials from off-site sources.
- Appropriate fuel and chemical handling, transport, and storage.
- Management of accidental release of contaminants at the site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice; good construction management practices will minimise the risk of pollution from construction activities at the Site including but not limited to:

- EPA 2004 (revised 2013) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
- Inland Fisheries Ireland (2020) Planning for Watercourses in Urban Environments.
- Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Construction Industry Research and Information Association (CIRIA) standards:
  - The SuDs Manual, 2015 (C753)
  - Environmental Good Practice on Site, 2015 (C741)
  - Control of Water Pollution from Linear Construction Projects: Site Guide, 2006 (C649)

- Control of Water Pollution from Linear Construction Projects: Technical Guidance, 2006 (C648)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, 2001 (C532)

#### ***8.6.3.1 Surface Water Quality Impacts from Suspended Sediment Load during construction phase involving earth movement and site preparation works.***

Site clearance and earth movement to facilitate construction activity may lead to discharge of suspended sediment load in runoff which may be directed to surface watercourses leading to any of the Glencar Irish, Glencar Scotch and Sprack Burn watercourses and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC
- **Pathway(s):** Surface discharge to river system
- **Pre-mitigation Impact:** Moderate short-term negative effect on a sensitive receptor

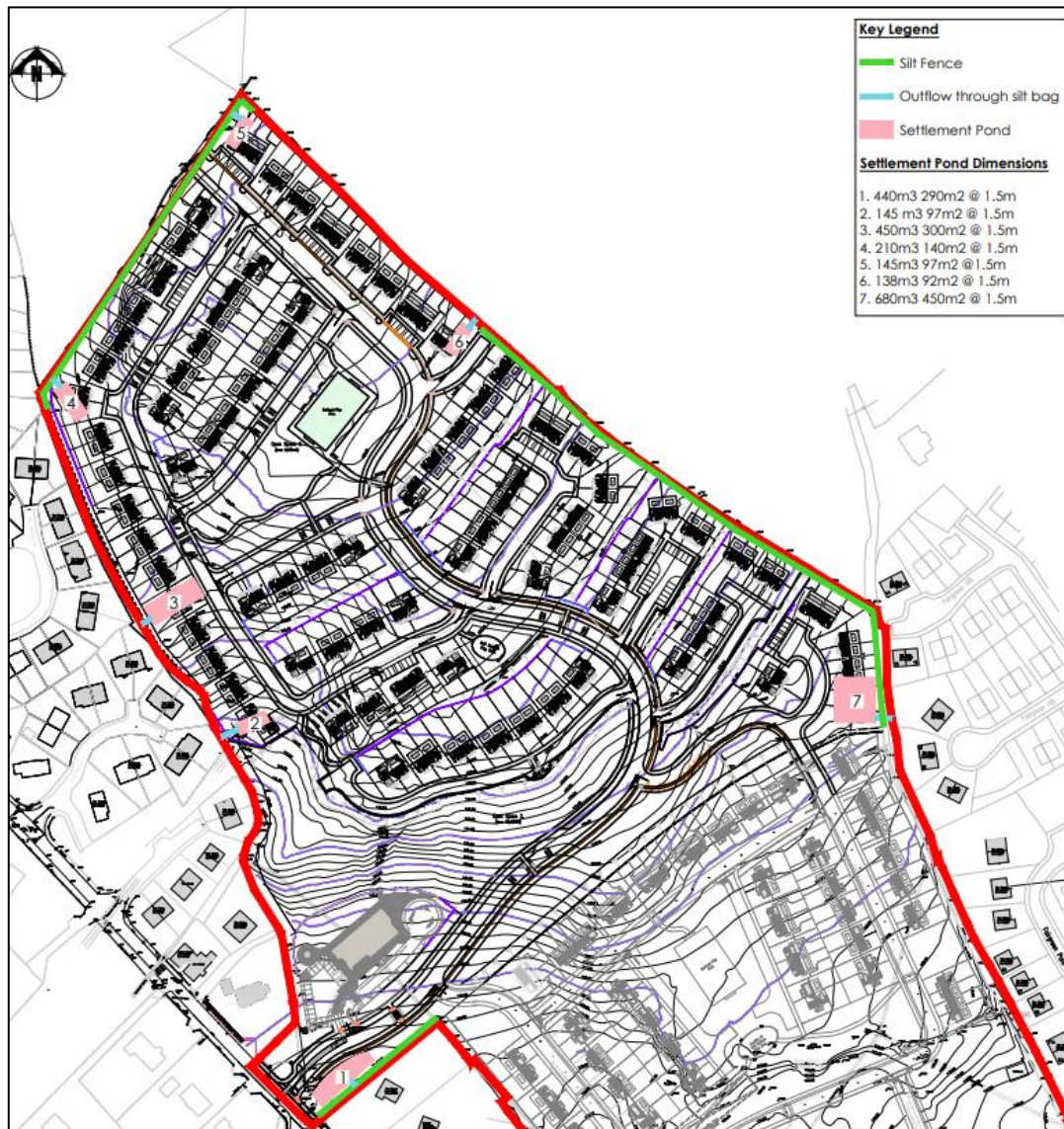
The main watercourse protection methodology involves capturing construction site runoff and treating the runoff through settlement before discharge off site through silt bags. There are two phases of development planned and settlement ponds are indicatively located on drawing 5122-P-2 supplied by MH Associates. Temporary settlement ponds 1, 2 & 7 are planned to service Phase 2 of this development, and ponds 3, 4, 5 & 6 are planned to service Phase 3 of the development. The settlement ponds are sized for minimum 12-hour retention and to cater for a 1 in 100-year 6-hour storm event. It is noted that these are indicative positions and sizing relating to the areas drained. The final position and sizing of the temporary ponds will be decided by the construction site manager at construction drawing stage and will be written into the final version of the Construction and Environment Management Plan (CEMP) for the site.

The mitigation measures that are proposed are listed below;

- Robust surface water capture drains leading to temporary settlement pond system with discharge to surface water through silt bags. Indicative locations and sizing of settlement ponds is shown in Figure 8.10 below. Location and sizing of temporary treatment systems to be agreed prior to commencement of works and written into final CEMP document.
- Daily monitoring and inspection of site drainage during construction will be undertaken.
- Suspension of earth movement and material handling activities for the duration of an orange level rainfall warning issued by Met Eireann to reduce run-off and potential siltation to watercourses.
- Silt fences to be erected along the banks of the watercourse flowing along the eastern site boundary and the watercourse along the north-western site boundary.
- There is to be no unauthorised discharge of surface water runoff to ground, drains or watercourses.
- To prevent tracking of dust and debris on haul routes off-site, on-site wheel washing will be undertaken for construction vehicles to remove any debris on the local roads.
- All works to be carried out in accordance with the standards outlined in the 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to waters', 2016 produced by inland Fisheries Ireland.

**Residual Effect:** Short-term imperceptible negative effect on surface water quality

**Significance of Effects:** No significant effects on surface water quality are expected.



**Figure 8.10: Indicative locations and sizing of temporary settlement ponds for phased construction**  
 (Extract from Drawing 5122-P-2 supplied by MH Associates)

**8.6.3.2 Surface Water Quality Impacts from Suspended Sediment Load from Stockpiles**

The stockpiling of material on-site will be avoided where possible. However, where material is being temporality stockpiled on-site pending re-use or classification for removal off-site there is potential for runoff following rainfall to contain a high sediment loading and to cause a negative effect in the receiving watercourses. The development discharges surface water off site directly to the Glencar Irish, Glencar Scotch and Sprack Burn watercourses and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC
- **Pathway(s):** Surface discharge to river system
- **Pre-mitigation Impact:** Moderate short-term negative effect on a sensitive receptor

The mitigation measures that are proposed are listed below;

- Stockpiles will be located, arranged and managed so that the risk to receiving water and other receptors, from silt and contaminated is minimised.

- All stockpiled materials will be located a minimum of 50m from water courses during the construction phase.
- Suitable drainage system in place to direct effluent and runoff that may become contaminated with suspended sediment to the temporary settlement pond and system.
- Silt fencing will be erected where there is a risk of unregulated run-off during prolonged rainfall.

**Residual Effect:** Short-term imperceptible effect on surface water quality

**Significance of Effects:** No significant effects on surface water quality are expected.

#### **8.6.3.3 Surface Water and Groundwater Quality Impacts from Hydrocarbon Contamination**

There is potential with plant and machinery onsite that an onsite leak or accidental spillage may cause pollution to surface or groundwater. The development discharges surface water off site directly to the Glencar Irish, Glencar Scotch and Sprack Burn watercourses and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body
- **Pathway(s):** Surface discharge to river system, discharge directly to groundwaters
- **Pre-mitigation Impact:** Moderate short-term negative effect on a sensitive receptor

The mitigation measures that are proposed are listed below:

- All plant and machinery will be serviced before being mobilized to site.
- No refuelling of machinery or overnight parking of machinery is permitted in areas adjacent to watercourses or on-site drainage infrastructure.
- On-site refuelling will only take place at distances greater than 50 meters from nearest watercourses or site drainage infrastructure. Refuelling will take place by direct filling from a delivery truck or using a mobile double skinned fuel bower and will only take place in designated bunded areas.
- Drip trays used for all re-fuelling operations. Best practice for refuelling incorporated into the CEMP for the site.
- Only dedicated trained and competent personnel will carry out refuelling operations.
- Regular inspections and maintenance scheduling for all plant and vehicle to minimise the potential for malfunction or leak.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants. Site staff will be familiar with emergency procedures and all staff on-site will be fully trained in the use of equipment to be used on-site.
- Emergency spill kit with oil boom, absorbers etc. is proposed to be kept on site for use in the event of an accidental spillage/leak.
- Regular visual monitoring of all surface waters onsite for any surface sheen or sign of potential hydrocarbon pollution.
- No bulk storage of fuels or lubricants to occur on site. Small quantities of fuel lubricants, if stored on site, must be stored in bunded storage tanks with bunded volumes to be not less than either (1) 110% of capacity of the largest tank/drum in the bunded area, or (2) 25% of the total volume of substance that could be stored within the bunded area.

**Residual Effect:** Short-term imperceptible effect on surface water quality

**Significance of Effects:** No significant effects on surface water quality or groundwater quality are expected

#### **8.6.3.4 Surface Water and Groundwater Quality Impacts from concrete works or other deleterious materials**

There is potential with the use of concrete and cementitious grout during construction activities spillage or poor work practices may cause pollution to surface or groundwater. The site discharges surface water off site directly to the Glencar Irish, Glencar Scotch and Sprack Burn watercourses and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body
- **Pathway(s):** Surface discharge to river system, discharge directly to groundwaters
- **Pre-mitigation Impact:** Moderate short-term negative effect on a sensitive receptor

The mitigation measures that are proposed are listed below:

- Use of appropriate design and methods for concrete that will be implemented by the Contractor and in accordance with industry standards.
- Where possible precast concrete will be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any potential groundwater.
- All ready-mixed concrete shall be delivered to the proposed development site by truck. There will be no batching of wet-cement products on site.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. Washout will be to a dedicated concrete washout unit in a fixed location.
- No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure concrete pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

**Residual Effect:** Short-term imperceptible effect on surface water quality **Significance of Effects:** No significant effects on surface water quality or groundwater quality are expected

#### ***8.6.3.5 Surface Water and Groundwater Quality Impacts from wastewater discharged from welfare facilities.***

Welfare facilities such as temporary port-a-loo toilets have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Percolation may have potential to reach the groundwater body or the surface water system and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body
- **Pathway(s):** Percolation to surface water drainage system, percolation to groundwater
- **Pre-mitigation Impact:** Slight short-term negative effect on a sensitive receptor.

The proposed mitigation measures are listed below:

- The functionality and periodic maintenance, including emptying, of the welfare facilities will be the responsibility of the construction site manager as defined in the CEMP.
- The removal and disposal of wastewater from site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.

**Residual Effect:** Short-term imperceptible effect on surface water quality and groundwater

**Significance of Effects:** No significant effects on surface water quality and groundwater quality are expected.

### **8.6.3.6 Surface Water alteration of catchment flow regime**

The proposed development will alter greenfield site conditions which have supplied surface water to the Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn
- **Pathway(s):** Direct due to potential alteration of water supply to stream
- **Pre-mitigation Impact:** Slight permanent negative effect on a sensitive receptor

Due to the construction of a dedicated stormwater capture and treatment system within the development site, there will be some minor changes to the flow paths of surface water on site. A small portion of the flow supplied by overland flow and throughflow to the Sprack Burn and the Glencar Scotch Stream will now be directed to the Glencar Irish Stream via site drainage and the public stormwater system. The volume of water leaving the site will remain the same and will leave the site at greenfield rates of supply because of the attenuation provision proposed. All watercourses draining the site empty into the river Swilly. There will be no change in either the volume of water supplied, or the rate of supply, to the River Swilly.

The mitigation measures that are proposed are listed below:

- Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that quantity and rate of supply of water leaving the site will be the same or less than pre-development Greenfield runoff rates.

**Residual Effect:** No negative effects on Glencar Irish Stream. Imperceptible effects on the Glencar Irish and Sprack Burn Streams due to a minor proportion of potential flow being diverted to Glencar Irish stream.

**Significance of Effects:** Neutral effects on Glencar Irish Stream and Glencar Scotch Stream. No significant negative effects on the Sprack Burn or Glencar Irish Stream.

## **8.6.4 Operational Phase Mitigation Measures**

### **8.6.4.1 Surface Water and Groundwater Quality Impacts from Hydrocarbon Contamination**

There is potential with vehicles using the site that an accidental spillage or leak may cause hydrocarbon pollution to surface or groundwater. The development will discharge surface water off site directly to the public stormwater sewer system, Glencar Irish and Glencar Scotch watercourses and ultimately to the River Swilly and Lough Swilly SAC.

- **Receptor(s):** Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body
- **Pathway(s):** Surface discharge to river system, discharge directly to groundwaters
- **Pre-mitigation Impact:** Moderate short-term negative effect on a sensitive receptor

The mitigation measures that are proposed are listed below:

- An appropriately sized hydrocarbon interceptor prior to stormwater leaving the site and entering the public stormwater system to ensure that there is no hydrocarbon pollution in the surface waters leaving the site.

**Residual Effect:** Short-term imperceptible effect on surface water or groundwater quality

**Significance of Effects:** No significant effects on surface water quality or groundwater quality are expected.

### **8.6.4.2 Increased Flood Risk caused by changing the rainfall response characteristics of the site**

There is potential to cause an increased flood risk at land or properties downstream of the application site due to a change in the rainfall response characteristics of the site post development. The nature of a housing

development will have hard and impermeable surfaces which will exhibit a faster response time to the receiving watercourses than the pre-developed greenfield site.

- **Receptor(s):** Land and property downstream of application site
- **Pathway(s):** Flashy rainfall response to river system
- **Pre-mitigation Impact:** Significant brief negative effect on a sensitive receptor

The mitigation measures that are in place and proposed are listed below:

- The site will avail of SuDs
- In addition to SuDS, an attenuation tank will be provided to store excess surface water during a storm event for slow release.
- Flow will be restricted to greenfield runoff rates using a vortex flow control device.

**Residual Effect:** No negative effects on surface water flow rates or surface water quality

**Significance of Effects:** No significant effects on surface water flow rates or surface water quality are expected.

**8.6.5 Cumulative Impacts**

The application site must also be considered in association with other developments located within or close to the application site.

**8.6.5.1 Other Developments**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined for likely cumulative impacts to water. A summary of the findings is presented in Table 8.4 below.

**Table 8.4: Cumulative Effects**

Planning Ref No.	Applicant	Development Description	Location	Potential Cumulative Impact
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Stormwater attenuation provided and mains connection. No cumulative impact expected
1950809 (ABP 307152-20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	Stormwater attenuation provided and mains connection. No cumulative impact expected



Planning Ref No.	Applicant	Development Description	Location	Potential Cumulative Impact
1851939	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	Stormwater attenuation provided and mains connection. No cumulative impact expected

#### **8.6.6 Do Nothing Option**

If the proposed development is not granted planning permission, it is considered that there would be no change or resulting impact on the nature of the application site. The site would remain as undeveloped land and there would be no impact or change to the hydrology or hydrogeology of the proposed development site.

**8.6.7 Determination of Environmental Impact Significance Pre-mitigation****Table 8.5: Determination of Environmental Impact Significance Pre-mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/Duration /Probability/Consequences) Negligible - High</b>	<b>Existing Environment (Significance/Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Surface Water Quality Impacts from Suspended Sediment Load during construction phase involving earth movement and site preparation works.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC	Medium	Medium	Moderate
Surface Water Quality Impacts from Suspended Sediment Load from Stockpiles	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC	Medium	Medium	Moderate
Surface Water and Groundwater Quality Impacts from Hydrocarbon Contamination.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Medium	Medium	Moderate
Surface Water and Groundwater Quality Impacts from concrete works or other deleterious materials	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Medium	Medium	Moderate
Surface Water and Groundwater Quality Impacts from wastewater discharged from welfare facilities.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Low	Medium	Slight
Surface Water alteration in catchment flow regime.	Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn	Low-Negligible	Medium	Slight
Increased Flood Risk downstream	Land, property and infrastructure downstream	Medium	Medium	Moderate

### 8.6.8 Summary of Mitigation Measures Proposed

**Table 8.6: Summary of Mitigation Measures Proposed**

Summary of Mitigation Measures Proposed
<ul style="list-style-type: none"> <li>Production and implementation of the Construction and Environmental Management Plan (CEMP) for all activities</li> </ul>
<ul style="list-style-type: none"> <li>The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice</li> </ul>
<ul style="list-style-type: none"> <li>All works to be carried out in accordance with the standards outlined in the 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to waters', 2016 produced by inland Fisheries Ireland.</li> </ul>
<ul style="list-style-type: none"> <li>During construction robust surface water capture drains leading to temporary settlement pond system with discharge to surface water through silt bags. Indicative locations and sizing of settlement ponds is shown in Figure 8.10. Location and sizing of temporary treatment systems to be agreed prior to commencement of works and written into final CEMP document.</li> </ul>
<ul style="list-style-type: none"> <li>Daily monitoring and inspection of site drainage during construction will be undertaken.</li> </ul>
<ul style="list-style-type: none"> <li>Suspension of earth movement and material handling activities for the duration of an orange level rainfall warning issued by Met Eireann to reduce run-off and potential siltation to watercourses.</li> </ul>
<ul style="list-style-type: none"> <li>Silt fences to be erected along the banks of the watercourse flowing along the eastern site boundary and the watercourse along the north-western site boundary.</li> </ul>
<ul style="list-style-type: none"> <li>There is to be no unauthorised discharge of surface water runoff to ground, drains or watercourses.</li> </ul>
<ul style="list-style-type: none"> <li>To prevent tracking of dust and debris on haul routes off-site, on-site wheel washing will be undertaken for construction vehicles to remove any debris on the local roads.</li> </ul>
<ul style="list-style-type: none"> <li>Stockpiles will be located, arranged and managed so that the risk to receiving water and other receptors, from silt and contaminated is minimised.</li> </ul>
<ul style="list-style-type: none"> <li>All stockpiled materials will be located a minimum of 50m from water courses during the construction phase.</li> </ul>
<ul style="list-style-type: none"> <li>Suitable drainage system in place to direct effluent and runoff that may become contaminated with suspended sediment to the temporary settlement pond and system.</li> </ul>
<ul style="list-style-type: none"> <li>Silt fencing will be erected where there is a risk of unregulated run-off during prolonged rainfall.</li> </ul>
<ul style="list-style-type: none"> <li>Stockpiles will be located, arranged and managed so that the risk to receiving water and other receptors, from silt and contaminated is minimised.</li> </ul>
<ul style="list-style-type: none"> <li>Use of appropriate design and methods for concrete that will be implemented by the Contractor and in accordance with industry standards.</li> </ul>
<ul style="list-style-type: none"> <li>Where possible precast concrete will be used for culverts and concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any potential groundwater.</li> </ul>
<ul style="list-style-type: none"> <li>All ready-mixed concrete shall be delivered to the proposed development site by truck. There will be no batching of wet-cement products on site.</li> </ul>
<ul style="list-style-type: none"> <li>No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.</li> </ul>
<ul style="list-style-type: none"> <li>Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. Washout will be to a dedicated concrete washout unit.</li> </ul>
<ul style="list-style-type: none"> <li>No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.</li> </ul>
<ul style="list-style-type: none"> <li>Use weather forecasting to plan dry days for pouring concrete.</li> </ul>
<ul style="list-style-type: none"> <li>Ensure concrete pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.</li> </ul>

**Summary of Mitigation Measures Proposed**

- The functionality and periodic maintenance, including emptying, of the welfare facilities will be the responsibility of the construction site manager as defined in the CEMP.
- The removal and disposal of wastewater from site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations, 2007.
- Attenuation tanks and flow controls for surface water leaving the site into the receiving surface watercourses will ensure that supply to all the streams is similar post development to pre-development levels.
- An appropriately sized hydrocarbon interceptor will be in place downstream of the attenuation tank to ensure that there is no hydrocarbon pollution in the surface waters leaving the site. Flow will be restricted to greenfield runoff rates using a vortex flow control device.
- The site will avail of SuDs design.

**8.6.9 Determination of Environmental Impact Significance Following Mitigation****Table 8.7: Determination of Environmental Impact Significance Following Mitigation**


<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/Duration /Probability/Consequences) Negligible - High</b>	<b>Existing Environment (Significance/Sensitivity) Negligible -High</b>	<b>Significance of Impact Imperceptible - Profound</b>
Surface Water Quality Impacts from Suspended Sediment Load during construction phase involving earth movement and site preparation works.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC	Medium	Medium	Not significant
Surface Water Quality Impacts from Suspended Sediment Load from Stockpiles	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly and Lough Swilly SAC	Medium	Medium	Not significant
Surface Water and Groundwater Quality Impacts from Hydrocarbon Contamination.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Medium	Medium	Not significant
Surface Water and Groundwater Quality Impacts from concrete works or other deleterious materials	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Medium	Medium	Not significant
Surface Water and Groundwater Quality Impacts from wastewater discharged from welfare facilities.	Glencar Irish Stream, Glencar Scotch Stream, Sprack Burn, River Swilly, Lough Swilly SAC and Lough Swilly Groundwater Body	Low	Medium	Not significant
Surface Water alteration in catchment flow regime.	Glencar Irish Stream, Glencar Scotch Stream and Sprack Burn	Low-Negligible	Medium - Low	Imperceptible
Increased Flood Risk downstream	Land, property and infrastructure downstream	Medium	Medium	Imperceptible

**8.6.10 Conclusion**

With the implementation of the mitigation measures listed, the implementation of the project as outlined will not cause a significant negative effect on the surface water or groundwater environments.

## Appendix 8.1: Certificates of Chemical Analysis

AQUALAB



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 IRELAND  
 (T) 074 9741809  
 (E) [aqualab.killybegs@pelagia.com](mailto:aqualab.killybegs@pelagia.com)

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### CERTIFICATE OF ANALYSIS

Page 1 of 1

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**Customer:** **Greentrack**  
 4 Roe House,  
 Dry Arch Business Park,  
 Dromore,  
 Letterkenny,

**Report no.:** **23-01188**  
**No. of samples:** 2  
**Acceptance date:** 23/02/2023  
**Analysis date:** 23/02/2023  
**Date of issue:** 27/02/2023  
**Contact:** Denis Faulkner

---

**Comments**  
 2 x sample water, ex PJ McD Glencar

---

Sample ID	Sample type	Client reference	Test method	Test description	Result / Units
23-01188-(01)	Water	Watercourse (N) Stream	E-105	pH	6.32 @ 17.3°C
			E-103	Suspended Solids	10 mg/l
			E-124	Ammonia (as NH3-N)	<0.01 mg/l
			E-109	Orthophosphate (as P)	<0.01 mg/l
			E-113	# Conductivity	88 µS/cm @20°C
23-01188-(02)	Water	Watercourse (E) Stream	E-105	pH	7.08 @ 16.7°C
			E-103	Suspended Solids	<5 mg/l
			E-124	Ammonia (as NH3-N)	0.08 mg/l
			E-109	Orthophosphate (as P)	<0.01 mg/l
			E-113	# Conductivity	196 µS/cm @20°C


---

The results in this electronically produced test report have been checked and approved. The test report meets the requirements of IS EN ISO/IEC 17025:2017 and is also valid without signature.

**Report authorised by:**

Julie Cassidy

Senior Technician



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In Test Method - 'Subcontracted A' tests are accredited; 'Subcontracted U' tests are unaccredited. Tests are unaccredited if prefixed by # or if INAB logo is not visible on the report.

Unless otherwise stated in the comments section, samples were accepted for testing in a satisfactory condition.

This report relates only to the item(s) tested and shall not be reproduced, except in full, without the prior agreement of AQUALAB.

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Revision: 13

## Section 9: AIR

Table of Contents	
Section 9: AIR	1
List of Figures	2
List of Photographs	2
List of Tables	2
9 AIR	3
9.1 Introduction	3
9.2 Methodology	4
9.2.1 Dust	4
9.2.2 Air Quality Regulation	4
9.2.3 References	5
9.3 Impact Assessment Methodology	6
9.4 Existing Environment	6
9.4.1 Site Description & Location	6
9.5 Characteristics of the Development	7
9.5.1 Construction Phase	7
9.5.2 Operational Phase	7
9.6 Impact Assessment	8
9.6.1 Construction Phase	8
9.6.2 Operational Phase	12
9.6.3 Cumulative Impacts	13
9.6.4 Do Nothing Option	15
9.7 Mitigation Measures	15
9.8 Monitoring	15
9.9 Residual Impacts	15
9.10 Technical Difficulties	15
9.11 Determination of Significance of Impact Pre-mitigation	15
9.12 Summary of Mitigation Measures	16
9.13 Determination of Significance of Impact Following Mitigation	16
9.14 Impact Assessment Conclusion	16



## List of Figures

Figure 9.1: Location of Application Site.....	7
Figure 9.2: Wind Rose for Malin Head (2014) .....	9
Figure 9.3: Potential receptors .....	11

## List of Photographs

Photograph 9.1: Mature tree lined hedge along eastern boundary of site. ....	11
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## List of Tables

Table 9.1: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard Mitigation in Place.....	4
Table 9.2: Relevant Air Quality Standards.....	5
Table 9.3: No of days with 10 min wind speeds > 15 m/s.....	9
Table 9.4: Indicative Criteria for Requiring an Air Quality Assessment.....	13
Table 9.5: Cumulative Effects.....	14
Table 9.6: Determination of Significance of Impact Pre-mitigation.....	15
Table 9.7: Summary of Mitigation Measures .....	16
Table 9.8: Determination of Significance of Impact Following Mitigation.....	16

## 9 AIR

### 9.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) assesses any potential impact the proposed development and ancillary activities at the site may have on the surroundings, with regards to the receiving air environment.

For construction related activities, the most likely emission to the air environment is dust, which arises predominantly from soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery). These sources are generally dispersed sources rather than specific point sources and this dictates the measures required to mitigate dust related impacts.

In addition to general dust deposition nuisance there is potential for elevated particulate matter concentrations (PM10 and PM2.5) as a result of dust generating activities on site and increases in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on site (non-road mobile machinery) and vehicles accessing the site.

Mitigation measures are proposed where required, to remove or reduce any potential impacts identified.

This section was prepared by Colin Farrell of Greentrack. The authors competencies are set out in Section 2 – Introduction.

#### 9.1.1 Project Description

The applicant PJ McDermott is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

*Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total)*

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission) The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange 9akalso proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) and a crèche together with the proposed development of 90 units (82 house and 8 apartments) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is presented with the EIAR.

## 9.2 Methodology

### 9.2.1 Dust

The impact of dust is usually monitored by measuring rates of dust deposition. There are currently no standards in Ireland for dust deposition from construction sites. Similar related activities that are likely to generate dust are construction activities associated with road and bridge construction and quarry activity. According to the EPA Guideline Document entitled Environmental Management in the Extractive Industries (April 2006), there are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert mineral dust. There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – the Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. It is the only enforceable method available. On this basis, the EPA recommend a dust deposition limit value of 350 mg/m<sup>2</sup>/day (Table 10.1) (when averaged over a 30-day period) has been adopted at site boundaries associated with quarrying related activities and can be adopted as the limit value for the construction of the proposed development.

The then Department of Environment, Heritage and Local Government (DoEHLG) published ‘Quarries & Ancillary Activities: Guideline for Planning Authorities’ (2004) also recommends the TA Luft dust deposition limit is adopted at site boundaries near quarry developments. In addition, the DoEHLG have identified that residents within 500m of the dust source can potentially be affected from emissions, with more severe concerns about dust within 100m of the source.

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or PM10 concentrations. TII recommend a semiquantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. The following table outlines the distance criteria which is recommended for use in assisting a semiquantitative assessment:

**Table 9.1: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard Mitigation in Place**

Source		Potential Distance for Significant Effects (Distance from Source)		
Scale	Description	Soiling	PM10	Vegetation Effects
Major	Large construction sites with high use of haul roads	100m	25m	25m
Moderate	Moderate sized construction sites with moderate use of haul roads	50m	15m	15m
Minor	Moderate sized construction sites with moderate use of haul roads	25m	10m	10m

### 9.2.2 Air Quality Regulation

European Union (EU) air quality legislation is provided within The Ambient Air Quality and Cleaner Air for Europe (CAFÉ) Directive 2008/50/EC, which is transcribed into Irish legislation by the Ambient Air Quality Standards Regulations 2022 which replaced the Air Quality Standards Regulations 2011. The Air Quality Limit Values (AQLVs) are legally binding for Ireland and have been set with the aim of avoiding, preventing, or reducing harmful effects on human health and on the environment.

The Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022) implement the European Union Directive 2008/EC/50 on Ambient Air Quality and CAFÉ and designate the Environmental Protection Agency (EPA) as the competent authority responsible for assessing ambient air quality in the territory of the State.

The regulations establish legally binding AQLVs and alert thresholds for concentrations of certain pollutants in ambient air, to prevent or reduce harmful effects on human health and the environment. AQLVs were published for seven pollutants, with alert thresholds for an additional five pollutants. National assessments undertaken by the EPA (EPA, 2021) have demonstrated that there is no risk of carbon monoxide (CO), 1,3-butadiene, benzene, lead and sulphur dioxide (SO<sub>2</sub>) concentrations exceeding the limits due to emissions from traffic anywhere in Ireland. The remaining pollutants are NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> with regards to human health and NO<sub>x</sub> with regard to vegetation. The limit values for these pollutants are presented in Table 9.2.

Pollutant Averaging Period Limit Value Nitrogen Dioxide (NO<sub>2</sub>) Protection of Human Health 1 Hour 200 µg/m<sup>3</sup> not to be exceeded more than 18 times a calendar year. Annual Average 40 µg/m<sup>3</sup> Nitrogen Oxides (NO<sub>x</sub>) Protection of Vegetation Annual Average 30 µg/m<sup>3</sup> Particulate Matter (PM<sub>10</sub>) 24 Hour 50 µg/m<sup>3</sup> not to be exceeded more than 35 times a year. Annual Average 40 µg/m<sup>3</sup> Particulate Matter (PM<sub>2.5</sub>) Annual Average 20 µg/m<sup>3</sup> Source: S.I. No. 739/202211 – Ambient Air Quality Standards Regulations 2022. The results of the AQA are compared against these standards to determine if the effect of a proposed development will be significant for air quality.

**Table 9.2: Relevant Air Quality Standards.**

Pollutant	Averaging Period	Limit Value
Nitrogen Dioxide (NO <sub>2</sub> ) Protection of Human Health	1-hour	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a calendar year
	Annual Average	40 µg/m <sup>3</sup>
Nitrogen Oxides (NO <sub>x</sub> ) Protection of Vegetation	Annual Average	30 µg/m <sup>3</sup>
Particulate Matter (PM <sub>10</sub> )	24-hour	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year
	Annual Average	40 µg/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> )	Annual Average	20 µg/m <sup>3</sup>

Source: S.I. No. 739/2022 – Ambient Air Quality Standards Regulations 2011

The assessment involved.

- Site walkovers and assessment of site
- Air modelling tool
- Examination of meteorological factors

### 9.2.3 References

- Existing Topographical Survey of Glencar Irish Site. *MH associates Ltd, 2023*
- Guidance on the Assessment of Dust from Demolition and Construction Version 1.1 (Institute of Air Quality Management (IAQM), 2014)
- TA Luft (1986) Technical Instructions on Air Quality Control – TA Luft in accordance with Article 48 of the Federal Emission Control Law (BImSchG) dated 15th March 1974 (BGBl, I p. 721). *Federal Ministry for Environment, Bonn 1986 and amendments.*
- *Department of the Environment, Heritage and Local Government (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)*
- *Environmental Protection Agency (2022) Guidelines on the Information to be included in Environmental Impact Assessment Reports*

- Advice Note on Preparing Environmental Impact Statements – Draft (EPA, 2015)
- *Transport Infrastructure Ireland (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*
- *Transport Infrastructure Ireland (2022) Air Quality Assessment of Proposed National Roads - StandardUK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air Quality.*

### 9.3 Impact Assessment Methodology

The nature of the potential environmental impacts on the land, soil and geology is based on the matrix presented in Table 3.4 of Section 2, Introduction, of this EIAR. This table is derived from the EPA Guidelines on information to be included in Environmental Impact Assessment Reports (May 2022) and outlines how the potential environmental effects of the project are described in terms of:

- Quality
- Significance
- Extent and context
- Probability
- Duration and frequency
- Type

### 9.4 Existing Environment

#### 9.4.1 Site Description & Location

The application site is 10.2 ha gross area and a net area of 8.1ha for the residential development that excludes planted buffers of 2.1ha. The site is currently in predominantly agricultural use. There are several blocks of coniferous forest on site and some significant areas of scrub. The site is part of a south facing slope within the town boundary of Letterkenny. The site is approximately 1.55 km northwest of the centre of Letterkenny and will be accessed directly off the local road, L-1174, with plans in the last phase of development to create a new access to the local road, L1152, to the north.

The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site, and other housing developments exist further south. To the north and northeast of the east is agricultural land with sporadic farmsteads.

The application site location is outlined in Figure 9.1 below.



**Figure 9.1: Location of Application Site** CYAL50313729 © Ordnance Survey Ireland/Government of Ireland

## 9.5 Characteristics of the Development

### 9.5.1 Construction Phase

The construction phase of the Proposed Development will include:

- Groundworks and excavation will be required to reduce levels to construct the Proposed Development including foundations, utilities and roads.
- The site is steeply sloped in places, and it is envisaged that cut and fill techniques will be used to lessen gradients and it is intended that all suitable excavated materials will be reused on site.
- The proposed development will include the importation of aggregates for the construction of utilities and roads, where there is a net shortfall of excavated material onsite.
- Foundations solutions will be designed to suit ground conditions.
- Use of temporary welfare facilities for the duration of the Construction Phase.
- Temporary settlement ponds to be used to treat surface water runoff. Noise abatement and dust control measures will be employed by the applicant for all activities on site.
- It is anticipated that there will be two phases of development for the project, the first phase constructing approximately 112 accommodation units in the southern and central areas of the site accounting for 60% of the overall development and the remaining accommodation units constructed in the northern part of the site as a second phase (76 houses and 40% of overall development).

### 9.5.2 Operational Phase

This will consist of the day-to-day use of the residential development.

Further details on the characteristics of development are provided in *Section 4, Description of Development*, of this EIA.

## 9.6 Impact Assessment

### 9.6.1 Construction Phase

There is potential for construction related air emissions to impact on local air quality as a result of the proposed development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:

- Dust deposition
- Elevated particulate matter concentrations (PM10 and PM2.5) as a result of dust generating activities on site.
- An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on site (non-road mobile machinery) and vehicles accessing the site.

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- Site activities and duration.
- The size of the site.
- The meteorological conditions.
- The proximity of receptors to the activities.
- The adequacy of applied mitigation measures.
- The sensitivity of receptors to dust.

#### 9.6.1.1 Site Activities

The primary sources of dust identified include soil excavation works, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

#### 9.6.1.2 Scale of Development

To account for a worst-case scenario, the proposed development is considered major in scale and using the TII guidance outlined in Table 9.1, it can be assumed that there is potential for significant dust soiling 100m from the site.

#### 9.6.1.3 Wind

Wind is of key importance for both the generation and dispersal of air borne pollutants including dust.

According to Met Eireann the average hourly wind speed in Donegal experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.6 months, from October 11 to March 29, with average wind speeds of more than 14.0 miles per hour. The calmer time of year lasts for 6.4 months, from March 29 to October 11.

Table 9.3 shows the number of days with mean wind speeds exceeding 15 m/s for 10 minutes or more for the past three complete years.

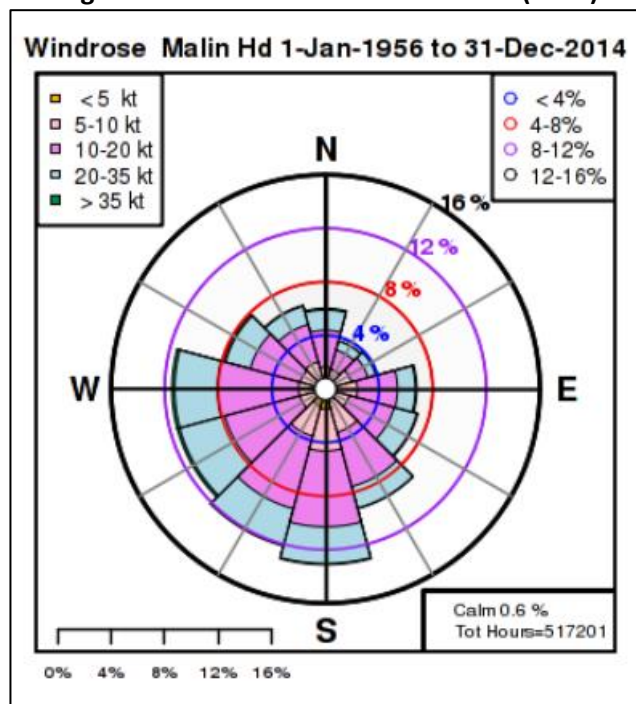
**Table 9.3: No of days with 10 min wind speeds > 15 m/s.**

Number of days with a maximum 10-min. mean wind speed $\geq 15\text{m/s}$												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	18	13	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
2022	13	23	8	4	5	3	2	0	7	13	15	9
2021	12	21	10	4	6	2	0	2	2	6	14	15
2020	19	26	10	3	4	4	5	3	5	15	11	15

(Met Eireann)

The predominant wind direction is from the south, west and southwest. Figure 9.2 shows the wind rose for Malin Head (50 km northeast of the application site).

**Figure 9.2: Wind Rose for Malin Head (2014)**



**Figure 9.2: Wind Rose for Malin Head (2014)** Met.ie

**9.6.1.4 Rain**

Rainfall will affect the rate of dust deposition and generation because of moisture binding small particles together into larger heavier ones and preventing them becoming airborne. Rainfall data was analysed for the Met Eireann recording station at Dromore, Letterkenny which is the closest local station to the application site.

A wet day is recorded by Met Eireann if the precipitation is 1mm or greater. It is considered that there will be minimal dust generation on a typical wet day. Over the 5-year period 2017-2021 inclusive, there have been an average of 187 days per year recorded as wet days.

The 30-year average (1981-2010) rainfall for the general area (Malin Head Met Eireann data) is 1076 mm.



#### **9.6.1.5 Dust Deposition**

Dust generation rates depend on the site activity, particle size, the moisture content of the material and weather conditions. Dust emissions are dramatically reduced where rainfall has occurred due to the cohesion created between dust particles and water and the removal of suspended dust from the air. It is typical to assume no dust is generated under "wet day" conditions where rainfall greater than 1 mm has fallen. Large particle sizes (greater than 75 microns) fall rapidly out of atmospheric suspension and are subsequently deposited in close proximity to the source. Particle sizes of less than 75 microns are of interest as they can remain airborne for greater distances and give rise to the potential dust nuisance at the sensitive receptors. This size range would broadly be described as silt. Emission rates are normally predicted on a site-specific particle size distribution for each dust emission source.

#### **9.6.1.6 Sensitive Receptors**

The prevailing wind is from a west, southwest and southerly direction. There are housing estates and private houses to the east and west of the application site, a proposed housing estate immediately to the south of the site and several farmsteads and one-off houses to the northeast of the site.

There are no sensitive sites for flora and fauna near the site. The nearest Natura 2000 sites are Lough Swilly SAC and Lough Swilly SPA at 2.5 km and 3 km southeast of the site respectively.

Figure 9.3 shows the potential receptors surrounding the site within 100 m of the site boundary.

At receptors west northwest, west southwest, south and south southeast of the application site the frequency of prevailing winds occurring from the direction of the dust source is low (between 4% and 8%). Appropriate conditions for fugitive dust emissions at these receptors are infrequent.

Receptors to the north and east experience the most appropriate conditions for fugitive dust emissions. Housing to the north and northeast of the site is some distance from the site boundary. The housing estate immediately to the east of the application site is likely to be the receptor to experience the highest impact. It is noted that along the eastern boundary of the site there is a mature tree lined hedge which will have a significant mitigating effect on dust travelling beyond the site boundary. Photograph 9.1 below shows an example of this hedge that also extends along the boundary of the adjacent Phase 1 development to the south (right) of the green arrow in Photograph 9.1.

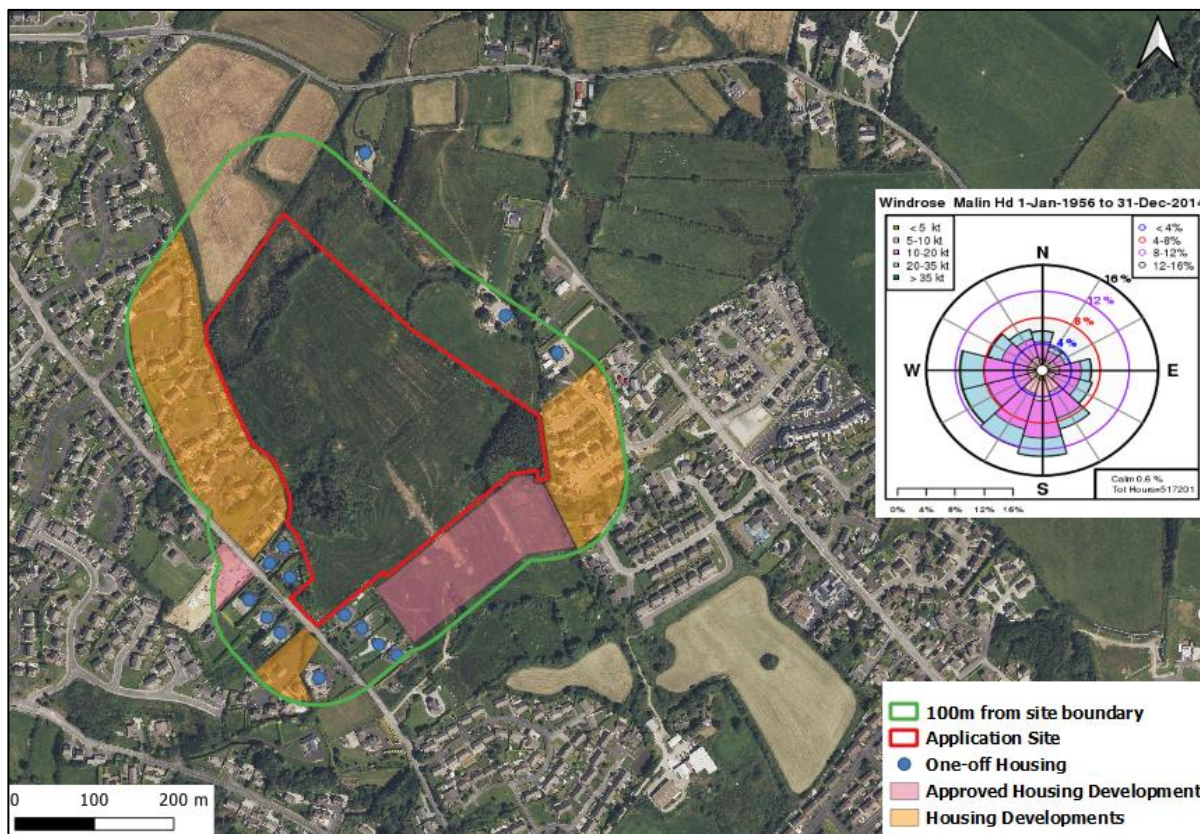


Figure 9.3: Potential receptors

(Figure created using QGIS)



Photograph 9.1: Mature tree lined hedge along eastern boundary of site.

### 9.6.1.7 Impact

There is not expected to be a dust nuisance problem at any of the receptors surrounding the application site. Average rainfall at the site is 1076 mm per year and over the last 5 years there have been an average of 187 wet days per year. The wet days have broadly coincided with the windier times of the year indicating that dust generation would be naturally suppressed for most of the year.

It is expected that adequate mitigation measures as outlined in section 9.6, will prevent nuisance dust causing adverse impacts at any sensitive receptors.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter. Guidance produced by the Institute of Air Quality Management (IAQM) 2014, on the assessment of exhaust emissions from on-site machinery and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the proposed development. However, any effects will be temporary, and any such increase is not considered significant and will be well within relevant ambient air quality standards.

According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM10 and PM2.5 should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. The assessment of potential traffic impacts has been completed within section 12, Material Assets -Traffic.

### 9.6.2 Operational Phase

The proposed development will comply with the Building Regulations Part L 2019. As part of the development's efforts to reduce energy consumption, the proposed development will have A2 BER (Building Energy Rating) throughout. The new dwellings will be "Nearly Zero Energy Buildings". For all new builds, an equivalent to a 60% improvement in energy performance on the 2008 Building Regulations is required. There is also a mandatory requirement for renewable sources. The renewable sources must provide 20% of the primary energy use, however there is flexibility where the building is more energy efficient than the regulations. Annex I of the Energy Performance of Buildings Directive 2010/31/EU (EPBD) as amended by Directive 2018/844/EU (EPBD) outlines requirements for determining Energy Performance of Buildings and methodologies. The residences will have air to water heat pumps and no chimneys.

It is predicted that fossil fuel combustion gas emissions associated with cookers and ancillary garden heating devices including carbon dioxide, sulphur dioxide, nitrogen oxides, carbon monoxide and hydrocarbon particulate emissions will be minor and ongoing for the life of the development and will not have an adverse significant impact on the existing ambient air quality in the vicinity of the Site.

The greatest potential effect on air quality during the operational phase of the proposed development is from traffic-related air emissions. Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations. In terms of associated impacts on air quality, Table 9.4 below outlines the criteria that are prerequisite for an air quality assessment.

**Table 9.4: Indicative Criteria for Requiring an Air Quality Assessment**

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of more than 1000 Annual Average Daily Traffic (AADT)
Cause a significant change in Heavy Duty Vehicle (HGV) flows on local roads with relevant receptors	A change of HGV flows of more than 100 Annual Average Daily Traffic (AADT)
Realign roads, i.e., changing the proximity of receptors to traffic lanes	Where the change is 5m or more
Cause a change in Daily Average Speed (DAS)	Where the DAS will change by 10 km/h or more
Cause a change in peak hour speed	Where the peak hour speed will change by 20km/h or more.

Source: IAQM 2017

Data from section 12, Traffic, indicates that the increase in traffic flow in an absolute worst-case scenario whereby Phase 1 including the Creche and Phase 2 are all fully operational and the relief link road to Windyhall in the north has not been created causing all traffic to flow south towards the Glencar roundabout, will be approximately 7.8% during peak hours, and significantly less than the increase of 1000 Light Duty Vehicles to the Annual Average Daily Traffic increase required to trigger an air quality assessment.

Based on the guidance from Table 9.4 above there is no requirement for an air quality assessment for the proposed development.

The predicted level of traffic increase is not likely to produce a significant adverse effect on air quality in the local environment. As people switch to electric and hybrid cars, the potential air quality impacts will reduce. There will be electric vehicle charging provisions made per dwelling within the proposed development.

**9.6.3 Cumulative Impacts**

The application site must also be considered in association with other developments located within or close to the application site.

**9.6.3.1 Other Developments**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined for likely cumulative impacts to air quality. A summary of the findings are presented in Table 9.5 below.

**Table 9.5: Cumulative Effects**

<b>Planning Ref No.</b>	<b>Applicant</b>	<b>Development Description</b>	<b>Location</b>	<b>Potential Cumulative Impact</b>
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Air impact will be similar to this application.  Impact due to traffic has been cumulatively considered with Phase 2.
1950809 (ABP 307152- 20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	Air impact will be similar to this application but on a smaller scale  (near completion at this stage only road surfaces to be carried out and nearly ready for occupation)
1851939	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	Air impact will be similar to this application.

The cumulative effects on the air quality of the current proposed development and other permitted or existing developments have been considered, in particular through the generation of air pollutants. The potential impacts on air quality are assessed in Section 9.6 and it is considered that there are no other potential significant cumulative impacts associated with the proposed development and considered offsite permitted developments. In terms of dust, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the application site. Due to the implementation of good construction practices at the site of the proposed development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur.

Assessment of operational stage impacts on air quality involved traffic data which is inclusive of traffic associated with other existing and permitted developments on the road networks surrounding the site both in current and future years. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as insignificant.

**9.6.4 Do Nothing Option**

The ‘do-nothing’ impact has been considered in terms of air quality in this chapter. If the proposed development did not proceed, the application site would remain as a greenfield site. The existing ambient air quality would remain unchanged onsite and at nearby sensitive receptors.

**9.7 Mitigation Measures**

The following mitigation measures are proposed to minimise the impacts of construction activity on the air quality of the application site and surroundings:

- The timing of operations optimised in relation to meteorological conditions
- A water bowser/sprayer will be available at all times to minimise dust during dry and windy conditions
- Speed restrictions of 15 kph maintained to limit generation of fugitive dust (within site and access roads)
- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.
- All vehicles leaving the construction areas of the site will pass through a wheel cleansing area prior to entering the local road network.

**9.8 Monitoring**

It is not expected that there will be any requirement for dust monitoring at the development site.

**9.9 Residual Impacts**

Residual impacts are those that remain after the implementation of the mitigation measures. After implementation of the mitigation measures the residual effects are assessed as imperceptible to the local air environment.

**9.10 Technical Difficulties**

There were no technical difficulties encountered.

**9.11 Determination of Significance of Impact Pre-mitigation**

**Table 9.6: Determination of Significance of Impact Pre-mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/Duration/Probability/Consequences) Negligible - High</b>	<b>Existing Environment (Significance / Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Dust deposition	Local dwellings	Low	Low	Slight
Dust within the air	Human health	Low	Medium	Moderate
Dust Deposition	Local vegetation	Low	Low	Slight
Air pollution from traffic	Human Health	Negligible	Medium	Not significant

### 9.12 Summary of Mitigation Measures

**Table 9.7: Summary of Mitigation Measures**

Summary of Mitigation Measures Implemented/Proposed
<ul style="list-style-type: none"> <li>The timing of operations optimised in relation to meteorological conditions</li> </ul>
<ul style="list-style-type: none"> <li>A water bowser/sprayer will be available at all times to minimise dust during dry and windy conditions</li> </ul>
<ul style="list-style-type: none"> <li>Speed restrictions of 15 kph maintained to limit generation of fugitive dust (within site and access roads)</li> </ul>
<ul style="list-style-type: none"> <li>Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.</li> </ul>
<ul style="list-style-type: none"> <li>The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.</li> </ul>
<ul style="list-style-type: none"> <li>Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.</li> </ul>
<ul style="list-style-type: none"> <li>Daily inspection of construction sites to examine dust measures and their effectiveness.</li> </ul>
<ul style="list-style-type: none"> <li>When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.</li> </ul>
<ul style="list-style-type: none"> <li>All vehicles leaving the construction areas of the site will pass through a wheel cleansing area prior to entering the local road network.</li> </ul>

### 9.13 Determination of Significance of Impact Following Mitigation

**Table 9.8: Determination of Significance of Impact Following Mitigation**

Impact	Receptor	Description of Impact (Character/Magnitude/Duration/Probability/Consequences) Negligible - High	Existing Environment (Significance / Sensitivity) Negligible -High	Significance Imperceptible - Profound
Dust deposition	Local dwellings	Low-Negligible	Low	Imperceptible
Dust within the air	Human health	Low-Negligible	Low	Imperceptible
Dust Deposition	Local vegetation	Low-Negligible	Low	Imperceptible
Air pollution from traffic	Human Health	Negligible	Medium	Not significant

### 9.14 Impact Assessment Conclusion

The impact on air quality and in particular dust generation and dust deposition from the site is assessed as having no significant negative effects.

