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Letterkenny Regional Sports Activity Hub

Non Technical Summary

Environmental Impact Assessment Report (EIAR)

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ATU LETTERKENNY SPORTS ACTIVITY HUB

Environmental Impact Assessment Report (EIAR)
Non-Technical Summary (NTS)

ATU Letterkenny Sports
Activity Hub
Non-Technical Summary
(NTS)
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ATU Donegal

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1 INTRODUCTION

1.1 Purpose of this Report

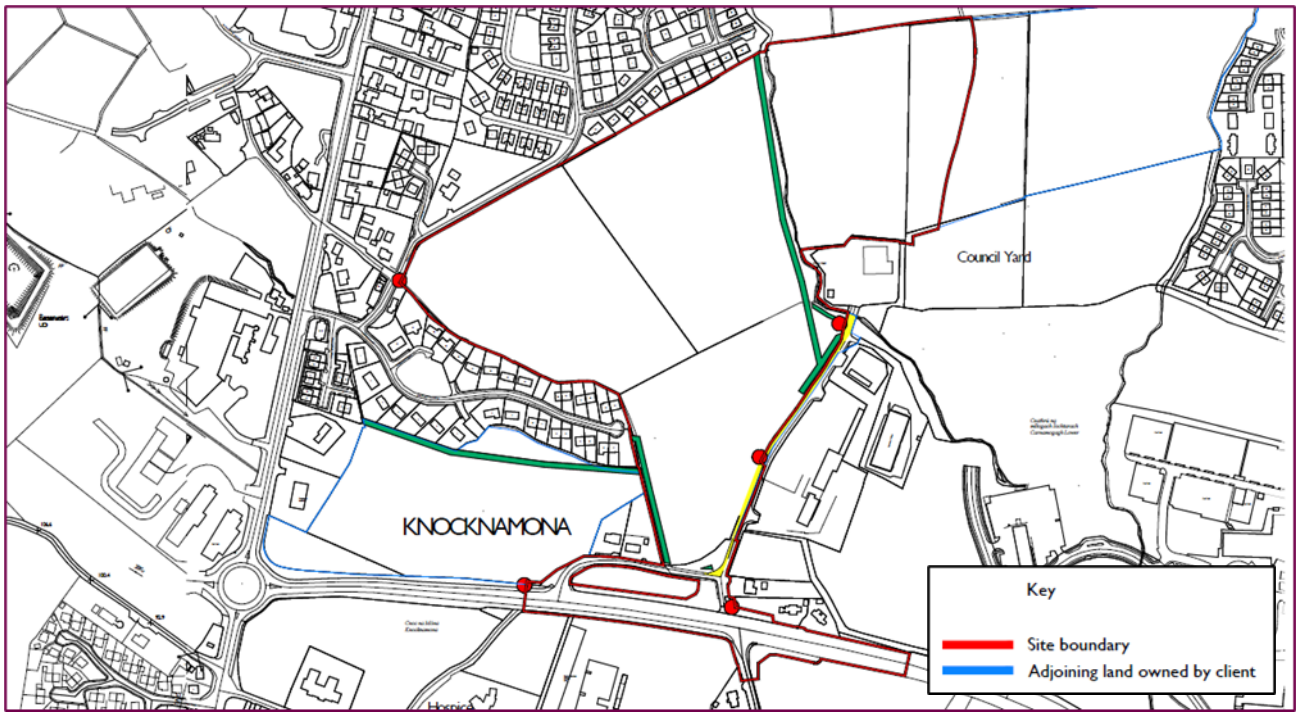
This Non-Technical Summary (NTS) has been prepared by RPS on behalf of ATU (Atlantic Technological University) Donegal in respect of the proposed Sports Activity Hub in Letterkenny, Co. Donegal.

A standalone NTS presents a summary of the Environmental Impact Assessment Report (EIAR) in plain, non-technical language, as required by the Environmental Impact Assessment (EIA) Regulations. The NTS provides a concise outline of the proposed development, the potential environmental effects identified, and mitigation measures proposed to avoid, reduce or offset these effects, as well as any related remaining ('residual') impacts. This NTS presents, in non-technical language, a summary of:

- **The proposed development;**
- **The purpose and scope of the EIAR;**
- **The main findings of each chapter of the EIAR; and**
- **The mitigation and enhancement measures proposed.**

The site boundary highlighted in red in Figure 1.2, comprise the c. 18 Ha of the greenfield site. The site of the proposed development is located in a mixed area of development to the north of Letterkenny Town, Co. Donegal.