There will be no significant negative effects on human health from any potential dust generated by the proposed development or air pollution from traffic associated with the proposed development.

## Section 10: NOISE & VIBRATION

### Table of Contents

Section 10: NOISE & VIBRATION .....	1
List of Figures .....	3
List of Tables .....	3
10 NOISE & VIBRATION .....	4
10.1 Introduction .....	4
10.2 Statement of Authority.....	4
10.3 Site Location and Setting.....	4
10.3.1 Location .....	4
10.3.2 Description of Development .....	5
10.3.3 Operational Phase .....	6
10.4 Methodology .....	6
10.4.1 Noise Assessment.....	7
10.4.2 Acoustic Terminology .....	7
10.5 Relevant Guidance and Legislation .....	8
10.5.1 Quiet area Screening .....	8
10.5.2 Recommended Noise Limits.....	8
10.6 Noise Impacts .....	9
10.6.1 Potential Noise Sources on site .....	9
10.6.2 Baseline Noise Survey.....	9
10.6.3 Noise measurement assessment.....	10
10.6.4 Noise Predictions from Construction Activity .....	12
10.6.5 Noise Sensitive Locations .....	12
10.6.6 Noise Impact predictions at Noise Sensitive Locations .....	13
10.6.7 Mitigation Measures Proposed .....	15
10.6.8 Operational Impacts .....	16
10.7 Vibration Impacts .....	18
10.8 Cumulative Impacts .....	18
10.9 Do-nothing Scenario .....	19
10.10 Residual Impacts.....	19
10.11 Technical Difficulties.....	19
10.12 Conclusion Noise and Vibration .....	19
10.12.1 Determination of Significance of Impact Pre-Mitigation .....	19
10.12.2 Summary of Mitigation Measures.....	20
10.12.3 Determination of Significance of Impact Following Mitigation.....	20
10.12.4 Impact Assessment Conclusion .....	21
10.13 References .....	21
APPENDIX 10.1: Environmental Noise Report.....	22
1 INTRODUCTION .....	24
2 SITE DESCRIPTION.....	24
2.1 Location .....	24
3 SCOPE .....	25
4 METHODOLOGY.....	25
4.1 Noise Sensitive Locations .....	25
4.2 Survey Equipment.....	26
4.3 Survey Period.....	28
4.4 Conditions .....	28
5 SURVEY RESULTS .....	28
6 GENERAL ASSESSMENT.....	31
6.1 Tonal Assessment .....	31



6.2 Impulsive Assessment..... 31  
7 CONCLUSIONS ..... 31  
APPENDIX 1: Calibration Certificates..... 32  
APPENDIX 2: Summary Noise Reports..... 36

## List of Figures

Figure 10.1: Location of Application Site and existing road network..... 5  
 Figure 10.2: Noise Monitoring Locations ..... 10  
 Figure 10.3: Noise Risk Assessment for sites..... 11  
 Figure 10.4: Potential Noise Sensitive Locations..... 13  
 Figure 10.5: Traffic projections at the morning and evening rush hours for various scenarios ..... 17

## List of Tables

Table 10.1: Noise levels that are typically acceptable ..... 8  
 Table 10.2: Noise Monitoring Locations..... 10  
 Table 10.3: Noise Survey Summary ..... 10  
 Table 10.4: Equipment associated with proposed construction activities..... 12  
 Table 10.5: Cumulative Effects ..... 18  
 Table 10.6: Determination of Significance of Impact Pre-Mitigation..... 19  
 Table 10.7: Summary of Mitigation Measures ..... 20  
 Table 10.8: Determination of Significance of Impact Following Mitigation..... 20

## 10 NOISE & VIBRATION

### 10.1 Introduction

Greentrack Consultants were commissioned by MH Associates on behalf of PJ McDermott Construction Ltd to assess the potential noise and vibration impacts of development at Glencar Irish, Letterkenny, Co. Donegal, to inform an Environmental Impact Assessment Report (EIAR). The EIAR is required to support an application for planning permission to Donegal County Council for a housing development of 188 dwelling units and all associated works. The scale of development is below the 500 accommodation units set as the threshold for Environmental Impact Assessment (EIA). However, this application represents phase 2 of a 2-stage development. Phase 1 has been given planning approval (Ref 22/51204). The entire site (15.7 hectares), including Phase 1 and Phase 2, exceeds the aerial threshold of 10 hectares for mandatory EIA.

#### 10.1.1 Project Description

The applicant PJ McDermott is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

*Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total)*

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission)The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange 9akalso proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) and a crèche together with the proposed development of 90 units (82 house and 8 apartments) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is present with the EIAR.

### 10.2 Statement of Authority

This section of the EIAR has been prepared by Colin Farrell of Greentrack Consultants Ltd. Colin has a MSc in Applied Environmental Sciences from QUB and a BSc in Geochemistry from Reading University. Colin has completed many environmental noise surveys and contributed to Environmental Impact Reports produced by Greentrack over the last 15 years.

### 10.3 Site Location and Setting

#### 10.3.1 Location

The application site is 10.2 ha gross area and a net area of 8.1ha for the residential development that excludes planted buffers and the main access road through the site that together measure 2.1 ha. The site is currently in predominantly agricultural use. There are several blocks of coniferous forest on site and some significant areas of scrub. The site is within the town boundary of Letterkenny and in the townland of Glencar

Irish. The site is approximately 1.55km northwest of the centre of Letterkenny. The site is accessed directly off the local road L-1174-1 in the southwest of the site and the site can also be accessed through the development which is yet to be constructed to the south. There are also plans to create a transport link from the north of the site to Windy Hall Road (L1152-1) for the third phase of this development. This is designed to ease traffic congestion south of the development site.

The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site. To the north and northeast of the east is agricultural land with sporadic farmsteads. The topography of the site is hilly with most of the site on a south facing hillside of varying slope.

The application site location and the existing surrounding road network is outlined in Figure 10.1 below.



**Figure 10.1: Location of Application Site and existing road network** CYAL50313729 © Ordnance Survey Ireland/Government of Ireland

### **10.3.2 Description of Development**

#### ***10.3.2.2 Construction Phase***

The construction phase of the Proposed Development will include:

- Groundworks and excavation will be required to reduce levels to construct the Proposed Development including foundations, utilities and roads.
- The site is steeply sloped in places, and it is envisaged that cut and fill techniques will be used to lessen gradients along with retaining walls and it is intended that all suitable excavated materials will be reused on site.
- The proposed development will include the importation of aggregates for the construction of utilities and roads, where there is a net shortfall of excavated material onsite.
- Foundations solutions will be designed to suit ground conditions.

- Use of temporary welfare facilities for the duration of the Construction Phase.
- A suitable surface water treatment system including temporary settlement ponds, silt fencing and silt bags will be in place for construction activities to treat all surface water before discharge off-site.
- Noise abatement and dust control measures will be employed by the applicant for all activities on site.
- It is anticipated that there will be two phases of development for the project, the first phase constructing approximately 112 accommodation units in the southern and central areas of the site accounting for 60% of the overall development and the remaining accommodation units constructed in the northern part of the site as a second phase (76 houses and 40% of overall development).

### **10.3.3 Operational Phase**

This will consist of the day-to-day use of the residential development.

## **10.4 Methodology**

To assess the potential noise & vibration emissions from the proposed development, the following relevant guidance and legislation were consulted:

- Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Jan 2016).
- Integrated Pollution Control Licensing – Guidance Note for Noise in Relation to Scheduled Activities, EPA 1995.
- ISO 9613-2, First Edition 1996-12-15. Acoustics-Attenuation of sound during propagation outdoors- Part 2: General method of calculations
- Draft Guidelines for the Treatment of Noise and Vibration in National Road Schemes
- BS5228, 2009 Code of Practice for Noise Control on Construction and Open Sites: Part 1: Noise.
- EPA, 2006, Environmental Management Guidelines-Environmental Management in Extractive Industry (Non-Scheduled Minerals).
- EPA, 2003, Environmental Quality Objectives-Noise in Quiet Areas
- HMSO, Welsh Office, 1988. Calculation of Road Traffic Noise
- BS 5228-1:2009: Code of Practice for noise and vibration and open sites- Part 1: Noise
- Dowding, Charles, H. (1996). *Construction Vibrations*, 610 pages, Prentice Hall.
- DIN 4150: Part 3: 1986, *Vibrations in buildings; effects on structures*.
- BS 7385: Part 2: 1993, *Evaluation and measurement for vibration in buildings*, Part 2. Guide to damage levels from ground borne vibration.

The Professional Guidance on Planning & Noise (ProPG) document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since its adoption it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development.

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.

Stage 2 – Involves a full detailed appraisal of the proposed development.

This assessment will examine the likely impacts of sound pressure levels generated by the proposed development. Noise calculations will be used to predict and assess the likely impact of facility operations on noise sensitive receptors.

For the purpose of the assessment 'sensitive receptors' terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the proposed development.

The primary noise impacts associated with this proposed development are likely to be due to:

- Site clearance works.
- Building construction works
- Trucks entering and existing the site.
- Traffic along local road network.

With respect to the listed noise impacts, the key objective of the proposed development is to manage activities to ensure any significant increase in noise emissions are minimised.

The following noise indices, analysis and observations were reviewed:

$L_{Aeq}$  - The A-weighted, equivalent continuous sound level of the measurement period. Represents an 'energy average' of the sound pressure levels measured.

$L_{A90}$  – The A-weighted, noise level exceeded for 90% of the measurement period. Calculated by statistical analysis of the measurement data.

$L_{A10}$  - The A-weighted, noise level exceeded for 10% of the measurement period. Calculated by statistical analysis of the measurement data.

$L_{AFMax}$  – The maximum sound pressure level recorded during the sample period.

#### **10.4.1 Noise Assessment**

The noise assessment will review all existing information relating to the site and its environs which involves the following:

- Baseline assessment used to assess any future noise related impacts of activities associated with the proposed development.
- An evaluation of the site and the surrounding area to assess certain changes that are likely to impact the surrounding environs was carried out. Noise sensitive locations were identified and are discussed in this chapter.
- Identification of sensitive receptors for assessment.
- BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites with respect to the controlling noise and vibration impacts.

#### **10.4.2 Acoustic Terminology**

Sound is simply the pressure oscillations that reach our ears. These are characterised by their amplitude, measured in decibels ("dB"), and their frequency, measured in Hertz ("Hz"). Noise is unwanted or undesirable sound, it does not accumulate in the environment, is transitory, fluctuates, and is normally localised. Environmental noise is normally assessed in terms of A-weighted decibels, dB (A), when the 'A weighted' filter in the measuring device elicits a response which provides a good correlation with the human ear. The criteria for environmental noise control are of annoyance or nuisance rather than damage. In general, a noise level is liable to provoke a complaint whenever its level exceeds by a certain margin, the pre-existing noise level or when it attains an absolute level. A change in noise level of 3 dB (A) is 'barely perceptible'; while an increase in noise level of 10 dB (A) is perceived as a twofold increase in loudness. A noise level in excess of 85 dB (A) gives a significant risk of hearing damage. Construction and industrial noise sources are normally assessed and expressed using equivalent continuous levels,  $L_{Aeq}$ <sup>1</sup>.

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<sup>1</sup>  $L_{Aeq}$  is defined as being the A-weighted equivalent continuous steady sound level that has the same sound energy as the real fluctuating sound during the sample period and effectively represents a type of average value.

## 10.5 Relevant Guidance and Legislation

### 10.5.1 Quiet area Screening

Screening was carried out to identify the potential of the proposed development located in or near an area that could be considered a ‘Quiet Area’ in open country in accordance with the Environmental Protection Agency’s publication “Environmental Quality Objectives – Noise in Quiet Areas, 2003. The criteria used to assess this determination comprised of the following:

- At least 3 km from urban areas with a population >1,000 people.
- At least 10 km from any urban areas with a population >5,000 people.
- At least 15 km from any urban areas with a population >10,000 people.
- At least 3 km from any local industry;
- At least 5 km from any National Primary Route.
- At least 7.5 km from any Motorway or Dual Carriageway.
- At least 10 km from any major industry centre.

If the Site does not meet the listed criteria, it is considered to be a non-quiet area as per the definition of the Environmental Protection Agency. ‘Quiet Areas’, according to NG4 (2016). Before relevant noise criterion can be applied, ‘Quiet Area Screening’ must be performed to identify or rule out the Site as a Quiet Area.

The application site is less than 1 km distant from an urban centre with a population of greater than 1,000 people (The town of Letterkenny had a population in the 2022 census of 17,586 people) so the site can be classified as a non-quiet area.

### 10.5.2 Recommended Noise Limits

#### 10.5.2.1 Relevant Guidance for Construction

There is no published national guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. However, the National Roads Authority (“NRA”) give limit values which are acceptable (“the NRA Guidelines”)<sup>2</sup>. Guidance to predict and control noise is also given in BS 5228:2009, *Code of Practice for Noise and Vibration Control on Construction and Open Sites* (two parts) where Part 1 deals with Noise. The NRA guidelines for construction noise which are considered typically acceptable are given in Table 10.1.

**Table 10.1: Noise levels that are typically acceptable**

Day / Times	Guideline Limits
<b>Monday to Friday</b>	
07:00 – 19:00hrs	70dB LAeq, (1h) and LAmax 80dB
19:00 – 22:00hrs	*60dB LAeq, (1h) and LAmax 65dB*
<b>Saturday</b>	
08:00 – 16:30hrs	65dB LAeq,1h and LAmax75dB
<b>Sunday and Bank Holidays</b>	
08:00 – 16:00hrs	*60dB LAeq,1h and LAmax 65dB*

\*Construction outside of these times, other than required by an emergency works, will normally require explicit permission from the relevant local authority.

Part 1 of BS 5228 provides several example criteria for the assessment of the significance of noise effects from construction activities. Noise levels generated by construction activities are considered significant if:

- The LAeq, period level of construction noise exceeds lower threshold values of 65dB during daytime, 55dB during evenings and weekends or 45dB at night, and;
- The total noise level (pre-construction ambient noise plus construction noise) exceeds the pre-construction noise level by 5dB or more for a period of one month or more.

<sup>2</sup> National Roads Authority, *Guidelines for Noise and Vibration in National Road Schemes*.

## **10.6 Noise Impacts**

The development is fully described in Section 4 of this EIAR which includes construction and operation of the development.

### **10.6.1 Potential Noise Sources on site**

The proposed development is a residential development and therefore not considered to be a major emitter of noise pollution during its operational lifetime. The majority of the noise impacts are associated with the construction phase of the project. Principal potential noise sources on site and associated with site activities are:

- Site clearance works (Construction Phase).
- Building construction works (Construction Phase).
- Trucks entering and existing the site (Construction Phase)
- Traffic along local road network (Construction and Operational Phase)

With respect to the potential for noise impacts, the key objective at the site has been to manage activities in order to ensure that any discernible increase in noise levels is prevented and the effect of any increase in noise emissions are minimised.

Construction activity includes removal of overburden, cut and fill operations and the construction of retaining walls to ensure the correct levels for development infrastructure. Rock breaking will be a significant source of noise and general movement of material into and around the site will cause noise.

### **10.6.2 Baseline Noise Survey**

The site is bounded by local roads and housing estates to the west and east, to the south by agricultural land with provisional planning permission for a housing development and to the north by agricultural land. The dominant noise sources at the site come from local road traffic noise, bird song and foliage noise.

An environmental noise survey was carried out to quantify noise emissions across the existing undeveloped site.

The noise monitoring report is presented in full in Appendix I of Section 10 of this EIAR and the main findings of the report are presented below.

Four noise monitoring locations were chosen surrounding the site. The location of the monitoring locations is shown below in Figure 10.2 and a description of each of the locations given in Table 10.2. Two 15-minute attended noise surveys were carried out at each of the noise monitoring locations and the results of the survey are presented in Table 10.2 below.



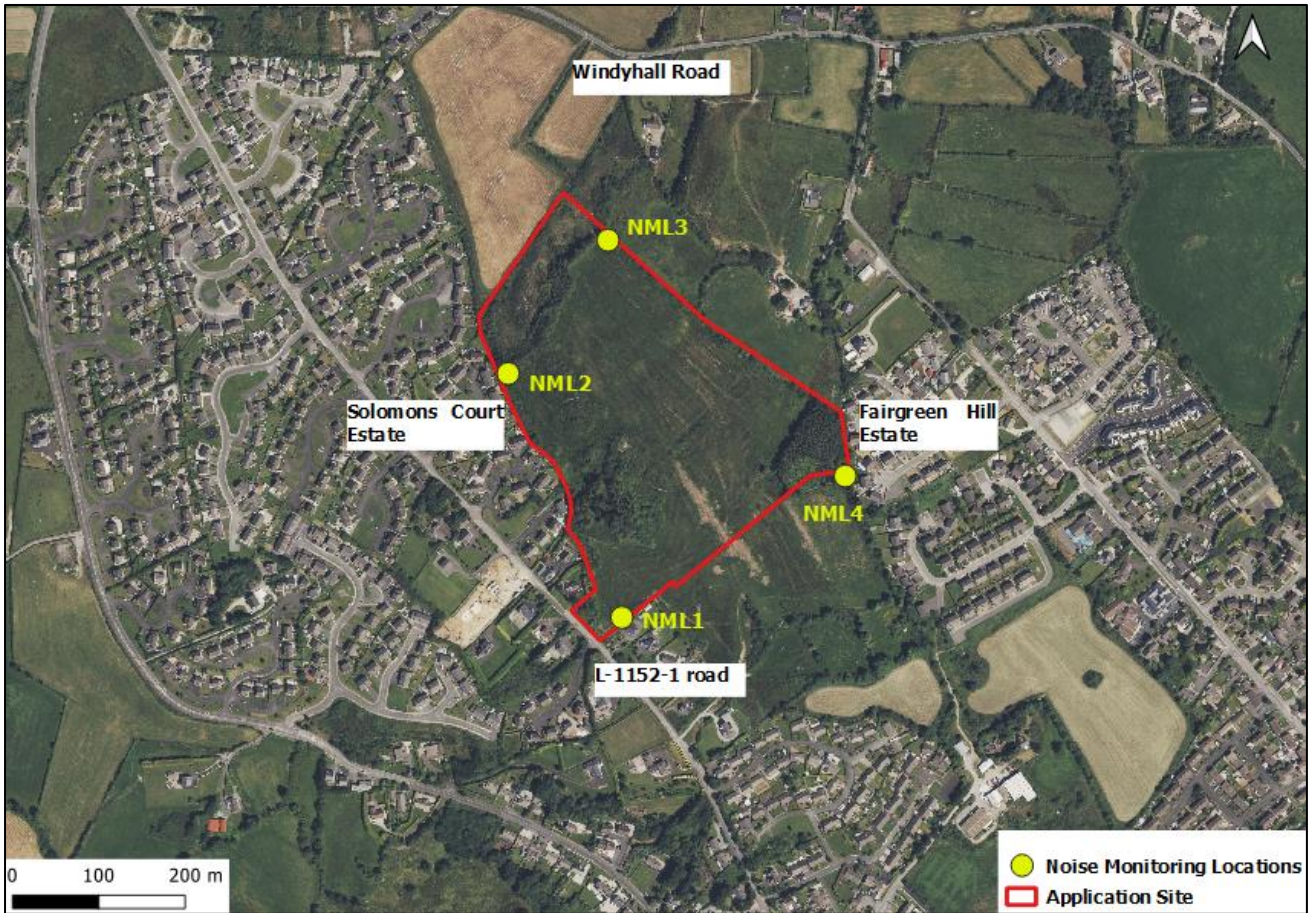


Figure 10.2: Noise Monitoring Locations

(Created using QGIS)

Table 10.2: Noise Monitoring Locations

Label	Description of Location
NML1	In the southwest of the site adjacent to a private dwelling
NML2	In the northwest of the site adjacent to Solomons Court Estate
NML3	In the northeast of the site
NML4	In the southeast of the site adjacent to Fairgreen Hill Estate

The results of the noise survey are summarised in Table 10.3 below

Table 10.3: Noise Survey Summary

Location	L <sub>Aeq, 15min</sub> dBA	L <sub>A90, 15min</sub> dBA	L <sub>A10, 15min</sub> dBA	L <sub>AFMax</sub> dBA
NML1	50.8	35.7	53.1	73.0
NML2	43.9	33.5	42.4	71.5
NML3	47.2	36.4	48.7	67.9
NML4	44.4	41.6	45.9	62.9

**10.6.3 Noise measurement assessment**

As can be seen from Table 10.3 above, all the L<sub>Aeq, 15-minute</sub> values were low and between 44.4 dBA and 50.8 dBA below the 55 dBA threshold. The L<sub>A90, 15-minute</sub> values are representative of background noise levels and are also seen to be low, averaging at 36.8 dBA. The recorded L<sub>A90, 15-minute</sub> values would indicate that the noise climate in the vicinity of the proposed development are not adversely impacted by a dominant or continuous noise source. The 1/3 octave band spectra for each survey period was examined and it was noted that there was no tonal component associated with the noise measurements at any of the monitoring locations.

Figure 10.3 below is taken from the guidance document ‘Professional Practice Guidance on Planning & noise, New Residential Development, May 2017, produced by the Institute of Acoustics, Chartered Institute of Environmental Health and Acoustic and Noise Consultants (ProPG). The guidance indicates a level of risk assessment when baseline noise levels for a site have been measured/predicted.

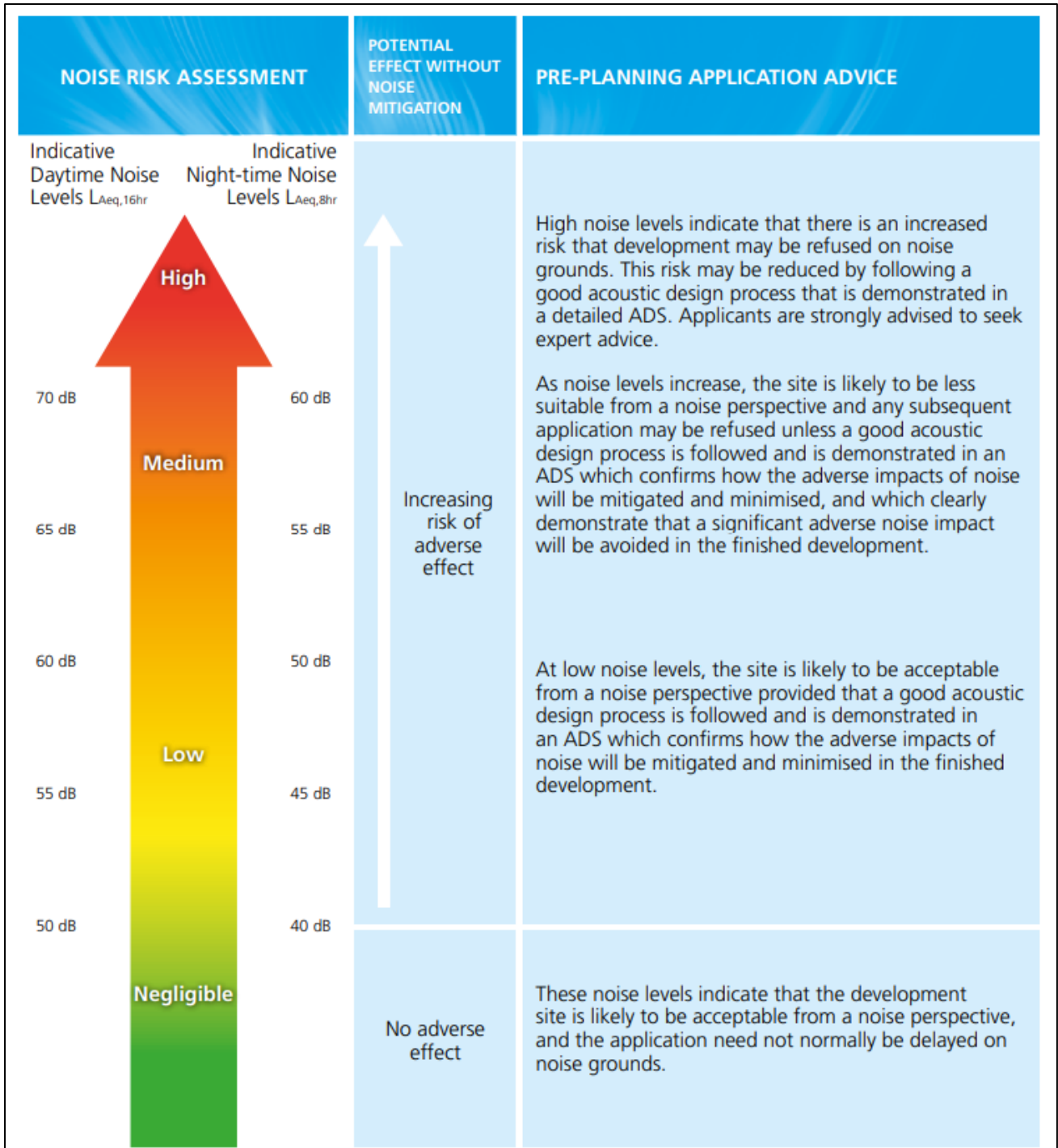


Figure 10.3: Noise Risk Assessment for sites

(Taken from ProPG guidance document)

It can be seen that the low levels of noise recorded on site ( $L_{Aeq,15\text{-minute}}$  values were low and between 44.4 dBA and 50.8 dBA) allow the site to be classified as **negligible to low** in terms of noise risk assessment.

As stated by Figure 10.4 above, ‘the noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.’

**10.6.4 Noise Predictions from Construction Activity**

Onsite activity will involve site clearance, earth movement and construction. A variety of plant items will be used for the purposes of site clearance and construction. A detailed construction programme has not been established; therefore, it is difficult to calculate the actual magnitude of noise emissions to the local environment. Noise prediction calculations have been completed for noise from the use of onsite plant. According to the inverse square law, for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB. The reference levels were calculated and projected for a range of distances from the source to the appropriate receptor using the following formula:

$$L_{Source} = L_{Ref} - 20 * \text{Log}_{10} (R2/R1)$$

Where:

$L_{Source}$  = Sound Pressure Level at Initial Location

$L_{Ref}$  = Sound Pressure Level at the new Location

R1 = Distance from the noise source to initial location

R2 = Distance from noise source to the new location

The calculations make a number of assumptions such as:

The inverse square law is the logical first estimate of the sound you would get at a distant point in a reasonably open area. It is noted that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts.

Table 10.4 sets out the equipment associated with the construction phase of the proposed development and associated dB(A) levels according to BS 5228-1, and the inverse square law:

**Table 10.4: Equipment associated with proposed construction activities.**

Plant Item (BS 5228)	dB(A) @10m	dB(A) @20m	dB(A) @ 60 m
Loading Shovel	76.5	70.5	60.9
Excavator	75	69	59.4
Mobile Crane	70	64	54.4
Generator	65	69	49.4
Dozer	81	75	65.4

**10.6.5 Noise Sensitive Locations**

There are a number of potential noise sensitive locations surrounding the proposed development as housing surrounds the site on all sides apart from to the northeast and immediately to the north. Figure 10.4 below show the location of potential noise sensitive locations surrounding the application site.



Figure 10.4: Potential Noise Sensitive Locations

(Created using QGIS)

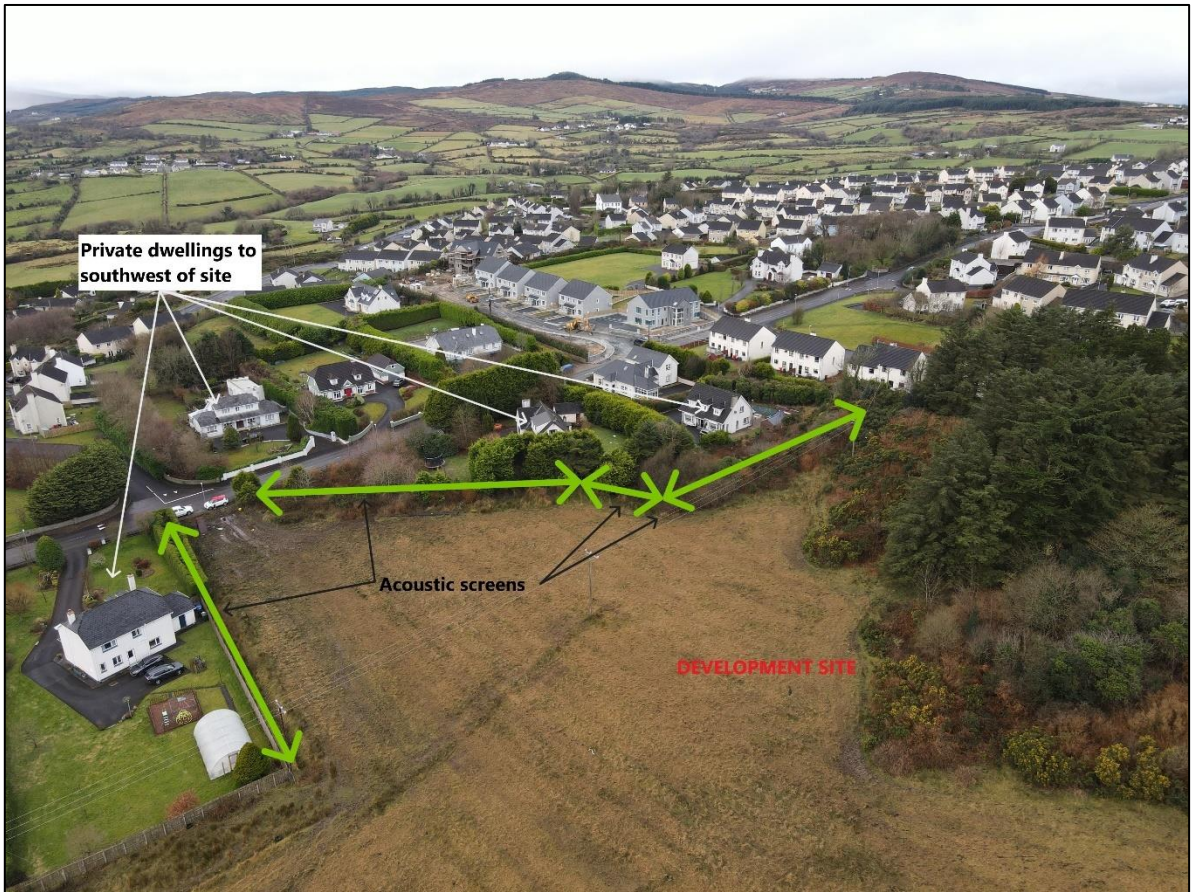
**10.6.6 Noise Impact predictions at Noise Sensitive Locations**

Table 10.3 outlines the predicted noise levels at reference distances using BS 5228-1 recommendations. The predicted noise levels from onsite activities up to 60m from the operational site have been included.

The predicted noise levels are assessed with regard to the noise levels that are typically acceptable from construction sites as presented in Table 10.1, the Category A value (65 dBA) is deemed appropriate for all the assessed noise sensitive receptors. The closest noise sensitive locations are those dwellings that are approximately 20 m from the application site boundary. These locations exist in the private dwelling immediately to the southwest of the site and for dwellings in Hunters Wood, Solomons Court and Fairgreen Hill.

There is the potential for the adopted criteria to be exceeded by both the loading shovel and the dozer during the construction works at these nearest sensitive receptors. However, there are hedgerows and trees on the intervening lands between the Site Boundary and the residential dwellings. It is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, the real sound level is likely to be less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential noise sensitive locations are expected to be lower than what is outlined in Table 10.3. Nevertheless, mitigation measures, as outlined in Section 10.6.7, will be implemented to reduce any potential impacts.

Photograph 10.1 shows the hedging and vegetation which is in place to provide acoustic screening for the occupants of the dwellings immediately to the southwest of the site. Photograph 10.2 show some of the acoustic screening in place in the northwest of the site along the boundary with Solomons Hill Housing estate. Photograph 10.3 show the acoustic screening in place in the eastern part of the site on the boundary with Fairgreen Hill Housing Estate.



Photograph 10.1: Acoustic screening at the southwest of the application site.



Photograph 10.2: Acoustic screening along the northwest boundary of the site.



**Photograph 10.3: Acoustic screening at the eastern part of the application site.**

It is not envisaged for any excessively noisy activities to be carried out over extended periods of time during the Construction Phase.

Taking into account the assessment assumptions and allowing for the attenuation of sound over distance and the proposed plans to retain all boundary hedgerows and vegetation, the worst-case construction noise levels at nearest sensitive receptors at 20m from significant works are predicted to be slightly above the threshold for significant impact during the general construction phase.

At distances greater than 60m the predicted levels are below the threshold. The assessment is worst-case scenario and does not account for other mitigation measures.

For noise sensitive locations within 20 m of construction activity potential **negative, moderate** and **short-term** effects are likely.

#### **10.6.7 Mitigation Measures Proposed**

There are number of mitigation measures proposed for the project to ensure that any potential noise nuisance is minimised. A list of the proposed mitigation measures is given below:

- Acoustic barriers of 2.5 to 3m height are to be constructed along the perimeter of the site in all locations where dwellings are within 20 -60 m of the site boundary.
- Construction activities to be limited to normal working hours and consideration should be given to the scheduling of activities which reflects the nature of the neighbouring properties.
- Careful consideration should be given to the noise emissions levels of plant items when they are being considered for use on site. The least noisy item should be selected as possible.
- As far as reasonably practicable, sources of significant noise should be enclosed.
- All mobile plant on site should have well maintained silencers.
- Machinery is to be throttled down or turned off when not in use.

- Operating procedures have included training to reduce drop heights when loading and unloading materials. For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- Compressors, generators and pumps will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- For percussive tools such as pneumatic concrete breakers, rock drills and tools a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed. Localised screens will be erected around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

## **10.6.8 Operational Impacts**

### ***10.6.8.1 Increased Traffic***

The proposed development is a residential development and therefore not considered to be a major emitter of noise pollution during its operational lifetime. The possibility of increased noise with increased traffic is considered.

Section 12 of this EIAR, Material Assets- Traffic, has been prepared by Simon Warke of SW Consulting and considers the increase in traffic likely with the development.

The Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011) states that 'changes in traffic volume on existing roads or new routes may cause either of the threshold values for noise to be exceeded. A change in noise level of 1dB LA<sub>10, 18h</sub> is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3dB LA<sub>10, 18h</sub> is equivalent to a 100% increase or a 50% decrease in traffic flow'.

Data from section 12, Traffic, takes the worst-case scenario, which is the fully operational Phase 1, Creche and Phase 2 of the development (labelled E on Figure 10.5) and models the projected traffic against the existing baseline traffic conditions during peak flows in the morning and evening rush hours. An extract from the traffic projections is presented in Figure 10.5 below.

<b>AM Peak Hour</b>							
	Glencar Rd W	The Grange	Dr McGinley Rd	Circular Rd E	Glencar Rd S	Total	
	Base	906	165	67	541	894	2573
	% Dist.	35%	6%	3%	21%	35%	100%
A	P1 (90)	16	3	1	10	16	46
B	Creche	8	1	1	5	8	23
C	60% Ph 2	20	3	2	12	20	58
D	100% Ph 2	34	6	3	20	34	97
E	P1+Creche+P2	58	10	5	35	58	166
F	08/80150 Res	75	13	6	45	74	215

<b>PM Peak Hour</b>							
	Glencar Rd W	The Grange	Dr McGinley Rd	Circular Rd E	Glencar Rd S	Total	
	Base	422	160	66	464	701	1813
	% Dist.	23%	9%	4%	26%	39%	100%
A	P1 (90)	11	4	2	12	17	46
B	Creche	5	2	1	6	9	22
C	60% Ph 2	14	5	2	15	22	58
D	100% Ph 2	23	9	4	25	37	98
E	P1+Creche+P2	37	15	7	43	64	167
F	08/80150 Res	50	20	9	56	84	218

**Figure 10.5: Traffic projections at the morning and evening rush hours for various scenarios**

(Taken from Section 12 Material Assets- Traffic, SW Consultancy Ltd)

The projections indicate that the overall increase in traffic flow will be approximately 6.45 % in the morning peak hour and approximately 9.21 % in the evening peak hour due to the development when fully complete. The report considers traffic flows on the Glencar Road W, The Grange, Dr McGinley Road, Circular Road E and Glencar Road S. The highest predicted increase on any of these roads was seen to be an increase of 10.61 % on Dr McGinley Road in the evening peak hour. (Refer to section 12 of the EIAR for a detailed traffic assessment report).

The predicted traffic increase is well beneath the 25% increase estimated to cause a rise in noise levels by 1dB LA<sub>10, 18h</sub>. Therefore, it is expected that the increase in noise level due to extra traffic flow associated with the development will be imperceptible.

The impact of noise from operational traffic will be unnoticeable and will not have a negative impact.

The effects are therefore **neutral, imperceptible** and **long-term**.

**10.6.8.2 Building Services Plant**

It is expected that the principal items of building and mechanical services plant will be for heating and ventilation of the buildings. These items and their location will be selected at the detailed design stage to ensure that noise emissions to sensitive receivers both external and within the development itself will be within the relevant criteria set out in Section 10.2.2.2.

The effects are considered **neutral, not significant** and **long-term**.



## 10.7 Vibration Impacts

In terms of construction vibration, it is anticipated that excavations will be made using standard excavation machinery, which typically do not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance that these properties are from the works and the attenuation of vibration levels over distance, the resultant vibration levels are expected to be well below a level that would cause disturbance to building occupants or even be perceptible.

The level of ground vibration at 10m from a loaded truck will be below the human threshold at less than PPV of 0.2mm/sec<sup>3</sup>.

The associated impact is considered **neutral, imperceptible** and **short-term**.

## 10.8 Cumulative Impacts

The cumulative effects of noise and vibrations from the proposed development and other existing developments have been considered, in particular through the generation of nuisance noise. All planning applications which have been granted permission and are already developed have been incorporated into the baseline assessment of this application. A planning search has revealed that there have been a number of planning applications in the vicinity of the proposed development site which have been granted permission, that could be constructed at the same time as the proposed development. Table 10.5 below details the planning applications in the surrounding area.

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined for likely cumulative impacts with regard to noise. A summary of the findings are presented in Table 10.5 below.

**Table 10.5: Cumulative Effects**

Planning Ref No.	Applicant	Development Description	Location	Potential Cumulative Impact
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Noise impact will be similar to this application.
1950809  (ABP 307152-20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	Development is almost complete and at the operational stage

<sup>3</sup> Wiss, J. F., and Parmelee, R. A.. (1974) Human Perception of Transient Vibrations, "Journal of Structural Division", ASCE, Vol 100, No. S74, PP. 773-787

There are several proposed and permitted developments within the local area. Considering the distances between the proposed and permitted developments, there is potential for cumulative construction impacts should the construction phases of the subject sites coincide with other developments. In order to minimise potential impacts mitigation measures are outline in Section 10.6.7.

For any noise sensitive locations within 20m of the proposed development potential **negative, moderate** and **short-term** effects are likely.

**10.9 Do-nothing Scenario**

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a neutral impact in the long-term.

**10.10 Residual Impacts**

It is not expected that there will be any significant adverse impact on noise quality in the vicinity of the application site assuming that mitigation measures and best practice has been applied.

**10.11 Technical Difficulties**

There were no technical difficulties encountered during the study / assessment.

**10.12 Conclusion Noise and Vibration**

Noise levels for the current site have been assessed and it is considered suitable for the planned housing development.

Construction noise was considered and modelled and with the full implementation of all the outlined mitigation measures, construction of the proposed development will not cause a significant adverse effect to the noise environment.

During the operation phase, the proposed development will not increase noise levels.

Construction or operational vibration impacts are not expected to cause any adverse effects.

**10.12.1 Determination of Significance of Impact Pre-Mitigation**

**Table 10.6: Determination of Significance of Impact Pre-Mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character / Magnitude / Duration / Probability / Consequences) Negligible - High</b>	<b>Existing Environment (Significance / Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Construction activity	Noise sensitive receptors up to 40 m from site boundary	Moderate	High	Significant (Temporary)
Operational increase in overall traffic volumes	Noise sensitive receptors along traffic routes near the site	Negligible	Medium	Imperceptible
Vibrations	Dwelling near the boundary of the site	Negligible	High	Not significant

**10.12.2 Summary of Mitigation Measures**

**Table 10.7: Summary of Mitigation Measures**

Summary of Mitigation Measures Proposed
<ul style="list-style-type: none"> <li>Acoustic barriers of 2.5 to 3m height are to be constructed along the perimeter of the site in all locations where dwellings are within 20 -60 m of the site boundary.</li> </ul>
<ul style="list-style-type: none"> <li>Construction activities to be limited to normal working hours and consideration should be given to the scheduling of activities which reflects the nature of the neighbouring properties.</li> </ul>
<ul style="list-style-type: none"> <li>Careful consideration should be given to the noise emissions levels of plant items when they are being considered for use on site. The least noisy item should be selected as possible.</li> </ul>
<ul style="list-style-type: none"> <li>As far as reasonably practicable, sources of significant noise should be enclosed.</li> </ul>
<ul style="list-style-type: none"> <li>All mobile plant on site should have well maintained silencers.</li> </ul>
<ul style="list-style-type: none"> <li>Machinery is to be throttled down or turned off when not in use.</li> </ul>
<ul style="list-style-type: none"> <li>Operating procedures have included training to reduce drop heights when loading and unloading materials.</li> </ul>
<ul style="list-style-type: none"> <li>For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.</li> </ul>
<ul style="list-style-type: none"> <li>Compressors, generators and pumps will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.</li> </ul>
<ul style="list-style-type: none"> <li>For percussive tools such as pneumatic concrete breakers, rock drills and tools a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed. Localised screens will be erected around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.</li> </ul>
<ul style="list-style-type: none"> <li>All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.</li> </ul>

**10.12.3 Determination of Significance of Impact Following Mitigation**

**Table 10.8: Determination of Significance of Impact Following Mitigation**

Impact	Receptor	Description of Impact (Character / Magnitude / Duration / Probability / Consequences) Negligible - High	Existing Environment (Significance / Sensitivity) Negligible -High	Significance Imperceptible - Profound
Construction activity	Noise sensitive receptors up to 40 m from site boundary	Moderate	High	Not significant
Operational increase in overall traffic volumes	Noise sensitive receptors along traffic routes near the site	Negligible	Medium	Imperceptible
Vibrations	Dwelling near the boundary of the site	Negligible	High	Not significant

#### **10.12.4 Impact Assessment Conclusion**

There will be no significant negative impact from noise following the implementation of the recommended mitigation measures.

#### **10.13 References**

EPA (2012) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

EPA (2016) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

BS5228 (2009) Code of Practice for Noise Control on Construction and Open Sites. Part 1: Noise.

Safety Health and Welfare at Work (Control of Noise at Work) Regulations 2006 (S.I. No. 371 of 2006)

*Design Manual for Roads and Bridges Volume 11 Section 3 Part 7* (HD 213/11 – Revision 1) (The Highways Agency et al., 2011)

## APPENDIX 10.1: Environmental Noise Report



# Environmental Noise Report

Environmental Noise Report by Greentrack Consultants commissioned to inform an Environmental Impact Assessment Report (EIAR) which is to accompany a planning application for a housing development on a greenfield site, Glencar Irish, Letterkenny, Co. Donegal.

Greentrack Environmental Consultants

April 2023

## Table of Contents

<b>1</b>	<b>INTRODUCTION</b> .....	24
<b>2</b>	<b>SITE DESCRIPTION</b> .....	24
2.1	Location .....	24
<b>3</b>	<b>SCOPE</b> .....	25
<b>4</b>	<b>METHODOLOGY</b> .....	25
4.1	Noise Sensitive Locations .....	25
4.2	Survey Equipment.....	26
4.3	Survey Period.....	28
4.4	Conditions.....	28
<b>5</b>	<b>SURVEY RESULTS</b> .....	28
<b>6</b>	<b>GENERAL ASSESSMENT</b> .....	31
6.1	Tonal Assessment .....	31
6.2	Impulsive Assessment.....	31
<b>7</b>	<b>CONCLUSIONS</b> .....	31
	<b>APPENDIX 1: Calibration Certificates</b> .....	32
	<b>APPENDIX 2: Summary Noise Reports</b> .....	36

# 1 INTRODUCTION

Greentrack Consultants were commissioned by MH Associates on behalf of PJ McDermott Construction Ltd to assess the potential noise and vibration impacts of development at Glencar Irish, Letterkenny, Co. Donegal, to inform an Environmental Impact Assessment Report (EIAR). The EIAR is required to support an application for planning permission to Donegal County Council for a housing development of 82 dwelling units and creches facility and all associated works. The scale of development is below the 500 accommodation units set as the threshold for Environmental Impact Assessment (EIA). However, this application represents phase 2 of a 2-stage development. Phase 1 has been given planning approval (Ref 22/51204). The entire site (15.7 hectares), including Phase 1 and Phase 2, exceeds the aerial threshold of 10 hectares for mandatory EIA.

An environmental noise report is carried out to inform the Noise and Vibration section of the EIAR.

# 2 SITE DESCRIPTION

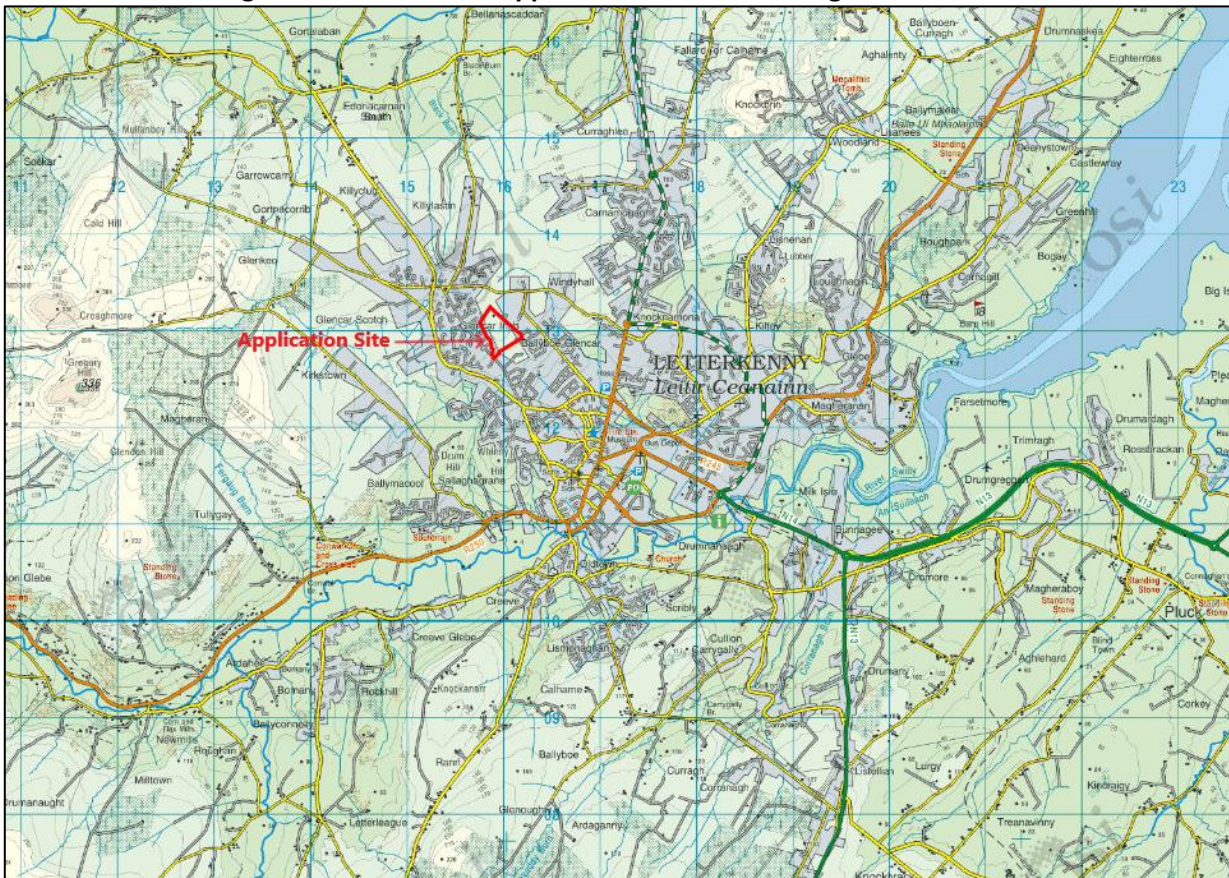
## 2.1 Location

The site is located inside Letterkenny town boundary within the townland of Glencar Irish. The site is approximately 1.55 km northwest of the centre of Letterkenny. The site is accessed directly off the local road L-1174-1 in the southwest of the site and the site can also be accessed through the development which is yet to be constructed to the south. There are also plans to create a transport link from the north of the site to Windy Hall Road (L1152-1) for the third phase of this development. This is designed to ease traffic congestion south of the development site.

The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site. To the north and northeast of the east is agricultural land with sporadic farmsteads. The topography of the site is hilly with most of the site on a south facing hillside of varying slope.

The application site location and the existing surrounding road network is outlined in Figure 2.1 below.

**Figure 2.1: Location of Application Site and existing road network**



CYAL50313729 © Ordnance Survey Ireland/Government of Ireland

### 3 SCOPE

Greentrack were commissioned to carry out a baseline environmental noise survey by PJ McDermott Construction Ltd to assess the pre-development noise climate to inform the Noise and Vibration section of the EIAR. The baseline survey was carried out in accordance with the EPA’s Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4, EPA 2016) and ISO 1996 (2017) Description Measurement and Assessment of Environmental Noise. Part 2 Determination of Environmental Noise Levels.

The purpose of the survey was to determine the prevailing noise environment in the area and to advise the relevant proposed operational noise criteria.

### 4 METHODOLOGY

The survey was carried out by Colin Farrell BSc. MSc. of Greentrack Environmental Consultants.