Figure 1.1: Site Location



1.2 Structure of the Non-Technical Summary

The EIA Directive and its implementing Regulations requires that an environmental impact assessment must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on the following factors and the interaction between those factors:

- population and human health;
- biodiversity, and in particular species and habitats protected under Council Directives 92/43/EEC (the Habitats Directive) and 2009/147/EC (the Wild Birds Directive);
- land, soil, water, air and climate;
- material assets, cultural heritage and the landscape.

The remainder of this NTS considers the above environmental topics in the order outlined in Table 1.1 below:

Table 1.1 Topics considered in this Report

Chapter No.	Topic
1	Introduction
2	Project Description
3	Alternatives
4	Consultation and Scoping
5	Policies and Plans
6	Landscape and Visual
7	Cultural Heritage
8	Land Use and Material Assets
9	Noise and Vibration
10	Air Quality
11	Climate and Greenhouse Gases
12	Population and Human Health
13	Flood Risk and Drainage Assessment
14	Biodiversity
15	Water Quality
16	Contaminated Land, Geology and Soils
17	Waste
18	Artificial Lighting
19	Traffic & Transportation
20	Interactions

This structure facilitates incorporation into the EIAR those environmental topics both highlighted by and scoped in by Scoping Opinion, and as specified in the EIA Regulations and allows those topics to be comprehensively assessed.

1.3 Proposed Structure of the EIAR

This NTS sets out the structure of the EIAR, as well as the various environmental topics to be considered. The EIAR comprises:

- **a Non-Technical Summary (NTS) (This document);**
- **Volume I Main Report;**
- **Volume II Technical Drawings and Figures; and,**
- **Volume III Technical Appendices.**

The EIAR will include all information identified in Schedule 6, Planning and Development Regulations 2001 (as amended), including:

- **A description of the proposed development comprising information on the site, design, size, and other relevant features of the proposed development;**
- **a description of the likely significant effects on the environment of the proposed development**
- **a description of the features if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and if possible, offset likely significant adverse effects on the environment of the development;**
- **a description of the location of the development;**
- **a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land–use requirements during the construction and operational phases;**
- **a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge;**
- **a description of the main characteristics of the operational phase of the development (in particular any production processes), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;**
- **an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.**

The EIAR will also include a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

1.3.1 EIAR Methodology

The Methodology for EIAR provides for a staged approach, which can be summarised as follows:

- Scoping/ consultation exercise: to be undertaken to compile relevant background data and identify issues and constraints.
- Baseline surveys: including walk-over visits, detailed specialist surveys and discussions with relevant statutory and other consultees to determine the nature and extent of the existing environment.
- Identification of potential significant effects: predicting the likely significant environmental effects of the development during construction and operation of the facility for the range of predicted uses as well as setting the scene for the identifying appropriate mitigation for the development.

- Mitigation: on-going development and description of mitigation proposals which will be incorporated into the project design as it evolves, including regular review and evaluation, to mitigate the potential environmental effects.
- Monitoring: if considered necessary, monitoring requirements may be identified for both the construction and operational phase of the development.
- Residual and cumulative effects: consideration of the residual effects remaining after mitigation.
- Reporting: preparation of the EIA Report, including NTS.

The assessment of whether the proposed development is likely to have significant effects on the environment will be undertaken through a variety of methods:

- Professional judgement and experience based on published guidance criteria
- Assessment of both temporary and permanent effects
- Assessment of cumulative effects
- Assessment of duration, frequency and reversibility of effects
- Assessment against local, regional and national planning policy
- Consultation with statutory and non-statutory consultees

1.4 The Proposed Development

1.4.1 Purpose of the Project

The purpose of this project is to build a large sports facility appropriate for both the community and regional sports teams, as well as for use by college students. STREAM 1 funding has been secured from the Large-Scale Sports Infrastructure Fund (LSSIF) operated by the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media (DTCAGSM). The project will address a current deficit in sport infrastructure provision for the ATU at a local and regional level.

It is important to emphasis the regional strategic importance of the LSRAH. The aim is to build a facility that is appropriate for community and regional sports teams, as well as for use by college students. This facility will be a multi-pitch community hub with an additional built facility and recreational spaces to support the use of the pitches and to ensure long-term financial sustainability. Numerous National Governing Bodies of Sport (NGBs), sports clubs and community groups supported the funding bid and continue to support the project. Notably, the Donegal Ladies Gaelic Football Association (LGFA) has expressed a keen interest in the site to use as their training centre and youth academy.

The LGFA does not currently have a home ground and consequently struggles to find grounds for training and matches. The organisation therefore currently plays across multiple sites around the County. The NW Cricket Union fully supports the project as it will support their aim of increasing participation in cricket while catering for a growing multi nationality population in the region. 3 schools are also supporting the project; St Eunan's College Boys secondary school, Colaiste Ailigh mixed secondary school, Little Angels Special School. The last 2 are within a few hundred metres of the site. Schools use of the site will add additional usage during traditionally off-peak hours (i.e. Monday – Friday, 9 – 5pm).

1.4.2 Project Details

The proposed development includes the provision of following facilities and elements:

- **Outdoor sports pitches as follows:**
- **1 artificial grass GAA pitch (Pitch 1). Line markings permit rugby and 2 x cross-play soccer pitches.**
- **1 Grass / Sand GAA competition pitch (Pitch 2). Line markings permit rugby and 2 cross-play soccer pitches.**
- **2 natural grass soccer pitches with Cricket Creases (Pitch 3,4, 5)**
- **4 synthetic 5-a-side soccer pitches (Pitches 6,7, 8, 9)**
- **1,000m^2 Indoor Sports Dome [Height = 10.8m] suitable for warm up, a range of sports and activities**
- **Additional outdoor sports and recreation areas to include Training/Practice Area (25x80m), 5m high Hurling/Handball Wall, 6 Lane Athletic Sprint Track (50x7.5m) with PV panels to roof, walking / running trails / children's playpark and community garden.**
- **1,399m^2 pavilion building [Height = 11.2m] to accommodate changing facilities, office / reception, self-serve catering facility, storage and flexible space for community programmes.**
- **Equipment Store and service compound.**
- **Hard and soft landscaping to include biodiversity garden.**
- **Vehicular and pedestrian access to include new junction from N56, internal access roads / footpath / cycleway and provision of 205 onsite vehicle parking spaces, 4 coach parking spaces and 120 cycle parking spaces. Additional pedestrian access point from Ashfield.**
- **Closure of existing vehicular access from N56 to Knocknamona Crescent.**
- **Ancillary infrastructure to include drainage, ESB substation, fencing and entrance gates, signage, retaining walls, floodlighting, netting and culverting watercourse at two locations to accommodate vehicle / pedestrian / cycle crossing.**

The scope of the project also includes:

- **Drainage**
- **Floodlighting to Pitches 1, 2, 6-9**
- **Fencing and netting to pitches 1, 2, 6-9**
- **Goal posts and ball stop netting.**
- **Tiered spectator viewing facilities to Pitches 1 and 2**
- **Site lighting**
- **Access roads, footpaths and cycleways**
- **Coach Parking**
- **Parking including disabled parking**
- **Creation of new 4 way junction at the N56**
- **Realignment of part of the site boundary with the adjoining local road to improve visibility**
- **Site preparation including:**
- **cut and fill and soil importation to prepare sloping areas of site**
- **ducting for undergrounding of overhead electrical services**

The site of the proposed development is located in a mixed area of development to the north of Letterkenny Town, Co. Donegal. Figure 1.2 highlights the location of the site, in the townlands of Knocknamona and Carnamogagh Lower.

The site is close to the Letterkenny hospital campus, IDA business park and a number of large industrial employers such as Pramerica and Optum. The site is located directly adjacent to the N56. There are three existing site entrances - two entrances from a local road linking the ESB depot and the DCC Civic Amenity site to the N56, and a third entrance off the local roadway serving the Ashfield residential development.