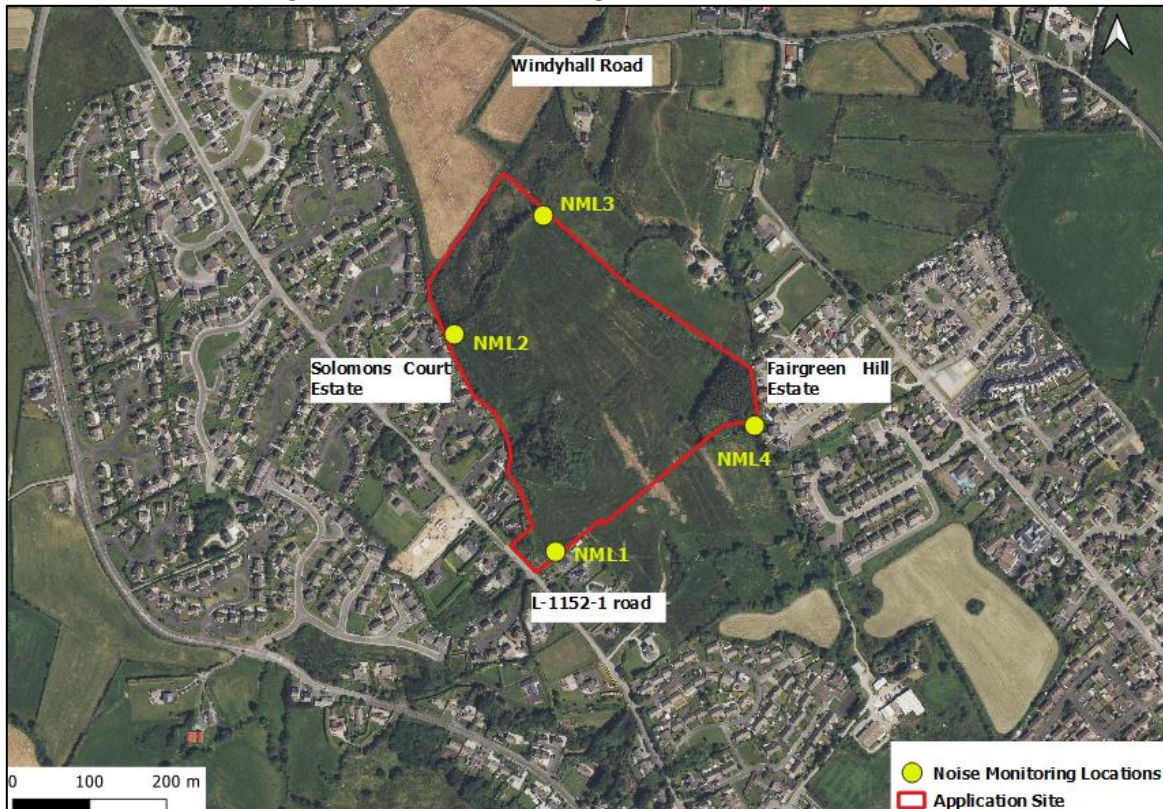
#### 4.1 Noise Sensitive Locations

A site visit was undertaken as part of the baseline environmental noise survey to inform the assessment. The site visit was used to choose appropriate Noise Monitoring Locations (NMLs) for the monitoring sites. The approximate four corners of the site were chosen as NMLs:

- NML 1 located in the southeast of the site adjacent to a private dwelling.
- NML2 located in the northwest of the site adjacent to the back gardens of dwellings in the Solomons Court estate.
- NML 3 located in the northeast part of the site.
- NML4 located in the southeast part of the site adjacent to the back gardens of dwellings in the Fairgreen Hill estate.

The location of each of the Noise Monitoring Locations relative to the site boundary and surroundings are shown on Figure 4.1.

Figure 4.1: Noise Monitoring Locations(Created using QGIS)





## 4.2 Survey Equipment

The measurements were made using a Cirrus Optimus + Green CK:177B sound level meter fitted with a 1:1 and 1:3 octave band filter. The instrument was calibrated in situ at 93.7 dB prior to use and the calibration was cross-checked after the measurements using a Cirrus acoustic calibrator. Calibration certificates from the manufacturer are supplied in Appendix 1, and on-site calibration values are supplied with the summary environmental noise reports in Appendix 2.

The sound level meter was orientated towards the closest application site boundary and mounted on a tripod at 1.5m above ground level. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was Fast and the Frequency Weighting was A-weighted as per IEC 651. 4.3 Survey Implementation.

Photographs of the sound level meter in place in NML 1, NML 2, NML 3, & NML 4 are shown in Photographs 4.1, 4.2, 4.3, & 4.4 below.

**Photograph 4.1: Survey equipment at NML1**



**Photograph 4.2: Survey equipment at NML2**



**Photograph 4.3: Survey equipment at NML3**



**Photograph 4.4: Survey equipment at NML4**

### 4.3 Survey Period

Noise measurements were conducted over the course of 14<sup>th</sup> April 2022. Two 15-minute attended surveys were conducted at each location. No evening or night-time surveys were undertaken as the construction phase for the proposed development will not be operational during the evening or night-time.

### 4.4 Conditions

The meteorological condition during the survey period were relatively calm, cool, dry conditions with isolated brief light showers. Wind speed averaged 3 m/s from the west and the temperature ranged from 3°C to 8°C. Cloud cover was variable from 40 to 100 %.

## 5 SURVEY RESULTS

The main measurement parameter was the equivalent continuous A-weighted Sound Pressure level,  $L_{Aeq,T}$ , over 15 minute monitoring periods. A statistical analysis of the measurement results was completed so that the percentile levels,  $L_{AN,T}$ , for  $N = 90\%$  and  $N = 10\%$  over the monitoring periods could be assessed. The arithmetic mean is presented for each of the monitoring locations. The percentile levels represent the noise level in dBA exceeded for  $N\%$  of the measurement time.

The results of the survey for each of the noise sensitive locations are summarised in Table 5.1 – 5.4. The summary report of each 15-minute survey is presented in Appendix 2.

**Table 5.1: Summary of the Environmental Noise Survey for NML 1**

Receptor	NSL1 – in southwest of site adjacent to private dwelling					
Period	Time	Measured Noise Level dB				Comments
		L <sub>Aeq</sub>	L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AFmax</sub>	
Daytime 0700- 1900 (14.4.23)	08:21 – 08:36	53.4	36.4	53.8	83.3	Background noise dominated by bird calls/chatter (Crows, Magpies, Pigeons & Starlings), and passing traffic on the L-1152. Some faint construction noise audible from housing development site approximately 100 m west.
	08:36 – 08:51	48.2	35.0	52.4	62.6	
	Arithmetic mean	50.8	35.7	53.1	73.0	
	Daytime Criteria L <sub>Aeq,T</sub> (dB)	55				

**Table 5.2: Summary of the Environmental Noise Survey for NML 2**

Receptor	NML 2 – in northwest of site adjacent to Solomons Court Estate					
Period	Time	Measured Noise Level dB				Comments
		L <sub>Aeq</sub>	L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AFmax</sub>	
Daytime 0700- 1900 (14.4.23)	08:58 – 09:13	45.5	33.6	43.0	77.2	Background noise dominated by birdsong, barking dogs in Solomons Court Estate and livestock in nearby fields. Passing traffic can be faintly heard.
	09:13 – 09:28	42.3	33.4	41.7	65.8	
	Arithmetic mean	43.9	33.5	42.4	71.5	
	Daytime Criteria L <sub>Aeq,T</sub> (dB)	55				

**Table 5.3: Summary of the Environmental Noise Survey for NML 3**

Receptor	NML 3 – in northeast of application site					Comments
	Period	Time	Measured Noise Level dB			
L <sub>Aeq</sub>			L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AFmax</sub>	
Daytime 0700- 1900 (14.4.23)	09:31 – 09:46	46.0	34.9	49.5	64.6	Background noise dominated by birdsong and passing traffic on the L-1152 and Windyhall Road.
		48.4	37.9	47.9	71.1	
	Arithmetic mean	47.2	36.4	48.7	67.9	
	Daytime Criteria L <sub>Aeq,T</sub> (dB)	55				

**Table 5.4: Summary of the Environmental Noise Survey for NML 4**

Receptor	NML 4 – in southeast of site adjacent to Fairgreen Hill Estate					Comments
	Period	Time	Measured Noise Level dB			
L <sub>Aeq</sub>			L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AFmax</sub>	
Daytime 0700- 1900 (14.4.23)	10:10 – 10:25	43.9	41.7	45.3	59.7	Background noise dominated by birdsong (particularly pigeon and crows) and the small stream flowing along the eastern site boundary.
		44.9	41.5	46.5	66.1	
	Arithmetic mean	44.4	41.6	45.9	62.9	
	Daytime Criteria L <sub>Aeq,T</sub> (dB)	55				

## 6 GENERAL ASSESSMENT

A summary of the noise monitoring results is presented in Table 6.1 below:

**Table 6.1: Noise monitoring summary**

Receptor	L <sub>Aeq, 15-minute</sub>	L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AFmax</sub>
NML 1	50.8	35.7	53.1	73.0
NML 2	43.9	33.5	42.4	71.5
NML 3	47.2	36.4	48.7	67.9
NML 4	44.4	41.6	45.9	62.9

L<sub>Aeq,15-minute</sub> levels for all are low and average 46.6 dBA

Background noise levels, represented by L<sub>AF90</sub>, range from 33.5 dBA to 41.6 dBA. These are all relatively low background noise levels.

### 6.1 Tonal Assessment

The methodology of objective identification of the presence of tonal noise is set out in BS 4142: 2014: Annex C (normative): *Objective method for assessing the audibility of tones in sound: One-third octave method*.

'This methodology requires that for a prominent, discrete tone to be identified as present, the time-averaged linear sound pressure level in the one-third-octave band of interest is required to exceed the time-averaged linear sound pressure levels of both adjacent one-third octave bands by some constant level difference. The appropriate level differences vary with frequency. They should be greater than or equal to the following values in both adjacent one-third-octave bands:

15dB in low-frequency one-third-octave bands (25Hz to 125Hz);  
8dB in middle-frequency bands (160Hz to 400Hz), and;  
5 dB in high-frequency bands (500Hz to 10,000Hz).'

The third octave spectra presented in Appendix 1 were examined for the presence of tonal noise. It is concluded that there was no audible tonal noise associated with the site during the survey period.

### 6.2 Impulsive Assessment

Normally an impulsive characteristic, such as thumping, banging or an impact noise, is determined subjectively.

No impulsive noise was identified during the survey period.

## 7 CONCLUSIONS

Recorded noise levels at noise monitoring locations on the undeveloped site were influenced by a number of background noise sources such as traffic on the local road network, birdsong and water movement.


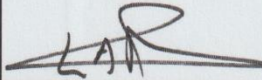
No audible tonal component of noise could be identified at any of the noise monitoring locations.

No impulsive noise sources could be identified at any of the noise monitoring locations.

## APPENDIX 1: Calibration Certificates

<b>CERTIFICATE OF CALIBRATION</b>		
ISSUED BY	Cirrus Research GmbH	
DATE OF ISSUE	10/12/21	CERTIFICATE NUMBER 167205

	<b>Cirrus Research GmbH</b> Arabella Center Lyoner Strasse 44-48 D-60528 Frankfurt Germany
	Page 1 of 2 Test engineer: M.Laakel Electronically signed: 

---

### Microphone

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**Microphone capsule**

Manufacturer: Cirrus Research plc

Model: MK:224

Serial Number: 213317B

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**Calibration procedure**

Date of calibration: 10 December 2021

Open circuit: 53.2 mV/Pa

Sensitivity at 1 kHz: -25.5 dB rel 1 V/Pa

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using a closed cavity applying a known pressure level using the sequential excitation technique in accordance with BS EN 61094-5:2016 with the free-field response derived via standard correction data traceable to a National Measurement Institute.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

---

**Environmental conditions**

Pressure: 98.29 kPa

Temperature: 23.4 °C

Humidity: 21.3 %

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# CERTIFICATE OF CALIBRATION

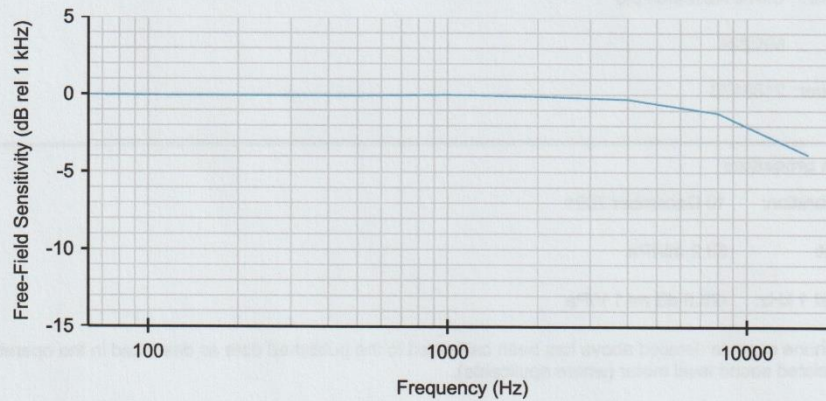
Certificate Number:  
**167205**

Page 2 of 2

## Free-Field Frequency Response : Tabular

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)
63	-0.01
125	-0.05
250	-0.06
500	-0.07
1000	0.00
2000	-0.10
4000	-0.28
8000	-1.15
16000	-3.85

## Free-Field Frequency Response : Graphical





# CERTIFICATE OF CALIBRATION

ISSUED BY **Cirrus Research GmbH**  
DATE OF ISSUE **13 December 2021** CERTIFICATE NUMBER **167285**



**Cirrus Research GmbH**  
Arabella Center  
Lyoner Strasse 44-48  
D-60528 Frankfurt  
Germany

Page 1 of 2

Approved signatory  
M.Laakel  
Electronically signed:

## Sound Level Meter : IEC 61672-3:2013

### Instrument information

Manufacturer: Cirrus Research plc      Notes:  
Model: CR:171B  
Serial number: G301928  
Class: 1  
Firmware version: 5.5.3021

### Test summary

Date of calibration: 13 December 2021  
The calibration was performed respecting the requirements of ISO/IEC 17025:2017.  
Periodic tests were performed in accordance with procedures from IEC 61672-3:2013.

**The sound level meter submitted for testing successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.**

However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to determine that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

### Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%.

# CERTIFICATE OF CALIBRATION

Certificate Number:  
**167285**

Page 2 of 2

### Environmental conditions

The following conditions were recorded at the time of the test:

**Before** Pressure: 101.60 kPa      Temperature: 24.4 °C      Humidity: 28.7 %  
**After** Pressure: 101.60 kPa      Temperature: 24.5 °C      Humidity: 28.3 %

### Test equipment

Equipment	Manufacturer	Model	Serial number
Signal Generator	KEYSIGHT	33511B	MY58001553
Attenuator	Cirrus Research	ZE:952	78713
Environmental Monitor	Comet	T7510	21961307

### Additional instrument information

Instruction manual:

Reference level range: Single range

Pattern approval: No

Source of pattern approval: -

#### Preamplifier

Model: MV:200F

Serial number: 10685F

#### Microphone

Model: MK:224

Serial number: 213317B

### Test results summary

Test	Result
Toneburst response	Complies
Electrical noise-floor	Complies
Linearity	Complies
Electrical Frequency weightings	Complies
Frequency and time weightings at 1 kHz	Complies
C-weighted peak	Complies
Overload indication	Complies
High level stability	Complies
Long-term stability	Complies
Acoustic Frequency weightings	Complies

## APPENDIX 2: Summary Noise Reports



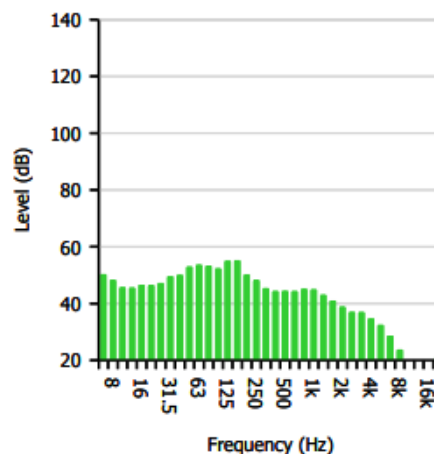
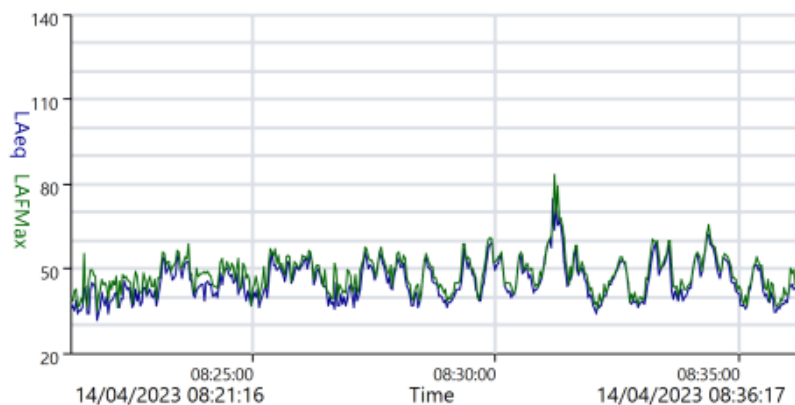
### Measurement Summary Report

<b>Name</b>	26	<b>Person</b>	Colin Farrell	<b>Place</b>	NML1
<b>Time</b>	14/04/2023 08:21:16	<b>Project</b>	Glencar Phase 2		
<b>Duration</b>	00:15:00				
<b>Instrument</b>	G301928, CR:171B				

**Calibration**

<b>Before</b>	14/04/2023 08:14	Offset	-0.19 dB	<b>After</b>	14/04/2023 10:49	Offset	-0.39 dB
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Basic Values		Statistical Levels (Ln)	
L <sub>Aeq</sub>	53.4 dB	LAF1	63.3 dB
L <sub>AE</sub>	82.9 dB	LAF5	56.7 dB
L <sub>AFMax</sub>	83.3 dB	LAF10	53.8 dB
		LAF50	44.2 dB
		LAF90	36.4 dB
		LAF95	35.2 dB
		LAF99	33.1 dB





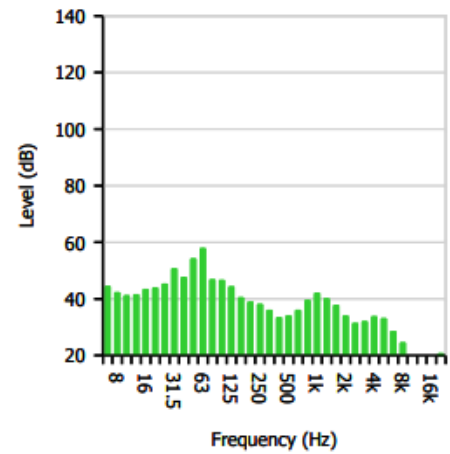
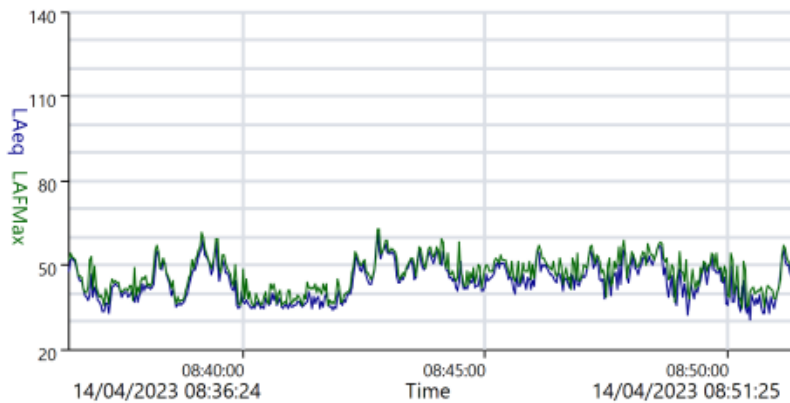
## Measurement Summary Report

**Name** 27  
**Time** 14/04/2023 08:36:24 **Person** Colin Farrell **Place** NML1 **Project** Glencar Phase 2  
**Duration** 00:15:00 **Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	48.2 dB	LAF1	57.1 dB
LAE	77.7 dB	LAF5	54.4 dB
LAFMax	62.6 dB	LAF10	52.4 dB
		LAF50	43.5 dB
		LAF90	35.0 dB
		LAF95	34.2 dB
		LAF99	32.1 dB





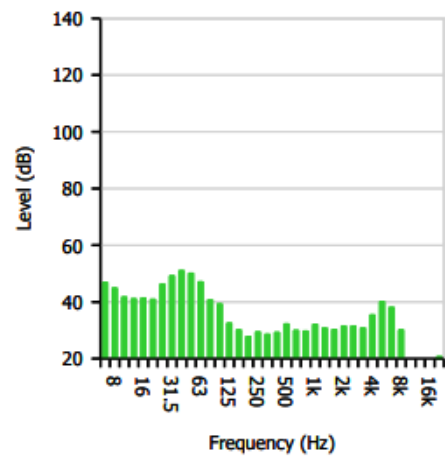
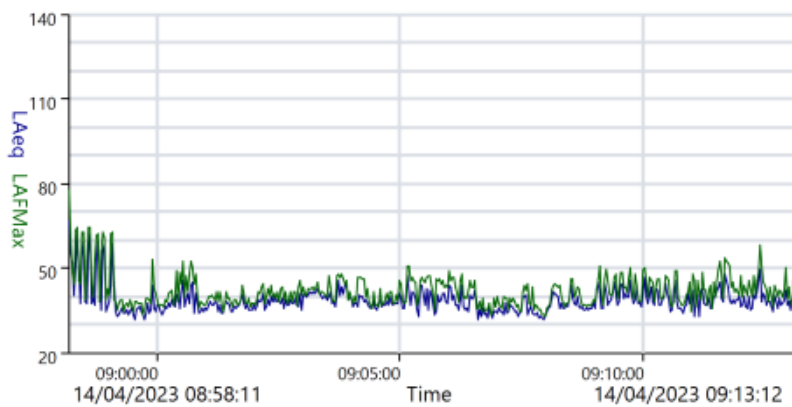
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**Name** 28  
**Time** 14/04/2023 08:58:11 **Person** Colin Farrell **Place** NML2 **Project** Glencar Phase 2  
**Duration** 00:15:00  
**Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	45.5 dB	LAF1	58.8 dB
LAE	75.0 dB	LAF5	45.5 dB
LAFMax	77.2 dB	LAF10	43.0 dB
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		LAF90	33.6 dB
		LAF95	32.8 dB
		LAF99	31.6 dB





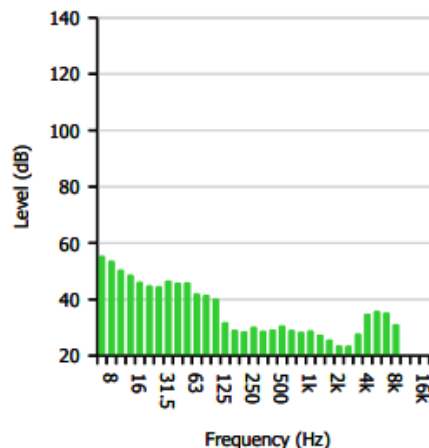
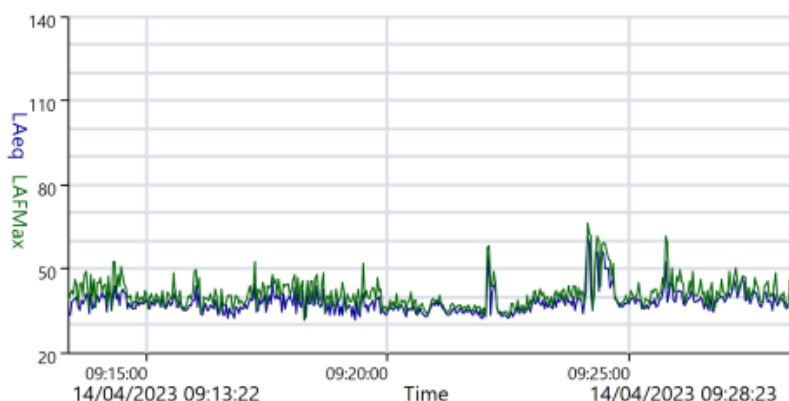
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**Name** 29  
**Time** 14/04/2023 09:13:22 **Person** Colin Farrell **Place** NML2 **Project** Glencar Phase 2  
**Duration** 00:15:00 **Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	42.3 dB	LAF1	55.6 dB
LAE	71.8 dB	LAF5	44.3 dB
LAFMax	65.8 dB	LAF10	41.7 dB
		LAF50	36.6 dB
		LAF90	33.4 dB
		LAF95	32.8 dB
		LAF99	31.7 dB





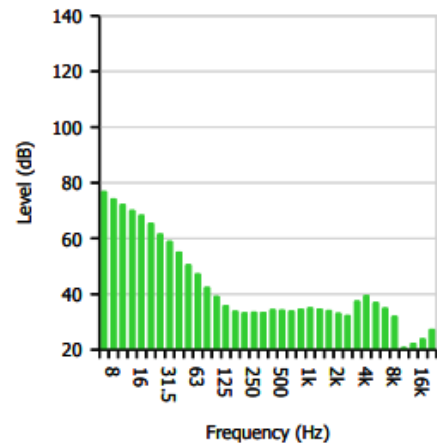
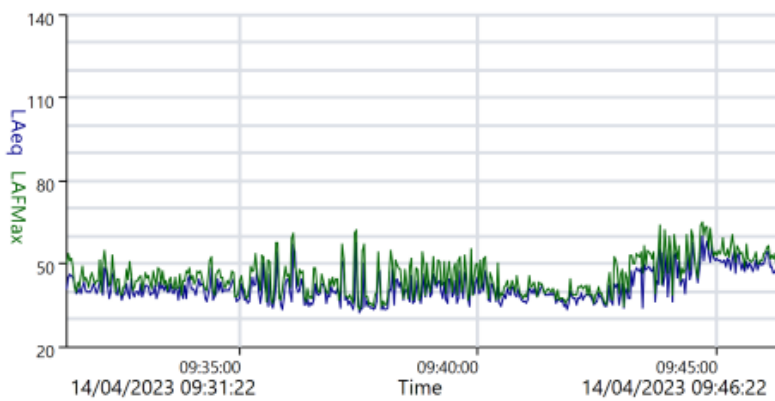
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**Name** 30  
**Time** 14/04/2023 09:31:22 **Person** Colin Farrell **Place** NML3 **Project** Glencar Phase 2  
**Duration** 00:15:00  
**Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	46.0 dB	LAF1	57.6 dB
LAE	75.5 dB	LAF5	52.1 dB
LAFMax	64.6 dB	LAF10	49.5 dB
		LAF50	39.4 dB
		LAF90	34.9 dB
		LAF95	34.0 dB
		LAF99	32.6 dB





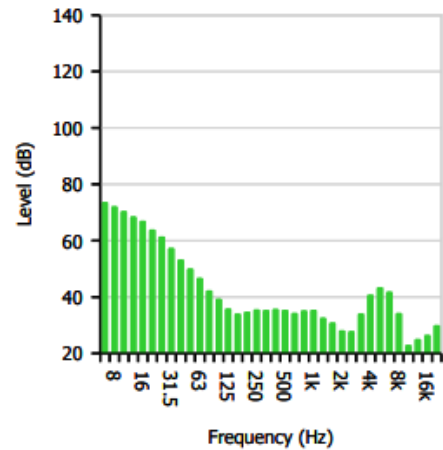
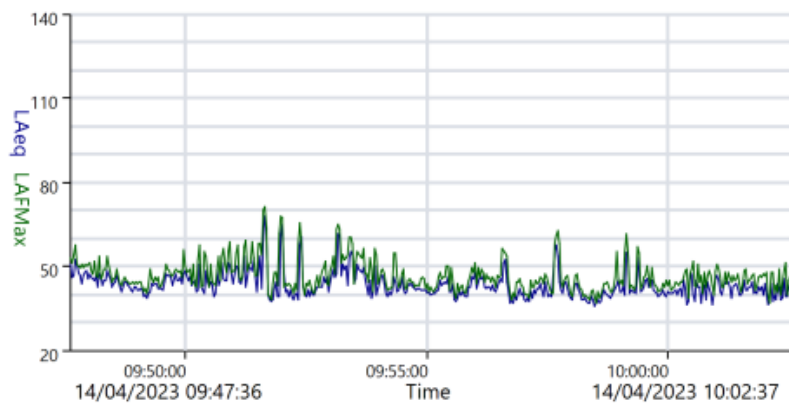
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**Name** 31  
**Time** 14/04/2023 09:47:36 **Person** Colin Farrell **Place** NML3 **Project** Glencar Phase 2  
**Duration** 00:15:00  
**Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	48.4 dB	LAF1	61.1 dB
LAE	77.9 dB	LAF5	51.1 dB
LAFMax	71.1 dB	LAF10	47.9 dB
		LAF50	41.9 dB
		LAF90	37.9 dB
		LAF95	36.9 dB
		LAF99	35.3 dB







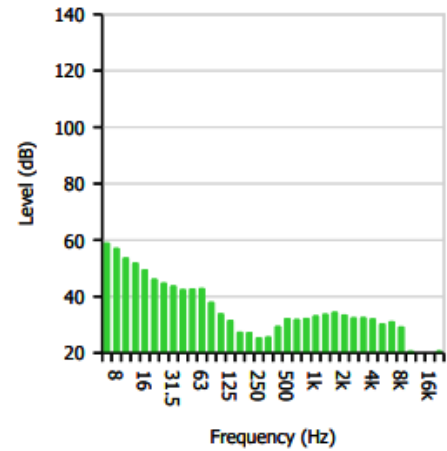
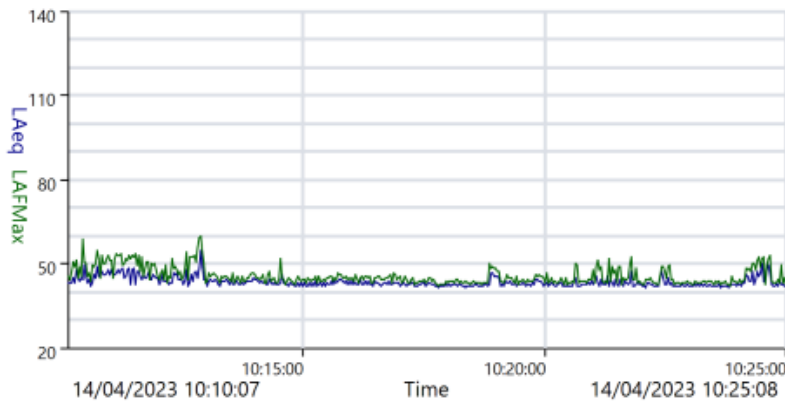
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**Name** 32  
**Time** 14/04/2023 10:10:07 **Person** Colin Farrell **Place** NML4 **Project** Glencar Phase 2  
**Duration** 00:15:00 **Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	43.9 dB	LAF1	51.0 dB
LAE	73.4 dB	LAF5	47.2 dB
LAFMax	59.7 dB	LAF10	45.3 dB
		LAF50	42.5 dB
		LAF90	41.7 dB
		LAF95	41.5 dB
		LAF99	41.3 dB





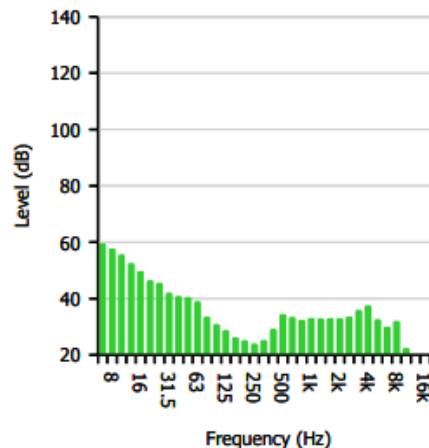
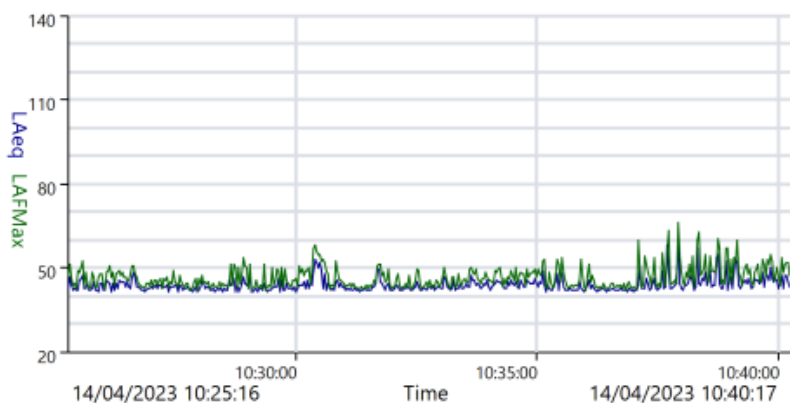
## Measurement Summary Report

**Name** 33  
**Time** 14/04/2023 10:25:16 **Person** Colin Farrell **Place** NML4 **Project** Glencar Phase 2  
**Duration** 00:15:00 **Instrument** G301928, CR:171B

### Calibration

**Before** 14/04/2023 08:14 **Offset** -0.19 dB **After** 14/04/2023 10:49 **Offset** -0.39 dB

Basic Values		Statistical Levels (Ln)	
LAeq	44.9 dB	LAF1	53.6 dB
LAE	74.4 dB	LAF5	48.7 dB
LAFMax	66.1 dB	LAF10	46.5 dB
		LAF50	42.5 dB
		LAF90	41.5 dB
		LAF95	41.3 dB
		LAF99	41.0 dB



## SECTION 11 CLIMATE

### Table of Contents

SECTION 11 CLIMATE .....	1
List of Figures .....	2
List of Tables.....	2
11 CLIMATE .....	3
11.1 Introduction .....	3
11.2 Methodology.....	3
11.3 Climate Change .....	4
11.3.1 Kyoto Protocol .....	4
11.3.2 Paris Agreement 2015.....	5
11.3.5 Compliance with EU and International Commitments .....	7
11.3.6 Local and Regional Climate .....	9
11.3.5 Land Use.....	10
11.4 Characteristics of the Development .....	11
11.4.1 Construction Phase .....	11
11.4.2 Operational Phase.....	11
11.5 Impact Assessment .....	11
11.5.1 Construction Impacts .....	11
11.5.2 Operational Impacts .....	12
11.5.3 Unplanned Events & Development Vulnerability .....	12
11.5.4 Cumulative Impact .....	13
11.5.5 Do-Nothing Option.....	14
11.6 Mitigation Measures .....	14
11.7 Residual Impacts .....	14
11.8 Determination of Significance of Impact Pre-Mitigation .....	15
11.9 Summary of Mitigation Measures .....	15
11.10 Determination of Significance of Impact Following Mitigation .....	15
11.11 Impact Assessment Conclusion.....	16
11.12 Technical Difficulties .....	16

## List of Figures

Figure 11.1: GHG Emissions by Sector .....	8
Figure 11.2: Total GHG emission projections to 2030 .....	9
Figure 11.3: Malin Head mean Daily Temperature Departure from Long-Term Average 2022/2023 .	10

## List of Tables

Table 11.1: No of days with 10 min wind speeds > 15 m/s (2020-2022 inc.) .....	10
Table 11.2: Cumulative Effects .....	13
Table 11.3: Determination of Significance of Impact Pre-Mitigation .....	15
Table 11.4: Summary of Mitigation Measures.....	15
Table 11.5: Determination of Significance of Impact Following Mitigation .....	15

# 11 CLIMATE

## 11.1 Introduction

This section of the EIAR assesses potential impacts that the development may have with regards to climate and climate change. Climate can be thought of as the ‘average weather’ over an extended period of time and so refers to temperature, precipitation and wind.

The topic of ‘Climate’ is commonly discussed with reference to ‘Climate Change’ which is any significant change in the measures of climate over an extended period of time. Climate change includes major changes in temperature, precipitation or wind patterns, among others, that occur over several decades or longer.

This section was prepared by Colin Farrell of Greentrack. The authors competencies are set out in Section 2 – Introduction.

### 11.1.1 Project Description

The developer PJ McDermott Ltd is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

*Application for a Large-Scale residential Development (LRD): 1, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total)*

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission) The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange also proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) and a crèche together with the proposed development of 90 units (82 house and 8 apartments) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is present with the EIAR.

## 11.2 Methodology

The methodology for the description of the current climate in the region of the proposed development included a desk study of the available data from Met Eireann, the Environmental Protection Agency (EPA) and other bodies which have a responsibility for Climate records in Ireland and Europe. Met

Eireann data from Malin Head recording station was used to assess the climate in the region of the application site. Malin Head is the nearest Met Eireann recording station located approximately 50 km to the northeast of the application site.

The nature of the potential environmental impacts on climate is based on the matrix presented in Table 3.4 of Section 2, Introduction, of this EIAR. This table is derived from the EPA Guidelines on information to be included in Environmental Impact Assessment Reports (May 2022) and outlines how the potential environmental effects of the project are described in terms of:

- Quality
- Significance
- Extent and context
- Probability
- Duration and frequency
- Type

### **11.3 Climate Change**

Climate change is a significant change recorded for the climate of a region. Climate change can be caused by natural occurrences such as volcanic eruptions or variations in solar intensity. Recent use of the term climate change more commonly refers to changes in the climate due to anthropogenic activity, namely the build-up of Greenhouse gases (GHGs) in the atmosphere. This build-up of GHGs is caused by emissions associated with human activity such as the burning of fossil fuels for energy, transport and heating.

#### **11.3.1 Kyoto Protocol**

The Kyoto Protocol was an historical agreement in that it was the first international agreement in which many of the world's industrial nations concluded a verifiable agreement to reduce their emissions of six greenhouse gases in order to prevent global warming. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialised countries and the European community for reducing emissions. These amount to an average of five per cent against 1990 levels over the five-year period 2008-2012.

The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. 184 Parties of the Convention have ratified its Protocol to date. It is an international agreement linked to the United Nations Framework Convention on Climate Change.

The major distinction between the Kyoto Protocol and the United Nations Framework Convention on Climate Change is that while the Convention encouraged industrialised countries to stabilise greenhouse gas emissions, the Protocol commits them to do so. Recognizing that developed countries are principally responsible for the current high levels of emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

Under the Kyoto Protocol, Ireland was required to limit total national GHG emissions to 3.14 Mtonnes of CO<sub>2</sub>eq over the 5-year period 2008-2012 which is equivalent to 62.8Mtonnes of CO<sub>2</sub>eq per annum. The Kyoto Protocol limit was calculated as being 13% above Ireland's 1990 baseline which was established and fixed at 55.61 Mtonnes CO<sub>2</sub>eq following an in-depth review of Ireland's 2006 GHG inventory submission to the UNFCCC (United Nations Framework Convention of Climate Change).

In December 2012 the Kyoto Protocol was amended. The amendment was referred to as the 'Doha Amendment to the Kyoto Protocol' which included the following amendments.

- New commitments for Annex I Parties to the Kyoto Protocol who agreed to take on commitments in a second commitment period from 1<sup>st</sup> January 2013 to 31<sup>st</sup> December 2020.
- A revised list of greenhouse gases (GHG) to be reported on by the Parties in the second commitment period.

- Amendments to several articles of the Kyoto Protocol which specifically referenced issues pertaining to the first commitment period and which needed to be updated to the second commitment period.

During the second commitment period, parties committed to reducing GHG emissions by at least 18% below 1990 levels in the eight-year period between 2013 and 2020. This placed binding targets on Ireland regarding climate change, with penalties for non-compliance.

### **11.3.2 Paris Agreement 2015**

A legally binding global agreement on climate change was agreed in Paris on 12<sup>th</sup> December 2015. The Paris Agreement put in place the necessary framework for all countries to take ambitious mitigation action. It sets out a long-term goal to put the world on track to limit global warming to well below 2 degrees Centigrade above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees. It aims to tackle 95% of global emissions through 188 Nationally Determined Contributions (NDCs). The agreement also places significant importance on actions needed, both nationally and globally, to help people adapt to climate change.

Ireland will contribute to the Paris Agreement via the NDC tabled by the EU in March 2015 on behalf of Member States, which commits to at least a 40% reduction in EU-wide emissions by 2030 (compared with 1990 levels): this is based on reductions in the Emissions Trading Scheme (ETS) and non-ETS sectors of 43% and 30% respectively (compared to 2005).

In July 2016, the European Commission presented a legislative proposal, The Effort Sharing Regulation (ESR) setting out binding annual GHG targets for Member States for the period 2021 to 2030. Under the ESR, targets have been proposed for Member States based on GDP per capita and the cost-effectiveness of domestic emissions reductions within individual Member States. The final agreement sets a target of 30% reduction in greenhouse gas emissions (compared to 2005 levels) by 2030 for Ireland. This will be Ireland's contribution to the overall EU objective to reduce its emissions in the non-ETS sectors by 30% by 2030 compared to 2005. The ESR was provisionally agreed by the European Council and the European Parliament in December 2017 and was formally adopted in May 2018.

It is clear that meeting its climate change obligations will be a huge challenge for Ireland. It will require substantial investment by both the public and private sectors, as well as a broad range of non-financial policy tools, including regulations, standards, education initiatives and targeted information campaigns. Work is ongoing to cost various suites of measures that could meet the 2030 target as cost-effectively as possible.

### **11.3.3 Climate Action and Low Carbon Development (Amendment) Act 2021**

The Climate Action and Low Carbon Development (Amendment) Act 2021 came into effect on the 7<sup>th</sup> of September 2021 and amended the Climate Action and Low Carbon Development Act 2015 (No. 46).

The preamble to the amended Act describes it as:

*An Act to provide for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050 and to thereby promote climate justice, and just transition; to make certain changes to the Climate Change Advisory Council; to provide for carbon budgets and a sectoral emissions ceiling to apply to different sectors of the economy; to provide for reporting by Ministers of the Government to a joint committee of the Houses of the Oireachtas; to provide for local authority climate action plans; for those and other purposes to amend the Climate Action and Low Carbon Development Act 2015; to provide that local authorities shall, when making development plans, take account of their climate action plans and, for that purpose to amend the Planning and Development Act 2000;*

The Act also made provision for updates to be made to the Climate Action Plan 2019, which has been updated twice since, in 2021 and in 2023.

Section 19 includes the following amendment to the Planning and Development Act 2000 (as amended):

*reduce anthropogenic greenhouse gas emissions and address the necessity of adaptation to climate change, taking account of the local authority climate action plan (within the meaning of section 14B of the Climate Action and Low Carbon Development Act 2015), where such a plan has been made for the area in question*

#### **11.3.4 Climate Action Plan 2023**

The 'Climate Action Plan 2023 is the second annual update to Ireland's Climate Action Plan 2019. This plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings. The plan implements the carbon budgets and sectoral emissions ceilings and sets a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as we committed to in the Programme for Government'.

The desired outcomes from citizen engagement on the Action Plan were: -

- Our communities are healthy and secure, enjoy cleaner air and water, and where homes are warmer and cheaper to heat;
- Thousands of new jobs are created by investing in areas like offshore wind, retrofit and cutting-edge agriculture;
- We cut our dependence on imported fossil fuels, and power comes from our own indigenous renewable resources including wind and solar;
- Walking and cycling are safe and accessible, public transport is cleaner and more frequent, and the rollout of electric vehicles is supported nationwide;
- Farmers have certainty that their industry has a viable future where farmers can continue producing world-class food with an even lower carbon footprint.

The Plan notes that 'Achieving further emissions reductions between now and 2030 requires a major step up in how we accelerate and increase the deployment of renewable energy to replace fossil fuels, deliver a flexible system to support renewables, and manage electricity demand'.

The Climate Action Plan specifically targets the primary source of heating homes and all residential units within the proposed development will be heated using energy efficient heat pumps without reliance on fossil fuels. The proposed homes will be efficient with an A2 BER rating ensuring compliance with NZEB Regulations and the objectives of the Climate Action Plan.

The Plan specifies various actions relating to pedestrian and cycling routes including the roll-out of cycle and greenway networks and the wider reviews of policy in relation to prioritising the safety of cycling and walking. There are pedestrian links and cycle paths planned through the site to link the development with Letterkenny town centre encouraging more sustainable transport modes in line with the aims of the Climate Action Plan.

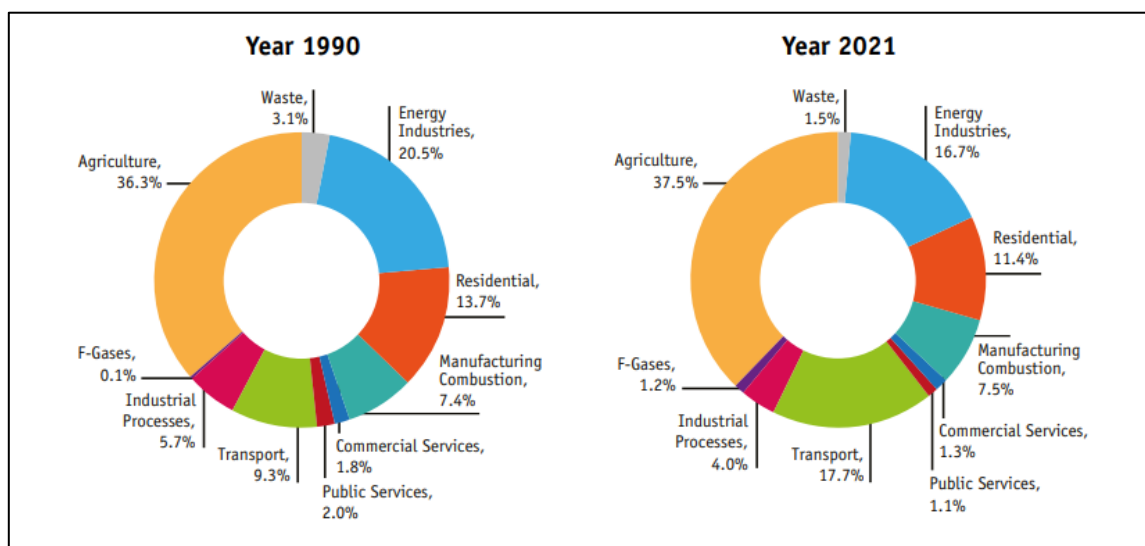


### **11.3.5 Compliance with EU and International Commitments**

The latest data available is taken from the publication 'Ireland's Provisional Greenhouse Gas Emissions 1990-2021' produced by the EPA in July 2022. Key findings in the report are listed below.

- 2021 total national greenhouse gas emissions are estimated to have increased by 4.7% on 2020 levels to 61.53 million tonnes carbon dioxide equivalent (Mt CO<sub>2</sub>eq). This increase in total emissions was driven by increased use of coal and oil for electricity generation and increases in both the Agriculture and Transport sectors. It highlights that further, transformative measures will be needed to meet National Climate ambitions.
- The provisional estimates of greenhouse gas emissions indicate that Ireland will exceed its 2021 annual limit, without the use of flexibilities, set under the EU's Effort Sharing Regulation (ESR) by 2.71 Mt CO<sub>2</sub>eq. This is the first year of compliance under the ESR.
- Emissions from Ireland's Emissions Trading Sector (ETS) increased by 15.2% or 2.02 Mt CO<sub>2</sub>eq in 2021 while ESR emissions increased by 1.6% or 0.73 Mt CO<sub>2</sub>eq.
- Provisional National total emissions (including LULUCF) for 2021 at 69.29 Mt CO<sub>2</sub>eq have used 23.5% of the 295 Mt CO<sub>2</sub>eq Carbon Budget for the five-year period 2021-2025. This leaves 76.5% of the budget available for the succeeding four years, requiring an 8.4 per cent average annual emissions reduction from 2022-2025 to stay within budget.
- Emissions in the Energy Industries sector increased by 17.6% or 1.53 Mt CO<sub>2</sub>eq in 2021. This is attributable to a tripling of coal and oil use in electricity generation as gas fired plant were offline. Electricity generated from wind and hydro decreased by 16% and 20% respectively in 2021. Emissions intensity of power generation increased from 296g CO<sub>2</sub>/kWh in 2020 to 331g CO<sub>2</sub>/kWh in 2021.
- Agriculture emissions increased by 3.0% or 0.67 Mt CO<sub>2</sub>eq in 2021, driven by increased fertiliser nitrogen use (5.2%), limestone application (49.5%) increased numbers of livestock including dairy cows (2.8%), other cattle (0.3%), sheep (0.3%) and pigs (4.5%). Total milk production increased by 5.5% in 2021, with milk output per cow also increasing (2.5%).
- Greenhouse gas emissions from the Transport sector increased by 6.1% or 0.63 Mt CO<sub>2</sub>eq in 2021. This increase was largely driven by ending COVID travel restrictions on passenger car and public transport usage. By the end of 2021 there were 47,000 electric vehicles in Ireland, ahead of the Climate Action Plan trajectory. International aviation, not included in national total emissions, also increased by 11.6% in 2021 or by 0.14 Mt CO<sub>2</sub>eq.
- Greenhouse gas emissions from the Residential sector decreased by 4.9% or 0.36 Mt CO<sub>2</sub>eq, driven by a combination of: reduced time in the home due to ending COVID restrictions, a milder winter, increased fuel prices and a possible stockpiling of heating oil from 2020. Coal, peat and kerosene sales declined by 4.6%, 5.0% and 11.8% whilst natural gas showed an increase of 0.9%.

Figure 11.1 below illustrates the change in contribution by sector to GHG from 1990 to 2021.



**Figure 11.1: GHG Emissions by Sector**

(from EPA provisional report)

GHG emission projections for the period 2021 – 2040 have been made and published by the EPA in July 2022 ‘Ireland’s Greenhouse Gas Emissions Projections 2021-2040’. Key findings in the report are listed below.

- Urgent implementation of all climate plans and policies, plus further new measures, are needed for Ireland to meet the 51 per cent emissions reduction target and put Ireland on track for climate neutrality by 2050.
- Ireland can meet its non-ETS EU targets of a 30 per cent emission reduction by 2030 (compared to 2005) assuming implementation of planned policies and measures and the use of the flexibilities available. Afforestation rates would need to more than triple, going from approximately 2,400 hectares reforested in 2021 to 8,000 hectares reforested annually between 2021 and 2025.
- The gap between the ‘Existing Measures’ and Additional Measures scenarios in these projections highlights that the current pace of implementation will not achieve the change required to meet the Climate Act targets. Faster implementation of ‘Additional Measures’ is needed to close this gap.
- Carbon budgets proposed by the Climate Change Advisory Council have recently been approved by the Oireachtas for the periods 2021-25, 2026-30 and 2031- 35. The Projections highlight that there is currently a significant gap between the budgets and the projected emissions over the budget periods. This gap will need to be addressed very quickly if Ireland is to stay within the Carbon Budgets.
- Under the Additional Measures scenario, renewable energy is projected to increase to 78 per cent of electricity generation by 2030 with emissions from the Energy Industry decreasing by 10 per cent per annum from 2021-30. Increased coal use from 2021 and growing energy demand, including from data centres, threaten to negatively impact achievement of National targets, particularly for the first carbon budget period.
- Under the Existing Measures scenario emissions are projected to increase by 1.9 per cent over the 2020-2030 period. A methane emissions reduction of almost 30 per cent is required to achieve a 22 per cent reduction in Agriculture emissions compared to 2018, as committed to in the 2021 Climate Action Plan. The sector must clearly set out how this will be achieved to address uncertainty regarding its ability to deliver even the lower end of the range of its sectoral targets within the ever-shortening timeframe to 2030.

- The end of COVID travel restrictions is projected to result in transport emissions increasing by 18-19 per cent from 2020 to 2022. Emissions from the sector are projected to reduce to 39 per cent below 2018 levels by 2030 and achieve a 31.7 per cent renewable transport share if the additional measures in plans and policies are implemented, this includes over 940,000 electric vehicles on the road by 2030, increased biofuel blend rates and measures to support more sustainable transport.
- Spending more time at home due to hybrid working and the increasing cost of fossil fuels highlights the need for our houses to become far more efficient. Implementing currently planned measures for the installation of 680,000 heat-pumps by 2030 as well as retrofitting 500,000 homes is projected to achieve a 41.5 per cent reduction in residential emissions in 2030 (compared to 2018).

Total GHG emissions projections by sector under the ‘with additional measures’ scenario to the year 2030 are represented graphically below in Figure 11.2.

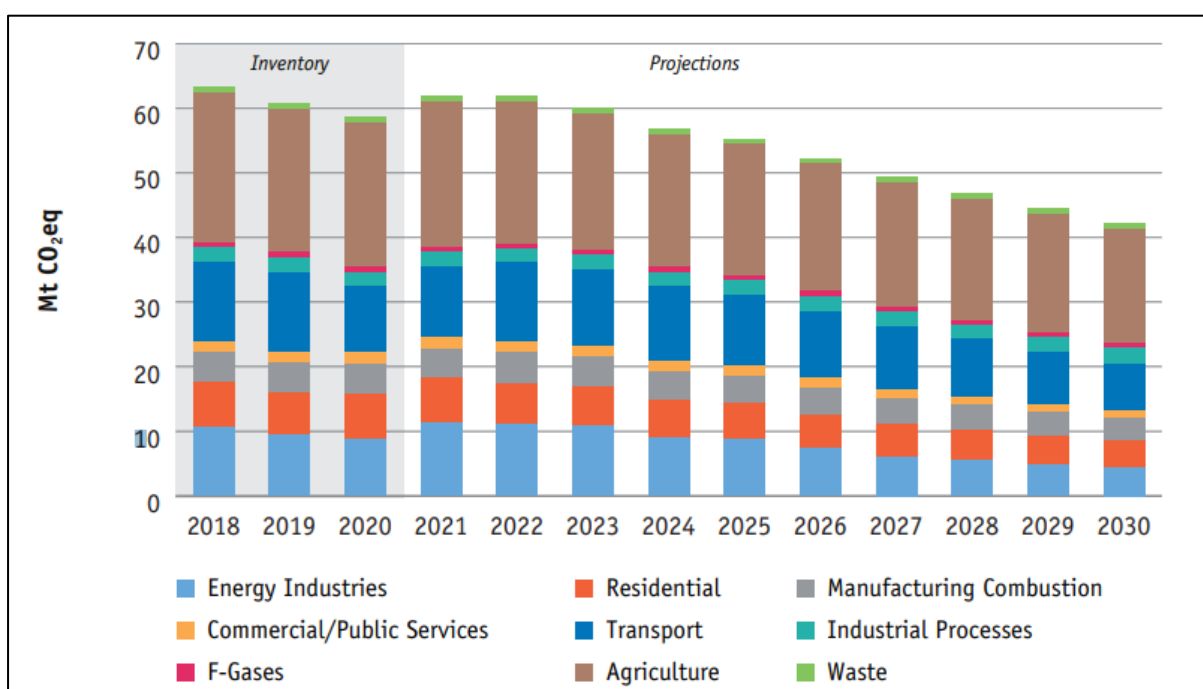


Figure 11.2: Total GHG emission projections to 2030

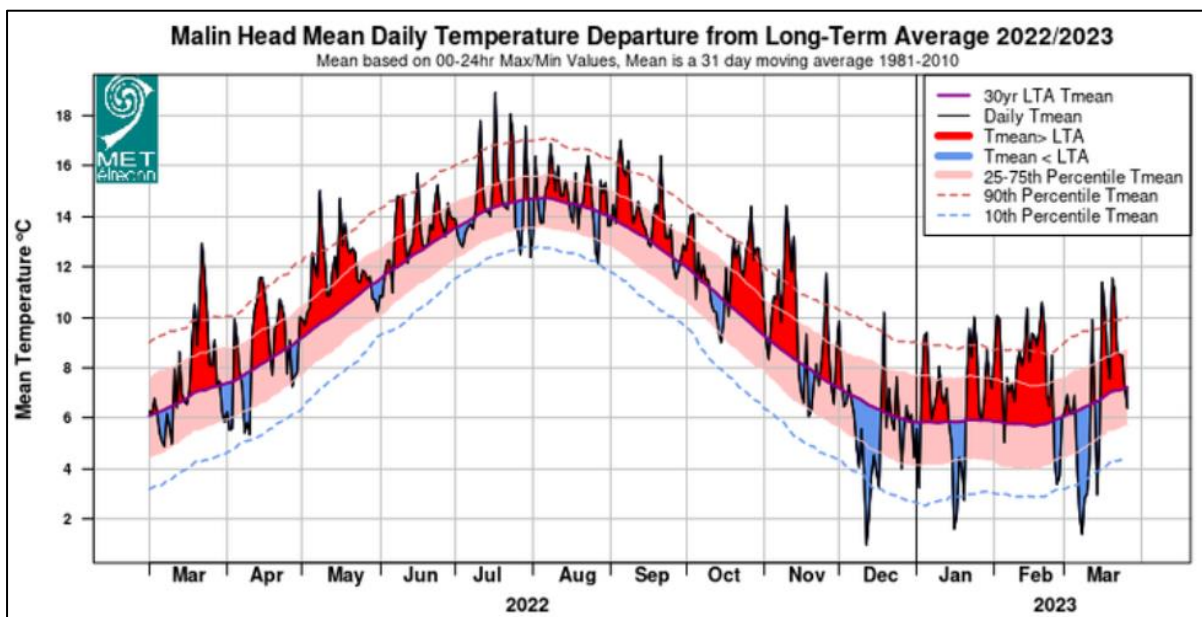
(From EPA GHG projections 2021-2040)

### 11.3.6 Local and Regional Climate

Ireland has a typical maritime climate, with relatively mild and moist winters and cool, cloudy summers. The climate of the application site is typical of the Irish climate. The climate is influenced by warm maritime air associated with the Gulf Stream which has the effect of moderating the climate, and results in high average humidity across the country. The area of highest precipitation is along the western coast.

Long term averages are calculated from the latest complete 30-year data set. The latest available long-term average is calculated from data recorded between 1981-2010. The long-term average annual precipitation value for Malin Head is 1,076 mm. The long-term average annual mean temperature for Malin Head is 9.8 degrees Celsius.

Data from Met Eireann’s Malin Head weather station for temperature departures from the long-term averages are shown below in Figure 11.3.



**Figure 11.3: Malin Head mean Daily Temperature Departure from Long-Term Average 2022/2023**  
(Met Eireann)

According to Met Eireann the average hourly wind speed in Donegal experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.6 months, from October 11 to March 29, with average wind speeds of more than 14.0 miles per hour. The calmer time of year lasts for 6.4 months, from March 29 to October 11. Table 11.1 shows the number of days with mean wind speeds exceeding 15 m/s for 10 minutes or more for the years 2020-2022 inclusive.

**Table 11.1: No of days with 10 min wind speeds > 15 m/s (2020-2022 inc.).**

Number of days with a maximum 10-min. mean wind speed $\geq 15\text{m/s}$												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	18	13	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
2022	13	23	8	4	5	3	2	0	7	13	15	9
2021	12	21	10	4	6	2	0	2	2	6	14	15
2020	19	26	10	3	4	4	5	3	5	15	11	15

(Met Eireann)

**11.3.5 Land Use**

The application site is 10.2 ha gross area and a net area of 8.1ha for the residential development that excludes planted buffers and the main access road through the site that together measure 2.1ha. The site is currently in predominantly agricultural use. There are several blocks of coniferous forest on site and some significant areas of scrub. The site is part of a south facing slope within the town boundary of Letterkenny. The site is approximately 1.55 km northwest of the centre of Letterkenny and is accessed directly off the local road, L-1174, with plans in the last phase of development to create a new access to the local road, L1152, to the north.

The site is situated in a semi-urban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site, and other housing developments further south. To the north and northeast of the east is agricultural land with sporadic farmsteads.

## **11.4 Characteristics of the Development**

### **11.4.1 Construction Phase**

The construction phase of the Proposed Development will include:

- Groundworks and excavation will be required to reduce levels to construct the Proposed Development including foundations, utilities and roads.
- The site is steeply sloped in places, and it is envisaged that cut and fill techniques will be used to lessen gradients and it is intended that all suitable excavated materials will be reused on site.
- The proposed development will include the importation of aggregates for the construction of utilities and roads, where there is a net shortfall of excavated material onsite.
- Foundations solutions will be designed to suit ground conditions.
- Use of temporary welfare facilities for the duration of the Construction Phase.
- A suitable temporary surface water treatment system including settlement ponds, silt fences and silt bags will be in place for construction activities to treat all surface water before discharge off-site. Noise abatement and dust control measures will be employed by the applicant for all activities on site.
- It is anticipated that there will be two phases of development for the project, the first phase constructing approximately 112 accommodation units in the southern and central areas of the site accounting for 60% of the overall development and the remaining accommodation units constructed in the northern part of the site as a second phase (76 houses and 40% of overall development).

### **11.4.2 Operational Phase**

The operational phase will include day to day use of the residential development.

Further details on the characteristics of development are provided in *Section 4, Description of Development*, of this EIAR.

## **11.5 Impact Assessment**

The potential impacts for the construction and operational phases are outlined below.

### **11.5.1 Construction Impacts**

#### **11.5.1.1 Plant and Vehicle Emissions**

The operation of plant and movement of vehicles will generate exhaust emissions. These emissions are an inevitable consequence of construction. Due to the size and duration of the construction phase, and the mitigation measures proposed, the effect on national GHG emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol and therefore will have no considerable impact on climate. The quantities of exhaust emissions and CO<sub>2</sub> released from construction activities will not result in an adverse impact to the local micro-climate or the broader macro climate. These impacts will be temporary as construction is expected to last for approximately 5 years. The impact of emissions associated with each phase of the development are assessed as short-term and imperceptible, whereas if the development was to last 10 years (as per the permission sought) the emissions would be medium term and imperceptible (the market will dictate speed of delivery which is envisaged to be quick in the current housing shortage (short term is 1-7 years while medium term is 7-15 years)).

### **11.5.1.2 Loss of Vegetation**

There will be an inevitable loss of vegetation with clearance for site infrastructure and to facilitate development. This will be offset with the landscaping plan for the site which will increase biodiversity in the overall site and introduce a tree planting scheme for carbon sequestration.

Overall, this impact is assessed as long term neutral.

## **11.5.2 Operational Impacts**

### **11.5.2.1 Vehicle Emissions**

Increased LDV and HGV traffic flow because of the proposed development is likely to contribute to increases in GHG emissions such as CO<sub>2</sub> and N<sub>2</sub>O (Nitrous Oxide). However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement, and therefore unlikely to have an adverse effect on climate. Furthermore, it is widely anticipated that CO<sub>2</sub> emissions for the passenger car fleet will reduce substantially in future years due to the increasing prevalence of electric or hybrid vehicle use.

### **11.5.2.2 Energy and Sustainability**

Building energy has been long understood as contributing a major component of GHG emissions which was acknowledged within the 2030 Communication published by the European Commission (2014) which stated that "the majority of the energy-saving potential (for the EU) is in the building sector. The EU Energy Performance of Buildings Directive set out the target that all new developments should be Nearly Zero-Energy Buildings (NZEB) by the end of 2020.

The proposed development will comply with the Building Regulations Part L 2019, Buildings Other Than Dwellings. As part of the development's efforts to reduce energy consumption, the Proposed Development is targeting an A2 BER (Building Energy Rating) throughout. NZEB homes will be 70% more energy efficient and emit 70% less carbon dioxide than those built under 2005 Building Regulations standards.

The changes will result in new homes being more energy efficient and cheaper to heat than existing dwellings. They will give health benefits through increased comfort and better air quality.

With 40% of Ireland's energy-related carbon emissions coming from buildings, these changes will help address climate change. Statistics show that NZEB Regulations are removing the use of solid fuel in new dwellings and benefitting outdoor air quality.

Extensive work has been carried out to develop a balanced design approach to achieve these onerous targets with a number of sustainable features being incorporated into the design from the early stages.

In developing the energy strategy for the proposed development, the incorporation of energy efficient strategies into the project deliverables will encourage the commitment to sustainable design at a very early stage and ensure that the Proposed Development will meet the principles of the Government's 'National Climate Change Policy' and the NZEB criteria as set out in the Part L Regulations 2021 and will maximise the reduction in Carbon Dioxide (CO<sub>2</sub>) emissions thus demonstrating the commitment to Climate Change.

### **11.5.3 Unplanned Events & Development Vulnerability**

The proposed development must also be assessed in relation to unplanned events in terms of vulnerability to the risks of major accidents or disasters relevant to the project. The types of event considered are floods and storms.

- Flooding. Extreme rainfall events are becoming more common. This site has been assessed in a basic flood risk assessment as part of Section 8, Water, and found to be not at risk of

flooding. There is a surface water drainage plan produced for the site which has attenuation tanks proposed to ensure greenfield runoff rates are maintained through the site and flooding will not be caused elsewhere by the proposed development.

- Extreme Temperatures. Operational procedures will be in place by the management company responsible for the maintenance aspects of the development once complete for times when the temperature is low enough to cause freezing including gritting areas.
- Storm Events. Extreme windy conditions could potentially lead to damage to infrastructure and buildings. Loose items that may be moved by high winds will be secured.

#### **11.5.4 Cumulative Impact**

The application site must also be considered in association with other developments located within or close to the application site.

##### **11.5.4.1 Other Developments**

The planning portal of Donegal County Council was accessed and recent projects in proximity to the application site were examined for likely cumulative impacts to air quality. A summary of the findings are presented in Table 11.2 below.

**Table 11.2: Cumulative Effects**

<b>Planning Ref No.</b>	<b>Applicant</b>	<b>Development Description</b>	<b>Location</b>	<b>Potential Cumulative Impact</b>
2251204	PJ McDermott	Construction of (A) Phase 1 of Housing Development consisting of 82 no. dwellings and 2 no. apartment blocks consisting of 8 no. apartments (90 no. residential units in total) (B) Proposed creche and all associated site works (C) All associated site works to include new vehicular entrance, landscaped open spaces and planted boundary buffers, connection to public services to include associated storm attenuation and re-routing of existing water mains at Glencar Irish and Glencar Scotch, Letterkenny, Co. Donegal.	Immediately south of application site	Climate impact will be similar to this application.
1950809 (ABP 307152-20)	Gerard Kelly	Construction of Housing Development containing 20 no. residential units as follows: (A) 8 no. semi-detached dwellings and (B) 12 no. apartments configured in 2 separate blocks of 6 units, each containing 4 no. 2 bedroom and 2 no. 1 bedroom units with new access road, footpaths, entrance, ancillary works etc at Glencar Scotch, Letterkenny, Co. Donegal	70 m west of application site	Climate impact will be similar to this application but on a smaller scale  (nearing completion)
1851939	Property Hold Ltd	Proposed erection of 98 residential units with connection to public sewer and all associated ancillary site development works at An Gleann Rua at Killylastin, Letterkenny, Co. Donegal.	425 m north of application site	Climate impact will be similar to this application.

The cumulative effects on climate of the current proposed development and other permitted or existing developments have been considered, in particular through the generation of GHG emissions. The potential impacts on air quality are assessed and it is considered that there are no other potential significant cumulative impacts associated with the proposed development and considered offsite

permitted developments. In terms of GHG levels, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the application site. Due to the implementation of good construction practices at the site of the proposed development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur.

Assessment of operational stage impacts on climate involved increased traffic GHG emissions which are not expected to be significant. Also, the cumulative impact of building energy and unplanned events were considered. Cumulative impacts have been assessed in this regard and the impact on climate has been determined as insignificant.

#### **11.5.5 Do-Nothing Option**

The 'do-nothing' impact has been considered in terms of climate in this chapter. If the proposed development did not proceed, the application site would remain as a greenfield site.

Greenhouse gas emissions as a result of the proposed development are also likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol when compared to a 'do-nothing' scenario.

### **11.6 Mitigation Measures**

The following mitigation measures will be practiced at the proposed development to reduce greenhouse gas emissions in order to limit the effects of the development on the local and regional climate.

- Strict adherence to good operational practice such as switching off plant and vehicles when not in use during the construction phase
- All plant and vehicles involved in the construction phase will be regularly serviced to ensure they are running as efficiently as possible
- Energy consumption ratings will be considered when upgrading new vehicles associated with the site.
- During the construction phase, it is proposed to implement regular energy audits in order to assess energy requirements and areas where energy usage can be reduced. This will lead to a reduction in greenhouse gas emissions.
- Landscaping plan (section 15) to offset vegetation loss, increase net biodiversity and increase the carbon capture potential of the site.
- Construction operations to shut down on the issue of a 'red' weather warning from Met Eireann for rain, temperature or wind.
- During construction, plant, buildings and the general area of operations will be regularly checked for structural integrity and any loose items securely fastened.

### **11.7 Residual Impacts**

Residual impacts are those that remain after the implementation of the mitigation measures.

No residual negative impacts are expected.



## 11.8 Determination of Significance of Impact Pre-Mitigation

**Table 11.3: Determination of Significance of Impact Pre-Mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/ Duration/Probability/ Consequences) Negligible - High</b>	<b>Existing Environment (Significance/Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Plant & Vehicle emissions during construction and operational phases	Climate	Low-Negligible	Medium	Not Significant
Loss of vegetation	Climate	Low	Medium	Slight
Disruption/damage due to extreme weather event	Development infrastructure, Environment	Low	Medium	Slight

## 11.9 Summary of Mitigation Measures

**Table 11.4: Summary of Mitigation Measures**

<b>Summary of Mitigation Measures Proposed</b>
Strict adherence to good operational practice such as switching off plant and vehicles when not in use during the construction phase
All plant and vehicles involved in the construction phase will be regularly serviced to ensure they are running as efficiently as possible
Energy consumption ratings will be considered when upgrading new vehicles associated with the site.
During the construction phase, it is proposed to implement regular energy audits in order to assess energy requirements and areas where energy usage can be reduced. This will lead to a reduction in greenhouse gas emissions.
Landscaping plan (section 15) to offset vegetation loss, increase net biodiversity and increase the carbon capture potential of the site.
Construction operations to shut down on the issue of a 'red' weather warning from Met Eireann for rain, temperature or wind.
During construction, plant, buildings and the general area of operations will be regularly checked for structural integrity and any loose items securely fastened.

## 11.10 Determination of Significance of Impact Following Mitigation

**Table 11.5: Determination of Significance of Impact Following Mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Description of Impact (Character/Magnitude/ Duration/Probability/ Consequences) Negligible - High</b>	<b>Existing Environment (Significance / Sensitivity) Negligible -High</b>	<b>Significance Imperceptible - Profound</b>
Plant & Vehicle emissions during construction and operational phases	Climate	Low-Negligible	Medium	Imperceptible
Loss of vegetation	Climate	Low	Medium	Neutral
Disruption/damage due to extreme weather event	Quarry infrastructure, Environment	Low	Medium	Imperceptible

**11.11 Impact Assessment Conclusion**

There is expected to be a neutral impact on climate following the implementation of the recommended mitigation measures.

**11.12 Technical Difficulties**

There were no technical difficulties encountered.

## Section 12: MATERIAL ASSETS - TRAFFIC

### Table of Contents

Section 12: MATERIAL ASSETS - TRAFFIC ..... 1

List of Figures..... 2

List of Tables..... 2

12 MATERIAL ASSETS - TRAFFIC ..... 3

12.1 Introduction ..... 3

12.2 Policy and Guidance ..... 3

12.3 Consultation ..... 4

12.4 Study Period ..... 4

12.5 Assessment Methodology ..... 5

    12.5.1 Baseline Conditions ..... 5

    12.5.2 Trip Generation, Distribution and Assessment Methodology..... 6

12.6 Receiving Environment..... 7

12.7 Characteristics of the Proposed Development ..... 7

12.8 Identification of Likely Significant Impacts ..... 9

    12.8.1 Construction Stage Impacts ..... 9

    12.8.2 Operational Stage Impacts ..... 10

    12.8.3 Cumulative Impacts ..... 13

12.9 Mitigation Measures ..... 13

12.10 Residual Impacts ..... 15

12.11 Severance, Noise, Delay & Intimidation, Summary of Effects ..... 16

12.12 Interactions Arising ..... 16

12.13 Monitoring ..... 16

12.14 References..... 17

12.15 Summary ..... 17



## List of Figures

Figure 12.1: AM Network Peak Hour (08:30 – 09:30) .....5  
 Figure 12.2: PM Network Peak Hour (16:30 – 17:30) .....5  
 Figure 12.3: 12-hour Flow (0700-1900) .....6

## List of Tables

Table 12.1: AM Peak Hour Network Flows 0830-0930 .....6  
 Table 12.2: PM Peak Hour Network Flows 1630-1730 .....6  
 Table 12.3: 12-Hour Network Flows 0700-1900 .....6  
 Table 12.4 Option Scenarios.....7  
 Table 12.5 AM Peak Hour Trip Generation Rates .....8  
 Table 12.6 PM Peak Hour Trip Generation RatesCre .....8  
 Table 12.7 Traffic Growth Rates, TII Travel Demand Projections Unit 5.3 Central Growth .....8  
 Table 12.8 AM Peak Opening Year Traffic Impact Of Development By Approach Arm 2024 .....11  
 Table 12.9 PM Peak Opening Year Traffic Impact by Approach Arm .....11  
 Table 12.10 2039 AM Peak 0830-0930 P1 & P2 (100%) .....12  
 Table 12.11 2039 PM Peak 1630-1730 P1 +P2 (100%) .....12  
 Table 12.12 Description of Effects- Operational Phase .....13  
 Table 12.13 Table of Mitigation Measures .....15  
 Table 12.14 Description of Effects- Traffic And Transportation Combined Phase 1 & 2.....17



## 12 MATERIAL ASSETS - TRAFFIC

### 12.1 Introduction

This section sets out the methodology used to assess the effects of the Glencar Irish/Glencar Scotch housing proposal, consisting of 90No. housing units plus creche (Phase 1), and 188No housing units (Phase 2), in total 278No homes plus crèche. Construction and operational phases of the proposal have been considered.

The previous grant of permission in 2010, on the same site, included 418 residential units, meaning that the current application represents 33% fewer units than was previously approved.

As part of this assessment, we have considered baseline conditions and the impact of staged development. The Glencar Scotch/Glencar Irish housing proposal is hereafter referred to as “the proposal”. The potential direct and indirect effects arising from the proposal have been considered, with mitigation measures required to prevent, reduce, or offset the likely significant adverse impacts described. The resultant residual impacts have been summarized.

Environmental impact in relation to traffic considers the network impact post development and the construction phase of the scheme. A Traffic and Transport Statement (TTS) was submitted in July 2022 and set-out the operational phase of Phase 1 for 93 houses (reduced to 90 houses upon approval) with Phase 2 for 200 units (reduced to 188No. as part of the current application.) 278 total housing units plus creche.

The predicted traffic impacts of the proposal have been assessed as follows:

- Classified turning counts for AM, and PM peak hour periods and 12-hour flows have been identified to provide baseline conditions. Development flows have been added and distributed onto the surrounding road network.
- The impact of development traffic from the proposal has been considered in line with Environmental Impact Assessment guidance and best practice.

This section has been prepared by Simon Warke of SW Consultancy Traffic and Transportation Specialists. Details of Simon’s Warke’s competencies are set out in Section 2 – Introduction.

### 12.2 Policy and Guidance

There are a variety of policy guidance documents related to the environmental impact of traffic and discussed below. Consideration has been given both to peak period and the modelling impact of the proposal on the network along with the broader impact of development. The principal sources of assessment used to consider the effects of traffic generated by the proposal are identified below.

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency May 2022),
- Transport Infrastructure Ireland (TII) Traffic and Transport Assessment Guidance 2014
- Transport Infrastructure Ireland (TII) Project Appraisal Guidelines 2011
- Design Manual for Urban Roads and Streets (DMURS) 2019
- County Donegal Development Plan 2018-2024

Reference has also been made to:

- Trip Rate Information Computer System (TRICS) trip generation rates
- Junction 10 PICADY 10 Priority Intersection Model software
- Transport Infrastructure Ireland (TII) PE+PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections)

Overarching historical guidance related to the impact of traffic both on a network and in relation to other road users has been discussed as part of the assessment.

- The **Guidelines for Traffic Impact Assessment (1994)** published by the Institution of Highways and Transportation, suggest that the impact of development traffic on highway capacity should be assessed when “development traffic exceeds 10% of existing traffic on the adjoining highway”.
- The **Guidelines for the Environmental Assessment of Road Traffic (January 1993)** published by the Institute of Environmental Management & Assessment (IEMA), suggests two broad rules-of-thumb are used to screen locations for assessment:

12.1.1 **Rule 1** - include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and

12.1.2 **Rule 2** - include any other specifically sensitive areas where traffic flows have increased by 10% or more.

Noise, severance, pedestrian delay and intimidation- generally a doubling or halving of traffic flow is needed before noise changes are perceived.

As far as broader impacts are concerned (severance, pedestrian delay and intimidation), the 30% change mentioned in Rule 1 above is usually the trigger for the consideration of effects. Thus, the significance of impacts arising should be judged against the following criteria:

- **Review potential adverse impact highway capacity** - where development traffic exceeds 10% of existing traffic, as set-out in transport assessment guidance
- **Review potential adverse impact on severance, pedestrian delay and intimidation** - where overall traffic flows, or proportion of traffic flows, or proportion of heavy vehicles are forecast to increase by more than 30%.

### 12.3 Consultation

A Large-Scale Residential Development (LSRD) meeting was held with Donegal County Council in Lifford in October 2022 following submission of the Phase 1 scheme (90No. units + crèche which was proposed be increases to 93 units following the request for further information but was subsequently reduced to 90No. units + creche in the decision of the Planning Authority). The purpose of the meeting was to discuss the Glencar Irish/Glencar Scotch LRD scheme with reference made to the Phase 1 application. This meeting was held as part of the LRD pre application process. The phasing of development was discussed, with DCC. It was the view of the Council that in terms of capacity and network impact only 60% of the proposed Phase 2 (120 phase 2 houses as the initial proposal was for 200 units) should use the Glencar Road, with the remainder (80 phase 2 houses) using the future link to a new road, north of the site connecting to the Northern Strategic Link/upgraded Windyhall Road. The final LRD layout is for 188 units and while the numbers have been adjusted down, the percentage of development in each of the two proposed phases has been retained at 60% - 40%.

Following-on from the LRD meeting in October 2022 a Road Safety Assessment for the Glencar Road/The Grange/Dr McGinley Road was submitted in December 2022 reviewing pedestrian connectivity and safety for Phase 1. This submission was accompanied by a junction capacity review considering the Glencar Road/The Grange/Dr McGinley Road priority junction (Phase 1). A Road Safety Audit Stage 1-2 also accompanied the response to the request for further information in respect of the Phase 1 development proposal.

### 12.4 Study Period

To evaluate the potential impact of the combined Phase 1 *and* Phase 2 proposal, a 12-hour classified video survey was undertaken during a typical weekday and classified data gathered. Video cameras we employed at a

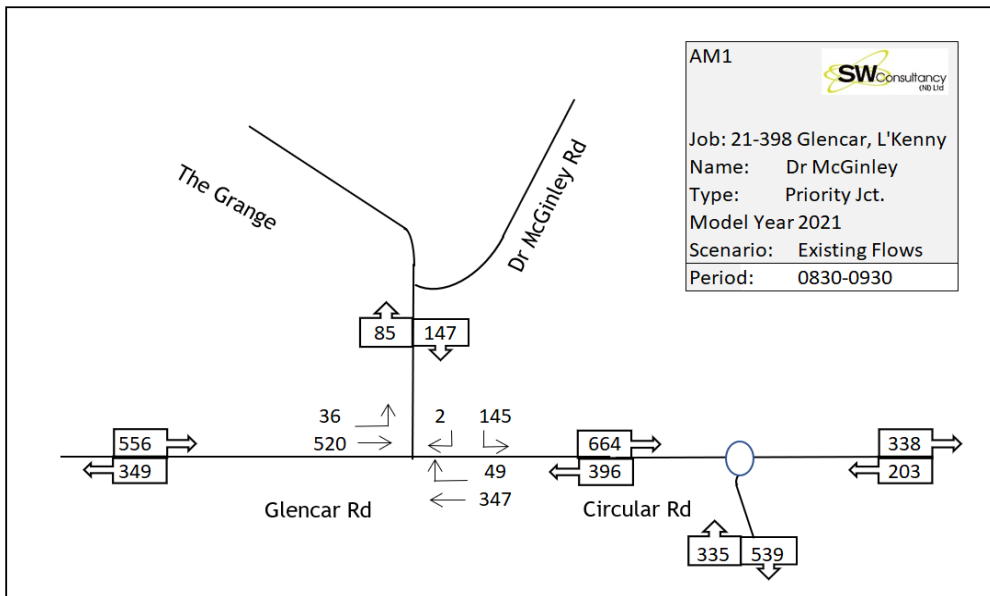
number of locations in the greater Glencar area and undertaken on Wednesday 30<sup>th</sup> November 2021. This day was chosen as it provided a typical working day and reflected normal flows, during a “neutral” month. There was no road works in the vicinity and driving conditions were normal. The video camera locations are identified below.

- The Grange at the Phase 1 Access
- Glencar Road/The Grange/Dr. McGinley Road priority junction
- Glencar Road (E)/Circular Road/Glencar Road (S) mini roundabout

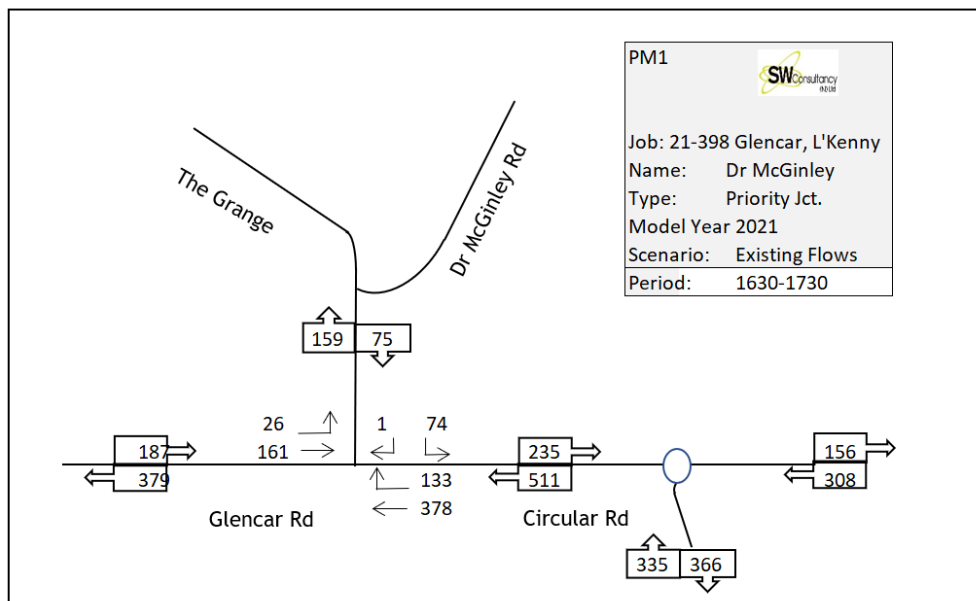
**12.5 Assessment Methodology**

**12.5.1 Baseline Conditions**

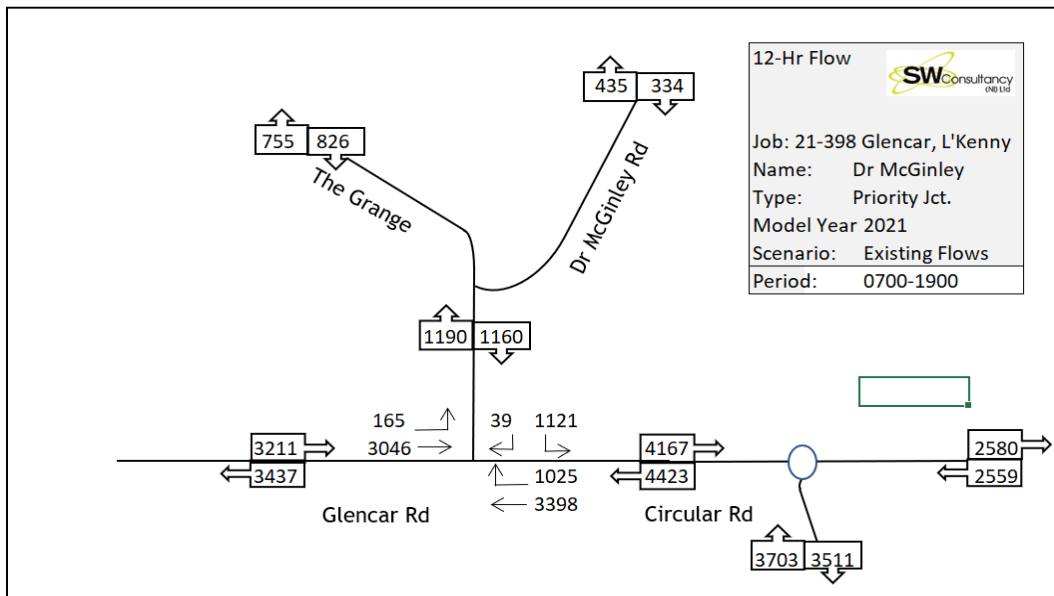
The 12-hour classified study identified network peak hour periods of 0830-0930 and 1630-1730. The diagrams indicating Passenger Car Unit (PCU) flows. PCU’s are metrics used in transportation engineering to assess traffic-flow rates on a highway, for example the value of a bus is 2.2 cars. Peak hour flows are shown as Figure 1 and Figure 2. Figure 3 provides the 12-hour flow pattern.



**Figure 12.1: AM Network Peak Hour (08:30 – 09:30)**



**Figure 12.2: PM Network Peak Hour (16:30 – 17:30)**



**Figure 12.3: 12-hour Flow (0700-1900)**

A summary of the passenger car unit (PCU) peak hour flow data (per approach) with distribution percentages (by approach) is provided in Tables 12.1-12.3 and included in full for the counted network as **Appendix 12A**.

**Table 12.1: AM Peak Hour Network Flows 0830-0930**

AM Peak Base Network Flows 0830-0930 (PCU's)											
	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Total Flow			
Base Traffic	Glencar Rd W Arrivals 3211	From The Grange 101	From Dr McGinley Rd 46	Circular Rd E Arrive 203	Glencar Rd S Arr 355	Glencar Rd West Departures 3437	To The Grange 64	To Dr. McGinley Rd 21	Circular Rd E Depart. 338	Glencar Rd S Dep 539	AM Peak
	<b>906</b>	<b>165</b>	<b>67</b>	<b>541</b>	<b>894</b>					<b>2573</b>	
Distribution Percentage	35%	6%	3%	21%	35%					100%	

**Table 12.2: PM Peak Hour Network Flows 1630-1730**

PM Peak Base Network Flows 1630-1730 (PCU's)											
	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Total Flow			
Base Traffic	Glencar Rd W Arrivals 185	From The Grange 68	From Dr McGinley Rd 7	Circular Rd E Arrive 308	Glencar Rd S Arr 335	Glencar Rd West Departures 237	To The Grange 92	To Dr. McGinley Rd 59	Circular Rd E Depart. 156	Glencar Rd S Dep 366	PM Peak
	<b>422</b>	<b>160</b>	<b>66</b>	<b>464</b>	<b>701</b>					<b>1813</b>	
Distribution Percentage	23%	9%	4%	26%	39%					100%	

**Table 12.3: 12-Hour Network Flows 0700-1900**

Base Network Flows 0700-1900 (PCU's)											
	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Total Flow			
Base Traffic	Glencar Rd W Arrivals 3211	From The Grange 826	From Dr McGinley Rd 334	Circular Rd E Arrive 2559	Glencar Rd S Arr 3703	Glencar Rd West Departures 3437	To The Grange 755	To Dr. McGinley Rd 435	Circular Rd E Depart. 2580	Glencar Rd S Dep 3511	PM Peak
	<b>6648</b>	<b>1581</b>	<b>768</b>	<b>5139</b>	<b>7214</b>					<b>21350</b>	
Distribution Percentage	31%	7%	4%	24%	34%					100%	

**12.5.2 Trip Generation, Distribution and Assessment Methodology**

The baseline count data provides a do-nothing scenario described above. This allows us to apply a growth factor to consider changes in traffic flow for the projected opening year of 2024, and +15 years- 2039, in line with the Traffic and Transport Assessment Guidelines.

Based upon existing traffic characteristics and the surrounding road network, an appropriate distribution has been assigned to site development vehicular trips across the road network.





Small changes in the selection of opening/design year will have no implications in terms of junction assessment/performance. A threshold assessment approach has been applied to determine whether capacity assessment of junctions is necessary. We have used Transport Infrastructure Ireland (TII) approved software package Junction 10- PICADY 10 to assess junction performance of a priority junction on the local network.

## 12.6 Receiving Environment

The Grange is located to the north west of Letterkenny, and is 2-lane single carriageway, lightly trafficked County Road. During the assessment period there was a 2-way flow of only 1601 vehicles over a 12-hour period 0700-1900. This distributor road is residential in nature.

During the AM peak hour 0830-0930 the 2-way flow on The Grange was 211 vehicles per hour and during the PM peak hour, 1630-1730, the 2-way flow was only 160 vehicles per hour. To put these traffic volumes into context, the traffic link capacity of The Grange link capacity will be 2000-2400 2-way vehicles per hour. A 2-way flow of only 371 vehicles per hour highlights a *lightly trafficked* route, operating well below link capacity.

The Grange (Old Glencar Road (L-1174-1)) connects the site with Dr. McGinley Road (L-1174-2) and with Glencar Road (L-1174-2), a main commuter route to Letterkenny. As part of our assessment the operational junction capacity has been tested.

## 12.7 Characteristics of the Proposed Development

The proposal is to be constructed in 2No. Phases. Phase 1 for 90No houses and a creche. This has been approved by Donegal Council and is under appeal to An Bord Pleanála. Phase 2 is for 188 houses. As per the LRD process Donegal County Council have highlighted that 60% of Phase 2 development traffic be permitted onto Glencar Road (112 units), and 40% onto a future new link road (76 units). This assessment has considered 100% of Phase 1, including the creche and 100% of Phase 2, all approaching the site from/to Glencar Road. For assessment purposes we have reviewed the impact of the housing element of the previous approval on this site for 418 No. houses, by An Bord Pleanála in 2010.

Consideration has been highlighted as to the impact of the development per approach for the combined Phase 1 & Phase 2, with sensitivity modelling testing junction performance for Option "E".

**Table 12.4 Option Scenarios**

Option Scenarios		Outcome
Scenario A	Phase 1 (90 units)	Impact identified
Scenario B	Creche 1087m <sup>2</sup> (600m <sup>2</sup> GIFA)	Impact identified
Scenario C	60% of 188 Phase 2 (112)	Impact identified
Scenario D	100% of 188 Phase 2 (188)	Impact identified
<b>Scenario E</b>	<b>Phase 1 (housing &amp; creche) &amp; Phase 2 (188)</b>	<b>Impact identified &amp; model testing</b>
Scenario F	08/80150 Residential only (418)	Impact identified

TRICS is a land use comparator database and used to identify the level of generated traffic from the residential and the creche element of the entire proposal.

Trip generation rates by Phase and scenario A-F are included as **Appendix 12B** for the AM and PM identified peak hour periods. These new trips have been distributed using existing flow pattern methodology. Tables 12.5 and 12.6 provide a breakdown of trip rate by scenario identified by the TRICS assessment.

**Table 12.5 AM Peak Hour Trip Generation Rates**

0800-0900 Trip Generation Comparitor Per Scenario							
Trip Gen Rates	Arr	Dep	Units	Arr	Dep	Scenario	
Housing	0.137	0.379	90	12	34	Phase 1 (90 Units)	Scenario A
Creche	2.120	1.677	6	13	10	600m² GIFA	Scenario B
Housing	0.137	0.379	113	15	43	60% of 188 Phase 2=113	Scenario C
Housing	0.137	0.379	188	26	71	100% of 188 Phase 2=188	Scenario D
Housing	0.137	0.379	278	51	115	Phase 1 & Phase 2 (278) + Creche	Scenario E
Prev. App Housing	0.137	0.379	418	57	158	08/80150 Residential only	Scenario F

**Table 12.6 PM Peak Hour Trip Generation RatesCre**

1700-1800 Trip Generation Comparitor Per Scenario							
Trip Gen Rates	Arr	Dep	Units	Arr	Dep	Scenario	
Housing	0.349	0.172	90	31	15	Phase 1 (90 Units)	Scenario A
Creche	1.741	1.962	6	10	12	600m² GIFA	Scenario B
Housing	0.349	0.172	113	39	19	60% of 188 Phase 2=113	Scenario C
Housing	0.349	0.172	188	66	32	100% of 188 Phase 2=188	Scenario D
Housing	0.349	0.172	278	107	60	Phase 1 & Phase 2 (278) + Creche	Scenario E
Prev. App Housing	0.349	0.172	418	146	72	08/80150 Residential only	Scenario F

Tables 12.5 and 12.6 indicate that Scenario “E” ie Phase 1 & 100% of Phase 2 will generate significantly fewer peak hour trips than the previously approved housing element of 08/80150 Scenario “F” approved in 2010.

On average during the AM or PM peak hour periods the proposal will generate fewer than 3No arrivals or departures per minute onto the existing road network at The Grange/Old Glencar Road.

The impact of development for Option F is set out as **Appendix 12C**. The table compares 2021 counted traffic factored to 2024 + development traffic. The previously approved scenario “F” has an impact greater than 10% during the PM peak when the base flows were compared with the quieter approaches.

We have referred to TII PE\_PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections Table 5.3.2 Linked-Based Growth Rates: Annual Growth Factor “central” growth to identify appropriate network growth for the purpose of assessment years and future year modelling. The projections are pre-covid 19 and provide a robust level of projected traffic during the assessment years.

The “worst case” development traffic i.e. housing and creche peak of 0800-0900 has been added to the network peak 0830-0930. Similarly, the housing and creche PM peak of 1700-1800 has been added to the network peak of 1630-1730. This provides the most robust level of assessment combining the busiest network hours with the busiest development hours.

The growth rates applied to identify base traffic plus development is set out in Table 12.7. We have applied a growth rate of 1.0114% per annum, and considered 2024 opening year, 2029+5 years and 2029+15 years.

**Table 12.7 Traffic Growth Rates, TII Travel Demand Projections Unit 5.3 Central Growth**

Year	To year	Growth rate %
2021	2021	0%
2021	2024 (year of opening)	3.06%
2021	2029 (+5 years)	8.38%
2021	2039 (+15 years)	19.76%



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Traffic diagrams for the opening year, +5, +10 and +15 years without and with development are included as **Appendix 12D**.

## 12.8 Identification of Likely Significant Impacts

### 12.8.1 Construction Stage Impacts

During the construction phase of development there is the potential for construction operations to cause an unreasonable level of excessive impact on the operational performance of the road network, resulting in issues with traffic safety or junction capacity.

Construction of the proposed development will generate private vehicles owned and driven by site construction staff, materials delivery arrivals and departures and materials removal arrival and departure vehicles. Some construction deliveries can be combined, and many staff will travel together to and from work, for example van trips.

This is an elevated site with staged development. Excavation and processing will take place on site. It is not envisaged that fill will be required.

The number of construction vehicle on a given day will vary but will be working on a small number of units at a given time. Operational and non-operational trips will be significantly lower than trip generated by the development proposal once Phase 1 or Phase 2 is complete.

Following the initial site clearance work Phase 1 will generate small numbers of site works and construction related trips. Typically, no more than 5-10 houses in one time, not all of the phase. The predominant traffic movement will be staff arriving and departing work, outside of network peak periods. Heavy Goods Vehicle (HGV) deliveries will occur during the working day bringing materials and supplies on site outside of network peak times. There will not be a significant impact during construction by either staff or HGV movements.

Larger vehicles such as OGV1 and OGV2 larger commercial vehicles will be generated from the commencement of site operations until site works are completed.

On occasion when delivery of abnormal loads for example steel or roof truss delivery are proposed, notification will be given to the relevant authorities including Garda and or Donegal County Council as set-out in the CTMP. The need for particularly large vehicles e.g. for delivery and extraction of the largest construction equipment such as a crane will require the following specific consideration discussed below.

An abnormal load is a total weight of >44,000kg or an axel load of >10,000kg, or a width of >2.9m or a rigid length of >18.65m. If any of these thresholds are exceeded both the Gardai and Donegal County Council will be informed, and route clearance required. The abnormal load will be managed by the contractor and will likely occur very early in the morning or very late at night.

In assessing the potential impact of the construction stage the following provision has been made:

- The construction day will start and finish outside of peak times, in this case 0830-0930 and 1630-1730 in this area. There will be few operational trips generated at this time.
- The Contractor will adhere to best practice mobility management measures for the site, encouraging staff to car share where possible.
- Consolidation of delivery loads to/from the site and management of larger deliveries outside peak periods will be actively encouraged. This will save time and money and relatively straightforward to implement.
- Precast/prefabricated materials will be utilised in the construction of the proposed development, where possible.
- HGV deliveries on site can be managed. An appointed time for deliveries will ensure just-in-time

processes are followed and the level of storage required on site minimised.

The traffic generated by the *construction phase* of development will be lower than the operational phase. Only a small number of houses will be constructed at a given time whereas when finished the development will generate daily trips movements by each house. The *operational phase* of the proposal has been discussed and assessed below.

The construction phase will not give rise to any significant traffic concerns or impede the operational performance of the local road network and its surrounding junctions, the operation of the site can be managed through implementation of the CEMP (prepared by the Contractor), and the agreed Construction and Traffic Management Plan (draft plan prepared by M.H. Associates).

### **12.8.2 Operational Stage Impacts**

The assessment of development related trips has been undertaken following consideration of the phased development. "Option E" considers all development traffic for both Phase 1 (including creche) and Phase 2. Construction of both phases will take a number of years, with potentially 278No. dwellings and a creche constructed as part of the phased development.

The level of development traffic has been **robustly** assessed in terms of traffic generation rate. All housing units have been run using the TRICS comparator as "houses privately owned", this is a higher traffic generation rate than social housing trips. It is our understanding that Phase 1 will consist of social housing, with 10% of Phase 2 housing being either social, affordable or cost rental housing (to be determined by the Local Authority), therefore a higher trip rate has been applied than is likely to be generated.

There is the *potential* for the operation and occupation of the development to have an adverse impact upon the safety, capacity, and operation of the adjacent road network. The assessment undertaken was to determine whether there was *likely* to be an adverse or significant impact during the worst-case scenario i.e. 15 years after the development opens, this is in line with TII guidance.

We have followed national guidance as set out in TII's Traffic and Transport Assessment Guidelines threshold approach (page 10) which states: "*The threshold approach should be used to establish the area of influence of the development. In general, the study area should include all road link and associated junctions where traffic to and from the development may be expected to exceed 10% of the existing junction movements, or 5% in congested or other sensitive locations, including junctions with national roads.*"

A threshold assessment of the impact on the local roads has been provided for year of opening to determine whether further, more detailed modelling and assessment of particular critical junctions is necessary. The professional guidance referenced above sets out specific increases in traffic volume associated with development, which, if breached, requires further, more detailed analysis and assessment to be undertaken.

We have reviewed the percentage impact of the Glencar Irish/Glencar Scotch development proposal per approach arm for opening year (2024) to determine the impact of development phases on the approach arms, for all scenarios A-F including option "E" Phase 1 and Phase 2 (100%) travelling south to Glencar Road. The purpose of this exercise was to identify the percentage impact on the surrounding network with all development and to identify a cumulative impact.

**Appendix 12E** sets out the sensitivity model impacts of cumulative P1 & P2 development, per approach for the AM and PM peak hour periods. This has been summarised below.

**Table 12.8 AM Peak Opening Year Traffic Impact Of Development By Approach Arm 2024**

Scenario	Glencar Rd West	The Grange	Dr McGinley Rd	Circular R East	Glencar Rd South
E Phase 1 & Phase 2 (278) + Creche	6.23%	5.87%	7.28%	6.26%	6.32%
F 08/80150 Residential only (previously approved for 418 houses)	8.09%	7.61%	9.44%	8.13%	8.09%

**Table 12.9 PM Peak Opening Year Traffic Impact by Approach Arm**

Scenario	Glencar Rd West	The Grange	Dr McGinley Rd	Circular R East	Glencar Rd South
E Phase 1 & Phase 2 (278) + Creche	4.01%	8.84%	9.75%	7.79%	6.96%
F 08/80150 Residential only (previously approved for 418 houses)	5.37%	11.53%	12.71%	9.98%	9.11%

As per the TII guidance the impact of development guidelines, the impact of development on the approach routes falls *below* both the less robust threshold 30% and the TII 10% impact guidance discussed for Scenario “E” i.e. for all development trips Phase 1 and Phase 2 (100%) south to Glencar Road.

The opening year of the development is likely to be 2024 for Phase 1. The impact of *cumulative* development on all approach arms in 2024, with Phase 1 and Phase 2 (100%) development traffic would be **less than** 10% on all approach arms, at the busiest times for scenario “E”.

No further assessment of the impact upon these junctions *is required*, in accordance with the nationally applied guidelines. To set the increase in traffic levels in context, the day-to-day variation in traffic volumes (due to day of week or weather conditions) is accepted as 10%, so, in this context alone, increases will go unnoticed.

We are aware that the Glencar Road/The Grange/Dr McGinley Road priority junction is a concern to Donegal County Council. Slow moving peak hour traffic on the main route occurs for a variety of reasons, including weather. For this reason, we have provided further sensitivity testing of junction performance with all development traffic approaching from and departing this junction.

It was previously demonstrated through Phase 1 modelling of the Glencar Road/The Grange/Dr McGinley Road junction (December 2022 submission) that there was ample capacity at this junction to accommodate Phase 1 development traffic. Tables 12.8 and 12.9 indicate that as per guidance **no further assessment** is required as it has been demonstrated that the cumulative impact on all arms of the network will remain **below 10% impact**.

To demonstrate to Donegal County Council that all development traffic can safely be accommodated on the network at this occasion we have ran further sensitivity testing as it is our understanding that DCC may wish to limit the level of traffic to 60% of Phase 2 development onto The Grange and the Glencar Road priority junction.

We have included Phase 1 (including creche) and 100% of Phase 2 development trips for the peak hour periods at the end of the design life i.e., 2039 +15 years after the entire development opens. In other words, network

traffic 2039+Scenario “E”.

Transport Research Laboratory (TRL) Junction 10 software has been used to analyse the Glencar Road/The Grange/Dr McGinley Road priority junction. Junction 10 is industry standard transport planning software and is used for the purpose of junction modelling to test junction capacity and performance.

**Appendix 12F** provides a layout plan of the Glencar Road/The Grange/Dr. McGinley junction along with a PICADY layout model. AM and PM peak hour modelling is also provided.

Capacity is deemed to be reached when the ratio of flow to capacity (RFC) of a PICADY (Priority Intersection Capacity And Delay) model is greater than 1.000 or 100%. Queuing and delay are more likely to increase when the RFC is *greater than* 0.850 (optimum capacity), 85<sup>th</sup>ile for priority junction models.

Although this is an existing priority junction, where typically 10 years modelling assessment is provided, +15 years has been considered as pedestrian connectivity improvements have been proposed as set-out in the December 2022 Road Safety Assessment, and it is important to test the robustness of the assessment. A summary of the modelling output for the AM and PM peak period for +15 years is provided in Table 12.10 and 12.11.

**Table 12.10 2039 AM Peak 0830-0930 P1 & P2 (100%)**

	AM Peak Proposed 2039 Sensitivity			
	Queue (PCU)	Delay (s)	RFC	LOS
	AM All Development AM Peak			
Stream B-C	1.2	13.95	0.55	B
Stream B-A	0.0	12.69	0.02	B
Stream C-AB	0.6	5.90	0.25	A

*Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

**Table 12.11 2039 PM Peak 1630-1730 P1 +P2 (100%)**

	PM Peak Proposed 2039 Sensitivity			
	Queue (PCU)	Delay (s)	RFC	LOS
	PM All Development PM Peak			
Stream B-C	0.3	6.75	0.23	A
Stream B-A	0.0	10.43	0.01	B
Stream C-AB	2.4	10.11	0.61	B

*Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.*

Arm A = Glencar Rd (W), Arm B= The Grange/Dr McGinley Rd. Arm C= Circular Road

A robust assessment of the impact of development on the junction discussed with Donegal County Council at the LRD meeting has been provided. The modelling results represent “worst case” assessment of development trips onto the existing road network +15 after the opening of the development. This is peak network and peak development trips modelled at the end of the design life of the priority junction.