The western perimeter of the site is bound principally by residential estates which are accessed from the Kilmacrenan Road (N56). The southern/eastern boundary of the site adjoins the N56 to the south of the site (recently constructed distributor road), agricultural fields, an IDA premises and the council-run civic amenity centre. The north western boundary bounds a residential development while the northern section perimeter bounds agricultural fields.

The lands at Carnamoggagh Lower/Knocknamona have unique characteristics that make it perfect for the proposed development. This includes the size and scale of the site and also its designation as a Strategic Community Opportunity Site in the Donegal County Development Plan. There are also many benefits to locating a community sports facility in a highly accessible urban area, including the potential to encourage active travel and use of public transport as identified in the Development Plan:

…the lands are located within reasonable walking distance of key transport corridors and therein are accessible to the Town Bus Service providing valuable opportunities for expansion of services provided through the Letterkenny Institute of Technology.

Figure 1.2: Site Context

2 PROJECT DESCRIPTION

The project will address a current deficit in sport infrastructure provision for the ATU at a local and regional level. It is important to emphasise the regional strategic importance of the Letterkenny Regional Sports Activity Hub (LSRAH). The aim is to build a facility that is appropriate for community and regional sports teams, as well as for use by college students. This facility will be a multipitch community hub with an additional built facility and recreational spaces to support the use of the pitches and to ensure long-term financial sustainability. The main elements of the proposed development are detailed in this section

2.1.1 Artificial Pitch (Pitch 1)

The 145x90m artificial pitch will be surrounded by 2.0m high paladin fencing beyond the 3.5m run-off area. Ballstop netting is also included at either end. At the western boundary of the pitch, the fencing will be reduced to 1.0m high to improve sightlines for spectators within the pavilion building. The pitch will be formed from artificial grass to current GAA and rugby standards; and have a cross fall of 1:72 to facilitate drainage. Line markings will also permit 2No. (100x65m) cross-play soccer pitches. Floodlighting has been designed for the artificial pitch and is to be of sufficient quality to facilitate the future installation of match analysis equipment.

2.1.2 Pavilion

The pavilion (1,399m^2 pavilion building (Height = 11.2m) has been designed as split level to make best use of the proposed site topography and provide level access to both the artificial and grass GAA pitches.

There will be upper and lower entrances which each provide access to Changing Rooms.

The Upper Level includes a c.200m^2 Flexible Space which can be used as a Gym or Studio space. This will have a glazed façade with doors opening out onto the upper terrace. There are also 2 Meeting Rooms provided and one includes a small Kitchen area for refreshments. These Meeting Rooms can be used by each team for video analysis after a match. Both Meeting Rooms also open out onto the upper terrace.

A large oversailing mono-pitched roof will enclose the building and provide shelter for the spectators in the terraced seating.

Sustainability options include the integration of PV panels on the roof and air source heat pumps.

The lower-level plan of the pavilion is to include the following facilities:

- Changing Rooms
- Referee Changing Rooms
- Toilets, Changing Places & First-aid room
- Stores
- Circulation

The upper-level plan of the pavilion is to include the following facilities:

- Flexible Space
- Meeting Rooms
- Changing Rooms
- Toilets
- Circulation

2.1.3 Grass Pitch (Pitch 2)

The 145x90m grass and sand GAA pitch is located directly across from the pavilion building, affording easy access from the changing rooms on the upper floor plan. Pedestrian access to the pitch will be from the main road, via steps and Part M compliant ramp.

The grass pitch will be surrounded by 2.0m high paladin fencing beyond the 3.5m run-off area. Ballstop netting is also included at either end. The pitch will be formed to current GAA and rugby standards. Line markings will also permit 2No. (100x65m) cross-play soccer pitches.

2.1.4 Soccer Pitches and Cricket Green (Pitch 3,4 & 5)

2No. (100x65m) grass soccer pitches are located to the northeast of the site and the play area has been increased to afford a cricket outfield area. Between the 2 pitches is one synthetic and two turf cricket crease which is orientated in a general north-south direction to facilitate play in the evenings.