During the AM peak hour period, with all development traffic, the modelling results highlight that the greatest RFC is only 0.55 or 55% on the minor arm (The Grange/Dr McGinley Rd), well below 0.85 or 85<sup>th</sup>ile threshold

where queuing and delay are more likely to occur. The level of queuing at the junction is minimal in free flow conditions (2.4 vehicles) and not adversely impacted by the P1 and P2 proposal (100%) with all development trips assigned to and from Glencar Road.

During the PM peak hour period, with all development traffic, the modelling results highlight that the greatest RFC is only 0.61 or 61% on the minor arm (The Grange/Dr McGinley Rd), well below 0.85 or 85<sup>th</sup>ile threshold where queuing and delay are more likely to occur. The level of queuing at the junction is again minimal in free flow conditions (2.4 vehicles) and not adversely impacted by the P1 and P2 proposal (100%) with all development trips assigned to and from Glencar Road.

The results confirm that the **operational phase** of the development will have a negligible and insignificant impact upon the capacity and safety of the road network in the area. We have defined the effects of this phase in terms of Table 3.4 of the EPA guidelines, as set out in Table 12.12.

**Table 12.12 Description of Effects- Operational Phase**

Heading	Comment/Effect
Quality of Effects	Neutral
Significance of Effects	Not Significant
Extent & Context of Effects	The extent of the area where the operational transportation will be locally, in the vicinity of development. The effects although Not Significant of Neutral will be most noticeable at peak commuter times.
Probability of Effects	Likely
Duration & Frequency of Effects	As per above the Transportation Effects will be most noticeable during the weekday Commuter Peak Hours

**12.8.3 Cumulative Impacts**

A Do-Nothing scenario would result in no change whatsoever to the existing established traffic and transportation demands or conditions.

A Do-Something scenario, ie. With P1 and P2 development (100% all development traffic) would generate a low or *not significant* impact of development. The proposal can be accommodated on the surrounding road network. Notwithstanding, mitigation measures are proposed to ameliorate the low impact of development identified.

**12.9 Mitigation Measures**

In terms of the **Construction Phase** of development an *outline* Construction and Traffic Management Plan (CTMP) has been prepared by MH Associates, Architects. A Construction and Environmental Management Plan (CEMP) will be prepared by the contractor for agreement with Donegal County Council prior to commencement, as per normal best practice. Such a document would include a description of the proposed works and how these works will be managed for the duration of the construction works on site.

The CEMP will include preliminary details for access arrangements for labour, plant and materials and would indicate the locations of construction/parking plant and machine compounds This plan is already available and has been prepared by MH Associates. Such detail, will be updated as the project progresses through the construction phase, including more detailed method statements by the construction contractor having regard to their own procedures, any revisions to the construction programme, up to date site conditions and any relevant conditions attached to a grant of planning permission.



Any works on public roads (e.g., for services connections) will require an application for a Road Opening License and will be submitted by the contractor to Donegal County Council and will include a full detailed Construction Traffic Management Plan prepared in accordance with Chapter 8 of the Traffic Signs Manual for pre-approval by Donegal County Council.

The final site-specific CTMP and CEMP will be based on the outline CTMP prepared by MH Associates. This includes (inter alia) the following measures for minimising construction traffic and mitigating its effects:

- The site working hours are expected to be 0700 to 1900 on weekdays and 0700 to 1400 on Saturdays. No works will be undertaken on Sundays or on Bank Holidays, without the consent of Donegal County Council.
- All instructions from the developer staff must be obeyed. All site traffic will be subject to speed restrictions.
- Only vehicles with specific business on site can enter the site once permission has been granted by the developer and/or staff. All vehicles must stop at the security barrier and caution must be exercised entering and leaving the site.
- The site access to Phase 2 (as per CTMP drawing) will be controlled by site personnel (gateman) for deliveries. Access will be strictly controlled via security personnel at the access point to the site.
- No parking is allowed on any access road to the site with no construction traffic permitted in or on any developed/occupied phases. No vehicle may park on or around any footpaths in adjoining areas.
- It is proposed that construction vehicle movements would be restricted to the main route i.e., the Glencar Road.
- Movements of large or abnormal loads will be addressed in advance with the relevant authorities. All deliveries will be notified to the site management team at least 24 hours in advance. No large deliveries will be allowed to the site during peak traffic times.
- The developer will strive to maintain a tidy site and to operate a “just in time” policy for the delivery and supply of materials for the works, particularly the final phase of works when on-site storage will be at a minimum.
- Vehicles will be directed to the delivery points for holding/off-loading /storage, these deliveries will be controlled by a dedicated person allocated to overseeing all deliveries and controlling the entrance.
- All pedestrian routes will be adequately segregated from vehicle routes across the site. All vehicle crossing points will have appropriate signage to alert pedestrians of vehicle crossing points. All site operatives will be given a specific site induction giving information on the pedestrian access routes. This will be segregation of vehicles and pedestrians.

The Construction Traffic Management Plan report, prepared by the contractor will be reviewed and updated in line with the construction programme and will typically include details of the following:

- Temporary Traffic Operations Supervisor (TTOS).
- Temporary traffic control measures.
- Temporary and permanent access to the works- vehicles and pedestrians.
- Off-loading and storage areas.
- Traffic management procedures for waste disposal vehicles
- Personnel and vehicle segregation
- Equipment e.g. road cones, temporary fencing and signage etc.
- Ensuring all work is planned and method statements prepared and detailing safe systems of work.
- Ensuring that all sub-contractors make adequate provision for vehicle selection and supervisions of drivers.
- Making vehicle safety an integral of the development safety and health plan
- Defining standards for driver competence, vehicle safety and maintenance.
- Ensuring the co-ordination and co-operation between contractors.
- Ensuring that all workers receive site induction training, detailing safe traffic routes and site rules for operating vehicles. Establish safety monitoring procedures for the use of vehicles on site.



- Checking that all staff on site have appropriate up to date health and safety cards.
- Ensuring dust or spoil on the road does not become an issue, the contractor will be responsible for cleaning the road surface in the site vicinity.

Construction personnel who live locally will be encouraged to walk or cycle to work. Similarly, all personnel will be encouraged to make use of available local public transport. Perhaps more appropriate is encouraging shared car and van trips to minimise the number of private vehicles to and from the site.

For the **Operational Phase** of development, any works prior to development opening will be agreed with Donegal County Council. Pedestrian, cyclist and vehicular links to both permitted phases of the development and to the local network are proposed. No further mitigation is proposed for the operational phase of the proposed development as it is predicted to have an imperceptible impact of the operation onto the local roads.

Infrastructure to facilitate a local bus service passing the site is proposed that will provide sustainable transport alternatives to the car and reduce relatively low level of vehicular trips proposed by the development. Bus stops are proposed and discussed in the Mobility Management Plan. This is outside the control of the applicant; however, we are willing to discuss the provision with Donegal County Council.

**Table 12.13 Table of Mitigation Measures**

Construction Phase	
Nuisance associates with construction activities and traffic	A Construction Environmental Management Plan and final Construction Traffic Management Plan will be prepared for agreement with Donegal County Council prior to commencement and implementation.
Operational Phase	
Adequacy and safety of site access onto The Grange	Construct permitted access arrangement and offer measures at Glencar Road priority junction, and bus stops to be agreed with Donegal County Council.
Adversely impacting upon the safety and capacity of local transportation network	Pedestrian, cyclist and vehicular links to permitted phases of development and surrounding road network in accordance with approved designs and considered through the audit process.

No further mitigation measures are deemed necessary based on the assessment process and relevant guidance.

**12.10 Residual Impacts**

With the exception of the Phase 1 and Phase 2 developments there are no other plans or projects in the vicinity of the site that would affect the local road network.

Following the assessment, the residual impacts are expected to be positive, with increased pedestrian activity and connectivity, with an increased demand for public and alternative transport created through contributing to a vibrant, sustainable, and active residential area adjacent to schools and local services.

The construction stage of the proposed development will still result in increased vehicle movements; however, the relative increases will be sufficiently low so that when combined with the mitigation measures outlined, will have a negligible residual impact.



The operational stage of the proposed development will result in increased traffic but the local road network has been shown to be capable of catering for this given the sub-threshold nature of the traffic impact.

### **12.11 Severance, Noise, Delay & Intimidation, Summary of Effects**

A detailed review is not required as the overall traffic flows, proportion of traffic flows or HGV movement are not forecast to increase by more than 10% or 30%. This is not the case. It is however worthwhile commenting on the issues.

Severance is defined in the Design Manual for Roads and Bridges (Vol 11 Section 3 Part 8) as: “...the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows.” It is proposed to improve pedestrian connectivity at the Glencar Road junction, by enhancing linkages, crossing points and signage. The percentage impact of this proposal is less than 10%, will not be adversely impacted, and mitigation proposed.

Future, further pedestrian and cycling improvements are proposed along The Grange by Donegal County Council once the Northern Link road has been upgraded, improving further connectivity and safety for all.

Air and noise assessment has been considered by Greentrack air and noise consultants.

The degree of fear and intimidation is generally dependant on traffic volumes, traffic composition and the presence of protection such as footways. All elements will remain broadly similar. Enhancements are proposed with connectivity improvement and enhancement of crossing facilities proposed for Glencar Road, The Grange and Dr. McGinley Road.

The impact of development was below identified environmental thresholds upon which further assessment was required. The scheme will not be built all at once but in a number of stages. Mitigation measures in relation to traffic and transportation during the construction stage have been discussed and will be incorporated into the final CEMP.

The junction modelling exercise undertaken for a +15-year horizon highlighted no significant delay for vehicular traffic, and similarly this is the case for pedestrian trips in the vicinity of Glencar Road. For those travelling on foot to nearby schools for example, crossing and pedestrian connectivity enhancements have been proposed as part of the Phase 1 application. The impact of the operational stage has been reviewed and tested and deemed low.

### **12.12 Interactions Arising**

SW Consultancy were part of the design team imputing into the layout and design process. Information was provided to the design team in terms of operational traffic and construction traffic to allow the air and noise assessments to be undertaken.

Given the limited nature of the construction stage, the interaction between traffic and transportation and air dust and climate factors and noise and vibration is considered imperceptible.

With respect to the operational stage of the proposed development, the interaction between traffic and transport and air, dust and climate factors and traffic and transport, noise and vibration the operational phase is again considered imperceptible.

### **12.13 Monitoring**

Normal post-planning consultation and liaison with Donegal County Council will be undertaken to ensure that any adverse impacts of the proposed development are minimised and reviewed.

### 12.14 References

The recommendations contained within the study are based on the following sources of information and industry standard practices:

- TII Traffic and Transport Guidelines
- TRICS
- Junction 10 PICADY Software

### 12.15 Summary

As per the EIAR guidelines (May 2022) the Descriptions of Effects in relation to traffic and transportation are summarised below.

Table 12.14 Description of Effects- Traffic And Transportation Combined Phase 1 & 2	
Quality of Effects	It has been shown that the impact on the surrounding road network from the development proposal Phase 1 & 100% Phase 2 onto Glencar Road will be low. There will be a Neutral effect on the network. Significant improvements offered at the Glencar Road/The Grange Dr McGinley Road junction will provide a positive effect for all road users.
Significance of Effects	The scheme proposal will have an Imperceptible impact on the surrounding road network. Although it has been demonstrated that all traffic can be accommodated onto the local network at Glencar Road/The Grange/Dr. McGinley Road the scheme will be phased, and additional improvements at the junction proposed.
Extent and Context of Effects	The local area beyond The Grange has been considered. The study area included both the Glencar Road priority junction and the roundabout. The main approach routes to the site were reviewed.
Probability of Effects	The assessment criteria of the process have been robustly considered. The effects identified can reasonably be expected to occur.
Duration and Frequency of Effects	A robust assessment has considered a "worst case" assessment. It has been demonstrated that the assessment undertaken was robust.



REF: Jobs 21-398 Glencar Scotch Letterkenny

SITE: Circular Road

DAY: 30/11/2021 Wednesday



TIME	D →							TOT	PCU	E ←							TOT	PCU	F ↓							TOT	PCU	G ↑							TOT	PCU
	PCL	MCL	CAR	LGV	OGV1	OGV2	BUS			PCL	MCL	CAR	LGV	OGV1	OGV2	BUS			PCL	MCL	CAR	LGV	OGV1	OGV2	BUS			PCL	MCL	CAR	LGV	OGV1	OGV2	BUS		
07:00	0	0	23	0	0	0	0	23	23	0	0	5	0	0	0	0	5	5	0	0	8	0	0	0	0	8	8	0	0	6	0	0	0	0	6	6
07:15	0	0	33	0	0	0	0	33	33	0	0	9	0	0	0	0	9	9	0	0	10	0	0	0	0	10	10	0	0	8	0	0	0	0	8	8
07:30	0	0	56	0	0	0	0	56	56	0	0	15	0	0	0	0	15	15	0	0	23	0	0	0	0	23	23	0	0	30	0	0	0	0	30	30
07:45	0	0	61	0	0	0	0	61	61	0	0	23	0	0	0	0	23	23	0	0	29	0	0	0	0	29	29	0	0	29	0	0	0	0	29	29
H/TOT	0	0	173	0	0	0	0	173	173	0	0	52	0	0	0	0	52	52	0	0	70	0	0	0	0	70	70	0	0	73	0	0	0	0	73	73
08:00	0	0	71	0	0	0	0	71	71	0	0	29	0	0	0	0	29	29	0	0	43	0	0	0	0	43	43	0	0	35	0	0	0	0	35	35
08:15	0	0	98	0	0	0	0	98	98	0	0	33	0	0	0	0	33	33	0	0	91	0	0	0	0	91	91	0	0	44	0	0	0	0	44	44
08:30	0	0	117	0	0	0	0	117	117	0	0	33	0	0	0	0	33	33	0	0	180	0	0	0	0	180	180	0	0	83	0	0	0	0	83	83
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H/TOT	0	0	333	0	0	0	0	333	333	0	0	133	0	0	0	0	133	133	0	0	489	0	0	0	0	489	489	0	0	226	0	0	0	0	226	226
09:00	0	0	94	0	0	0	0	94	94	0	0	69	0	0	0	0	69	69	0	0	109	0	0	0	0	109	109	0	0	103	0	0	0	0	103	103
09:15	0	0	80	0	0	0	0	80	80	0	0	63	0	0	0	0	63	63	0	0	75	0	0	0	0	75	75	0	0	105	0	0	0	0	105	105
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09:45	0	0	44	0	0	0	0	44	44	0	0	33	0	0	0	0	33	33	0	0	62	0	0	0	0	62	62	0	0	56	0	0	0	0	56	56
H/TOT	0	0	265	0	0	0	0	265	265	0	0	204	0	0	0	0	204	204	0	0	302	0	0	0	0	302	302	0	0	307	0	0	0	0	307	307
10:00	0	0	53	0	0	0	0	53	53	0	0	38	0	0	0	0	38	38	0	0	38	0	0	0	0	38	38	0	0	41	0	0	0	0	41	41
10:15	0	0	42	0	0	0	0	42	42	0	0	34	0	0	0	0	34	34	0	0	47	0	0	0	0	47	47	0	0	45	0	0	0	0	45	45
10:30	0	0	36	0	0	0	0	36	36	0	0	23	0	0	0	0	23	23	0	0	40	0	0	0	0	40	40	0	0	47	0	0	0	0	47	47
10:45	0	0	34	0	0	0	0	34	34	0	0	34	0	0	0	0	34	34	0	0	39	0	0	0	0	39	39	0	0	47	0	0	0	0	47	47
H/TOT	0	0	165	0	0	0	0	165	165	0	0	129	0	0	0	0	129	129	0	0	164	0	0	0	0	164	164	0	0	180	0	0	0	0	180	180
11:00	0	0	45	0	0	0	0	45	45	0	0	41	0	0	0	0	41	41	0	0	46	0	0	0	0	46	46	0	0	53	0	0	0	0	53	53
11:15	0	0	40	0	0	0	0	40	40	0	0	27	0	0	0	0	27	27	0	0	45	0	0	0	0	45	45	0	0	64	0	0	0	0	64	64
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11:45	0	0	37	0	0	0	0	37	37	0	0	39	0	0	0	0	39	39	0	0	43	0	0	0	0	43	43	0	0	75	0	0	0	0	75	75
H/TOT	0	0	157	0	0	0	0	157	157	0	0	148	0	0	0	0	148	148	0	0	184	0	0	0	0	184	184	0	0	243	0	0	0	0	243	243
<b>AM TOT</b>	<b>0</b>	<b>0</b>	<b>1093</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1093</b>	<b>1093</b>	<b>0</b>	<b>0</b>	<b>666</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>666</b>	<b>666</b>	<b>0</b>	<b>0</b>	<b>1209</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1209</b>	<b>1209</b>	<b>0</b>	<b>0</b>	<b>1029</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1029</b>	<b>1029</b>
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12:30	0	0	22	0	0	0	0	22	22	0	0	41	0	0	0	0	41	41	0	0	56	0	0	0	0	56	56	0	0	85	0	0	0	0	85	85
12:45	0	0	42	0	0	0	0	42	42	0	0	49	0	0	0	0	49	49	0	0	46	0	0	0	0	46	46	0	0	95	0	0	0	0	95	95
H/TOT	0	0	172	0	0	0	0	172	172	0	0	181	0	0	0	0	181	181	0	0	214	0	0	0	0	214	214	0	0	308	0	0	0	0	308	308
13:00	0	0	41	0	0	0	0	41	41	0	0	60	0	0	0	0	60	60	0	0	64	0	0	0	0	64	64	0	0	89	0	0	0	0	89	89
13:15	0	0	54	0	0	0	0	54	54	0	0	33	0	0	0	0	33	33	0	0	50	0	0	0	0	50	50	0	0	76	0	0	0	0	76	76
13:30	0	0	52	0	0	0	0	52	52	0	0	55	0	0	0	0	55	55	0	0	74	0	0	0	0	74	74	0	0	81	0	0	0	0	81	81
13:45	0	0	67	0	0	0	0	67	67	0	0	48	0	0	0	0	48	48	0	0	106	0	0	0	0	106	106	0	0	84	0	0	0	0	84	84
H/TOT	0	0	214	0	0	0	0	214	214	0	0	196	0	0	0	0	196	196	0	0	294	0	0	0	0	294	294	0	0	330	0	0	0	0	330	330
14:00	0	0	52	0	0	0	0	52	52	0	0	51	0	0	0	0	51	51	0	0	64	0	0	0	0	64	64	0	0	93	0	0	0	0	93	93
14:15	0	0	45	0	0	0	0	45	45	0	0	41	0	0	0	0	41	41	0	0	68	0	0	0	0	68	68	0	0	61	0	0	0	0	61	61
14:30	0	0	46	0	0	0	0	46	46	0	0	57	0	0	0	0	57	57	0	0	94	0	0	0	0	94	94	0	0	86	0	0	0	0	86	86
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H/TOT	0	0	187	0	0	0	0	187	187	0	0	206	0	0	0	0	206	206	0	0	308	0	0	0	0	308	308	0	0	324	0	0	0	0	324	324
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15:15	0	0	70	0	0	0	0	70	70	0	0	66	0	0	0	0	66	66	0	0	92	0	0	0	0	92	92	0	0	94	0	0	0	0	94	94
15:30	0	0	55	0	0	0	0	55	55	0	0	47	0	0	0	0	47	47	0	0	100	0	0	0	0	100	100	0	0	89	0	0	0	0	89	89
15:45	0	0	58	0	0	0	0	58	58	0	0	56	0	0	0	0	56	56	0	0	127	0	0	0	0	127	127	0	0	86	0	0	0	0	86	86
H/TOT	0	0	269	0	0	0	0	269	269	0	0	229	0	0	0	0	229	229	0	0	383	0	0	0	0	383	383	0	0	386	0	0	0	0	386	386
16:00	0	0	38	0	0	0	0	38	38	0	0	72	0	0	0	0	72	72	0	0	91	0	0	0	0	91</										

**AM Peak Hour**

	Glencar Rd W	The Grange	Dr McGinley Rd	Circular Rd E	Glencar Rd S	Total	
	Base	906	165	67	541	894	2573
	% Dist.	35%	6%	3%	21%	35%	100%
A	P1 (90)	16	3	1	10	16	46
B	Creche	8	1	1	5	8	23
C	60% Ph 2	20	3	2	12	20	58
D	100% Ph 2	34	6	3	20	34	97
E	P1+Creche+P2	58	10	5	35	58	166
F	08/80150 Res	75	13	6	45	74	215

**PM Peak Hour**

	Glencar Rd W	The Grange	Dr McGinley Rd	Circular Rd E	Glencar Rd S	Total	
	Base	422	160	66	464	701	1813
	% Dist.	23%	9%	4%	26%	39%	100%
A	P1 (90)	11	4	2	12	17	46
B	Creche	5	2	1	6	9	22
C	60% Ph 2	14	5	2	15	22	58
D	100% Ph 2	23	9	4	25	37	98
E	P1+Creche+P2	37	15	7	43	64	167
F	08/80150 Res	50	20	9	56	84	218

**0800-0900 Trip Generation Comparitor Per Scenario**

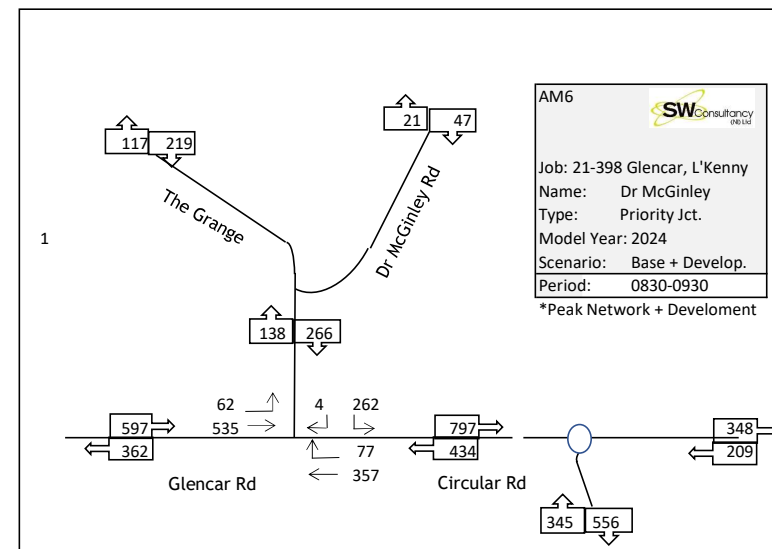
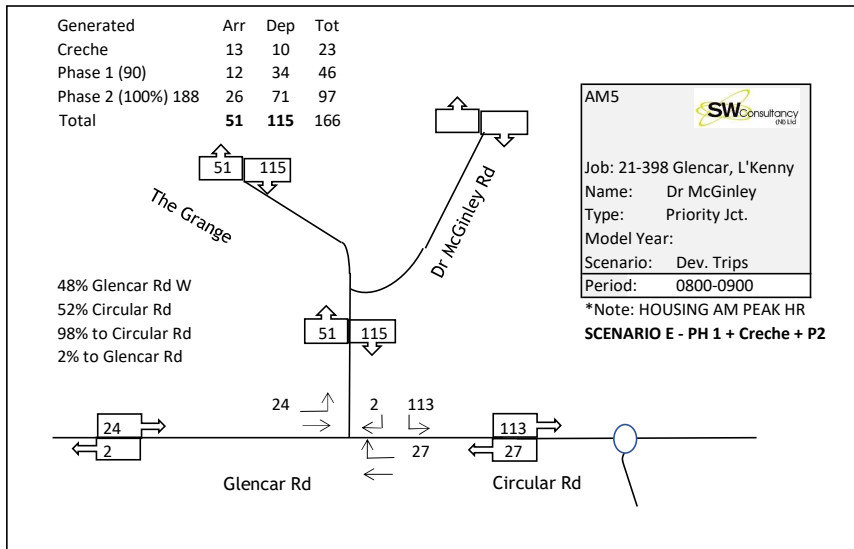
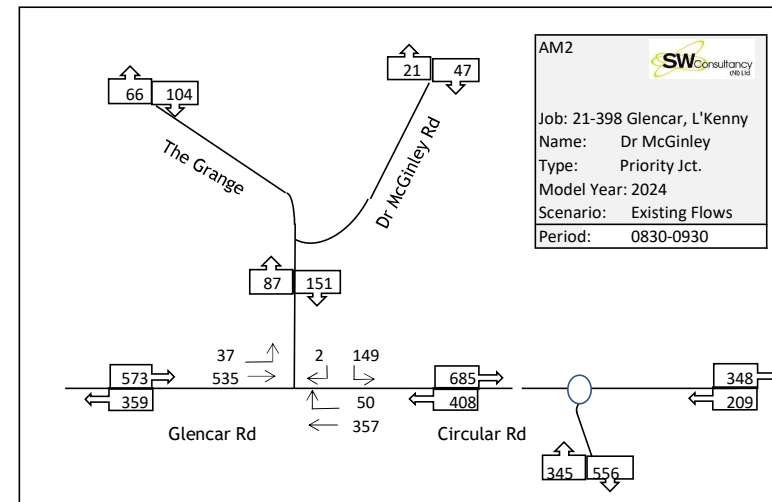
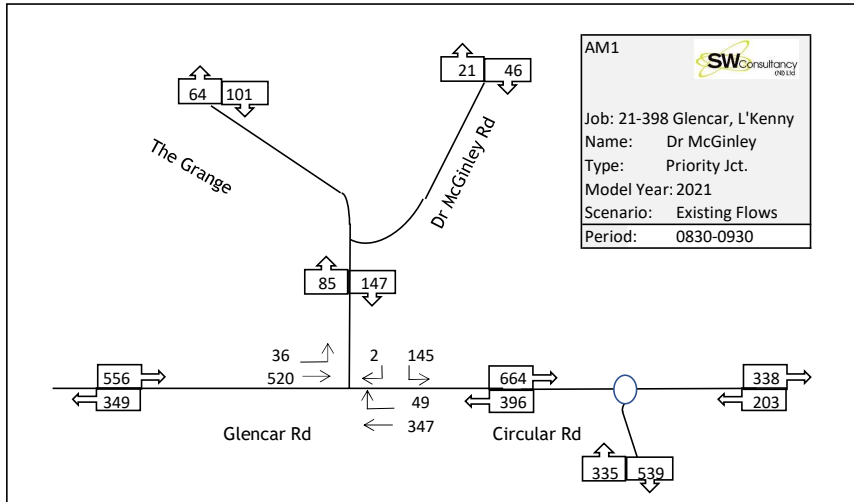
Trip Gen Rates	Arr	Dep	Units	Arr	Dep	Scenario
Housing	0.137	0.379	90	<b>12</b>	<b>34</b>	Phase 1 (90 Units) Scenario A
Creche	2.120	1.677	6	<b>13</b>	<b>10</b>	600m <sup>2</sup> GIFA Scenario B
Housing	0.137	0.379	113	<b>15</b>	<b>43</b>	60% of 188 Phase 2=113 Scenario C
Housing	0.137	0.379	188	<b>26</b>	<b>71</b>	100% of 188 Phase 2=188 Scenario D
Housing	0.137	0.379	278	<b>51</b>	<b>115</b>	Phase 1 & Phase 2 (278) + Creche Scenario E
Prev. App Housing	0.137	0.379	418	<b>57</b>	<b>158</b>	08/80150 Residential only Scenario F

**1700-1800 Trip Generation Comparitor Per Scenario**

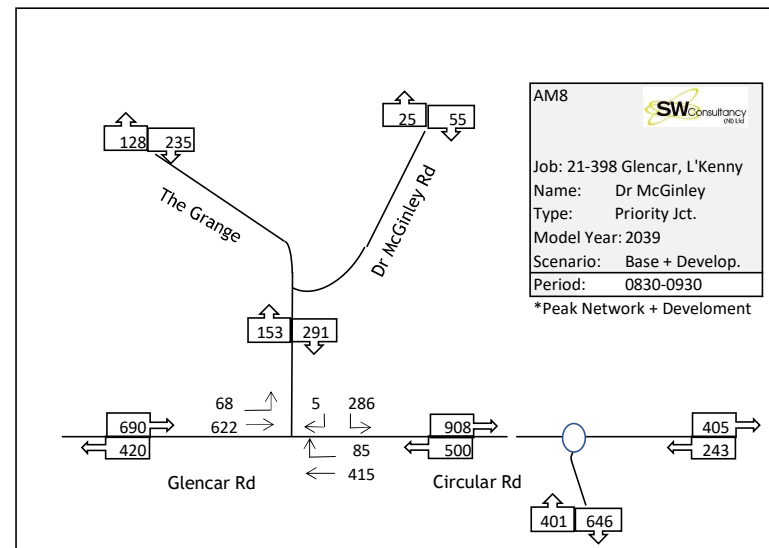
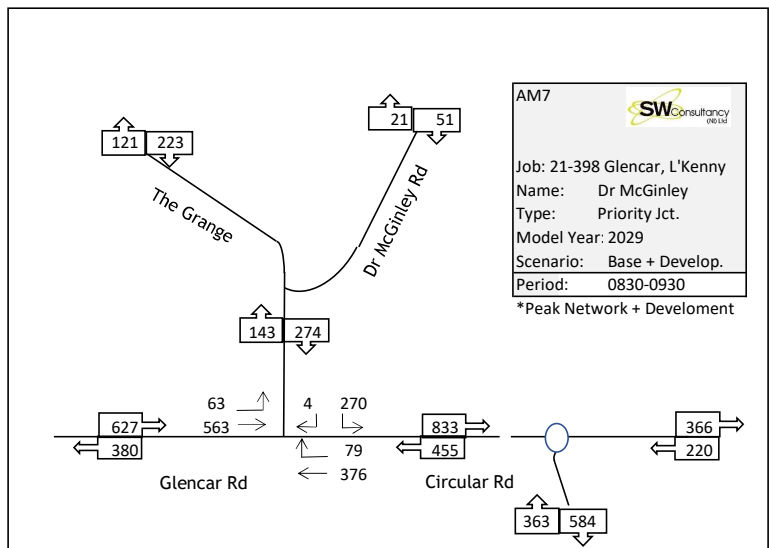
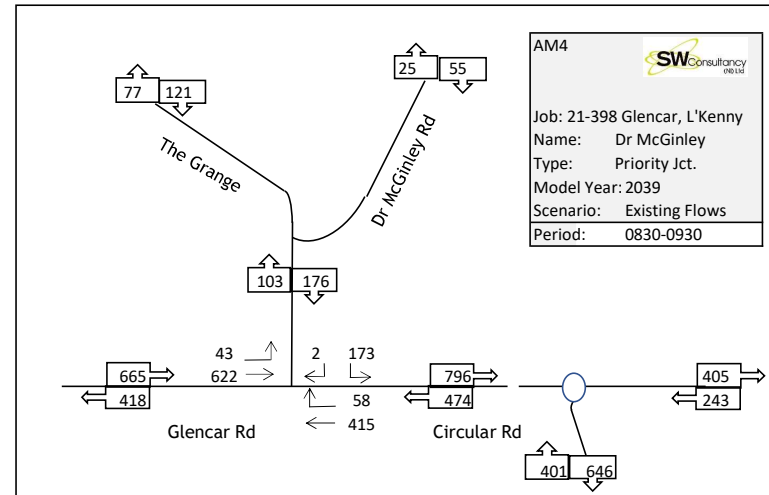
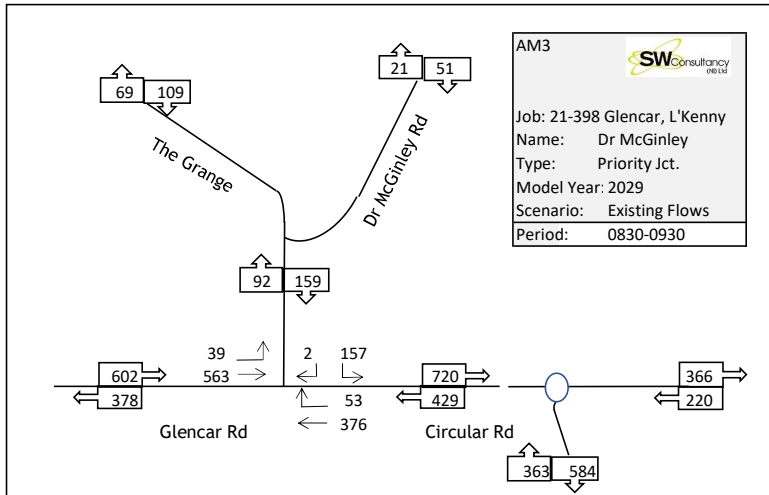
Trip Gen Rates	Arr	Dep	Units	Arr	Dep	Scenario
Housing	0.349	0.172	90	<b>31</b>	<b>15</b>	Phase 1 (90 Units) Scenario A
Creche	1.741	1.962	6	<b>10</b>	<b>12</b>	600m <sup>2</sup> GIFA Scenario B
Housing	0.349	0.172	113	<b>39</b>	<b>19</b>	60% of 188 Phase 2=113 Scenario C
Housing	0.349	0.172	188	<b>66</b>	<b>32</b>	100% of 188 Phase 2=188 Scenario D
Housing	0.349	0.172	278	<b>107</b>	<b>60</b>	Phase 1 & Phase 2 (278) + Creche Scenario E
Prev. App Housing	0.349	0.172	418	<b>146</b>	<b>72</b>	08/80150 Residential only Scenario F

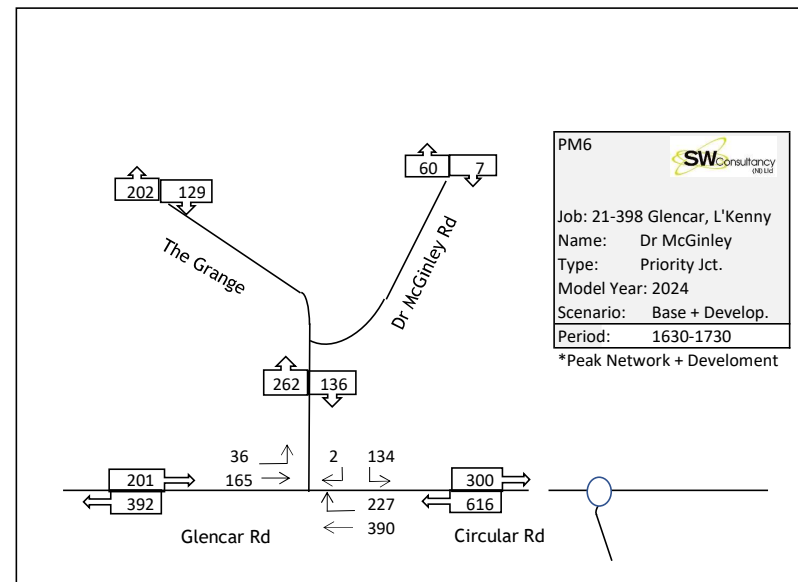
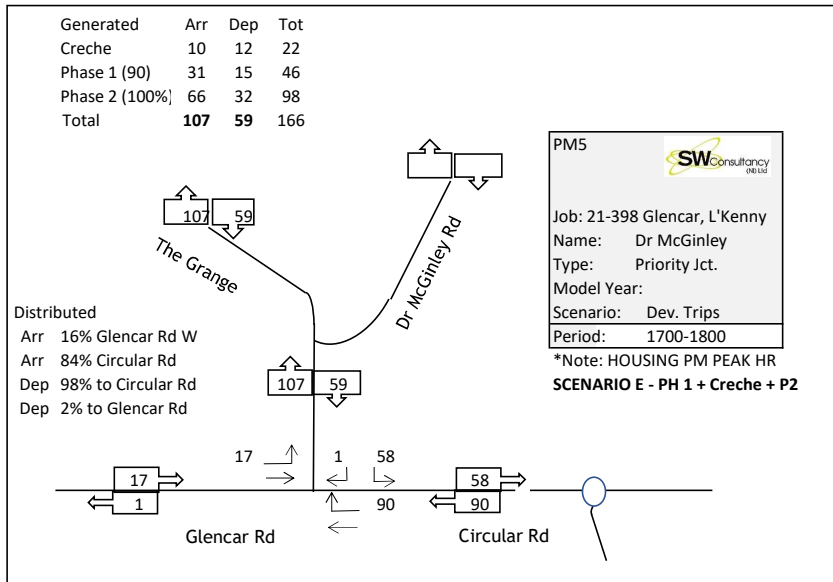
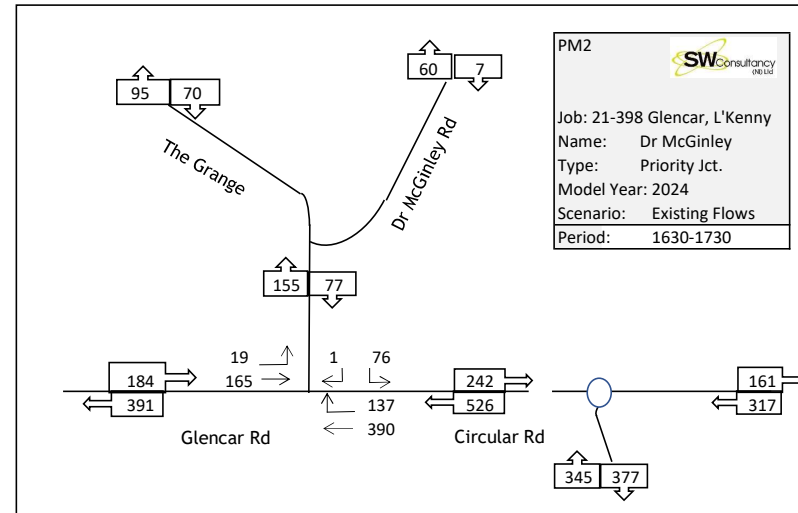
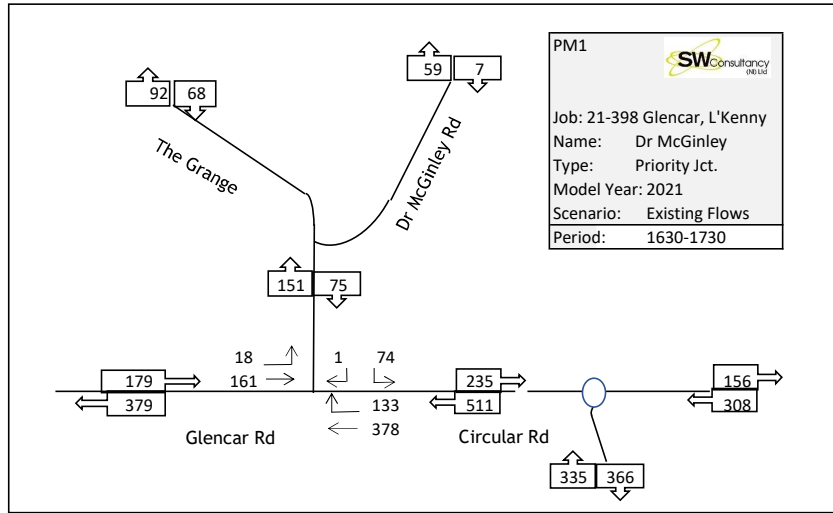
AM Peak Base Network Flows 0830-0930 (PCU's) 2021 Data Factored by 3.03% 2021-2024 Opening year												
	Flow		Flow		Flow		Flow		Flow		Total Flow	
Base	Glencar Rd W Arrivals	572	From The Grange	104	From Dr McGinley Rd	47	Circular Rd E Arrive	209	Glencar Rd S Arr	366	AM Peak	
Traffic	Glencar Rd West Departures	361	To The Grange	66	To Dr. McGinley Rd	21	Circular Rd E Depart.	348	Glencar Rd S Dep	555		
	<b>Total</b>	<b>934</b>	<b>Total</b>	<b>170</b>	<b>Total</b>	<b>69</b>	<b>Total</b>	<b>558</b>	<b>Total</b>	<b>921</b>	<b>Total</b>	<b>2651</b>
Distribution Percentage		35%		6%		3%		21%		35%		100%
Scenario Impact Per Arm												
A		1.74% <b>16</b>		1.64% <b>3</b>		2.03% <b>1</b>		1.75% <b>10</b>		1.76% <b>16</b>	1.75%	46
B		0.85% <b>8</b>		0.80% <b>1</b>		1.00% <b>1</b>		0.86% <b>5</b>		0.87% <b>8</b>	0.86%	23
C		2.18% <b>20</b>		2.05% <b>3</b>		2.55% <b>2</b>		2.19% <b>12</b>		2.21% <b>20</b>	2.20%	58
D		3.64% <b>34</b>		3.42% <b>6</b>		4.25% <b>3</b>		3.65% <b>20</b>		3.69% <b>34</b>	3.66%	97
E		6.23% <b>58</b>		5.87% <b>10</b>		7.28% <b>5</b>		6.26% <b>35</b>		6.31% <b>58</b>	6.27%	166
F		8.08% <b>75</b>		7.61% <b>13</b>		9.44% <b>6</b>		8.12% <b>45</b>		8.08% <b>74</b>	8.10%	215

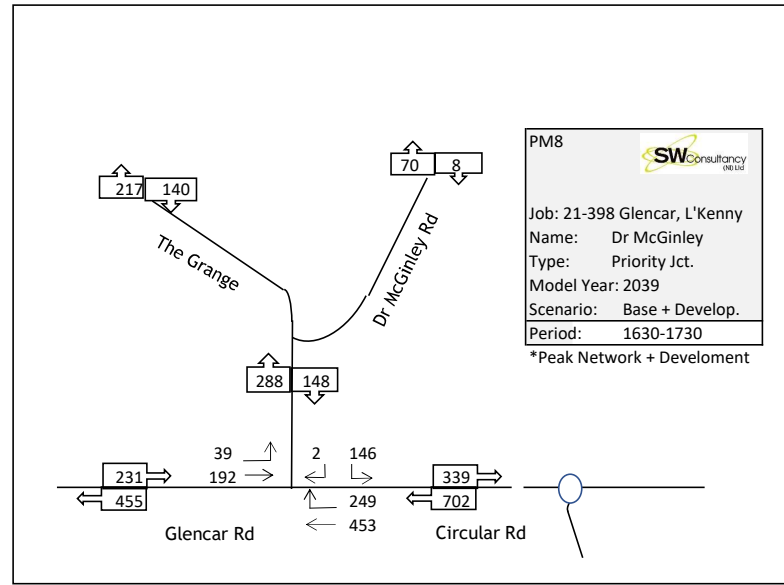
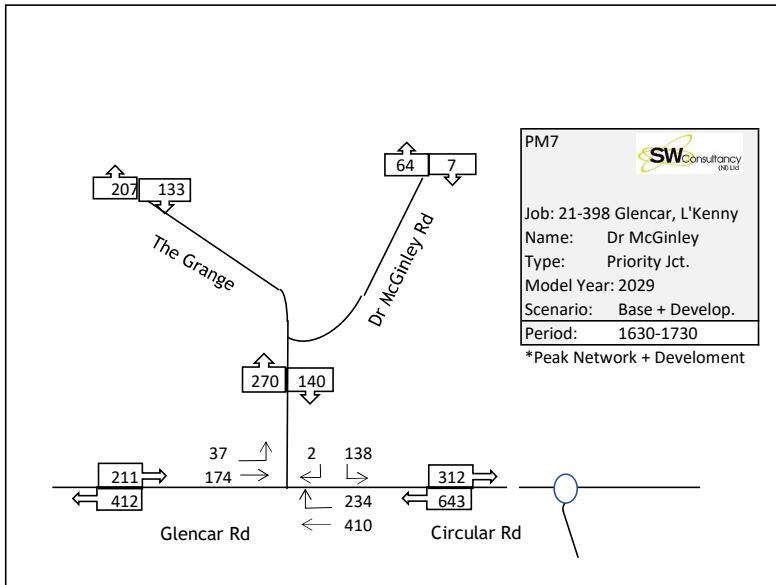
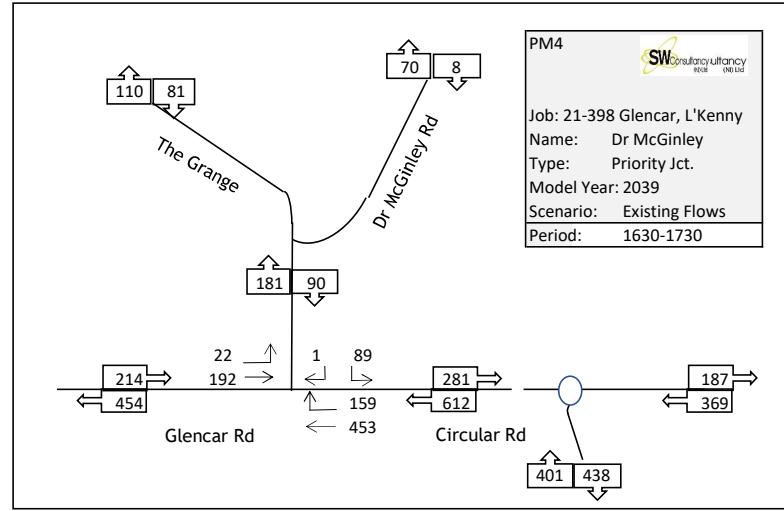
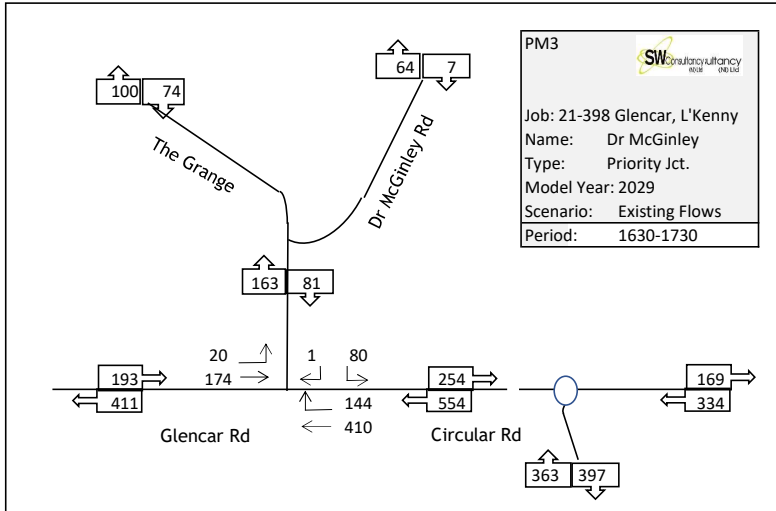
PM Peak Base Network Flows 1630-1730 (PCU's) 2021 Data Factored by 3.03% 2021-2024 Opening year												
	Flow		Flow		Flow		Flow		Flow		Total Flow	
Base	Glencar Rd W Arrivals	190	From The Grange	70	From Dr McGinley Rd	7	Circular Rd E Arrive	317	Glencar Rd S Arr	345	PM Peak	
Traffic	Glencar Rd West Departures	245	To The Grange	95	To Dr. McGinley Rd	61	Circular Rd E Depart.	161	Glencar Rd S Dep	377		
	<b>Total</b>	<b>435</b>	<b>Total</b>	<b>165</b>	<b>Total</b>	<b>68</b>	<b>Total</b>	<b>478</b>	<b>Total</b>	<b>722</b>	<b>Total</b>	<b>1868</b>
Distribution Percentage		23%		9%		4%		26%		39%		100%
Scenario Impact Per Arm												
A		1.15% <b>11</b>		2.48% <b>4</b>		2.74% <b>2</b>		2.19% <b>12</b>		1.88% <b>17</b>	1.75%	46
B		0.55% <b>5</b>		1.18% <b>2</b>		1.30% <b>1</b>		1.04% <b>6</b>		0.94% <b>9</b>	0.85%	22
C		1.45% <b>14</b>		3.11% <b>5</b>		3.43% <b>2</b>		2.74% <b>15</b>		2.38% <b>22</b>	2.20%	58
D		2.41% <b>23</b>		5.18% <b>9</b>		5.72% <b>4</b>		4.57% <b>25</b>		4.04% <b>37</b>	3.69%	98
E		4.01% <b>37</b>		8.84% <b>15</b>		9.75% <b>7</b>		7.79% <b>43</b>		6.96% <b>64</b>	6.29%	167
F		5.36% <b>50</b>		11.53% <b>20</b>		12.71% <b>9</b>		9.98% <b>56</b>		9.11% <b>84</b>	8.22%	218





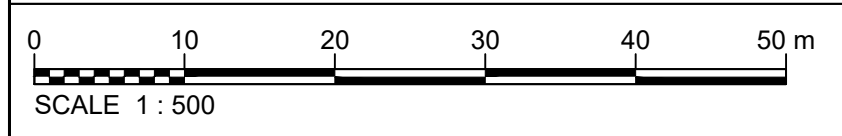
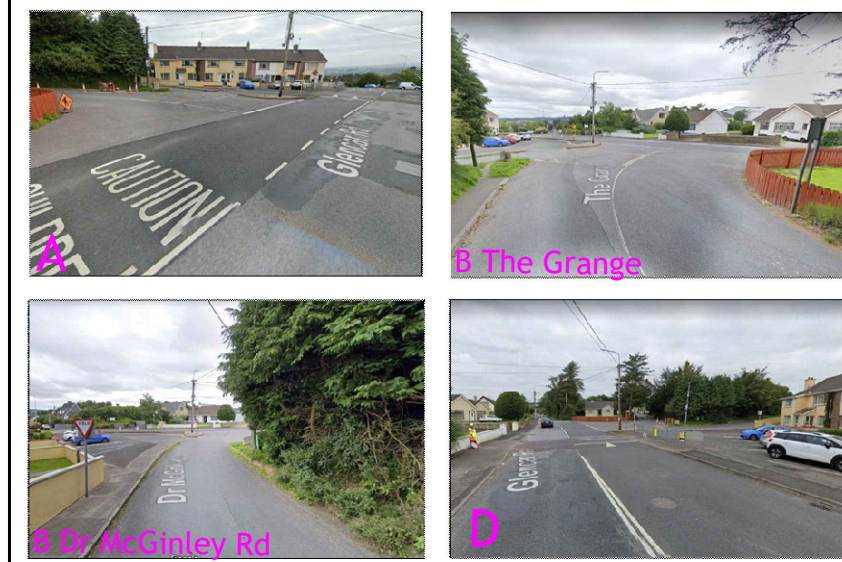
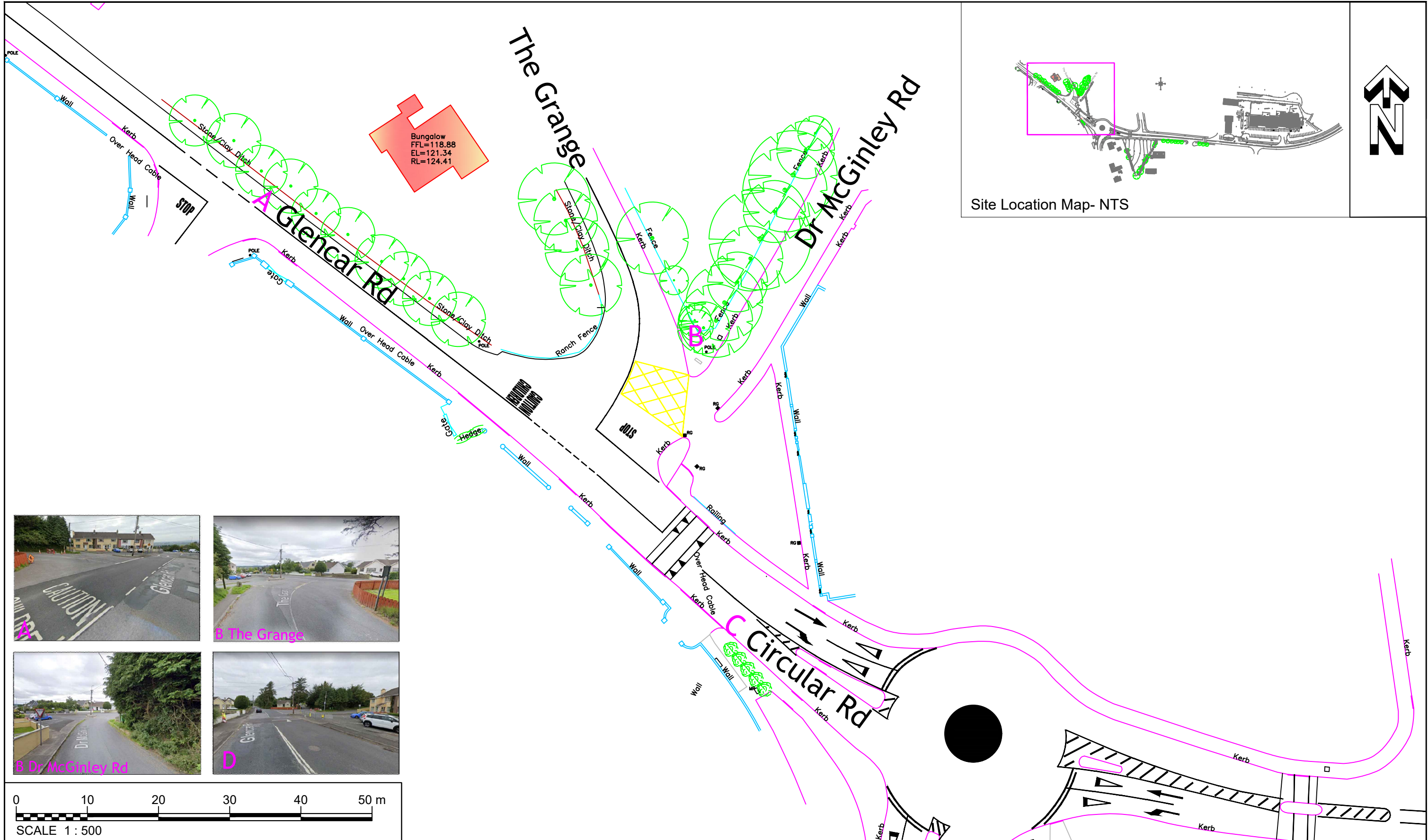






AM Peak Base Network Flows 0830-0930 (PCU's) 2021 Data Factored by 3.03% 2021-2024 Opening year												
	Flow		Flow		Flow		Flow		Total Flow			
Base	Glencar Rd W Arrivals	572	From The Grange	104	From Dr McGinley Rd	47	Circular Rd E Arrive	209	Glencar Rd S Arr	366	AM Peak	
Traffic	Glencar Rd West Departures	361	To The Grange	66	To Dr. McGinley Rd	21	Circular Rd E Depart.	348	Glencar Rd S Dep	555		
	<b>Total</b>	<b>934</b>	<b>Total</b>	<b>170</b>	<b>Total</b>	<b>69</b>	<b>Total</b>	<b>557</b>	<b>Total</b>	<b>921</b>	<b>Total</b>	<b>2651</b>
Distribution Percentage		35%		6%		3%		21%		35%		100%
Scenario Impact Per Arm												
A		1.74% <b>16</b>		1.64% <b>3</b>		2.03% <b>1</b>		1.75% <b>10</b>		1.76% <b>16</b>	1.75%	46
B		0.85% <b>8</b>		0.80% <b>1</b>		1.00% <b>1</b>		0.86% <b>5</b>		0.87% <b>8</b>	0.86%	23
C		2.18% <b>20</b>		2.05% <b>3</b>		2.55% <b>2</b>		2.19% <b>12</b>		2.21% <b>20</b>	2.20%	58
D		3.64% <b>34</b>		3.42% <b>6</b>		4.25% <b>3</b>		3.65% <b>20</b>		3.69% <b>34</b>	3.66%	97
E		6.23% <b>58</b>		5.87% <b>10</b>		7.28% <b>5</b>		6.26% <b>35</b>		6.32% <b>58</b>	6.27%	166
F		8.09% <b>75</b>		7.61% <b>13</b>		9.44% <b>6</b>		8.13% <b>45</b>		8.09% <b>74</b>	8.10%	215

PM Peak Base Network Flows 1630-1730 (PCU's) 2021 Data Factored by 3.03% 2021-2024 Opening year												
	Flow		Flow		Flow		Flow		Total Flow			
Base	Glencar Rd W Arrivals	190	From The Grange	70	From Dr McGinley Rd	7	Circular Rd E Arrive	317	Glencar Rd S Arr	345	PM Peak	
Traffic	Glencar Rd West Departures	244	To The Grange	95	To Dr. McGinley Rd	61	Circular Rd E Depart.	161	Glencar Rd S Dep	377		
	<b>Total</b>	<b>435</b>	<b>Total</b>	<b>165</b>	<b>Total</b>	<b>68</b>	<b>Total</b>	<b>478</b>	<b>Total</b>	<b>722</b>	<b>Total</b>	<b>1867</b>
Distribution Percentage		23%		9%		4%		26%		39%		100%
Scenario Impact Per Arm												
A		1.16% <b>11</b>		2.48% <b>4</b>		2.74% <b>2</b>		2.19% <b>12</b>		1.88% <b>17</b>	1.75%	46
B		0.55% <b>5</b>		1.18% <b>2</b>		1.30% <b>1</b>		1.04% <b>6</b>		0.94% <b>9</b>	0.85%	22
C		1.45% <b>14</b>		3.11% <b>5</b>		3.43% <b>2</b>		2.74% <b>15</b>		2.38% <b>22</b>	2.20%	58
D		2.41% <b>23</b>		5.19% <b>9</b>		5.72% <b>4</b>		4.57% <b>25</b>		4.04% <b>37</b>	3.69%	98
E		4.01% <b>37</b>		8.84% <b>15</b>		9.75% <b>7</b>		7.79% <b>43</b>		6.96% <b>64</b>	6.29%	167
F		5.37% <b>50</b>		11.53% <b>20</b>		12.71% <b>9</b>		9.98% <b>56</b>		9.11% <b>84</b>	8.22%	218



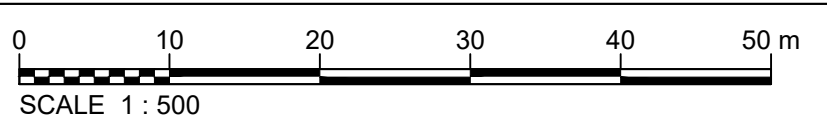
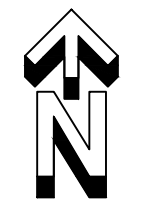
NOTES:

Junction Arm

**A** Glencar Road      **B** The Grange & Dr McGinley Road      **C** Circular Road

 To Letterkenny centre

11a Commons Hall Road, Newry, BT34 2PL T: +44(0)28 3063 3454 M: +44(0) 7968488913 E: simon@swconsultancy.net W: www.swconsultancy.net		Drawing title <b>Glencar Road, The Grange, Dr McGinley Rd, Circular Road Layout Plan</b>	
Client <b>PJ McDermott Group</b>		Drawing status <b>For Planning</b>	
Project <b>Phase 1 Proposed Development at Glencar Irish/Glencar Scotch, Letterkenny Planning App Ref. No. 22/51204</b>		Scale 1:500@ A3	
		SW Consultancy No. 21-398	
		Date 20-12-2022	
		Drawing number <b>21-398-001</b>	



**NOTES:**

Junction Arm

**A** Glencar Road

**B** The Grange & Dr McGinley Road

**C** Circular Road

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Client <b>PJ McDermott Group</b>		Drawing status <b>For Planning</b>	
Project <b>Phase 1 Proposed Development at Glencar Irish/Glencar Scotch, Letterkenny Planning App Ref. No. 22/51204</b>		Scale 1:500@ A3	
		SW Consultancy No. 21-398	
		Date 20-12-2022	
		Drawing number <b>21-398-002</b>	

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**Filename:** 2039 AM Peak Proposed.j10

**Path:** C:\Users\simon\OneDrive\JOBS\Jobs October 2021- September 2022\Jobs 21-398 Glencar Scotch Letterkenny\2023-04-01 EIA Chapter Glencar Scotch\2023-05-04 EIA Sensitivity Modelling

**Report generation date:** 08/05/2023 10:26:28

### «AM All Development AM Peak, AM Peak Proposed 2039 Sensitivity

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

### Summary of junction performance

	AM Peak Proposed 2039 Sensitivity			
	Queue (PCU)	Delay (s)	RFC	LOS
	<b>AM All Development AM Peak</b>			
<b>Stream B-C</b>	1.2	13.95	0.55	B
<b>Stream B-A</b>	0.0	12.69	0.02	B
<b>Stream C-AB</b>	0.6	5.90	0.25	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

### File summary

#### File Description

<b>Title</b>	
<b>Location</b>	
<b>Site number</b>	
<b>Date</b>	16/12/2022
<b>Version</b>	
<b>Status</b>	(new file)
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	DESKTOP-PLCKGF1\simon
<b>Description</b>	

### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

### Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	AM All Development AM Peak	AM Peak Proposed 2039 Sensitivity	Network Peak 0830-0930 P1 (90)+Creche + 100% Phase 2 (188)=278	ONE HOUR	08:15	09:45	15



# AM All Development AM Peak, AM Peak Proposed 2039 Sensitivity

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.40	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.40	A

## Arms

### Arms

Arm	Name	Description	Arm type
A	Glencar Rd		Major
B	The Grange/Dr McGinley Rd	The Grange/Dr McGinley Rd	Minor
C	Circular Rd		Major

### Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	9.24			190.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

### Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	9.90	9.90	4.50	3.10		3.00	54	56

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	560	0.088	0.222	0.139	0.317
B-C	758	0.100	0.252	-	-
C-B	684	0.228	0.228	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	690	100.000
B		✓	291	100.000
C		✓	500	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A	B	C
From	A	0	68	622
	B	5	0	286
	C	415	85	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	1	0	1
	C	5	1	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.55	13.95	1.2	B
B-A	0.02	12.69	0.0	B
C-AB	0.25	5.90	0.6	A
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	215	633	0.340	213	0.5	8.615	A
B-A	4	386	0.010	4	0.0	9.500	A

C-AB	107	780	0.137	106	0.3	5.475	A
C-A	270			270			
A-B	51			51			
A-C	468			468			

## 08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	257	609	0.422	256	0.7	10.282	B
B-A	4	350	0.013	4	0.0	10.535	B
C-AB	143	804	0.178	143	0.4	5.599	A
C-A	306			306			
A-B	61			61			
A-C	559			559			

## 08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	315	575	0.547	313	1.2	13.768	B
B-A	6	293	0.019	5	0.0	12.662	B
C-AB	207	839	0.247	206	0.6	5.870	A
C-A	344			344			
A-B	75			75			
A-C	685			685			

## 09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	315	575	0.547	315	1.2	13.952	B
B-A	6	292	0.019	6	0.0	12.689	B
C-AB	207	839	0.247	207	0.6	5.896	A
C-A	343			343			
A-B	75			75			
A-C	685			685			

## 09:15 - 09:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	257	609	0.422	259	0.8	10.441	B
B-A	4	349	0.013	5	0.0	10.553	B
C-AB	144	804	0.179	145	0.4	5.642	A
C-A	306			306			
A-B	61			61			
A-C	559			559			

## 09:30 - 09:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	215	633	0.340	216	0.5	8.738	A
B-A	4	386	0.010	4	0.0	9.514	A
C-AB	107	780	0.138	108	0.3	5.511	A
C-A	269			269			
A-B	51			51			
A-C	468			468			

<h1>Junctions 10</h1>
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**Filename:** 2039 PM Peak Proposed.j10

**Path:** C:\Users\simon\OneDrive\JOBS\Jobs October 2021- September 2022\Jobs 21-398 Glencar Scotch Letterkenny\2023-04-01 EIA Chapter Glencar Scotch\2023-05-04 EIA Sensitivity Modelling

**Report generation date:** 08/05/2023 10:29:38

### «PM All Development PM Peak, PM Peak Proposed 2039 Sensitivity

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

### Summary of junction performance

	PM Peak Proposed 2039 Sensitivity			
	Queue (PCU)	Delay (s)	RFC	LOS
	<b>PM All Development PM Peak</b>			
<b>Stream B-C</b>	0.3	6.75	0.23	A
<b>Stream B-A</b>	0.0	10.43	0.01	B
<b>Stream C-AB</b>	2.4	10.11	0.61	B

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

### File summary

#### File Description

<b>Title</b>	
<b>Location</b>	
<b>Site number</b>	
<b>Date</b>	16/12/2022
<b>Version</b>	
<b>Status</b>	(new file)
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	DESKTOP-PLCKGF1\simon
<b>Description</b>	

### Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

### Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

### Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

### Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	PM All Development PM Peak	PM Peak Proposed 2039 Sensitivity	Network Peak 1630-1730 P1 (90)+Creche + 100% Phase 2 (188)=278	ONE HOUR	16:15	17:45	15

# PM All Development PM Peak, PM Peak Proposed 2039 Sensitivity

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.36	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.36	A

## Arms

### Arms

Arm	Name	Description	Arm type
A	Glencar Rd		Major
B	The Grange/Dr McGinley Rd	The Grange/Dr McGinley Rd	Minor
C	Circular Rd		Major

### Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	9.24			190.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

### Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	9.90	9.90	4.50	3.10		3.00	54	56

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	560	0.088	0.221	0.139	0.316
B-C	758	0.100	0.252	-	-
C-B	684	0.228	0.228	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

### Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	231	100.000
B		✓	148	100.000
C		✓	702	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A	B	C
From	A	0	39	192
	B	2	0	146
	C	453	249	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	5
	B	1	0	1
	C	5	1	0

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.23	6.75	0.3	A
B-A	0.01	10.43	0.0	B
C-AB	0.61	10.11	2.4	B
C-A				
A-B				
A-C				

### Main Results for each time segment

#### 16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	110	718	0.153	109	0.2	5.960	A
B-A	2	419	0.004	1	0.0	8.718	A

C-AB	310	863	0.359	307	0.8	6.616	A
C-A	219			219			
A-B	29			29			
A-C	145			145			

**16:30 - 16:45**

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	131	710	0.185	131	0.2	6.274	A
B-A	2	390	0.005	2	0.0	9.359	A
C-AB	411	901	0.456	409	1.2	7.529	A
C-A	220			220			
A-B	35			35			
A-C	173			173			

**16:45 - 17:00**

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	161	700	0.230	160	0.3	6.741	A
B-A	2	352	0.006	2	0.0	10.399	B
C-AB	580	953	0.608	575	2.3	9.841	A
C-A	193			193			
A-B	43			43			
A-C	211			211			

**17:00 - 17:15**

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	161	700	0.230	161	0.3	6.747	A
B-A	2	351	0.006	2	0.0	10.426	B
C-AB	582	955	0.610	582	2.4	10.107	B
C-A	191			191			
A-B	43			43			
A-C	211			211			

**17:15 - 17:30**

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	131	710	0.185	132	0.2	6.285	A
B-A	2	389	0.005	2	0.0	9.391	A
C-AB	413	903	0.458	418	1.3	7.760	A
C-A	218			218			
A-B	35			35			
A-C	173			173			

**17:30 - 17:45**

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	110	718	0.153	110	0.2	5.979	A
B-A	2	417	0.004	2	0.0	8.745	A
C-AB	312	865	0.361	314	0.8	6.759	A
C-A	217			217			
A-B	29			29			
A-C	145			145			



# 13 LANDSCAPING & RESTORATION

## Table of Contents

- 13 LANDSCAPING & RESTORATION ..... 1
- List of Figures ..... 2
- List of Photographs ..... 2
- List of Tables ..... 3
- 13.1 Introduction ..... 4
  - 13.1.1 Project Description ..... 4
- 13.2 Methodology ..... 4
  - 13.2.1 Landscape assessment criteria ..... 5
  - 13.2.3 Visual Impact Assessment criteria ..... 6
- 13.3 Scope ..... 7
- 13.4 Existing environment ..... 7
  - 13.4.1 Landscape Appraisal ..... 7
  - 13.4.2 County Development Plan 2018 – 2024 ..... 10
  - 13.4.3 Location ..... 10
  - 13.4.4 Land Use of surrounding environs ..... 11
  - 13.4.5 Land use within site ..... 12
- 13.5 Landscape Character Assessment ..... 13
- 13.6 General Visual Impact ..... 14
  - 13.6.1 Viewsheds ..... 14
  - 13.6.2 Study Area ..... 17
  - 13.6.3 Potential Visual Receptors ..... 17
  - 13.6.4 Visual Impact without mitigation ..... 27
- 13.7 Mitigation Landscaping and Screening Measures ..... 28
  - 13.7.1 Description of the Proposed Development ..... 28
  - 13.7.2 Landscaping ..... 28
  - 13.7.3 Screening ..... 29
  - 13.7.4 Planting works ..... 30
  - 13.7.5 Mitigation Measures during construction ..... 31
  - 13.7.6 Summary of Mitigation Measures ..... 32
  - 13.7.7 Photomontage ..... 32
- 13.8 Overall Impact Assessment ..... 34
  - 13.8.1 Landscape ..... 34
  - 13.8.2 Visual ..... 34
- 13.9 Residual Impacts ..... 36
- 13.10 Technical Difficulties ..... 40

## List of Figures

Figure 13.1: Landscape Character Areas for County Donegal .....8

Figure 13.2: Location of Application Site and existing road network ..... 11

Figure 13.3: Location of habitats in the surrounding environs .....12

Figure 13.4: Location of habitats on site ..... 13

Figure 13.5: Rural area types assigned by Donegal County Council Development Plan 2018-2024 .....14

Figure 13.6: Viewshed from point V1, application site in red, viewing altitude 16 km (Taken from Google Earth ProTM) .....15

Figure 13.7: Viewshed from point V2, application site in red, viewing altitude 16 km. (Taken from Google Earth ProTM) ..... 15

Figure 13.8: Viewshed from point V3, application site in red, viewing altitude 16 km (Taken from Google Earth ProTM) .....16

Figure 13.9: Viewshed from point V4, application site in red, viewing altitude 16 km (Taken from Google Earth ProTM) .....16

Figure 13.10: Visual assessments from viewpoints close to the application site .....19

Figure 13.11: Points distant to the development where visual assessments were taken. ....19

Figure 13.12: Extract from Landscaping Layout Drawing (not to scale).....29

Figure 13.13: Site Compound Location and details (not to scale) .....31

## List of Photographs

Photograph 13.1: View from point 1 .....21

Photograph 13.2: View from point 2 .....22

Photograph 13.3: View from point 3 .....22

Photograph 13.5: View from point 5 .....23

Photograph 13.6: View from point 6 .....24

Photograph 13.7: View from point 7 .....24

Photograph 13.8: View from point 8 .....25

Photograph 13.9: View from point 9 .....25

Photograph 13.10: View from point 10 .....26

Photograph 13.11: View from point 11 .....26

Photograph 13.12: View from point 12 .....27

Photograph 13.13: Typical boundary existing on site.....30

Photograph 13.14: Photomontage from L-1054 at Lismonaghan .....33

## List of Tables

Table 13.1: Landscape value and sensitivity .....5

Table 13.2: Magnitude of landscape impacts .....5

Table 13.3: Landscape impact significance matrix .....6

Table 13.4: Visual receptor sensitivity .....6

Table 13.5: Magnitude of visual impact .....6

Table 13.6: Visual impact significance matrix .....7

Table 13.7: Habitats found immediately surrounding the site .....12

Table 13.8: Habitats found immediately surrounding the site .....13

Table 13.9: Viewpoint distances .....17

Table 13.10: Viewpoint summary .....20

Table 13.11: Viewpoint visual impact assessments .....34

Table 13.12: Determination of Significance of Impacts Pre-mitigation .....37

Table 13.13: Summary of Mitigation Measures Proposed .....38

Table 13.14: Determination of Significance of Impacts Post mitigation .....39

### 13.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) will establish potential landscape and visual impacts/effects arising from the proposed development associated with the planning application for 188 residential units at Glencar Irish, Letterkenny Co. Donegal. It aims to identify and assess the effects on the appearance and character of the local environs arising from the proposed development. A landscaping plan is proposed which will be implemented during the construction phase of the project.

A Landscape and Visual Impact Assessment combines the magnitude of change with the sensitivity of the landscape to the existing development, which provides a measure of the significance of the impacts. The acceptability of a development is determined by the extent to which the long-term landscape and visual effects are significant. Understanding the character, quality and value of the landscape determines the sensitivity of that landscape to accommodate change through development. The two principal factors determining the visual impact of a development are the sensitivity of the location or receptor and the scale or magnitude of the development.

#### 13.1.1 Project Description

The developer PJ McDermott Ltd is applying for planning permission for a period of 10 years for the proposed development comprising of the following:

Application for a Large-Scale residential Development (LRD): I, PJ McDermott intend to apply for planning permission for a period of 10 years for a large-scale residential development on a site of 10.2ha (within an overall landholding of 15.7ha) at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal. The Proposed development will consist of the construction of Phase 2 of a housing development consisting of 160no. dwellings and 7 No. apartment blocks containing 28 No. apartments (188no. residential units in total).

The development will also consist of connections to piped services proposed as part of the adjacent Phase 1 development of 90 residential units to the south (Appeal Pending on An Bord Pleanála ref. PL05E.316160 - decision of Donegal County Council reg. ref. 22/51204 to grant permission) The two phases of development will also be connected via two no. proposed pedestrian and vehicular routes. The development will also include new vehicular entrance from the Grange also proposed as part of Phase 1) and an internal distributor road that will provide for future access to adjacent lands to the north and east of the site to facilitate integration of the proposed development and adjacent future developments as well as facilitating future connection to the Northern Strategic Link /Windyhall Road, bus stops, landscaped open spaces, play areas and planted boundary buffers, attenuation tank, retaining walls, all associated site development works, infrastructure and services.

This EIAR has considered and assessed the cumulative impacts of the proposed development of 188 residential units (160 houses and 28 apartments) and a crèche together with the proposed development of 90 units (82 house and 8 apartments) in phase one of the overall development (also on behalf of Mr. McDermott) which is proposed to be located on a site to the immediate south of the current application site and which is currently the subject of a third party appeal that is under consideration by An Bord Pleanála.

A full project description is given in chapter 4 (Description of Development) in this EIAR and the list of drawings relating to all aspects of the project is present with the EIAR.

### 13.2 Methodology

A detailed landscaping and visual assessment were undertaken to assess the impact of the existing development on the surrounding landscape. This involved field work and a desk-based study to gather information on the existing landscape, visual resources, planning context and landscape designations. Information has been gathered from:

- Ordnance Survey Ireland
- Aerial photography
- Field surveys
- Donegal County Development Plan 2018-2024

- Landscape Character Assessment of County Donegal – Donegal County Council (May 2016)

The following methodologies for assessment of landscape character, sensitivity and visual impact have also been used in the preparation of this report:

- *Department of Housing Local Government and Heritage (June 2000)* Landscape and landscape assessment guidelines.
- *Landscape Institute of Environmental Management and Assessment (Second edition, 2002).* Guidelines for landscape and visual impact assessment.
- *Environmental Protection Agency (2022)* Guidelines on the Information to be included in Environmental Impact Assessment Reports
- *The Landscape Institute with the Institute of Environmental Management and Assessment, 2013 (Third edition),* Guidelines for landscape and visual assessment.
- *National Biodiversity Data Centre (2021)* All-Ireland Pollinator Plan (2021 – 2025)

Field observations were undertaken to assess the landscape character and structure of the subject site and surroundings. A visual impact assessment of the subject site was undertaken from publicly accessible viewpoints in the vicinity. This section now assesses the potential impacts that may arise from the existing development on the landscape within the receiving environment.

**13.2.1 Landscape assessment criteria**

When assessing the potential impacts on the landscape resulting from a development, the following criteria are considered:

- Landscape character, values and sensitivity.
- Magnitude of likely impacts.
- Significance of landscape effects.

The sensitivity of the landscape to change is the degree to which a particular landscape receptor can accommodate changes or new features without unacceptable detrimental effects to its essential characteristics. Table 13.1 outlines landscape value and sensitivity classified using the following criteria:

**Table 13.1: Landscape value and sensitivity**

Sensitivity	Description
<b>High</b>	A landscape of particularly distinctive character, susceptible to relatively small changes.
<b>Medium</b>	A landscape of moderately valued characteristics reasonably tolerant to change.
<b>Low</b>	A relatively unimportant landscape, the nature of which is potentially tolerant to substantial change.

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced because of the development. The magnitude considers whether there is a direct physical impact resulting from the loss of landscape components and/ or change that extends beyond the proposal site boundary that may have an effect on the landscape character of the area, as outlined in Table 13.2.

**Table 13.2: Magnitude of landscape impacts**

Magnitude of impact	Description
<b>High</b>	Notable changes in landscape characteristics over an extensive area and/ or permanent long-term change.
<b>Medium</b>	Moderate changes in a localised area and/or medium-term change.
<b>Low</b>	Small change in any components and/or short term/temporary change.

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. Table 13.3 outlines the significance of landscape impacts is arrived at using the following matrix.

**Table 13.3: Landscape impact significance matrix**

Magnitude of landscape resource change	Landscape Sensitivity		
	Low	Medium	High
<i>No change</i>	No change	No change	No change
<i>Low</i>	Slight	Slight/ Moderate	Moderate
<i>Medium</i>	Slight/Moderate	Moderate	Moderate/Substantial
<i>High</i>	Moderate	Moderate/Substantial	Substantial

**13.2.3 Visual Impact Assessment criteria**

As with the landscape impact, the visual impact of the development is accessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor is weighted against the magnitude of the visual effect.

**Sensitivity of visual receptors**

Unlike landscape sensitivity, the sensitivity of visual receptors, see Table 13.4, has an anthropogenic basis (i.e. it balances the visual susceptibility of the viewer against the value of the view on offer. The susceptibility of a viewer to changes in a particular view is related to the occupation or activity they are engaged in at that location and whether views of the surrounding landscape are an important aspect of that occupation or activity i.e., hill walkers versus commuters. By comparison, the value of the view relates to the visual setting of the viewer and whether this is recognised through county designations and guidebooks or is likely to just have local value.

**Table 13.4: Visual receptor sensitivity**

Sensitivity	Description
<i>High</i>	e.g. users of an outdoor recreation feature which focuses on the landscape; valued views enjoyed by the community; tourist visitors to scenic viewpoint; occupiers of residential properties with a high level of visual amenity.
<i>Medium</i>	e.g. users of outdoor sport or recreation which does not offer or focus attention on landscape; occupiers of residential properties with a medium level of visual amenity
<i>Low</i>	e.g. regular commuters, people at place of work; occupiers of residential properties with a low level of visual amenity.

**Visual impact magnitude**

The magnitude of visual effects, see Table 13.5, is determined on the basis of two factors; the visual presence of the development and its effects on the visual amenity. Visual presence is something of a quantitative measure relating to how noticeable or visually dominant the proposal is within a particular view. This is based on a number of aspects beyond simply scale in relation to distance. Some of these include the extent of the view as well as its complexity and the degree of movement is presented and its relationship with other focal points or prominent features within the view is also considered. Visual presence is essentially a measure of the relative visual dominance of the proposal within the available vista.

**Table 13.5: Magnitude of visual impact**

Criteria	Description
<i>High</i>	Total loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements considered totally uncharacteristic when set within the attributes of the receiving landscape or view.
<i>Medium</i>	Partial loss or alteration to key elements/features/characteristics of the existing landscape or view and/ or introduction of elements that may be prominent but not necessary substantially uncharacteristic when set within the attributes of the receiving landscape/ view.
<i>Low</i>	Minor loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape/view.

<b>No change</b>	Very minor loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements that are not uncharacteristic when set within the attributes of the receiving landscape/ view.
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**Visual impact significance**

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. The relationship is expressed in the significance matrix in Table 13.6.

**Table 13.6: Visual impact significance matrix**

Magnitude of visual resource change	Visual sensitivity		
	Low	Medium	High
<b>No change</b>	No change	No change	No change
<b>Low</b>	Slight	Slight/Moderate	Moderate
<b>Medium</b>	Slight/Moderate	Moderate	Moderate/Substantial
<b>High</b>	Moderate	Moderate/Substantial	Substantial

**13.3 Scope**

The scope of this section includes:

- An assessment and description of the existing landscape.
- The capacity of the existing landscape to absorb the existing development.
- An assessment of the impact of the proposed development on the landscape character and the visual impact of the proposed development.
- Recommendation of remedial measures to reduce or mitigate against any potential visual impacts or adverse effect on landscape character.

**13.4 Existing environment**

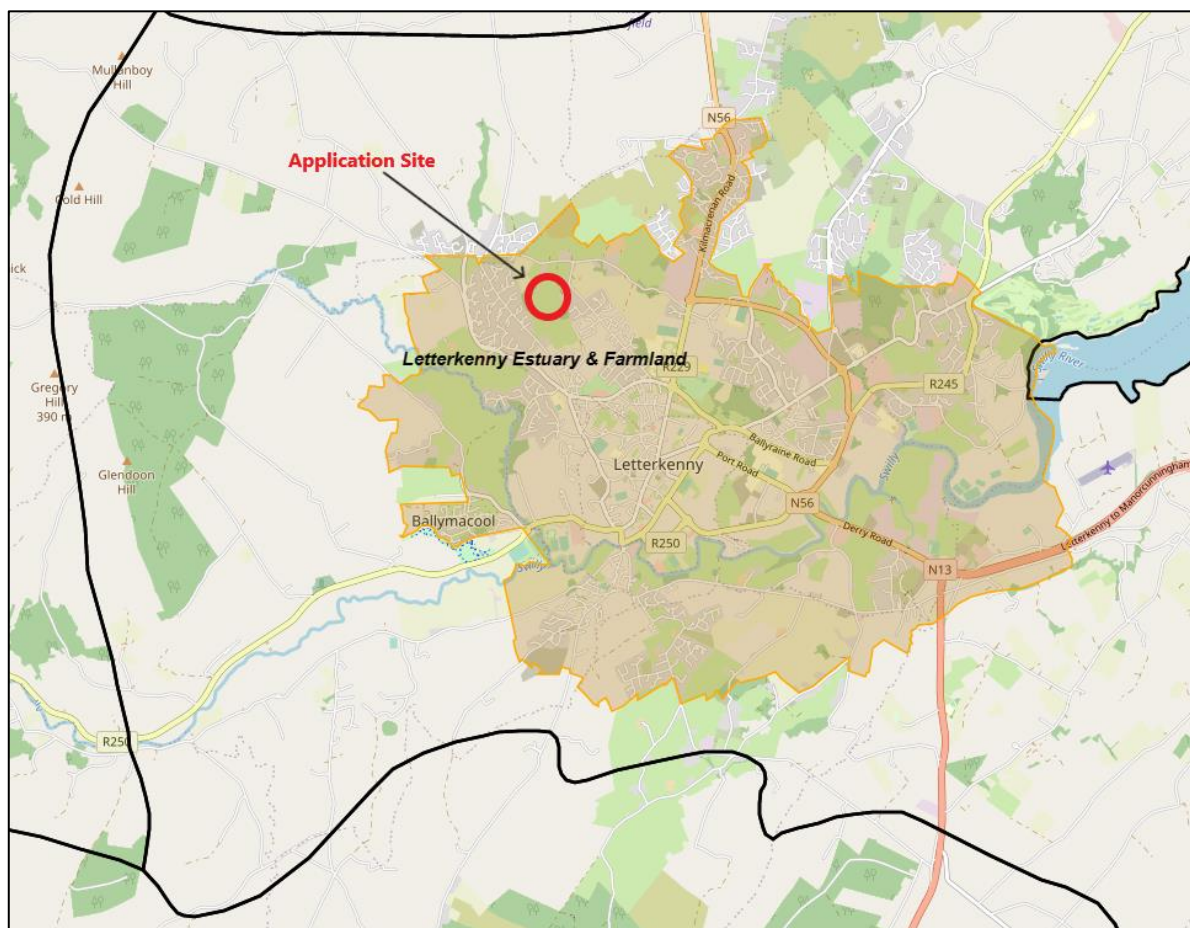
**13.4.1 Landscape Appraisal**

County Donegal has many distinctive attributes, unique landscapes and defining features. Donegal is the most northerly county in Ireland with the most northerly landfall at Malin Head, the highest sea cliffs in Europe at Sliabh Liag and reputedly the oldest town in Ireland, Ballyshannon, to name but a few.

The Landscape Character Assessment for Donegal<sup>1</sup> is a document that identifies and describes the landscape character of each part of the county. Landscape Character Types are the physical attributes that make up a landscape; they are generic in nature and not specific to an area so are present throughout the County. Landscape Character types were identified following a desk-based examination of various layers of spatial data on the physical attributes of the County, in combination with historical mapping, photography surveys, 3D photography and aerial photography. A total of 23 different Landscape Character Types were identified.

The development is located in the Letterkenny Estuary and Farmland Landscape Character Area (LCA). The application site is shown in Figure 13.1 below.

<sup>1</sup> Landscape Character Assessment Donegal: <https://www.donegalcoco.ie/services/planning/developmentplansbuiltheritageincludinggrants/landscape%20character%20assessment%20of%20county%20donegal/landscape%20character%20assessment%20of%20county%20donegal/>



**Figure 13.1: landscape Character Areas for County Donegal**

*(Taken from Landscape Character Assessment for County Donegal - digital mapping )*

Letterkenny Estuary and Farmland LCA is characterised by a wide, fertile valley of the River Swilly flowing through heath and bog covered uplands east towards Lough Swilly, a large intertidal estuary encircled by higher hills and mountains to the north and south and rolling arable lands in the east. Letterkenny is the largest town in the County and dominates much of this LCA; the town sprawls out from its historic core in the centre of this LCA in all directions, only somewhat curtailed by the floodplains of the River Swilly and steep rugged land to the north and west of the town. The area is accessible from all directions via a good network of National Primary, Regional and county roads.

#### **13.4.1.1 Letterkenny**

Historic Landscape Characterisation identifies that Letterkenny, like many towns, is located at the first significant river crossing inland of an estuary (Lough Swilly), and thereby over time became a travel node, with roads converging on the river crossing. Letterkenny may have been a centre for trade and commerce since the Plantation, although a castle once stood near the Cathedral of St Eunan and St Columba. Lough Swilly was of international maritime importance (Treaty port) and also a source of fish, the relative calmness of the Lough water in contrast to the open Atlantic, allowed inshore fishing in a variety of weather and sea states.

Letterkenny is the largest town in the county with a population of 19,274 (Letterkenny urban boundary; CSO 2016) and was part of the linked Letterkenny-Derry Gateway as identified in the National Spatial Strategy that has been replaced by the National Planning Framework in 2020 which identifies the town as a 'Regional Centre' and part of the 'North-West Gateway' with Derry. The town is located west of the Swilly estuary on the banks of the Swilly River; in recent times the town has expanded south across the river whereas the historic town fabric is located on higher lands just north of the river. Letterkenny and Environs Development Plan 2018-2024 sets out a strategy for development within the defined plan boundary, although much of the rural surround is visually and physically associated with the town. Historically, Letterkenny was connected by railway from the west coast of the county towards Derry and Strabane in the east. The railway services ceased to operate in



the 1960s, however a number of remaining railway structures and features remain in and inform the landscape, including old railway arches.

The landscape of Letterkenny is rich and varied. It comprises a valley settlement with surrounding local hillocks making up the Swilly Valley's sloping sides. The landscape in the environs of the town is significantly undeveloped on lands intervening the development along the key arterial roads. This land is largely agricultural in nature. The landscape has retained a significant level of tree cover through both the retention of existing trees and hedgerows and as a result of existing dense woodlands at Kiltroy and Ballymacool. The surrounding valley hillsides with elevated slopes and ridges provide a strong enclosed setting for the town.

The Landscape Character Assessment and Settlement Character Assessment describe the character of the areas as set out in sections 13.4.1.2 to 13.4.1.6.

#### **13.4.1.2 Land Form and Land Cover**

- Schist bedrock underlies much of Letterkenny town, the western shore of Lough Swilly, and the northern and southern extremities of the LCA. The surrounding upland and mountainous areas are primarily quartzite save for a fringe of limestone along the southern shore of Lough Swilly.
- Large primarily agricultural floodplains extend inland along the river Swilly through Letterkenny town and beyond into Newmills. Some of the floodplains within the town area have been developed for commercial and retail use.
- The agricultural lands within this LCA are of varying quality ranging from good quality arable land along the shores of Lough Swilly, river valleys and arable land to the east, to upland grazing and pasture on peripheral uplands.
- There is a substantial amount of residential sprawl radiating from Letterkenny and a considerable amount of one-off rural dwellings and linear development along the local road networks.

#### **13.4.1.3 Access and Recreation**

- The N13 and N56 National Primary roads cut through this LCA.
- R245 and R250 traverse this LCA.
- Network of county roads permeate the area.
- Wild Atlantic Way travels the route of the National Primary Road through this LCA.
- Letterkenny Golf Course sits on the west bank of Lough Swilly creating a visual greenway when viewed from the opposite side of the Lough.
- Letterkenny has a high level of social and cultural facilities including two town parks, a leisure centre, museum and a theatre.

#### **13.4.1.4 Biodiversity**

- Ecologically important landscape containing 315.4ha of Natura 2000 sites (SAC & SPA) and 368.7ha of pNHA sites.
- Lough Swilly, designated as SPA (Site Number 004075) and as an SAC (Site Number 002287) and lush fertile valleys carved out by various tributaries and streams flowing towards the River Swilly create important biodiversity corridors.
- Hedge and deciduous tree bound fields are a predominant feature in this landscape providing biodiversity corridors throughout.
- Dispersed clumps of deciduous woodland, demesne woodland and important historic woodlands in this LCA.
- Lands on and around the estuary at Big Isle are an important wintering feeding ground for internally important species of Geese, and much of this tidal estuary is designated as SPA (004075).

#### **13.4.1.5 Forces for Change**

- Degree of pressure in the rural area of this LCA for urban generated housing development from Letterkenny.
- Linear development along the rural road network.

- Renewable energy development (windfarms).
- Telecommunications and infrastructural development.
- Coastal erosion.
- Flooding.
- Development and consolidation of Letterkenny urban area.

#### **13.4.1.6 Views worth protecting**

In the Tier 1 Settlement descriptions as part of the landscape assessments by Donegal County Council, the following perspectives are considered to be of particular importance in terms of landscape setting and the protection of views in Letterkenny:

- Views of the settlements skyline, from all approaches to the town.
- Church spires visible from outside the town from local landmarks.
- Streetscape views within, into and out of the ACA are important, particularly with reference to the character of Cathedral Square, Church Lane, and Castle Street.
- Views projecting out to the Lough Swilly provide a connection with the settlement and the surrounding landscape contributing to a strong sense of place.
- Occasional views between buildings along the main street provide glimpses of the surrounding landscape setting.

#### **13.4.2 County Development Plan 2018 – 2024**

The Donegal County Development Plan (CDP) 2018 - 2024 was also reviewed as part of the assessment. A number of policies relate to Landscape and integration of urban housing.

Chapter 6.2: Urban Housing of the Donegal CDP refers to the following objective UB-0-4: “To promote quality urban design in new residential development and ensure that it is integrated with existing urban development in a manner to provide for positive places and spaces to contribute to overall social cohesion and quality of life.”

Chapter 7 of the CDP: The Natural and Built Heritage also applies to this development as its main aim is to “conserve, protect and enhance the County’s built, natural and cultural heritage for future generations and encourage appreciation, access and enjoyment of these resources”.

Objectives NH-O-1 to NHO-11 and policies NH-P-1 to N-P-20 relate to protecting natural heritage in the Donegal area.

The policies below are the most relevant relating to landscape:

- NH-0-4: To ensure the protection and management of the landscape in accordance with current legislation, ministerial and regional guidelines and having regard to the European Landscape Convention 2000.
- NH-0-5: To protect, manage and conserve the character, quality and value of the landscape having regard to the proper planning and development of the area, including consideration of the scenic amenity designations of this plan, the preservation of views and prospects and the amenities of places and features of natural, cultural, social or historic interest.
- NH-0-7: To protect the areas of Especially High Scenic Amenity from intrusive and/or unsympathetic developments.

#### **13.4.3 Location**

The site is located with Letterkenny town boundary within the townland of Glencar Irish. The site is approximately 1.55 km northwest of the centre of Letterkenny. The site is accessed directly off the local road L-1174-1 in the southwest of the site and the site can also be accessed through the Phase 1 development to the south which is currently on appeal. There are also plans to create a transport link to the north of the site to Windyhall Road (L1152-1).

The site is situated in a suburban area with existing housing west and east of the site. There is a permitted development planned for immediately south of the site. To the north and northeast of the east is agricultural land with sporadic farmsteads. The topography of the site is hilly with most of the site on a south facing hillside of varying slope.

The application site location and the existing surrounding road network is outlined in Figure 13.1 below.



**Figure 13.2: Location of Application Site and existing road network**

CYAL50313729 © Ordnance Survey Ireland/Government of Ireland

**13.4.4 Land Use of surrounding environs**

The land immediately surrounding the application site is typical of that in a site close to the edge of a town boundary. It is surrounded by housing developments to the west and east and a planned development to the south. To the north and northeast lies agricultural land with sporadic farmsteads. Further to the north there are more housing developments. Table 13.7 below outlines the habitats found immediately surrounding the site and Figure 13.2 indicates the location of these habitats and land uses in relation to the application site. A detailed habitat assessment of the subject site and surrounding environs was conducted as part of Section 6: *Biodiversity*.

**Table 13.7: Habitats found immediately surrounding the site**

Habitat classification	Description	Location
GA2	Amenity grassland	Young plantation of Sitka Spruce and Lodgepole Pine to the west of the site. More mature plantation immediately north of the site and some smaller isolated blocks to the east of the site.
BL3	Buildings and artificial surfaces	Housing estates and private houses are found predominantly to the east and west of the application site. Phase 1 of this Glencar development will involve the construction of 90 residential units immediately to the south of the current application site.
WL1/WS1	Hedgerow and Scrub	Scrub and hedgerows are found in all directions surrounding the site.
GA1	Improved agricultural grassland	Grassland is found mainly to the north and northeast of the site.
GS4	Wet grassland	Wet grassland is found to the northeast of the site and immediately to the south of the site where Phase 1 of the development is planned.



**Figure 13.3: Location of habitats in the surrounding environs**

(Created using QGIS software and using data collected during site visits according to Fossitt’s guide to habitats in Ireland)

**13.4.5 Land use within site**

The current land use within the site is agricultural with several small stands of coniferous forestry. There is a mature stand of Sitka Spruce in the eastern part of the site, a stand of mixed age class of Sitka Spruce in the northern part of the site and a mature stand of mixed conifers (Predominantly Sitka Spruce and Lodgepole Pine) in the western part of the site. Approximately 70% of the site is classed as agricultural use with wet grassland dominant. The habitat types found on site are shown in Figure 13.3 and Table 13.8 below.



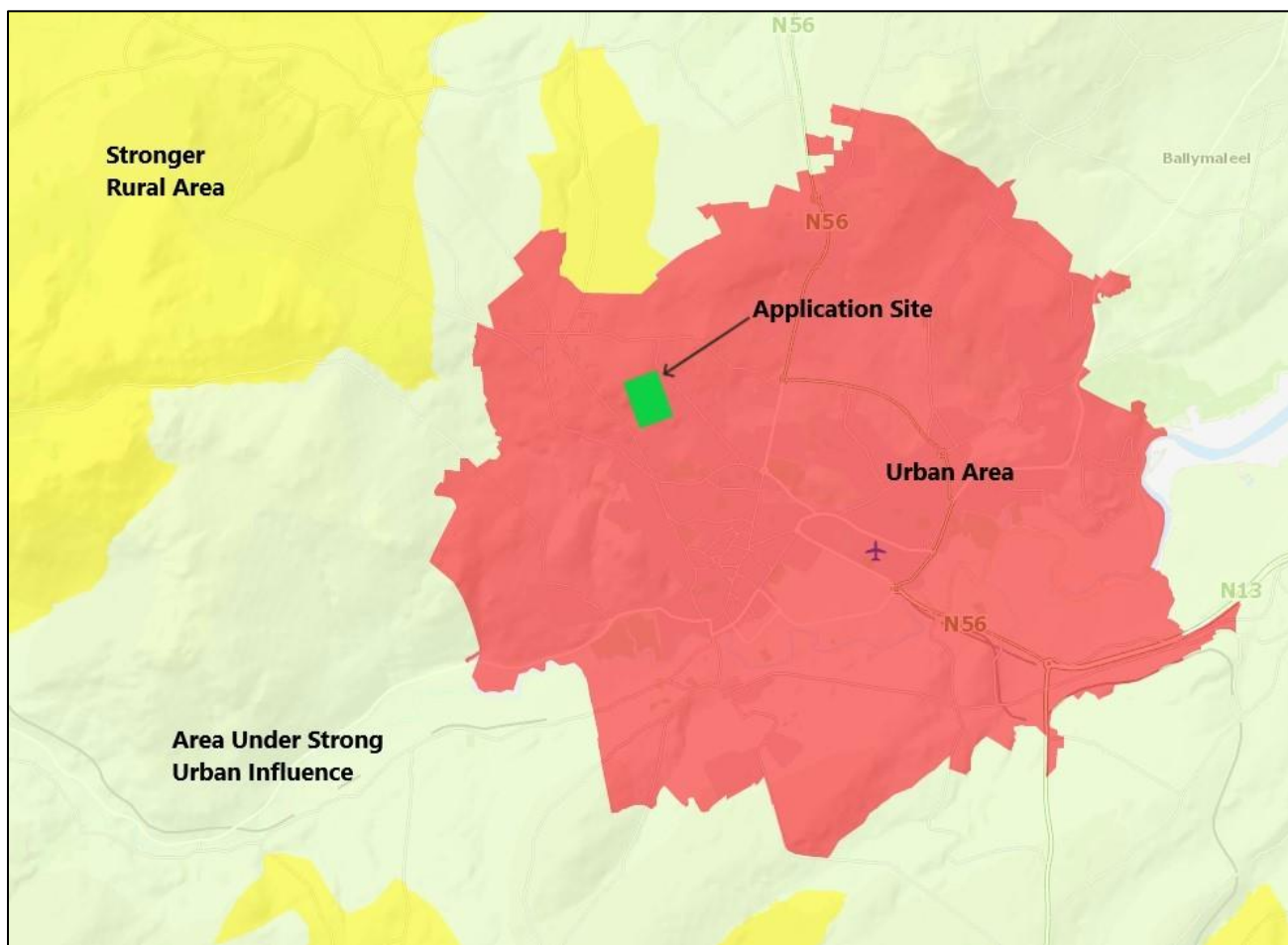
Figure 13.4: Location of habitats on site

Table 13.8: Habitats found immediately surrounding the site

Habitat classification	Description	Location
WD4	Conifer plantation	Predominantly Sitka Spruce plantations in the eastern and northern portions of the site.
WD3	Mixed conifer plantation	Block of mixed Sitka Spruce (80%) and Lodgepole Pine (20%) in central western part of site
WL2/WS1	Treelines and scrub	Found along most of the site boundaries
WS1	Scrub	Found in scattered areas throughout site
GS4	Wet grassland	Wet grassland is the dominant habitat on site.

### 13.5 Landscape Character Assessment

The Donegal County Council Development Plan 2018-2024 classifies the application site as being in an Urban Area of Letterkenny as shown in Figure 13.5.



**Figure 13.5: Rural area types assigned by Donegal County Council Development Plan 2018-2024**

(Extracted from the Donegal County Development Plan 2018-2024, CYAL50313729 © Ordnance Survey Ireland/Government of Ireland)

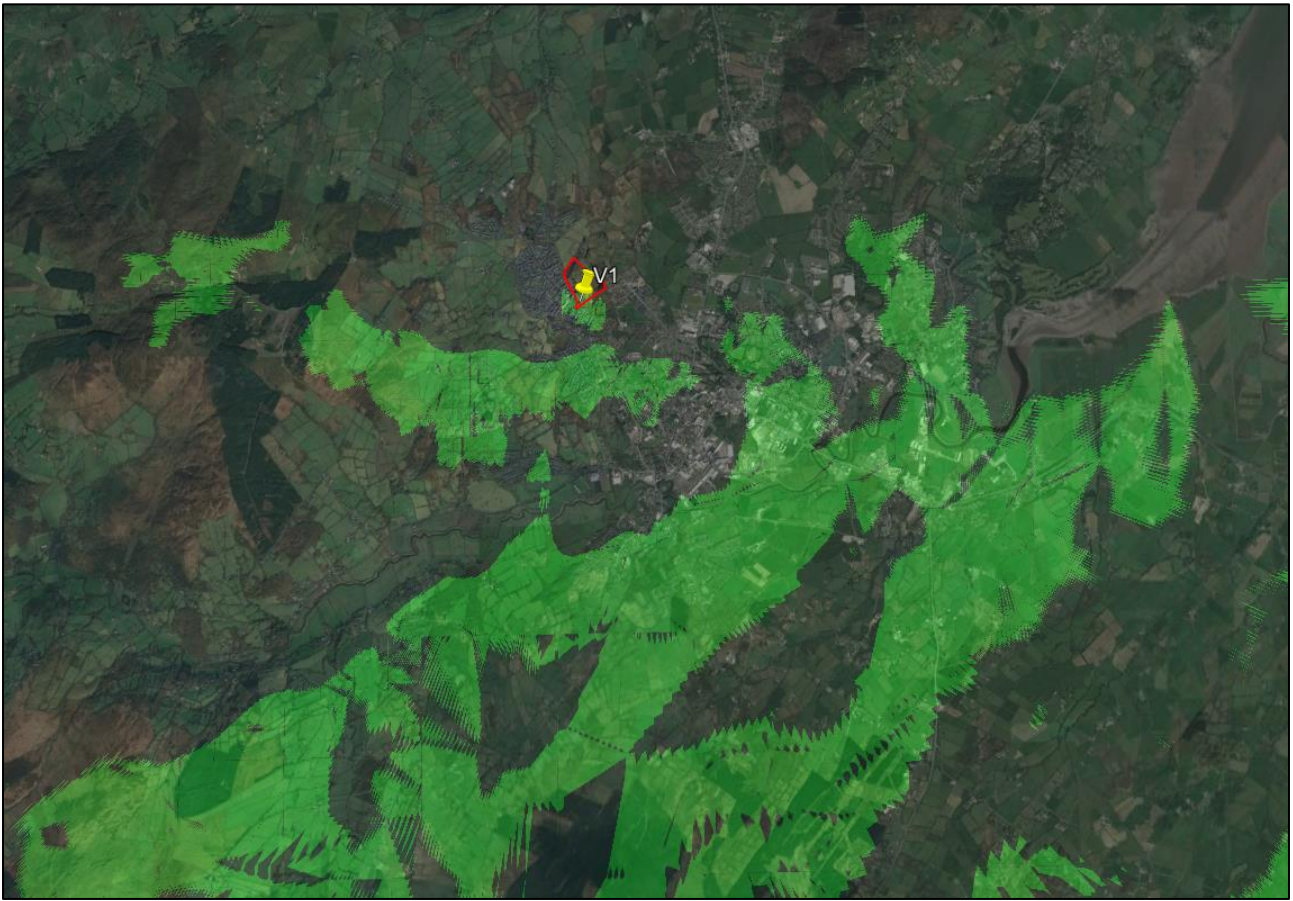
The Donegal County Development Plan 2018-2024 highlights areas of Especially High Scenic Amenity (EHSA) as worthy of protection from any deterioration in landscape character. The application site is located outside of any EHSA.