2.1.5 5-a-side Pitches (Pitch 6, 7, 8 & 9)

4No. (36.5x27.5m) 5-a-side football pitches are proposed to the southern portion of the site. Each pitch will be enclosed within 1.2m high rebound walls and 2.4m high paladin fencing over same. Floodlighting is proposed to these pitches to maximise use.

The associated pitches described are illustrated in Figure 2.1.

Figure 2.1: Proposed Plan

2.1.6 Sports Dome

A prefabricated building is proposed to facilitate winter training for various sports teams. The internal fit-out will include, Changing Rooms, Toilets, an Office, Plant and Stores. The main sports arena (30.1x22.7m) will accommodate the following court sizes detailed in **Table 2.1**.

Table 2.1: Sports Dome Court Sizes

Sport	Standard	Size
Basketball	Community Level	30.1 x 17.1m
Volleyball	Club level	24.0 x 15.0m
3No. Badminton Courts	Premier Level	17.4 x 9.1m each
5-a-side Football	Club Level	30.1 x 18.4m
Cricket		31.62 x 3.66m

2.1.7 Hurling Wall and Training Area

A 102x19.7m synthetic training area is to be provided beside the grass GAA pitch. At the western end a 5m high hurling wall will be erected. This will be constructed as a concrete retaining wall and cut into the proposed embankment. Safety fencing will be provided to the top of the wall.

2.1.8 Walking and Running Trails

There are walking and cross-country running trails around the site. The loop trail which includes the road through the site, while a shorter loop starting from the community gardens and passes the open stream (culverted in two places.to enable crossing) and biodiversity garden. It is also proposed to have pedestrian links for adjacent housing developments (Ashfield) directly to these walking trails therefore improving permeability into the site. However, these access points will be controlled with gates and closed at night-time to discourage anti-social behaviour. As well as the discussed trails a children's playpark and community garden has also been proposed as a community resource, as illustrated in Figure 2.2.

Figure 2.2: Children's Playpark

2.1.9 Floodlighting and Site Lighting

There is currently no artificial lighting installed on the existing site. The external lighting design and LED pitch floodlighting has been carried out with extensive consideration towards minimising the obtrusive lighting impact on the surrounding area. The complete installation is designed to comply with all relevant standards, guidance criteria, and legislation. Full details of the proposed flood lighted are contained in Chapter 18 of the EIAR.

The lighting should ensure that the full flight of the ball is visible while providing good viewing conditions for players, officials and spectators. The overall lighting design complies with all legislation and will not negatively impact the environmental conditions for both surrounding property and wildlife.

2.1.10 Active Travel

The ATU already has a Mobility Management Plan (MMP) in place, which aims to promote sustainable travel amongst employees and students, and is a signatory to the NTA's 'Smarter Travel Partner' Charter. If consented, the MMP would be extended to include the Sports Hub. The overall aim of the MMP will be to reduce car travel to the site. This will involve:

- Undertaking a separate bi-annual Active Travel Site audit for the Sports Hub site
- Including specific questions on travel to the Sports Hub within the annual travel questionnaire, or specifically targeting Sports Hub users with a separate questionnaire

- Monitoring use of the cycle parking at the Sports Hub, and car park occupancy. This could be done on a 'spot-check' basis at agreed points throughout the year. This would assess whether current provision was sufficient, and help trigger interventions.
- Developing targets and initiatives specifically for the Sports Hub.

2.1.11 Cut and Fill Analysis

The bulk earthworks exercise which requires that the cuts are carried out to allow the fill of the substantial platforms and roadways to formation level to be achieved. This cut and fill operation must be carried out for the entire site in one single operation to reduce the need of importing or exporting of sub-soil material, i.e. splitting the cut and fill operation into separate phases will not generate a balance of cut and fill within the site.

The cut and fill analysis will form a key consideration for the phasing of the works.

2.2 Access to N56

Access from the N56 will be required for the proposed development. A new/ upgraded signalised junction is the optimum option. A new/ upgraded signalised junction is the optimum option, as illustrated in Figure 2.3.