### 13.6 General Visual Impact

The visibility of the proposed development site was initially assessed by a desktop study of Ordnance Survey and street view maps to identify potential viewpoints. The viewshed feature on the software Google Earth Pro™ was also accessed. This was followed up by a field survey where viewpoints were chosen at locations from which the proposed development was visible. The viewpoints were chosen to give a representative sample of views of the proposed development within the landscape to illustrate the impact on local residential properties, transport routes and on protected views, where relevant.

#### 13.6.1 Viewsheds

Google Earth Pro™ software was accessed and viewsheds were defined in 4 different points on the site of the proposed development (V10541- V4), as it can be seen below in Figures 13.5 – 13.8. The viewsheds adjusted the view of the observer 2 meters above the terrain. In green, in the images, it can be seen the visibility from the considered points. Screening from existing vegetation is not considered in these viewsheds. In reality the proposed development will not be visible from as large an area as indicated and ground-truthing of the viewshed results was undertaken.



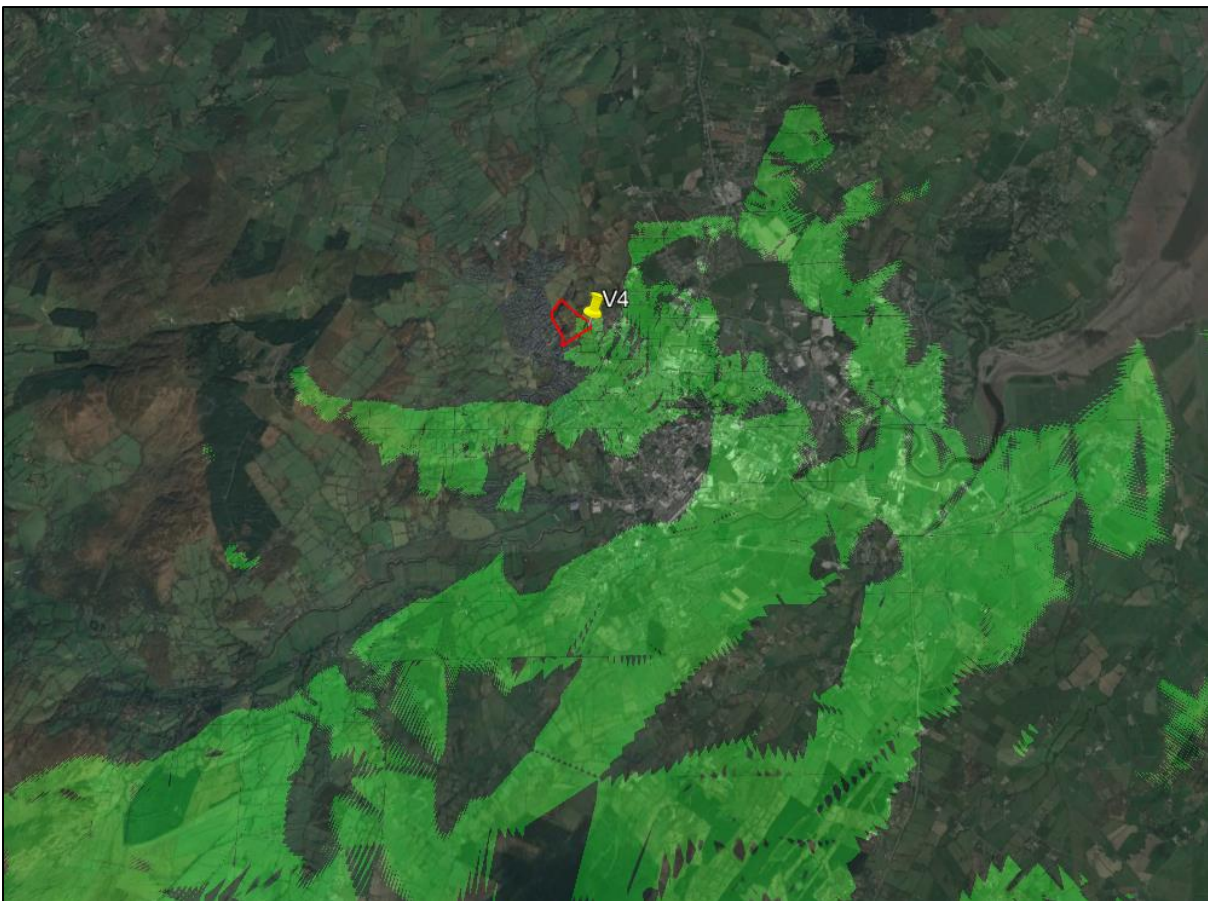
**Figure 13.6: Viewshed from point V1, application site in red, viewing altitude 16 km** (Taken from Google Earth Pro™)



**Figure 13.7: Viewshed from point V2, application site in red, viewing altitude 16 km.** (Taken from Google Earth Pro™)



**Figure 13.8: Viewshed from point V3, application site in red, viewing altitude 16 km** (Taken from Google Earth Pro™)



**Figure 13.9: Viewshed from point V4, application site in red, viewing altitude 16 km** (Taken from Google Earth Pro™)



**13.6.2 Study Area**

The viewsheds analysis identified a wide geographical area from where the proposed development had visibility. Most of the zone of visual influence was to the south of the site due to the proposed development being located predominantly on the slopes of a south-facing hillside. The zone of visual influence was adjusted by field study, desk study and using standardised viewpoint distances from the source of impact. Due to the scale and nature of the proposed development within this receiving landscape setting, it is anticipated that the proposed development is not likely to give rise to significant landscape or visual impacts beyond approx. 1km. As one moves away from any type of development in the landscape, it will become less perceptible with distance. However, it is noted that the application site is visible from the N13 approach road to Letterkenny from the south, approximately 5 km southeast of the site and from other local roads approaching Letterkenny from the south from elevated positions.

It is common practice to consider the viewpoint distance as laid out in Table 13.9 below. Table 13.9 identifies and describes the impact of a viewpoint and the distances associated with these visual impacts.

It must be noted that the viewshed analysis did not factor in visual screening from trees, hedges or vegetation on the ground.

**Table 13.9: Viewpoint distances**

Viewpoint Distance	Description
0-2 km	It is generally accepted that a development located approximately 2km or less from a viewer would be close enough to allow identification of significant detail. Any positions within this range with open uninterrupted views of a development would generally receive the greatest visual impacts.
2-5 km	At this distance, visibility of a development site becomes more general, with viewers in open uninterrupted positions able to identify general form, colour/tone and textural contrast, but losing the more focused detail achievable from closer positions. Impacts at this distance are generally less than those found between 0-2km.
5-10 km	Beyond 5km visual prominence quickly diminishes. Certain circumstances/light conditions etc. have potential to allow certain types of development and material finishes to be perceived. The development increasingly becomes part of the general background/distance views. Upwards of 15km distance, developments quickly become minor features within the landscape and considered imperceptible to the average human eye. The impact of the development diminishes as the developments becomes part of the general background/distance views.

**13.6.3 Potential Visual Receptors**

Impacts on potential receptors have been assessed below. The assessment has been informed by the Viewsheds and field study on the ground.

**13.6.3.1 Users of High Scenic Amenity Areas**

The site is located outside of any high scenic amenity areas (HSA’s) or especially high scenic amenity areas (EHSA’s). The proposed development is not visible from any HAS’s or EHSA’s.

**13.6.3.2 Outdoor Workers**

People engaged in outdoor work are not likely to focus on the surrounding view thus having medium to low visual sensitivity.

**13.6.3.3 Road users**

Users of the main roads around the proposed development are generally accepted as having medium to low visual sensitivity.

The L-1174 provides the access link to the proposed development and will be the closest road to the development.

There are plans to provide a link to the L-1152 (Windyhall road) from the northern part of the development and the site will be visible from part of this road.

The proposed development may be visible on the L-1044 approach road to Letterkenny at Crievesmith. The proposed development is visible on certain sections of the L-1054 in Lismonaghan and L-1114 in Scribly on approach to Letterkenny.

Viewshed analysis of V4 also suggests the proposed development is visible from the housing areas off the Circular Road and Kilmacrenan Road.

The town of Letterkenny, including the proposed development, is visible on approach on the N13 approximately 5 km southeast of the site.

The roads mentioned above were driven and points from which visual assessments were taken near on approach roads and from viewpoints distant to the application site (VP1 – VP5) are shown on Figure 13.9 below. The viewpoint from the L-1174 is shown in Figure 13.9 below.

#### **13.6.3.4 People at their place of work.**

People engaged in work activities indoors, with limited opportunity for views of the development are accepted as having a low visual sensitivity. It is predicted no negative visual impact to these types of receptors.

#### **13.6.3.5 Dwellings with views orientated towards the development.**

Dwellings with views orientated towards the proposed development are generally accepted as having a high visual sensitivity.

Viewshed analysis for V1 indicates that the southwest part of the development may be visible from many of the private residences close to the site off the Grange. The proposed development may also be visible from the many housing areas immediately south of the Glencar Road and the Circular Road.

Viewshed analysis for V2 indicates that the northwest part of the development may be visible from several nearby housing estates including Solomons Court off the Grange and the An Clárach housing estate to the northwest.

Viewshed analysis for V3 indicates that the northeast part of the development may be visible from several nearby housing estates including Solomons Court off the Grange and An Gleann Rua off the Windy Hall Road. It may be possible that the proposed development is visible from An Clárach housing estate to the northwest. Viewshed analysis for V4 indicates that the southeast part of the development may be visible from several nearby housing estates including Ard Ghlass and Meadowbank Park along Long Lane, and Fernhill along the Grange.

Ground truthing was carried out and the screening effect of vegetation and buildings makes the proposed development much less visually intrusive than the viewshed analysis would suggest.

Points from which visual assessments were taken near the application site are shown on Figure 13.10 below.

Table 13.10 below summarises where the most significant viewpoints were assessed from, and Figures 13.9 and Figure 13.10 illustrate where these viewpoints are located.



**Figure 13.10: Visual assessments from viewpoints close to the application site**

(Base image taken from Google earth Pro™)



**Figure 13.11: Points distant to the development where visual assessments were taken.**

(Base image taken from Google earth Pro™)

Table 13.10: Viewpoint summary

Viewpoint	GPS Coordinates	Distance from site boundary	Elevation	Direction of view	Location of Viewpoint	Description of View from Viewpoint
1	-7.7472 54.9366	2.78 km	58m	N	On approach road to Letterkenny L-1044 at Crievesmith	Site for proposed development can be seen on skyline in between two other housing developments. The magnitude of visual impact can be described as low.
2	-7.7339 54.9356	3.23 km	82m	NNW	On approach road to Letterkenny L-1054 at Lismaonaghan	Site for proposed development can be seen on skyline in between two other housing developments. The magnitude of visual impact can be described as low.
3	-7.7356 54.9418	2.5 km	13m	NNW	On approach road to Letterkenny L-1114 at Leck	Site for proposed development can be seen on skyline in between two other housing developments. The magnitude of visual impact can be described as low-medium
4	-7.7155 54.9412	3.34 km	52 m	NW	On approach road to Letterkenny L-1114 at Scribly	Site for proposed development can be seen on skyline in between two other housing developments. The magnitude of visual impact can be described as low.
5	-7.6785 54.9448	4.9 km	25m	NW	On approach road to Letterkenny on N13 at Dromore	Site for proposed development can be seen on skyline in between two other housing developments. The magnitude of visual impact can be described as low.
6	-7.6786 54.9448	2.6 km	1m	NW	On R250 approaching Letterkenny from the east near the Public Services Centre	Site for proposed development visible as part of the urban landscape of Letterkenny
7	-7.7534 54.9622	75m	129m	NE	On Glencar Road (L-1174) at entrance to private dwellings facing site.	Site for proposed development is largely screened by existing trees and vegetation on eastern side of road
8	-7.7555 54.9654	65m	157m	SE	In Solomon's Court Housing Estate	Site partially visible from housing facing proposed development. Development will be very visible from the rear of the houses adjacent to the site
9	-7.7553 54.9688	375m	164m	S	In An Langán Housing Estate	Northern portion of site partially visible through the estate of Stoney Court. Development will be very visible from the rear of the houses in Stoney Court Housing Estate.
10	-7.7542 54.9684	250m	162m	S	Windyhall Road (L-1152) next to Stoney Court Housing Estate	Northern portion of site visible from this small section of roadway
11	-7.7471 54.9643	65m	135m	W	In Fairgreen Hill Housing Estate	Western portion of development partially visible from this point. There will be a more expansive view of the proposed development from the rear gardens of the houses adjacent to the development site. The boundary trees and shrubs are to be retained as a screening measure.
12	-7.7471 54.9634	35m	128m	NW	In Fairgreen Hill Housing Estate	South-western portion of development partially visible from this point. There will be a more expansive view of the proposed development from the rear gardens of the houses adjacent to the development site. The boundary trees and shrubs are to be retained as a screening measure.

Photographs 13.1 to 13.17 shows the view from the various viewpoints in relation to the application site. Table 13.7 displays the locations of the viewpoints in relation to the application site and the extent of expected visual impact of the proposed development.

**Photograph 13.1: View from point 1.**



GPS -7.7472, 54.9366

Distance to site: 2.8 km

Elevation: 58m

Direction of view: N

Description: Application site visible as part of the view of Letterkenny town on approach to Letterkenny on an elevated section of the L-1044 from the south.

**Photograph 13.2: View from point 2.**



GPS -7.7339, 54.9356      Distance to site: 3.08 km      Elevation: 82m      Direction of view: NNW  
Description: Application site visible as part of the view of Letterkenny town on approach to Letterkenny on an elevated section of the L-1054 from the south.

**Photograph 13.3: View from point 3.**



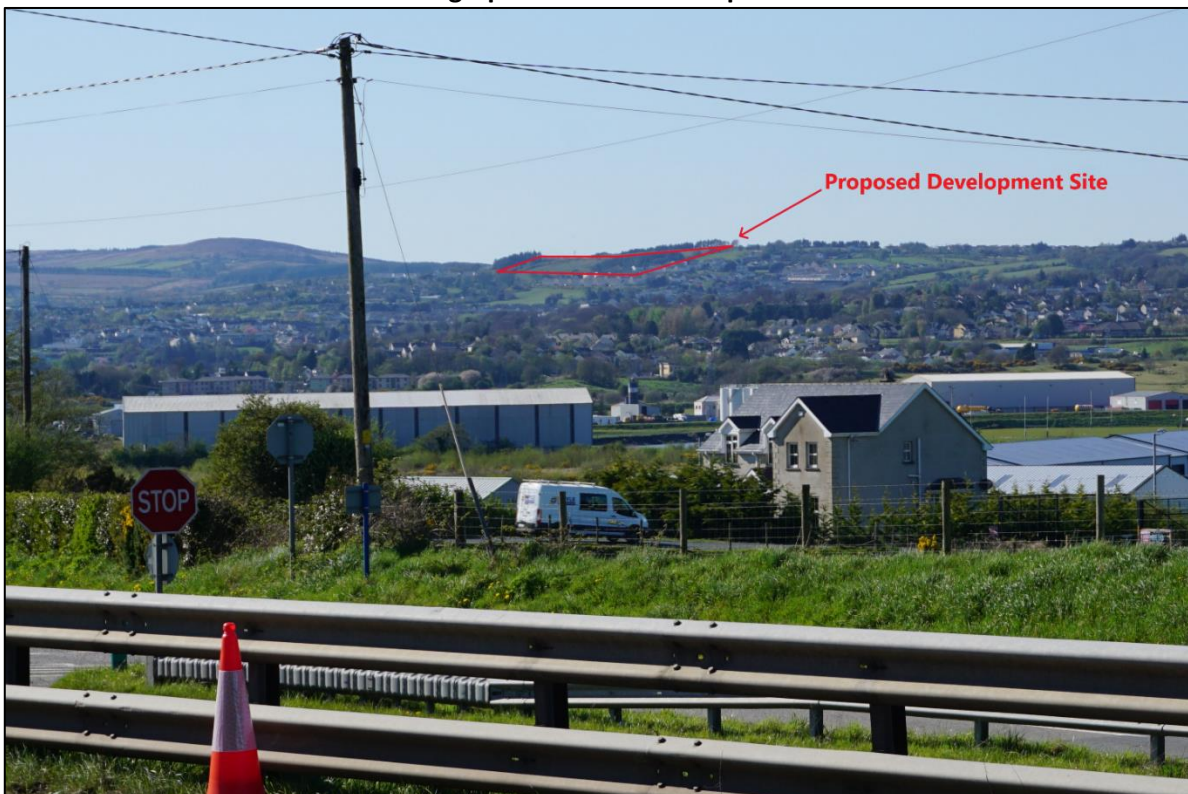
GPS -7.7356, 54.9418      Distance to site: 2.5 km      Elevation: 13m      Direction of view: NNW  
Description: Application site visible as part of the view of Letterkenny town on approach to Letterkenny on the L-1114 from the south.

**Photograph 13.4: View from point 4.**



GPS -7.7155, 54.9412      Distance to site: 3.34 km      Elevation: 52m      Direction of view: NW  
 Description: Application site visible as part of the view of Letterkenny town on approach to Letterkenny on an elevated section of the L-1114 from the south.

**Photograph 13.5: View from point 5.**



GPS -7.6785, 54.9448      Distance to site: 4.9 km      Elevation: 25m      Direction of view: NW  
 Description: Application site visible as part of the view of Letterkenny town on approach to Letterkenny on the N13 dual carriageway.

**Photograph 13.6: View from point 6.**



GPS -7.6786, 54.9448      Distance to site: 2.6 km      Elevation: 1m      Direction of view: NW  
 Description: On R250 approaching Letterkenny from the east near the Public Services Centre, site is visible as part of the urban landscape of Letterkenny.

**Photograph 13.7: View from point 7.**



GPS -7.7534, 54.9622      Distance to site: 75m      Elevation: 129m      Direction of view: NE  
 Description: View from Glencar Road (L-1174) at entrance to private dwellings facing site.



**Photograph 13.8: View from point 8.**



GPS -7.7555, 54.9654      Distance to site: 65m      Elevation: 157m      Direction of view: SE  
 Description: View from houses within Solomons Court Housing Estate that are facing proposed development. View of development will be more apparent from the rear of houses adjacent to the site.

**Photograph 13.9: View from point 9.**



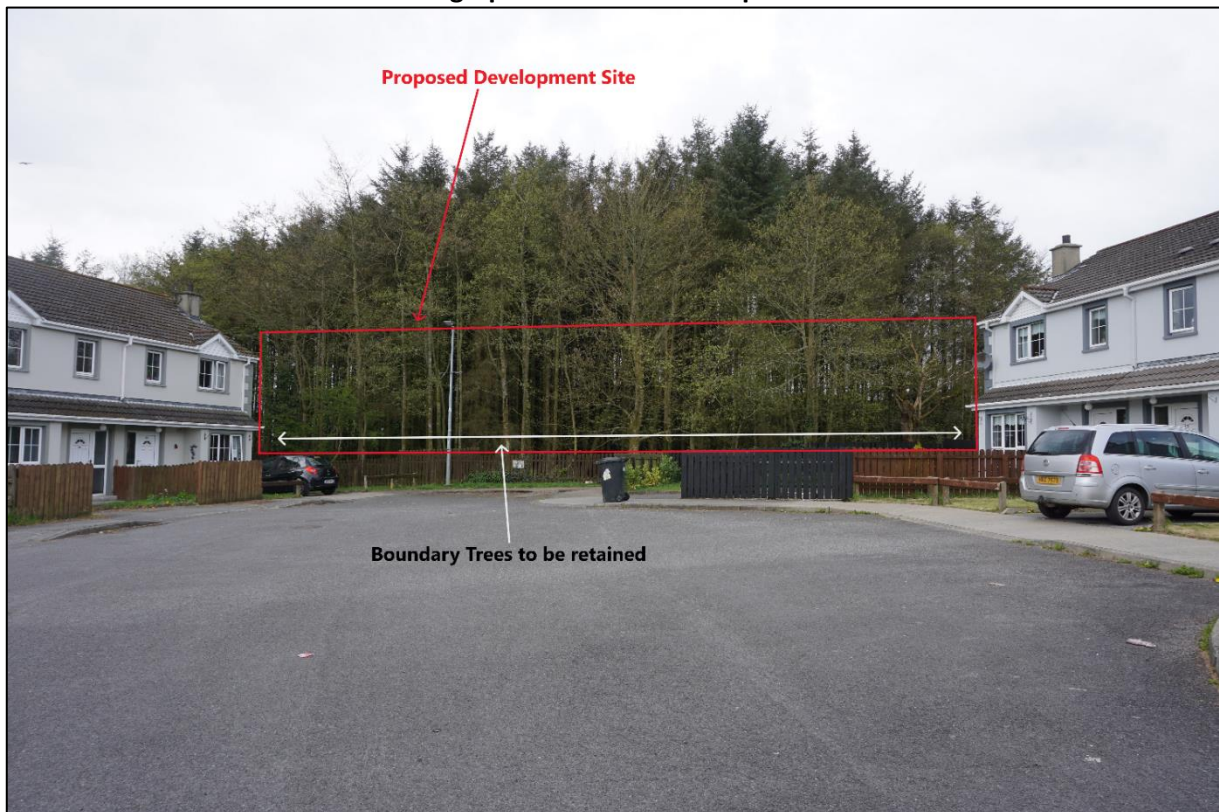
GPS -7.7553, 54.9688      Distance to site: 375m      Elevation: 164m      Direction of view: S  
 Description: Partial view of development site from An Langán Housing Estate. Development will be more visible from the rear of properties within the Stoney Court Housing Estate

**Photograph 13.10: View from point 10.**



GPS -7.7542, 54.9684      Distance to site: 250m      Elevation: 162m      Direction of view: S  
Description: Northern portion of proposed development is visible from a small section of the Windyhall Road (L-1152)

**Photograph 13.11: View from point 11.**



GPS -7.7471, 54.9643      Distance to site: 65m      Elevation: 135m      Direction of view: W  
Description: Western portion of development partially visible from within Fairgreen Hill Housing Estate. Development will be more apparent from the rear gardens of those houses immediately adjacent to the development site. Boundary trees and shrubs are to be retained.

**Photograph 13.12: View from point 12.**



GPS -7.7471, 54.9634

Distance to site: 35m

Elevation: 164m

Direction of view: S

Description: South-western portion of development partially visible from within Fairgreen Hill Housing Estate. Development will be more apparent from the rear gardens of those houses immediately adjacent to the development site. Boundary trees and shrubs are to be retained.

**13.6.4 Visual Impact without mitigation**

From this investigation of the visual impact of proposed development from viewpoints in the surrounding environs it is seen that the impact has potential to range from slight to moderate depending on the receptor and stage of development. Local areas of scrub, boundary hedgerows and the general topography of the surrounding lands also contribute to limit the visual impact of the proposal. The proposed development is flanked to the west by the developments of upper Glencar including Solomons Court, The Grange and Chestnut Grove, and flanked to the east by the numerous small housing developments off Long Lane. There are other housing estates such as Stoney Court and An Langan further north. The proposed development is the continuation of a housing trend in a suburban area.

The visual impacts from these closest visual receptors will be greatest during the construction stage. There will be construction vehicles and machinery onsite without the benefit of bolstered boundary planting coming to maturity. This impact is assessed as moderate and temporary in nature, lasting for the initial phase of construction.

The visual impacts posed by the proposed development on views from transport routes, especially on some approach roads to Letterkenny from elevated positions coming into the town from the south and from properties immediately surrounding the site are considered slight or slight to moderate.

## 13.7 Mitigation Landscaping and Screening Measures

### 13.7.1 Description of the Proposed Development

Section 4, *Description of Development*, describes the construction phase and operational phase of the proposed development. The layout drawing including landscaping proposals prepared by MH Associates is presented as drawing 5122 – P - 700 accompanying this EIAR.

The development is proposed to be carried out in two phases. The first phase includes 60% of the development and covers the southern and central areas of the site. The second stage of development includes the remaining 40% of the residential units and covers the northern portion of the site. There are large tree-planted buffers planned in several parts of the site. It is proposed to complete this works as soon as is practicable to do so. This will mean that the screening and landscaping effects of these buffers will be well established on completion of the project.

### 13.7.2 Landscaping

MH Associates designed comprehensive landscape design proposals for the proposed development. The main aims of the landscape design for the project are:

- The landscape design aims to create a sense of connectivity between spaces and promotes a sense of place and well-being within the mixed-use residential development.
- A coherent pedestrian footpath network ensures residents and guests can navigate around the site easily and aims to encourage residents to interact and use the public open space created within the landscape design.
- The main public open space incorporates play spaces to ensure the landscape is interactive for children all ages.
- Communal open space is provided and includes areas of hard landscape, tree planting, ornamental planting including seating / passive amenity areas. Tree and hedge planting helps create areas of seclusion and privacy for the residents.
- The planting scheme uses a mix of native and ornamental tree and shrub species to create a seasonal landscape that is functional, whilst also being sympathetic to the surrounding environment.
- The Landscape Proposals look at finding a balance between creating a safe space, sense of place and responding to the existing conditions.
- Where possible, the existing vegetation/trees will be retained, particularly to the west of the site, where the most biodiversity exists pre-development.
- The Public Open Space areas will provide opportunities for seating and soft areas of landscaping. The total public open space is 19.7 % of the footprint of the proposed development.
- The landscape plan proposes a mix of tree species to create a natural and welcoming environment for people. The proposed tree planting schedule will add a layer of colour and seasonal interest within the site, but also to consider climate mitigation by choosing hardy, locally sourced plants.
- Specific planting mixes are also considered for lighting conditions (sun and shade-loving species) and emphasis on pollinators (with reference to the All-Ireland Pollinator Plan 2021- 2025) to enhance the biodiversity at the site.
- Trees are used to provide a natural buffer between spaces and punctuate pedestrian routes to reinforce the paths. They also create shelter and focal points within the landscape. The use of semi-mature tree planting ensures the site will provide an instant positive contribution to the surrounding environment. Early implementation of the dedicated planted buffers will be beneficial to the instant landscaping effect. Native planting will be used to reinforce the existing characteristics of the environment.
- To promote and enhance the biodiversity in the development, various strategies will be considered such as: -
  - Establishing wildlife corridors - To support and enhance the habitat for a diversity of wild creatures (birds, bats, hedgehogs, toads, frogs etc.).
  - Hedges: Provide flowers and fruits for wildlife, nesting opportunities for birds and cover for hedgehogs.

Wood Piles: Can be used to create habitats for amphibians, invertebrates and bryophytes micro-habitats by leaving piles of dead wood or recumbent dead logs within the mature tree areas. Pollinators: A variety of wildflowers and shrubs are proposed in the planting that providing shelter as well as nectar and pollen to feed butterflies and bees. The plant selection is based on recommendations within the All-Ireland Pollinator Plan (2021-2025)<sup>2</sup>. Tree-planted buffers: wildlife corridors and foraging routes for bats.

**13.7.3 Screening**

An extract of the Landscaping Layout drawing is presented below in Figure 13.11. There are two significant open spaces planned for the site. The first is to the north of the entrance driveway. This area contains many mature conifer trees and a significant amount of native scrub species. Most of this area will remain untouched to preserve the associated biodiversity and landscape value. Further supplementary planting will be carried to enhance this area. Immediately south of the entrance driveway the main planted buffer strip of trees and shrubs is proposed running in a southwest northeast direction. This area will be planted as early as practicable and serve to act as long-term screening value to the development.

The second large green space is in the central northern portion of the site and is also flanked by a planted buffer of trees on the southern and eastern sides. The trees in this planted buffer will be planted as soon as is practicable to ensure that it achieves maximum impact before construction of the second phase of development.



**Figure 13.12: Extract from Landscaping Layout Drawing (not to scale)**  
 (Extract from drawing 5122-P-700 provided by MH Associates Ltd)

<sup>2</sup> All-Ireland Pollinator Plan 2021 – 2025, Published and co-ordinated by the *National Biodiversity Data Centre (2021)*

In addition to the screening value of the planted tree buffers and the mixed mature conifer copse that will remain in place there are significant landscaping features that will blend the development into the existing landscape.

There are lines of tree proposed to follow either the access roads into the individual cul-de-sacs or as a soft boundary between adjoining back gardens where rows of houses are back-to-back. These lines of trees are generally running in a southwest to northeast direction and on semi-maturity and maturity will soften the appearance of the development from viewpoints south of Letterkenny. The tree lines will also enhance the landscape within the development and make a significant contribution to biodiversity within the site.

There are a number of trees and hedges found along the existing site boundary. Photograph 13.13 below shows a typical site boundary on the western side of the site (approximate boundary shown in green), and as seen from the photograph there is significant screening value in the native trees and shrubs on site. It is proposed to bolster these areas with semi-mature trees to provide more screening value and to add to the biodiversity of the site. In areas where there is minimal tree cover along the site boundaries, planting of native trees and shrubs is proposed to provide visual screening and to aid the integration of the development into the existing landscape.

**Photograph 13.13: Typical boundary existing on site.**



The majority of the planting will be done with native species specified in Section 13.7.4. There are also some ornamental species proposed such as Beech and Hornbeam.

#### **13.7.4 Planting works**

All plants and trees must be purchased from a source compliant with the plant health regulation 2016/2031/EU. All bare-root planting works will be carried out during the dormant season (November to March). Any trees that fail should be replaced during the next dormant planting season.

The planting mix to be used on site is as follows:

- Alder
- Aspen
- Blackthorn
- Crab apple
- Elm
- Hazel
- Hawthorn
- Holly
- Pedunculate oak
- Sessile oak
- Rowan
- Whitebeam
- Willow

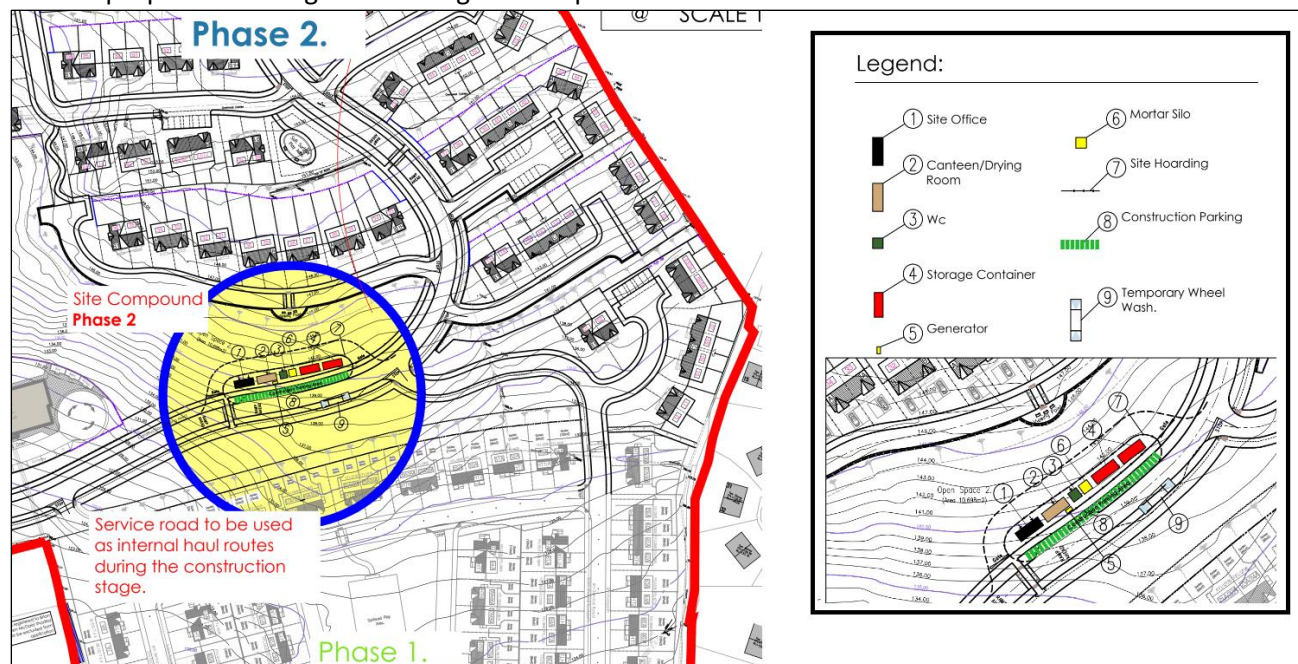
In-planting between trees must also include the following:

- Spindle
- Guelder rose
- Dog rose
- Woodbine honeysuckle
- Cherry.

In addition to suitable planting stock, correct planting techniques and tree support where required, all planted areas will require maintenance for a minimum of 3 years post planting. Any failed trees/shrubs should be replaced in the following planting season.

**13.7.5 Mitigation Measures during construction**

The development site including a small site compound with temporary site office, canteen and welfare facilities, storage containers, car parking areas and temporary works will be visible during the construction phase. The site compound is proposed to be located in the central southern portion of the site which is the least visually intrusive location on site. Figure 13.12 below, extracts taken from the drawing 5122-CM-100 ‘Outline Construction Traffic Management Plan’ by MH Associates, show the location of the site compound and the proposed hording surrounding the compound.



**Figure 13.13: Site Compound Location and details (not to scale)**  
 (Taken from drawing 5122-CM-100 ‘Outline Construction Traffic Management Plan’ by MH Associates)

The provision of site hoarding along the compound boundaries will substantially address many potential effects of construction operations at ground level during the delivery stage. Emerging buildings will become visible from neighbouring properties and also from a number of more distant vantage points as the development proceeds. There are no proposals for tower cranes on site. The site facilities are generally viewed as a temporary and unavoidable feature of construction, particularly in urban settings.

Mitigation measures proposed during the construction stage of the development, revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of compounds, control of vehicular access, and effective dust and dirt control measures, etc.

The outline Construction Environmental Management Plan for the project, which will be finalised before commencement of construction, sets out the technical measures to be employed in order to mitigate potential negative effects during construction. This is a working document which is refined and added to as the project proceeds.

Also prior to construction an Ecological Clerk of Works (ECoW) will be appointed to oversee many of the ecological aspects of the project. Pre-commencement of any works there will be comprehensive bat and badger surveys and assessments made on the site and site-specific action plans produced for these species (see Section 6 of the EIAR, Biodiversity). The ECoW will be responsible for the overseeing of the implementation of these plans and the integration of planting schemes recommended in the action plans with the landscaping proposed within the application. The ECoW will co-ordinate the priority planting of native trees and shrubs to best replicate trees and shrubs that are found on site and in the immediate surrounding area to provide suitable foraging habitat for bats and wildlife corridors for other species.

### **13.7.6 Summary of Mitigation Measures**

Measures will be put in place to reduce loss of biodiversity, enhance the application site area and reduce the visual impact of the proposed development.

These include:

- Overall design to blend development in with existing landscape.
- Planting of all landscaped areas in accordance with Landscape Layout drawing 5122-P-700
- Planting of buffer zones with trees to take place as soon as is practicable and areas protected as per specification in BS 5837 (2012) 'Trees in relation to design, demolition and construction'.
- Using plants suited to the given soil type and conditions to reduce the need for expensive and intrusive remedial measures (ex. replacing failed plants).
- All planting of trees and shrubs must take place during the first dormant season, avoiding times of frost.
- Protective fencing erected to protect areas of trees/scrub that are to remain on site to specification laid out in BS 5837 (2012) 'Trees in relation to design, demolition and construction'.
- Site hoarding to be used where required along the property boundaries during the construction stage.
- Appropriate good construction practice will be set out in the CEMP document in order to reduce the visual impact of construction activities as much as possible.
- The site ECoW will co-ordinate & oversee final recommendations for biodiversity/mitigation with the proposed landscaping plan to ensure the resultant landscape within the development site is suitable for visual screening purposes, suitable as a pleasant place to live and suitable for foraging routes and as wildlife corridors.

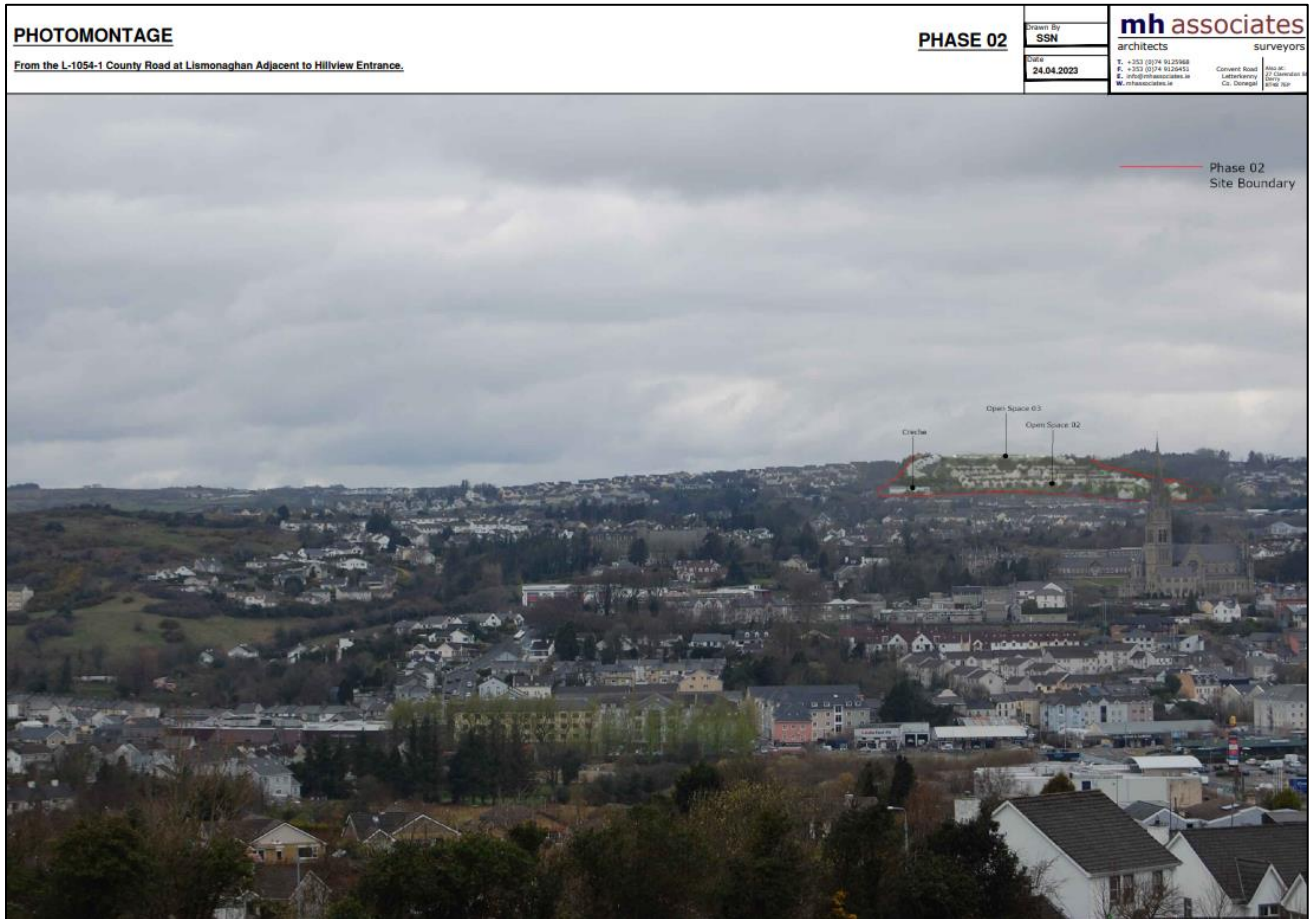
### **13.7.7 Photomontage**

MH Associates Ltd produced a series of photomontages to project how the proposed development may look within the landscape when complete and with all the mitigation measures in place. Photograph 13.14 presents this photomontage from what is considered the view with the greatest impact (L-1054 at Lismonaghan – viewpoint 2, Photograph 13.2). This view represents the most important in terms of landscape setting in Letterkenny as noted in section 13.4.1.6 'Views of the settlement's skyline, from all approaches to the town'



As can be seen from the photomontage the development blends in with the other developments and suburban areas that are visible to the east and west of the application site.

**Photograph 13.14: Photomontage from L-1054 at Lismonaghan**



(Supplied by MH Associated Ltd)

## 13.8 Overall Impact Assessment

### 13.8.1 Landscape

Based on the field survey and reference to the current Donegal County Development Plan 2018-2024, the overall landscape character has been given a landscape value and sensitivity of “*Low - Medium*” (Table 13.1). The area is not considered of high scenic amenity in the Donegal County Development Plan and is characterised as being within an urban area. The surrounding landscape would be reasonably tolerant to change. The magnitude of additional change as a result of the proposed development has been assessed as ‘*Medium*’ (Table 13.2) due to the localised nature of the proposal and location within an established suburban area. As defined by Table 13.3, the significance of landscape impacts of the development is assessed as “*Slight/Moderate*”.

The losses of existing vegetation as a result of the development will be offset by the creation and maintenance of planted buffers, enhancement of the open areas, supplementary planting of the boundaries and landscaping works within each proposed cul-de-sac. It is expected that the landscaping measures will lead to overall increased biodiversity for the site.

### 13.8.2 Visual

The field survey confirmed that the application site is visible from some of the routes approaching Letterkenny from the south and from some of the nearby housing developments. The screening and landscaping effects of the design of the site and all the planting measures proposed will greatly reduce the visual impact of the proposed development.

The photomontage shown in Photograph 13.14 show how well the finished development sits into the existing landscape. The supplementary planting along the boundaries of the site also greatly reduce the visual impact experienced by those properties adjacent to the proposed development.

Table 13.11 summarises the visual impacts that are expected at each of the viewpoints considered post mitigation.

**Table 13.11: Viewpoint visual impact assessments**

View point	Visual Receptor Sensitivity	Magnitude of Visual Impact	Visual Impact Significance (pre-mitigation)	Mitigation Measures	Visual Impact Significance (post-mitigation)
1	Low	Low	Slight	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Not significant
2	Low	Low	Slight	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Not significant

3	Low	Low-Medium	Slight-Moderate	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Slight-Not significant
4	Low	Low	Slight	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Not significant
5	Low	Low	Slight	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Not significant
6	Low	Low	Slight	Planted boundaries, Open spaces planted with native trees, Planting to take place in the early phases of construction to aid screening and blending-in to the existing environment. Sensitive design layout of houses within site.	Not significant
7	Low	Low-Medium	Slight-Moderate	Boundary planting to supplement existing screening on western side of application site.	Not significant
8	Low	Medium	Slight-Moderate	Boundary planting of native trees and shrubs along the western side of the application site. Planting of tree belts throughout proposed development will reduce overall impact. Impact highest for those dwellings bordering the development.	Slight
9	Low	Low-Medium	Slight-Moderate	Boundary planting of native trees and shrubs along the northern side of the application site. Planting of tree belts throughout proposed development will reduce overall impact. Impact highest for those dwellings with uninterrupted view of the development.	Slight-Not significant
10	Low	Low	Slight	Boundary planting of native trees and shrubs along the northern side of the application site. Planting of tree belts throughout proposed development will reduce overall impact.	Not significant
11	Low	Medium	Slight-Moderate	Supplementary planting of native trees and shrubs along the eastern boundary will aid screening.	Slight
12	Low	Medium	Slight - Moderate	Supplementary planting of native trees and shrubs along the eastern boundary will aid screening.	Slight

As illustrated in Table 13.6, the assessment of the significance of the visual impacts on the viewpoint is based on a combination of the visual sensitivity and magnitude of visual changes to the viewpoint. The visual receptor sensitivity was considered “*Low*” due to the suburban nature of the surrounding environs, the magnitude of visual impact was currently considered “*Medium*” due to the loss of characteristics of the existing landscape and the degree to which development may alter the landscape. The magnitude of the visual impact as a result of the development has therefore been currently assessed as “*Slight/Moderate*” (Table 35.6). Mitigation has been proposed above in section 13.7 which will then reduce this to “*Slight*” from “*Slight /Moderate*”

### 13.9 Residual Impacts

Key landscape and visual mitigation measures have been incorporated into the layout of the site and design of the proposed buildings. The buildings will be low height (maximum 2-storey) with height and massing of the proposed development given careful consideration and is considered appropriate having regard to the site’s suburban location whilst also respecting the local context and the sloping topography of the site. MH Associates Ltd have produced a landscaping plan including new planting and open spaces combined with the retention of the boundary hedgerows and a mature copse of woodland as the best mitigation measures in landscape and visual impacts. In terms of cumulative landscape effects, the proposed development (Phase 1 by PJ McDermott Construction Ltd, Ref: 22/51204) immediately to the south and the established housing estates east and west of the site continue the trend of housing developments in this area. This proposal links with the proposed Phase 1 development to the south while this proposed second phase of this Phase 2 development is proposed to connect to the upgraded Windyhall road to the north thereby linking the development with the other housing developments to the north and alleviating transport issues to the southwest.

There will be the inevitable visual impacts during construction for the receptors closest to the application site. These are assessed as Slight to Moderate after mitigation measures have been implemented and will be temporary in nature.

The visual impact of the development in operation for the receptors closest to the application site is assessed as being between slightly negative to not significant after the mitigation measures have been implemented.

The visual impact of the development in operation for receptors from further afield including those transport routes into Letterkenny from the south is assessed as Not Significant after the mitigation measures have been implemented.

A summary is presented in the Tables 13.12, 13.13 and 13.14 of impacts pre mitigation, mitigation measures and residual impacts post mitigation.

**Table 13.12: Determination of Significance of Impacts Pre-mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Magnitude of Impact (Character/Magnitude/ Duration/Probability/ Consequences) No change to High</b>	<b>Existing Environment Sensitivity Low to High</b>	<b>Significance No change to substantial</b>
Negative visual impact on the landscape character of the surrounding environs from change of greenfield site to landscaped housing site with open areas	Visual receptors within the vicinity of the subject site (dwellings, viewpoints, road users)	Low/medium	Low/medium	Slight/Moderate
Negative visual impact during construction	Visual receptors within the vicinity of the subject site – adjoining properties, nearby estates etc	Low/medium	Low/medium	Moderate (Temporary)
Negative visual impact during construction	Visual receptors – viewpoints, road users	Low/medium	Low/medium	Slight (Temporary)
Negative visual impact during operation	Visual receptors within the vicinity of the subject site – adjoining properties, nearby estates etc	Low/medium	Low/medium	Slight to Moderate
Negative visual impact during operation	Visual receptors – viewpoints, road users	Low/medium	Low/medium	Slight

**Table 13.13: Summary of Mitigation Measures Proposed**

Summary of Mitigation Measures Proposed
<ul style="list-style-type: none"> <li>• Overall design to blend development in with existing landscape.</li> </ul>
<ul style="list-style-type: none"> <li>• Planting of all landscaped areas in accordance with Landscape Layout drawing 5122-P-700</li> </ul>
<ul style="list-style-type: none"> <li>• Planting of buffer zones with trees to take place as soon as is practicable and areas protected as per specification in BS 5837 (2012) 'Trees in relation to design, demolition and construction'.</li> </ul>
<ul style="list-style-type: none"> <li>• Using plants suited to the given soil type and conditions to reduce the need for expensive and intrusive remedial measures (ex. replacing failed plants).</li> </ul>
<ul style="list-style-type: none"> <li>• All planting of trees and shrubs must take place during the first dormant season, avoiding times of frost.</li> </ul>
<ul style="list-style-type: none"> <li>• Protective fencing erected to protect areas of trees/scrub that are to remain on site to specification laid out in BS 5837 (2012) 'Trees in relation to design, demolition and construction'.</li> </ul>
<ul style="list-style-type: none"> <li>• Site hoarding to be used where required along the property boundaries and around site compound during the construction stage.</li> </ul>
<ul style="list-style-type: none"> <li>• Appropriate good construction practice will be set out in the <u>Q</u>CEMP document in order to reduce the visual impact of construction activities as much as possible.</li> </ul>
<ul style="list-style-type: none"> <li>• The site ECoW will co-ordinate &amp; oversee final recommendations for biodiversity/mitigation with the proposed landscaping plan to ensure the resultant landscape within the development site is suitable for visual screening purposes, suitable as a pleasant place to live and suitable for foraging routes and as wildlife corridors.</li> </ul>

**Table 13.14: Determination of Significance of Impacts Post mitigation**

<b>Impact</b>	<b>Receptor</b>	<b>Magnitude of Impact (Character/Magnitude/ Duration/Probability/ Consequences) No change to High</b>	<b>Existing Environment Sensitivity Low to High</b>	<b>Significance No change to substantial</b>
Negative visual impact on the landscape character of the surrounding environs from change of greenfield site to landscaped housing site with open areas	Visual receptors within the vicinity of the subject site (dwellings, viewpoints, road users)	Low/medium	Low/medium	Slight to Not Significant
Negative visual impact during construction	Visual receptors within the vicinity of the subject site – adjoining properties, nearby estates etc	Low/medium	Low/medium	Moderate to Slight (Temporary)
Negative visual impact during construction	Visual receptors – viewpoints, road users	Low/medium	Low/medium	Slight (Temporary)
Negative visual impact during operation	Visual receptors within the vicinity of the subject site – adjoining properties, nearby estates etc	Low/medium	Low/medium	Slight to Not Significant
Negative visual impact during operation	Visual receptors – viewpoints, road users	Low/medium	Low/medium	Not significant

### **13.10 Technical Difficulties**

No technical difficulties were encountered.



## Section 14: CULTURAL HERITAGE

### Table of Contents

Section 14: CULTURAL HERITAGE .....	1
List of Figures.....	2
List of Tables.....	2
14 CULTURAL HERITAGE.....	3
14.1 Introduction .....	3
14.2 Assessment Methodology .....	3
14.2.1 Relevant Guidelines and Legislative Framework .....	4
14.2.2 Appraisal Methodology .....	5
14.2.3 Evaluation Criteria .....	6
14.2.4 Desk Based Assessment.....	6
14.2.5 Site Inspection .....	7
14.3 Receiving Environment.....	8
14.3.1 Toponyms .....	14
14.3.2 Cartographic Sources.....	15
14.3.3 Topographical Files.....	17
14.3.4 Aerial Images .....	17
14.3.5 Previous Archaeological Excavations and Surveys.....	17
14.3.6 National Monuments.....	17
14.3.7 County Donegal Development Plan 2018-2024.....	17
14.3.8 Site Inspection .....	18
14.3.9 Architectural Heritage .....	19
14.3.10 Cultural Heritage .....	19
14.4 Potential Effects .....	19
14.4.1 Do Nothing Effect .....	19
14.4.2 Direct Construction Effects.....	20
14.4.3 Indirect Construction Effects .....	20
14.4.4 Cumulative Construction Effects .....	20
14.5 Mitigation Measures .....	20
14.6 Residual Effects .....	20
14.7 Interactions .....	20

## List of Figures

Figure 14.1: Location of proposed development site (after MH Associates).....	8
Figure 14.2: Aerial photograph showing the proposed development site and known heritage assets within the 1 km study area. ....	9
Figure 14.3: Extract from First Edition 1:10,560 Ordnance Survey map showing proposed development site	15
Figure 14.4: Extract from First Edition 1:2,500 Ordnance Survey map showing proposed development site ..	16

## List of Tables

Table 14.1	Placenames.....	14
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## 14 CULTURAL HERITAGE

### 14.1 Introduction

This Cultural Heritage Environmental Impact Assessment Report has been prepared to examine the potential effects on the archaeological, architectural and cultural heritage resource of the proposed development of 188 residential units, with associated site development works and services, including road, infrastructure, landscaping and open space, on a site at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal.

This chapter has been prepared by Colm Flynn and Dermot Nelis of Horizon Archaeology Ltd. Colm Flynn is a Senior Archaeologist with over 20 years of experience in cultural resource management and licensed fieldwork. He has a BA in Heritage Studies (Archaeology and Heritage Management) from Galway-Mayo Institute of Technology and has been a licence eligible archaeologist in the Republic of Ireland since 2006, and in Northern Ireland since 2016. He is a Member of the Institute of Archaeologists of Ireland (MIAI). Colm has detailed experience in archaeological assessment, specialising in fieldwork in urban, rural and brownfield environments and the production of cultural heritage reports.

Dermot Nelis graduated from Queen's University Belfast, and after gaining extensive fieldwork experience undertook postgraduate studies at the University of Oxford in archaeological consultancy and project management. Dermot is a Senior Archaeologist with over 25 years' experience in cultural resource management and licensed fieldwork. Dermot has detailed experience in archaeological assessment, specialising in fieldwork in urban, rural and brownfield environments and the production of cultural heritage reports.

This chapter assesses the impacts or effects, if any, of the proposed developments on the archaeological, architectural and cultural heritage resource. This chapter will also propose mitigation measures to safeguard any monuments, features or finds of antiquity, if required.

### 14.2 Assessment Methodology

This report has been prepared according to the following documents and legislation:

- National Monuments Acts (1930-2014).
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.
- Framework and Principles for the Protection of Archaeological Heritage (DAHGI, 1999).
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022).

Each potential impact or effect on identified archaeological, architectural or cultural heritage assets was classified according to the Environmental Protection Agency Guidelines (May 2022) as set out below:

- **Profound:** this applies where mitigation would be unlikely to remove the adverse effects. These profound impacts arise where an archaeological site is completely and irreversibly destroyed by a proposed development.
- **Significant:** this applies when an impact which, by its magnitude, duration or intensity, alters an important aspect of the archaeological feature/site. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about the archaeological feature/site.
- **Moderate:** this applies when a change to the site is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised, and which is reversible. This arises where an archaeological feature can be incorporated into a development without damage and that all procedures used to facilitate this are reversible.

- Slight: this applies when the proposed works will result in an impact which causes changes in the character of the archaeology which are not significant or profound and do not directly impact or affect an archaeological feature or monument.
- Imperceptible: this applies when the proposed development will have an impact on the archaeology capable of measurement but without noticeable consequences.
- Uncertain: this applies when the extent or nature of possible impacts on archaeological is unknown. This is particularly relevant where the extent of the known archaeology within the proposed development area has not been established.

The objectives of this chapter are to:

- Identify all known features of archaeological, architectural and cultural heritage importance in the vicinity of the proposed development site.
- Determine any potential impacts of the proposed development on the archaeological, architectural and cultural heritage resource.
- Identify measures to mitigate any potential impacts of the proposed development on the archaeological, architectural and cultural heritage resource.

The potential impacts considered include the following:

- Direct and indirect impacts of construction activities on recorded and unrecorded archaeological, architectural and cultural heritage features.
- Direct and indirect impacts of the operation of the proposed developments on recorded and unrecorded archaeological, architectural and cultural heritage features.
- Cumulative and residual impacts of the proposed developments on recorded and unrecorded archaeological, architectural and cultural heritage features.

#### **14.2.1 Relevant Guidelines and Legislative Framework**

##### **Archaeological Resource**

The *National Monuments Act, 1930 to 2004* and relevant provisions of the *National Cultural Institutions Act, 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

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

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

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

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

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

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

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

### **Architectural and Built Heritage Resource**

The main laws protecting the built heritage are the *Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999* and the *Planning and Development Act, 2000* (Amended 2010). The Architectural Heritage and Historic Monuments Act requires the Minister to establish a survey to identify, record and assess the architectural heritage of the country. The National Inventory of Architectural Heritage (NIAH) records built heritage structures from within each county in the State. As inclusion in the Inventory does not provide statutory protection, the document is used to advise Local Authorities on compilation of a Record of Protected Structures (RPS) as required by the Planning and Development Act, 2000.

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

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

#### **14.2.2 Appraisal Methodology**

There is no professional standard for defining the extent of a study area when assessing potential impacts on archaeological, architectural or cultural heritage remains. A study area of 1 km has been imposed around the proposed development site to assess the presence of statutorily protected archaeological remains. A 1 km study area is an industry agreed approach for assessing potential impacts on archaeological remains, and is accepted by National Monuments Service as providing an adequate assessment of any impacts that may occur on archaeological features. This involved mapping all Recorded Monuments within 1 km of the proposed development site and assessing their potential to be impacted on as a result of the proposed development.

Study areas of 1 km have been imposed around the proposed development site to record the presence of Protected Structures or any additional statutorily protected architectural or cultural heritage features recorded in the *County Donegal Development Plan 2018 – 2024* ([www.heritagemaps.ie](http://www.heritagemaps.ie)). A 1 km study area has been established to look for the presence of any buildings recorded on the National Inventory of Architectural Heritage, while an assessment has been made of historic gardens or designed landscapes within the proposed development area ([www.buildingsofireland.ie](http://www.buildingsofireland.ie)).

Research has been undertaken in two phases in order to establish the baseline environment. The first phase comprised a desk review, namely a paper and digital survey of archaeological, historical and cartographic sources. The second phase involved a field inspection of the proposed development area.

### **14.2.3 Evaluation Criteria**

Effects of a development on cultural heritage assets can be identified from examining detailed information about a project, the nature of the area of the development, and the extent of known cultural heritage assets potentially affected. Development sites such as housing schemes can affect the cultural heritage resource of a given landscape in a number of ways:

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.
- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.
- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.
- Visual impacts on architectural heritage buildings and historic landscapes sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise fences, and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.
- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.
- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluvium or peat deposits.
- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, service trenches etc.
- Although not widely appreciated, positive effects can accrue from permitted developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

### **14.2.4 Desk Based Assessment**

A desk-based assessment of the proposed development area and surrounding landscape was prepared as part of this chapter. This assessment utilised the following sources:

- **Record of Monuments and Places (RMP) of County Donegal** - This is a list of archaeological sites known to the National Monuments Service. Back-up files of the Sites and Monuments Record (SMR) provide details of documentary sources and field inspections where these have taken place. There are no monuments recorded on the RMP within the proposed development site.
- **Topographical Files of the National Museum of Ireland** - This is the archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts, but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information in the discovery of sites of archaeological significance. There are no Topographical File entries within the proposed development site.

- **County Donegal Development Plan 2018 – 2024** (Donegal County Council, 2018) - Contains Objectives and Policies on the preservation and management of archaeological, architectural and cultural heritage features. The “Record of Protected Structures” (Donegal County Council, 2018) for County Donegal is included as part of the County Development Plan. Both documents were consulted to obtain information on features within the proposed development site and the 1 km study area.
- **National Inventory of Architectural Heritage (NIAH)** – This is a section within the Department of Housing, Local Government and Heritage. The work of NIAH involves identifying, recording and evaluating on a non-statutory basis the architectural heritage of Ireland from 1700 to the present day. The NIAH website also contains a non-statutory register of historic gardens and designed landscapes, and this was assessed to look for the presence of any such features within the proposed development site.
- **Cartographic sources** – These are important in tracing land-use development within the proposed development site, as well as providing topographical information on sites and areas of archaeological potential. Cartographic analysis of relevant maps has been made to identify any topographical anomalies that may no longer remain within the landscape.
- **Documentary sources** – These were consulted to gain background information on the historical and archaeological landscape surrounding the proposed development site.
- **Aerial photographs of Ordnance Survey Ireland and Bing aerial photography** - This coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its potential to contain previously unidentified archaeological remains.
- **Previous Archaeological Fieldwork**- An assessment has been made of archaeological fieldwork programmes carried out in or near to the proposed development site. This provides important information on the below-ground archaeological potential of the development area.

#### **14.2.5 Site Inspection**

Site inspection is necessary to determine the extent, character and condition of archaeological, architectural and cultural heritage remains, and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information. The site visit was carried out by Dermot Nelis on 9<sup>th</sup> November 2021, and weather at the time of the visit was dry and bright.

The entire area of the development was walked and visually assessed. In addition, land surrounding this area, but which does not form part of the proposed development, was visually assessed in an attempt to gain information on the wider landscape. No archaeological, architectural, or cultural heritage features were revealed within the proposed development area or the surrounding landscape as a result of carrying out the site inspection.



Figure 14.1: Location of proposed development site (after MH Associates)

### 14.3 Receiving Environment

Donegal is located on the north-western seaboard and comprises a land mass of 486,091 hectares (6.9% of the total land area of the State). The county is dominated by a mountainous granite spine running



northeast to southwest comprising the mountain ranges of Derryveagh. To the southwest of these ranges is a massive peninsula of hard quartzite mountains, known as the Blue Stack Mountains, extending from Ballybofey to Glencolmcille on the west coast. To the east of the Derryveagh mountain range, drift soil provides some of the best agricultural land in the county, such as in the Finn Valley. Of the 1.2 million acres of land that make up County Donegal, almost 800,000 acres is rough pasture and upland bog.



Figure 14.2: Aerial photograph showing the proposed development site and known heritage assets within the 1 km study area.

During the Mesolithic (c. 7000-4000 BC) people existed as hunters/gatherers, living on the coastline, along rivers and lakesides. They used flint and other stones to manufacture sharp tools, and locating scatters of discarded stone tools and debris from their manufacture can sometimes identify settlements. The earliest evidence of settlement in County Donegal dates to this period, and is represented by Early Mesolithic material (c. 7000 – 5500 B.C.) recovered from a beach at Greencastle in north Inishowen. A collection of narrow blades, also thought to possibly date to the Early Mesolithic, was found under peat bog near Castlefinn close to the River Finn (Lacy 2002, 3). Lacy argues that the finds of Mesolithic artefacts recovered in Donegal around the two substantial rivers of the area, the Foyle and the Finn, is consistent with the riverine and estuarine conditions favoured by Mesolithic settlers. It is suggested these rivers served as a water highway into the interior of the country during the Mesolithic period, and were probably travelled by the earliest food-gathering settlers in Ireland (Lacy 1983, 5). This point is further supported by a find of several Bann Flakes (a Late Mesolithic tool) on the western shoreline of the River Foyle, just north of Derry. This relative concentration of Mesolithic activity forms a contrast to many other parts of the county, which through a combination of poor and isolated land appear not to have been widely settled during this period. Later Mesolithic material (c. 5500 – 4000 B.C.) has also been found in the form of a flint working site on a raised beach at Dunaff Bay in Inishowen (Lacy 2002, 260). Further Bann flakes have also been recovered from five locations, one at Horn Head and the others in the general Raphoe area, in the east of the county.

During the Neolithic (c. 4000-2400 BC) the population became more settled with a subsistence economy based on crop growing and stock-raising. This period also saw changes in burial practices and a tradition of burying the dead collectively and carrying out of cremations emerged. Unlike the relative scarcity of Mesolithic evidence in County Donegal, the Neolithic is better represented. Of the approximate 1,400 megalithic tombs recorded in the country, 138 have been identified in Donegal, suggesting the area was relatively important throughout the Neolithic and Early Bronze Age, after which time this form of burial practice ended (Lacy 1983, 14). These tombs have been recognised as falling into four distinct groups, identified on the basis of their architecture, distribution, date range and associated features: court tombs, portal tombs, passage tombs and wedge tombs (De Valera and Ó Nualláin 1961, xii-xiv).

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

Bronze Age monuments from County Donegal include standing stones, stone circles and alignments, cist and pit burials, cairns, barrows, rock art and *fulachta fiadh*, which are one of the most numerous monument types in Ireland with over 4,500 examples recorded (Waddell 2005, 174).

A possible Bronze Age site (RMP DG053-025) is recorded as a standing stone, and is located in Sallaghgrane townland approximately 1km south of the proposed development area (figure 14.2). It is shown as the site of a standing stone on historic cartographic sources, but it no longer survives above ground and the general area is now part of a housing development ([www.archaeology.ie](http://www.archaeology.ie)).

There are approximately 300 standing stones recorded in County Donegal (Lacy 1983, 69). As Waddell has pointed out, the particular significance of individual standing stones can be difficult to assess but it is considered they mark a special place. Some standing stones have been found with associated burials, and the majority are believed to date to the second millennium BC (Waddell 2005, 174). In Donegal standing stones are known to mark ancient routeways and fords.

During the Iron Age (c. 600 BC-400 AD) new influences came into Ireland which gradually introduced the knowledge and use of iron, although for several centuries bronze continued to be widely used. The Iron Age

in Ireland however is problematic for archaeologists as few artefacts dating exclusively to this period have been found, and without extensive excavation it cannot be determined whether several monument types, such as ring barrows or standing stones, date to the Bronze Age or Iron Age.

A small number of exceptional artefacts dating to the Iron Age have been found in Donegal, and these include the Ballyshannon sword hilt and a collection of carved stone heads from Raphoe. While there have been very few settlement sites definitively recognised as dating to this period, three hillforts on the summits of Grianán Mountain, McGonigle's Fort at Glasbolie and Croaghan Hill, near Lifford, almost certainly date to the Late Bronze Age or Iron Age. The surviving possible passage tomb at Croaghan Hill indicates that this site was also in use in prehistoric times (Lacy 1983, 6). A number of the coastal promontory forts found in the county may also date to this period (Lacy 2002, 19).

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

During the 5<sup>th</sup> century AD the three branches of the Northern Uí Néill dynasty conquered the area of Donegal and gained complete political domination over the county. By the following century two branches of this dynasty came to dominate the area, with Cinéal Eoghain comprising the territory of Inishowen, and Cinéal Conaill the territory of west and south Donegal. It is argued that the Cinéal Eoghain were the most powerful political dynasty in Ireland during the Early Medieval period (Mac Giolla Easpaig 2002, 150).

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

Ringforts are considered to be the most common indicator of settlement during the Early Medieval period. The most recent detailed study (*ibid.*) has suggested that there is an approximate total of 45,119 potential ringforts or enclosure sites throughout Ireland. A ringfort (RMP DG053-024) is located approximately 1km south of the proposed development area in Ballymacool townland (figure 14.2). It is recorded as a "fort" and "cave" on the First Edition 1:1,560 map (1836), but it is not shown on later edition Ordnance Survey maps. No above-ground evidence of the monument survives, although a record in the National Museum of Ireland suggests it measured approximately 45m in diameter ([www.archaeology.ie](http://www.archaeology.ie)).

Cashels have the same function, date and plan as ringforts but differ in that the enclosing element is constructed predominantly or entirely of stone, which is a reflection of the content of the soil and the local geology.

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

The Early Medieval period is also characterised by the foundation of a large number of ecclesiastical sites throughout Ireland in the centuries following the introduction of Christianity in the 5<sup>th</sup> century AD. The early churches tended to be constructed of wood or post-and-wattle. Between the late 8<sup>th</sup> and 10<sup>th</sup> centuries however mortared stone churches gradually replaced the earlier structures. Many of the sites, some of which were monastic foundations, were probably originally defined by an enclosing wall or bank similar to that found at coeval secular sites. This enclosing feature was probably built more to define the sacred character of the

area of the church than as a defence against aggression. An inner and outer enclosure can be seen at some of the more important sites; the inner enclosure surrounding the sacred area of church and burial ground and the outer enclosure providing a boundary around living quarters and craft areas. Where remains of an enclosure survive it is often the only evidence that the site was an early Christian foundation.

The commencement of Viking raids at the end of the 8<sup>th</sup> century and their subsequent settlement during the following two centuries marked the first ever foreign invasion of Ireland. Viking settlement evidence is scarce and has been found in Cork, Dublin and Waterford, however excavations there have revealed extensive remains of the Viking towns. Outside these towns understanding of Viking settlement is largely drawn from documentary and place-name evidence. In addition to Cork, Dublin and Waterford, documentary sources provide evidence for the Viking foundation of the coastal towns of Limerick and Wexford (Edwards 2006, 179). Other indirect evidence which suggest Viking settlement, or at least a Norse influence in Ireland, is represented by upwards of 120 Viking-age coin hoards, possible votive offerings of Viking style objects, and the assimilation of Scandinavian art styles into Irish designs. While the initial Viking raids would have been traumatic, the wealth and urban expansion brought into the country as a result of Viking trading would have benefited the Gaelic Irish and cultural assimilation in some parts would have been significant.

A number of artefacts which are probably of Viking origin have been found in Donegal. These include a collection of arm-rings from northwest Inishowen, a probable Viking hoard of Anglo-Saxon coins found on the eastern shore of Lough Swilly in the 19<sup>th</sup> century, and a collection of silver ingots and jewellery found in the vicinity of Raphoe. Additionally, there are also several literary references to a Viking presence in Donegal (Lacy 1983, 7).

The arrival of Anglo-Normans in Ireland towards the end of the 12<sup>th</sup> century caused great changes during the following century. Large numbers of colonists arrived from England and Wales and established towns and villages. They brought with them new methods of agriculture which facilitated an intensification of production. Surplus foods were exported to markets all along Atlantic Europe which created great wealth and economic growth. Results of this wealth can be seen in the landscape in the form of stone castles, churches and monasteries. The presence of Anglo-Normans in Donegal is well documented through the *Annals of Ulster*, which record that in 1199 John de Courcy plundered Inishowen after camping in Derry for nine days (*ibid.*).

The political structure of the Anglo-Normans centred itself around the establishment of shires, manors, villages, castles and churches. In the initial decades after the Anglo-Norman invasion a distinctive type of earth and timber fortification was constructed- the motte and bailey. Mottes were raised mounds of earth topped with a wooden or stone tower while the bailey was an enclosure, surrounded by an earthen ditch with a timber palisade, used to house ancillary structures, horses and livestock. There are no motte and baileys recorded in County Donegal ([www.archaeology.ie](http://www.archaeology.ie)).

The most important archaeological evidence for Anglo-Norman presence in Donegal is the “*great pile of Greencastle*”, built in 1305 by Earl of Ulster Richard de Burgo at the entrance to Lough Foyle (Lacy 1983, 7). It was known at that time as Northburgh or Newcastle, and its construction is recorded in the *Annals of the Four Masters*.

In certain areas of Ireland Anglo-Norman settlers constructed square or rectangular enclosures, now termed moated sites. Their main defensive feature was a wide, often water-filled, fosse with an internal bank. As in the case of ringforts, these enclosures protected a house and outbuildings usually built of wood. They appear to have been constructed in the latter part of the 13<sup>th</sup> century, though little precise information is available. There are no moated sites recorded in County Donegal ([www.archaeology.ie](http://www.archaeology.ie)).

More substantial stone castles followed the motte and bailey and moated sites in the 13<sup>th</sup> and 14<sup>th</sup> centuries. Tower houses are regarded as late types of castle and were erected from the 14<sup>th</sup> to early 17<sup>th</sup> centuries. Their

primary function was defensive, with narrow windows and a tower often surrounded by a high stone wall (bawn). An Act of Parliament of 1429 gave a subsidy of £10 to “*liege*” men to build castles of a minimum size of 20ft in length, 16ft in breadth and 40ft in height (6m x 5m x 12m). By 1449 so many of these £10 castles had been built that a limit had to be placed on the number of grants being made available. The later tower houses were often smaller, with less bulky walls and no vaulting. There are 14 tower houses recorded in County Donegal ([www.archaeology.ie](http://www.archaeology.ie)).

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

Before the Tudors came to the throne the kings of England were also the kings of western France and so, during the 14<sup>th</sup> and 15<sup>th</sup> centuries, the various lords who ruled in Ireland were largely left to themselves. After the withdrawal of the Normans from the Inishowen peninsula in 1333 Donegal passed in entirety to the Cinéal Conaill under the O’Donnells, however the O’Neills, who now fully ruled Tyrone, continued to lay claim to the territory. By the time of the establishment of the present county border, and in the face of Elizabethan conquest, the longstanding rivalry of the two ancient factions had been resolved.

The Tudor conquest brought a much greater interest in the affairs of Ireland. They wanted to put a stop to the raids of the Gaelic Irish on areas under English rule. To do this, they ruthlessly put down any rebellions and even quashed inter-tribal feuds. English settlers were then brought in to settle their lands. The first of these plantations occurred in the mid-16<sup>th</sup> century in what is now Laois and Offaly. After the Desmond rising in Munster in 1585 came another plantation, and parts of south western Tipperary were planted at that time.

By 1600 permanent garrisons were established by the Tudor government within Donegal. Sir Henry Dowcra established the Governorship of Lough Foyle, which included the northern part of the county, and from his base at Derry further garrisons were planted in northern and eastern Donegal at Rathmullan and Lifford.

From 1593 until 1603 there was a countrywide war between the Gaelic Irish, who were supported by the French, and the Elizabethan English. The Irish were finally defeated and with the “*Flight of the Earls*” from Rathmullan in 1607 the territory of Donegal along with the rest of Ulster, which had previously been independent of English rule, was planted. Subsequently Donegal was divided into numerous plantation estates and several planned towns, many of which preserve their original layout to the present day, were built at that time.

A known archaeological site identified as a mass-rock (RMP DG053-046) that likely dates to Penal Law times is located approximately 670m south of the proposed development area in Ballymacool townland. It is located in rough, wet, scrub-covered, secluded, steep north-facing mountain side. The altar is an irregularly shaped slab (0.7m long x 0.42m wide x 0.3m high) aligned northwest/southeast. It is supported on its northeast side by a single boulder and on both its northwest and southeast sides by relatively large uprights topped by narrow, horizontally placed, packing slabs to achieve a relatively level surface. The southwest side, presumably where the sacred vessels *etc.* were temporarily held, is open ([www.archaeology.ie](http://www.archaeology.ie)). Mass-rocks are generally rocks or earth-fast boulders which were used as altars when Mass was being celebrated during Penal times (1690s to 1750s AD), though there are some examples which appear to have been used during the Cromwellian period (1650s).

The development will be located in Glencar Irish and Glencar Scotch townlands, which are in the barony of Kilmacrenan and parish of Conwal. Lewis (1837, Vol. I, 395) records the parish of Conwal, or Conwall, as containing, along with the post-town of Letterkenny, 12,978 inhabitants. He notes the parish contained:

*“according to the Ordnance survey, 45,270 statute acres, of which 32,715 are in the barony of Kilmacrenan; there is much waste land and bog.” (ibid.).*

Lewis (*ibid.*, Vol. II, 258) records Letterkenny as:

*“containing 2160 inhabitants. It is situated on the river Swilly, over which is a bridge of one arch, and consists of one street with a spacious market-square, containing 416 houses. The market is on Friday, and is well supplied with provisions; the fairs are on the first Friday in January, May 12th, July 10th, the third Friday in August, and Nov. 8<sup>th</sup> ... In the mountains in the vicinity are great quantities of stone of good quality, and marl; about half a mile from the town, and about the same distance from Lough Swilly, is a good quarry of slate; and on the shores of the lough are great quantities of potters’ clay and clay for bricks. The river is navigable from Lough Swilly to this place for vessels of 150 tons’ burden.” (ibid.).*

**14.3.1 Toponyms**

Townland names are important in understanding the archaeology, geology, land-use, ownership and cultural heritage of an area ([www.logainm.ie](http://www.logainm.ie)).

**Table 14.1 Placenames**

Name	Translation
Glencar Irish	<i>Gleann Chartha Gaelach.</i> Translates as “Glen of the Carrs.”
Glencar Scotch	<i>Gleann Chartha Albanach.</i> Translates as “Glen of the Carrs.”
Letterkenny	<i>Leitir Ceanainn.</i> Possibly translates as “Cannon’s hill-side.”

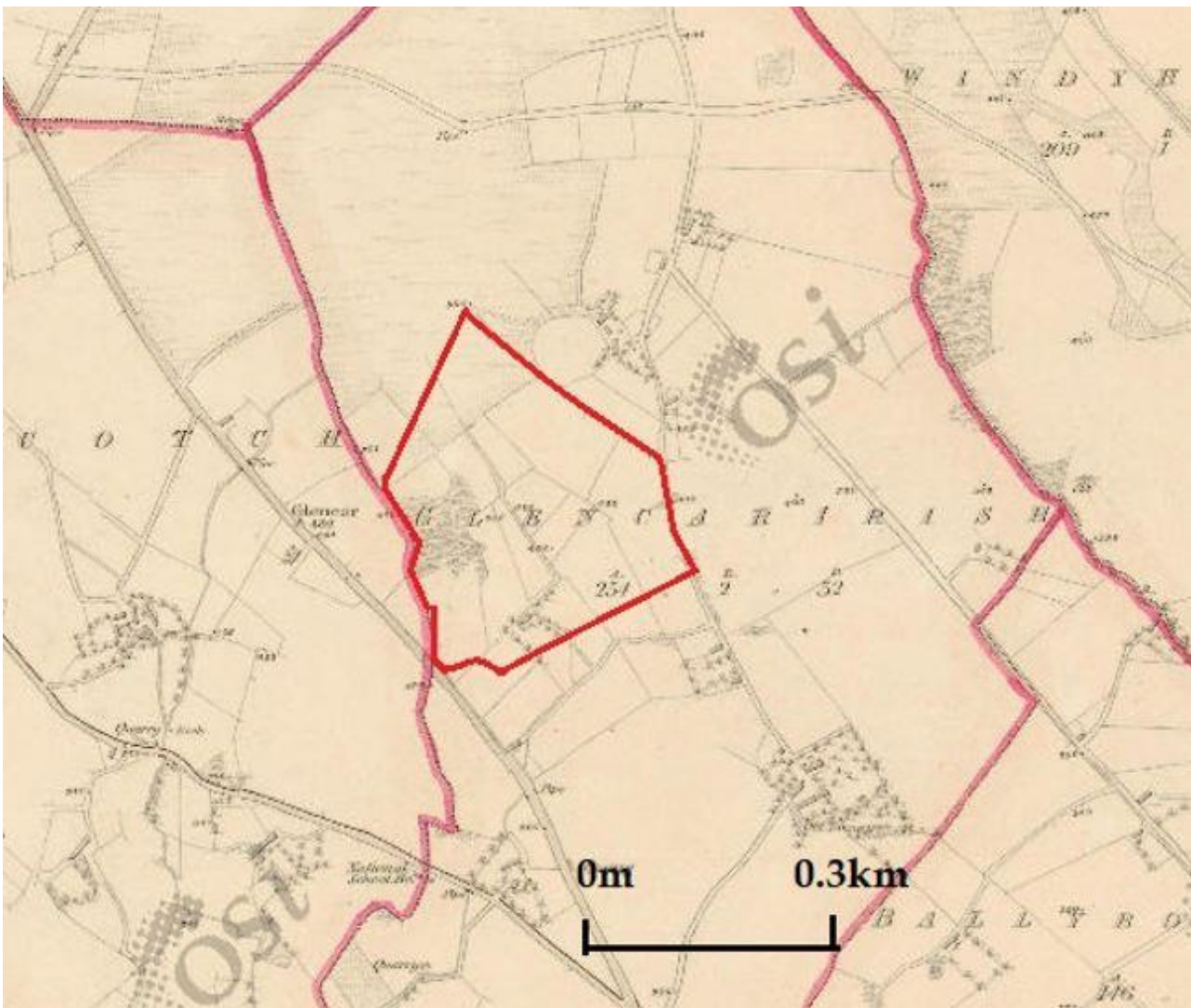
### 14.3.2 Cartographic Sources

#### **Ordnance Survey 1:10,560 First Edition 1836 (figure 14.3)**

The proposed development area is recorded as consisting of medium to large fields on the First Edition 1:10,560 Ordnance Survey map. A lane extends in a north westerly direction towards the unenclosed northern end of the site. The northern end is recorded as unenclosed rough pasture, while an area of rough pasture and cropping rock is recorded towards the western end. A large circular feature measuring approximately 95m in diameter is shown immediately outside the proposed northern site boundary, but it is not recorded as an antiquity on any of the historic cartographic sources. The southern side of the development area is recorded as a townland boundary. Research suggests that:

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

No features of archaeological, architectural or cultural heritage interest are depicted within the development area on this map.



**Figure 14.3: Extract from First Edition 1:10,560 Ordnance Survey map showing proposed development site**

### Ordnance Survey 1:2,500 First Edition 1905 (Figure 14.4)

The development area is recorded as being enclosed with medium to large fields on the First Edition 1:2,500 map, with areas of rough pasture and cropping rock again being noted. An Ordnance Survey trigonometrical station is recorded towards the northern western end of the area of proposed land take, but this feature was not noted during the walkover survey.

With the exception of the Ordnance Survey trigonometrical station no features of archaeological, architectural or cultural heritage interest are depicted within the development area on this map.

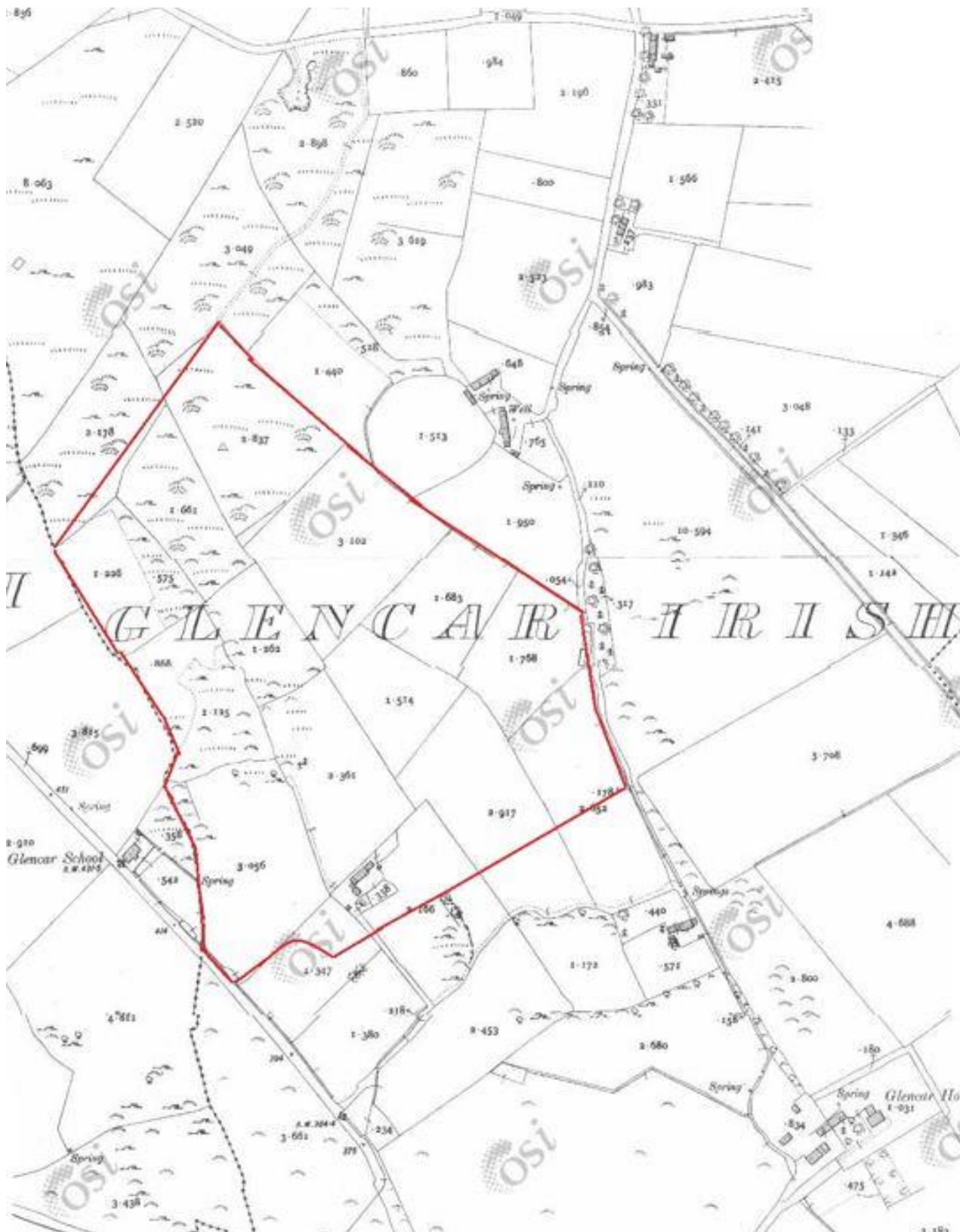


Figure 14.4: Extract from First Edition 1:2,500 Ordnance Survey map showing proposed development site



### **Ordnance Survey 1:10,560 Third Edition 1907**

With the exception of the Ordnance Survey trigonometrical station which is not shown on the Third Edition 1:10,560 map, there are no differences recorded within the proposed development area between the First Edition 1:2,500 map and the later edition 1:10,560 map.

No features of archaeological, architectural or cultural heritage interest are depicted within the development area on this map.

#### **14.3.3 Topographical Files**

Information on artefact finds and excavations from County Donegal is recorded by the National Museum of Ireland. Location information relating to such finds is important in establishing prehistoric and historic activity in the study area. There are no entries recorded in the Topographical Files for Glencar Irish or Glencar Scotch townlands, or any of the surrounding townlands ([www.heritagemaps.ie](http://www.heritagemaps.ie)).

#### **14.3.4 Aerial Images**

Aerial photographs held by Ordnance Survey Ireland ([www.map.geohive.ie](http://www.map.geohive.ie)) and Bing aerial photography ([www.bing.com/maps](http://www.bing.com/maps)) were consulted to look for the presence of archaeological and architectural remains within the proposed development area. All aerial photographs record the proposed development area as generally unenclosed, and overgrown with trees, bushes and rushes towards the northern and southern ends. There was no evidence of any archaeological or architectural features recorded on aerial photography within the proposed development area.

#### **14.3.5 Previous Archaeological Excavations and Surveys**

Reference to Summary Accounts of Archaeological Excavations in Ireland ([www.excavations.ie](http://www.excavations.ie)) confirmed that no fieldwork programmes have been carried out in Glencar Irish or Glencar Scotch townlands, the location of the proposed development.

Ten fieldwork programmes are recorded as having been carried out in Letterkenny, none of which revealed any archaeological features or artefacts.

#### **14.3.6 National Monuments**

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

*“a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto”* ([www.archaeology.ie](http://www.archaeology.ie)).

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

The Department of Housing, Local Government and Heritage also maintains a database on a county basis of National Monuments with Preservation Orders or Temporary Preservation Orders. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the proposed development area or the 1km study area.

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

#### **14.3.7 County Donegal Development Plan 2018-2024**

It is an Objective (AH-O-1) of Donegal County Council (County Donegal Development Plan 2018, 138) to:

*“conserve and protect the County’s archaeological heritage for present and future generations”.*

It is the Policy (AH-P-1) of Donegal County Council (*ibid.*) to:

*“protect and enhance the integrity of Archaeological Monuments and their settings and to secure the preservation in-situ of all archaeological monuments included on the Record of Monuments and Places. Preservation by record shall only be considered in exceptional circumstances where the principles of the Department of Arts, Heritage, Gaeltacht and the Islands publication entitled, ‘Framework and Principles for the Protection of Archaeological Heritage’ can be satisfied”.*

It is also the Policy (AH-P-3) of Donegal County Council (*ibid.*, 139) to:

*“protect the character, settings of and views from National Monuments and Recorded Monuments and to manage development which would be considered to (visually or physically) intrude upon or inhibit the enjoyment of the amenities of these sites”.*

Table 8 Appendix 3 of the County Donegal Development Plan (*ibid.*, 195) records the *National Monuments in State Ownership or Guardianship* in County Donegal. There are no National Monuments in State Ownership or Guardianship within the proposed development area or the 1km study area.

Table 9 Appendix 3 of the County Donegal Development Plan (*ibid.*, 196-197) records the *Historic Graveyards (in guardianship of Donegal County Council)* in County Donegal. There are no Historic Graveyards (in guardianship of Donegal County Council) within the proposed development area or the 1km study area.

There are no Historic Towns/Zones of Archaeological Potential as listed in the County Donegal Development Plan (*ibid.*, 138) within the proposed development area or the 1km study area.

#### **14.3.8 Site Inspection**

A site visit was carried out on 9th November 2021 in dry and bright weather conditions, and all areas of proposed land take were walked and visually assessed.

Tall rushes were noted towards the northern part of the site, which was recorded as sloping down sharply to east and south. Views were very good to east and south and poor to north and west. The middle/northern part of the proposed development area was generally very overgrown. The southern part of the site was again noted as being generally overgrown with tall rushes, and it slopes down to the east. Views were very good to northeast and east, good south and poor west. The northwest and northeast corners of the area of proposed land take consisted of trees and tall rushes and were slightly wet underfoot.

No archaeological or architectural features or artefacts were revealed within the proposed development area as a result of carrying out the walkover survey.



**Photograph 14.1: Northern part of the proposed development area, looking southeast.**



**Photograph 14.2: Northern part of the proposed development area, looking south.**



**Photograph 14.3: Northern part of the proposed development area, looking north.**



**Photograph 14.4: South western part of the proposed development area, looking northeast.**

#### **14.3.9 Architectural Heritage**

There are no Protected Structures recorded in the County Donegal Development Plan (2018) within the proposed development area or the 1km study area.

There are no structures recorded on the National Inventory of Architectural Heritage within the proposed development area. There are three structures recorded on the National Inventory of Architectural Heritage within the 1km study area, the closest of which are located approximately 350m to the south (see Figure 14.2 and Appendix 14.2).

There are no historic gardens or designed landscapes recorded on the National Inventory of Architectural Heritage within the proposed development area.

#### **14.3.10 Cultural Heritage**

There are no protected cultural heritage features within the proposed development area or the 1km study area.

### **14.4 Potential Effects**

Impacts or effects can be identified from detailed information about a project, the nature of the area affected, and the range of heritage resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation and topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation.

The proposed development will involve the construction of 188 residential units, with associated site development works and services, including road, infrastructure, attenuation, landscaping, open space and retaining walls on a site at Glencar Irish and Glencar Scotch, Letterkenny, Co Donegal.

As a result of carrying out this Archaeological, Architectural and Cultural Heritage Environmental Impact Assessment Report, the following potential construction direct, indirect, cumulative and residual effects on the cultural heritage resource have been assessed:

#### **14.4.1 Do Nothing Effect**

- If the proposed development were not to proceed, there would be no effect on the archaeological, architectural or cultural heritage resource.

#### **14.4.2 Direct Construction Effects**

- There are no Recorded Monuments or any additional statutorily protected archaeological features, architectural heritage sites, or cultural heritage assets, within the footprint of the proposed development. As a result, there will be no direct construction phase effect on the cultural heritage resource.
- It is assessed that there may be a permanent direct and imperceptible construction phase effect on any previously unrecorded archaeological remains that may exist within the proposed development area and which may be discovered during the construction phase.
- There will be no construction phase visual or noise effect on the cultural heritage resource.

#### **14.4.3 Indirect Construction Effects**

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

#### **14.4.4 Cumulative Construction Effects**

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

### **14.5 Mitigation Measures**

The following mitigation measures will offset any direct construction effects the proposed development may have on below-ground archaeological remains:

- Based on the results of the site inspection undertaken in the preparation of this chapter, which showed the proposed development area to be very overgrown in places and to be heavily sloping, it is considered the site is not suitable for test trenching. As such, it is recommended that archaeological monitoring of all groundworks be carried out. Monitoring will be carried out under Licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland.
- Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring.

### **14.6 Residual Effects**

- There will be no residual effect on the cultural heritage resource after mitigation measures have taken place.

### **14.7 Interactions**

- It is considered there will be no interactive effect on the archaeological, architectural or cultural heritage resource.

# Section 15: INTERACTIONS

## Table of Contents

Section 15: INTERACTIONS .....	1
15 INTERACTIONS .....	2
15.1 Introduction .....	2
15.2 Interactions .....	2
15.2.1 Population & Human Health and Water .....	2
15.2.2 Biodiversity and Land, Soils & Geology .....	3
15.2.3 Biodiversity and Water.....	3
15.2.4 Biodiversity and Air .....	3
15.2.5 Biodiversity and Noise & Vibration .....	3
15.2.6 Biodiversity and Landscape & Restoration.....	4
15.2.7 Land, Soils & Geology and Population and Human Health.....	4
15.2.8 Land, Soils & Geology and Water .....	4
15.2.9 Land, Soils & Geology and Air .....	4
15.2.10 Land, Soils & Geology and Landscape & Restoration .....	4
15.2.11 Water and Air.....	4
15.2.12 Air & Population & Human Health .....	5
15.2.13 Noise & Vibration and Population & Human Health .....	5
15.2.14 Climate and Population & Human Health .....	5
15.2.15 Climate and Air.....	5
15.2.16 Air and Material Assets - Traffic.....	5
15.2.17 Material Assets – Traffic and Noise & Vibration.....	6
15.2.18 Material Assets – Traffic and Population & Human Health .....	6
15.2.19 Material Assets – Traffic and Water (Hydrology) .....	6
15.2.20 Landscape & Restoration and Population & Human Health.....	6
15.2.21 “Do Nothing” Scenario .....	6

# 15 INTERACTIONS

## 15.1 Introduction

This section addresses the cumulative impacts, indirect impacts and main interactions between different aspects of the environment that may be impacted on as a result of the development. Only topics that could be logically linked to the development have been examined in detail. Accordingly, when a topic is not mentioned, it is concluded that no potential for conflict exists.

## 15.2 Interactions

Inter-relationships relate to the interactions between impacts within a project and the interactions between impacts identified under one topic with impacts identified under another topic. Each of the various environmental and related topics have been discussed separately in the preceding sections of the EIAR and the major interactions between the recorded environmental impacts are accessed within the individual sections of the EIAR.

On examining the interactions of the potential impacts for this development, one must investigate the combined physical, environmental, visual and socio-economic impact of the development on the receiving environment. Table 16.1 illustrates the interaction of impacts assessed for this project and is consistent with Figure 3.5 of the EPA’s ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’, May 2022.

**Table 15.1: Interactions**

	Population & Human Health		Biodiversity		Lands, soils & Geology		Water		Climate		Air		Noise and Vibration		Traffic		Landscape and Restoration		Material Assets		Cultural Heritage	
Population & Human Health																						
Biodiversity																						
Land, Soils & Geology	X		X	X																		
Water	X		X		X																	
Climate	X																					
Air	X		X	X	X		X		X													
Noise and vibration	X	X	X																			
Traffic	X										X		X									
Landscape and Restoration	X			X	X																	
Cultural Heritage																						
Const./ Oper.	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O		

### 15.2.1 Population & Human Health and Water

Contaminants or leakages from plant and vehicles can potentially leak into surface waters and groundwater which could impact on water quality. Procedures are in place for dispensing fuel, servicing plant and equipment and for dealing with accidental spillages should they arise. Re-fuelling of site vehicles is done from fuel tankers that visit the site and no hydrocarbons are stored on site.

Strict adherence to pollution control protocols will be for re-fuelling operations. Drip trays must be used and spill kits are available if required. Re-fuelling of plant will continue to be carried out using off-site delivery vehicles. Effluent from the processing and manufacturing area is recycled through a pair of settlement ponds. A hydrocarbon interceptor will be installed within the drainage system leading from the ponds to the St Johnstown Stream. Given that there will be no effect on water quality standards, the effects on human health from water are assessed as Imperceptible.

#### **15.2.2 Biodiversity and Land, Soils & Geology**

c. 75,000m<sup>2</sup> of wet grassland habitat will be lost within the site over a 5 – 10 year period. It is envisaged that the majority of the bedrock, sub-soils and topsoils excavated during the construction stage will be re-used within the site. A Construction and Environmental Management Plan (CEMP) will be prepared for the site which will incorporate all the mitigation measures highlighted in various sections of the EIAR. The CEMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place on site. Activities undertaken in accordance with the CEMP will minimise the potential effects on geology, soil quality and biodiversity.

#### **15.2.3 Biodiversity and Water**

c. 75,000m<sup>2</sup> of wet grassland habitat will be lost within the subject site over a 5 - 10-year period. Removal of the grassland habitat could have a wider impact on the hydrology of the surrounding area. Post construction, storm/surface runoff will be treated within an attenuation system. The attenuation system for this site has been specifically sized and flow controls have been incorporated within the system to deal with the additional runoff generated from site stripping so there is no risk of flooding occurring within the site nor in the surrounding environs due to the removal of the grassland habitat. All runoff will also flow through an appropriately sized hydrocarbon interceptor prior to leaving the site and entering the public stormwater system to ensure that there is no hydrocarbon pollution in the surface waters leaving the site. There will be no impact on the biodiversity of the area provided all mitigation measures within section 8 are implemented and best practice is followed.

#### **15.2.4 Biodiversity and Air**

Construction activities have the potential to create windblown dust which can impact on flora and fauna. Mitigation measures will be in place throughout the construction phase such as daily inspections of the site to examine dust measures and their effectiveness and dampening down haul roads during dry windy conditions which will ensure that there is no negative effects on flora and fauna within the site.

The new dwellings will be Nearly Zero Energy Buildings which will be 70% more energy efficient (A2 BER rating) and emit 70% less carbon dioxide than those built under 2005 Building Regulations standards. NZEB Regulations are removing the use of solid fuel in new dwellings which benefits outdoor air quality. This will have a positive effect on climate change and in turn on the biodiversity of the site.

#### **15.2.5 Biodiversity and Noise & Vibration**

Noise levels at the development site may affect some birds and mammals particularly those sensitive to noise. Predicted noise levels from the construction phase were modelled and with the full implementation of all the outlined mitigation measures, noise throughout the construction phase will not cause any significant adverse effect to wildlife within the site. As the proposed development is a

residential development, it is not considered to be a major emitter of noise pollution during its operational lifetime and therefore will not have any significant negative effects on wildlife within the area.

#### **15.2.6 Biodiversity and Landscape & Restoration**

A landscaping plan has been compiled to offset the impact associated with housing development. The losses of existing vegetation as a result of the development will be offset by the creation and maintenance of planted buffers, enhancement of the open areas, supplementary planting of the boundaries and landscaping works within the site. It is expected that the landscaping measures will lead to overall increased biodiversity for the site. Post mitigation the loss of habitat has been assessed as imperceptible.

#### **15.2.7 Land, Soils & Geology and Population and Human Health**

The site clearance phase has the potential to result in increased levels of dust and fugitive emissions in the air as well as the potential to release contaminated soils to the local water environment.

#### **15.2.8 Land, Soils & Geology and Water**

Site clearance and construction works can increase the risk of contamination of surface and groundwater in the event of accidental spillages occurring. Procedures are in place for overburden removal, landscaping, dispensing fuel and servicing plant and equipment. Refuelling of static plant will be carried out by a licenced fuel contractor or by mobile bunded bowser adhering to pollution prevention protocols and using drip trays. Oils and lubricants will be stored in a bunded area, and there will be no bulk storage of fuel on the site during either the construction or operational phase. The implementation of the proposed water management plan using the new attenuation tank and hydrocarbon interceptor will also protect receiving waters.

#### **15.2.9 Land, Soils & Geology and Air**

Overburden removed from the site will be used to vegetate the site boundaries through supplementary planting as well as creating green spaces throughout the development site. The removal and storage of overburden onsite can give rise to windblown dust. Measures and procedures to mitigate against air pollution by site clearance and associated activities are proposed.

#### **15.2.10 Land, Soils & Geology and Landscape & Restoration**

Construction will involve a certain amount of site clearance of topsoil and bedrock to create the correct levels for site infrastructure. It is envisaged that the majority of the bedrock, sub-soils and topsoils will be re-used within the site. The landscaping plan proposed for the site will use the extracted topsoil/subsoil within the site to vegetate the proposed green areas and for supplementary planting around the site boundaries with the bedrock used as fill as needed.

#### **15.2.11 Water and Air**

Dust associated with construction activities has the potential to contaminate surface water and groundwater if appropriate measures are not in place. Mitigation measures will be in place throughout the construction phase such as daily inspections of construction sites to examine dust measures and their effectiveness and dampening down haul roads during dry windy conditions.



#### **15.2.12 Air & Population & Human Health**

The interaction between air and population and human health would relate to potential dust emissions associated with the construction process from fugitive dust from soil excavations and the movements of uncovered vehicles. Dust deposition monitoring will be undertaken if necessary to ensure that levels are within the recommended guideline values. Dust suppression actions are included as part of mitigation. These include water spraying, the use of wheel wash and reduced speed within the subject site as well as additional planting on the site perimeter. No residual impacts to the air quality are envisaged with the impacts assessed as imperceptible.

#### **15.2.13 Noise & Vibration and Population & Human Health**

Activities undertaken at the construction site activities will increase noise and vibration levels and may result in negative impacts on the amenities of local residents

During the operational phase increase noise levels as a result of traffic movements and human interaction may result in negative impacts.

A series of mitigation measures that are required during the construction phases are provided in the Noise section of the EIAR, with the introduction of electric cars and and the promotion of cycling and public transports as modes of travel for the future residents will mitigate potential impacts from increased traffic noise in the area and no significant residual negative impacts are predicted.

#### **15.2.14 Climate and Population & Human Health**

Construction plant associated with the construction of the development will result in emissions to air associated with the day-to-day operations which are difficult to eliminate. Mitigation measures in place will reduce emissions in so far as possible in order to reduce the impact on climate from day-to-day operations. No significant residual negative impacts are predicted.

#### **15.2.15 Climate and Air**

The operation of plant and movement of vehicles will generate exhaust emissions during the construction phase. These impacts will be temporary as construction is expected to last for approximately 5 - 10 years. The impact of emissions associated with each phase of the development are assessed as short-term and imperceptible.

The proposed development will comply with the Building Regulations Part L 2019, Buildings Other Than Dwellings. As part of the development's efforts to reduce energy consumption, the Proposed Development is targeting an A2 BER (Building Energy Rating) throughout. NZEB homes will be 70% more energy efficient and emit 70% less carbon dioxide than those built under 2005 Building Regulations standards. The changes will result in new homes being more energy efficient and cheaper to heat than existing dwellings which will give better air quality.

#### **15.2.16 Air and Material Assets - Traffic.**

Increased LDV and HGV traffic flow because of the proposed development is likely to contribute to increases in GHG emissions such as CO<sub>2</sub> and N<sub>2</sub>O (Nitrous Oxide). However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement, and therefore unlikely to have an adverse effect

on climate. Furthermore, it is widely anticipated that CO<sub>2</sub> emissions for the passenger car fleet will reduce substantially in future years due to the increasing prevalence of electric or hybrid vehicle use.

#### **15.2.17 Material Assets – Traffic and Noise & Vibration**

Construction traffic may give rise to local noise and vibration which may have an impact on local residents during the construction period.

#### **15.2.18 Material Assets – Traffic and Population & Human Health**

Construction traffic has the potential to negatively impact local residents through increased delays and potential impacts on health and safety.

During the operational phase increased traffic has the potential to negatively impact local residents through increased delays and potential impacts on health and safety.

#### **15.2.19 Material Assets – Traffic and Water (Hydrology)**

Increased traffic and parking at the site may give rise to hydrocarbon spills from vehicles both during the construction and operational stages of the development

#### **15.2.20 Landscape & Restoration and Population & Human Health**

There is potential for negative effects to visual amenity of the loc area and the wider study

area as a result of the visibility of construction activities such as the construction of roads, retaining walls and houses as well as construction traffic and construction compounds, prior to the implementation for the landscaping scheme.

During the operational phase the landscaping plan will serve to reduce the visual impacts associated with the development activity. The associated impacts have been assessed as imperceptible.

#### **15.2.21 “Do Nothing” Scenario**

If the proposed is not granted planning permission, then the site is likely to remain in agricultural use and it would not achieve the objective of the sites ‘Primarily Residential’ land use zoning. There would be a negative/adverse effect on population, as the failure to deliver housing on ‘Primarily Residential’ zoned land would fail to address the significant lack of new housing of houses in Letterkenny. At a time when there is demand and need for new housing in Letterkenny the proposed development will utilise this zoned land to in accordance with its designated purpose. The delivery of 188 new houses and apartments on zoned and service urban land would reduce the demands for housing in smaller and unserved towns, villages and in the open countryside and would have permanent positive impacts for climate and human health.

Potential employment from the construction and operational phase will not occur. The likely significant secondary benefit to the wider local economy with the development of the project will not occur with the do-nothing option.