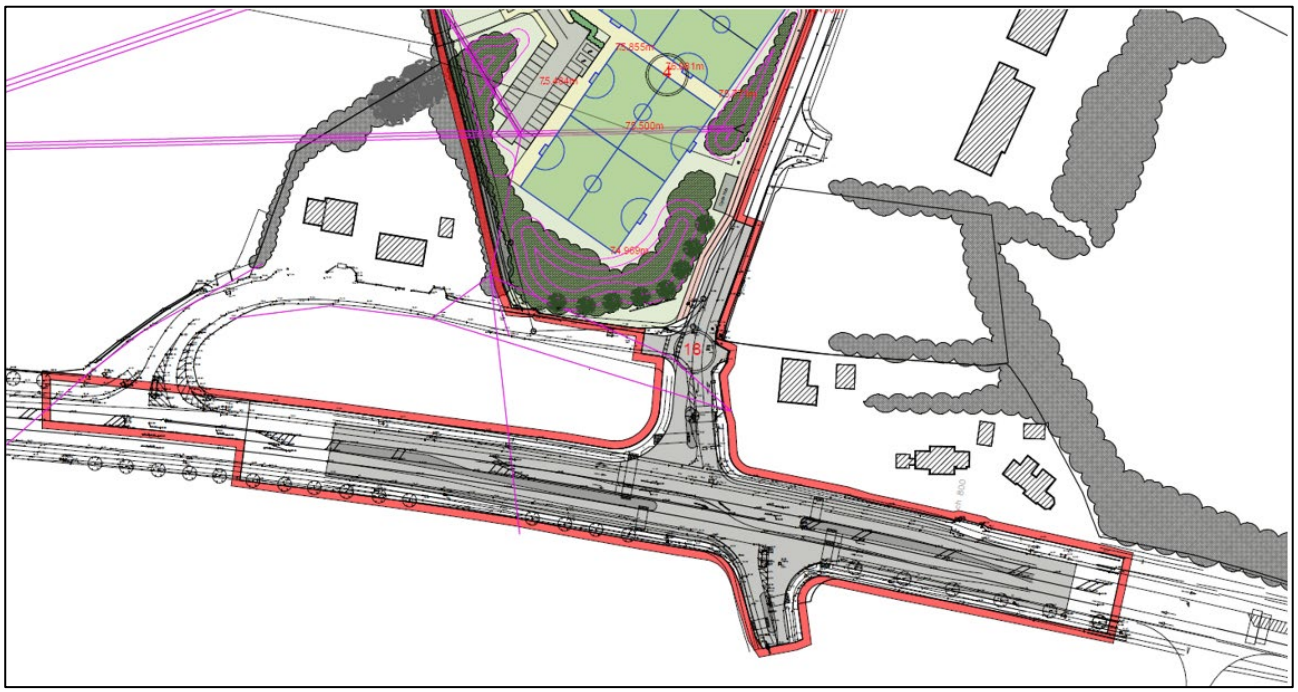


Figure 2.3: Road Junction

3 ALTERNATIVES

The presentation and consideration of the various reasonable alternatives investigated by the applicant is an important requirement of the EIA process. These indicate the main reasons for choosing the project that is being submitted for consent describing how environmental considerations were taken into account when selecting between those alternatives.

In the “Do Nothing” scenario, the application site would remain as an existing part of the urban fringe and agricultural land at the edge of Letterkenny Town despite being zoned in the County Donegal Development Plan 2018-20254 as a *“Strategic Community Opportunity”*. Without the proposal it is possible that the existing invasive species areas would be left untreated. This proposal provides a coordinated opportunity to benefit from future regeneration development potential, to present a key reactional area.

The proposed development would increase the availability of local pitch supply significantly and provide a multi-pitch hub to growing clubs and community organisations. In addition to this expansion, the proposed development includes plans for 4, 4G 5-aside soccer pitches, and an airdome covered pitch. These pitches would be open to local businesses to rent out for their employees and would in turn increase informal soccer play. There are limited alternative site locations that would be able to accommodate the sports hub development whilst availing of an existing land use designation and access directly of the N56 (a national road). There are no other sites zoned as a Strategic Community Opportunity within Letterkenny, therefore this is the only suitable site for the development.

A range of alternative arrangements have been considered for the sports hub. The preferred option evolved through various design stages. For example there were several iterations of the car parking layout were included to ensure maximum design capacity, and the original option for have pitches spanning the entire watercourse was not considered further due to environmental impact. The EIAR team also provided environmental constraints maps that determined the optimum design layout for the site taken into consideration the potential environmental impacts.

Where environmental impacts could not be avoided or reduced the EIAR team proposed specific mitigation measures that were built into the design layout. The environmental constraints have therefore led to alternative layouts and alternative quantum and locations of the different land uses within the proposed development.

4 CONSULTATION AND SCOPING

On the Council's behalf, RPS submitted a EIAR Scoping Report to Donegal County Council on the 23rd of February 2023 under Section 173 of the Planning & Development Act, 2000 (as amended) in accordance with Article 95 of the Planning & Development Regulations 2001 (as amended).

The purpose and objective of the scoping exercise with Donegal County Council was to:

- Provide a description of the proposed development and inform key stakeholders;
- Identify the potential impacts and issues that are proposed to be the focus of the EIAR;
- Define the scope of the study for each of the EIAR topics and issues to be considered;
- Identify data and information available and additional surveys and investigations required;
- Define the methods and criteria to be used in predicting and evaluating impacts;
- Identify alternatives and mitigation measures to be considered as part of the project, and to,
- Determine the proposed content, structure, and format of the EIAR.

Following the submission of the Pre-application EIAR Scoping Consultation, Donegal County Council provided a response dated the 11th May 2023 (Ref. SR.2302 & PP6591). The Response can be found within the EIAR Volume III Technical Appendices Appendix 4.A., with the response from Irish Water located in Appendix 4.B.

Public Consultation Events

Letters regarding the proposed development were sent out to 343 residential addresses and 24 commercial addresses. Students and Staff of ATU Donegal and 25 project partners and supporting organisations were also sent an email with the same information as the letters. The letter/email gave a general description of the proposed development and included an invitation to the public consultation event on Thursday the 30th of March.

The drawings of the proposal were also posted on ATU's website.

A public consultation event was held on Thursday 30th March 2023 at 7pm. The event was hosted at ATU's Port Road Campus and followed a dedicated drop-in session for staff and students to view the proposals.

Feedback was captured through an online survey, accessed via a QR code on the exhibition boards. Several hard copies were also completed on the evening with one substantive response from a local resident's group. Since the event, several additional substantive responses have been received.

From the consultation, a number of concerns were highlighted. On the 15th of May, a follow up public consultation event was hosted at ATU's Port Road Campus. The aim of the event was to address the concerns raised following the previous public consultation and those received from the online questionnaire.

Stakeholder Engagement

The proposal was presented to the Letterkenny Municipal District Elected Members on the 20th of September 2022. The proposal was presented to the Minister for Sport, the Minister for Agriculture, Food and the Marine and a number of Elected Members on the 21st of October 2022.

In both engagements with Ministers and Elected members, no objections to the proposal were received. The scheme was greatly supported, and Ministers expressed that they were looking forward to the project advancing. The issues raised by the local community, key stakeholders, and landowners in respect of specific design queries and issues have been thoroughly reviewed and addressed through scheme amendments where appropriate, in the final design proposals submitted as part of this application. Donegal County Council is committed to on-going liaison and effective engagement with elected representatives, the local community and other stakeholders to address any emerging issues during both the construction and operational phase of this project. All issues raised during all consultations have been taken into consideration in the finalisation of the development proposal, and for the purpose of the environmental assessment set out in the accompanying EIAR.

5 POLICIES AND PLANS

The Donegal County Development Plan 2018-2024 (CDP) is the principal statutory land use plan for the County, and it sets out a strategic vision for the future growth and development of the County over the 6-year life of the Plan (to 2024) and beyond to a 20-year timeframe (to 2038). This spatially based strategic framework seeks to manage and coordinate change in land use in the County setting out a clear view ahead in development terms together with clear priorities to drive growth.

Objective CCG-O-4 of the County Plan seeks to "facilitate a coordinated approach to the delivery of social, community, and cultural infrastructure and provision of services through the work of the various Council directorates, as well as inter-agency liaison and co-operation with statutory and other relevant organisations including cross border initiatives".

Policy CCG-P-4 sets out a range of criteria which need to be met for new community development (see **Table 5.1**).

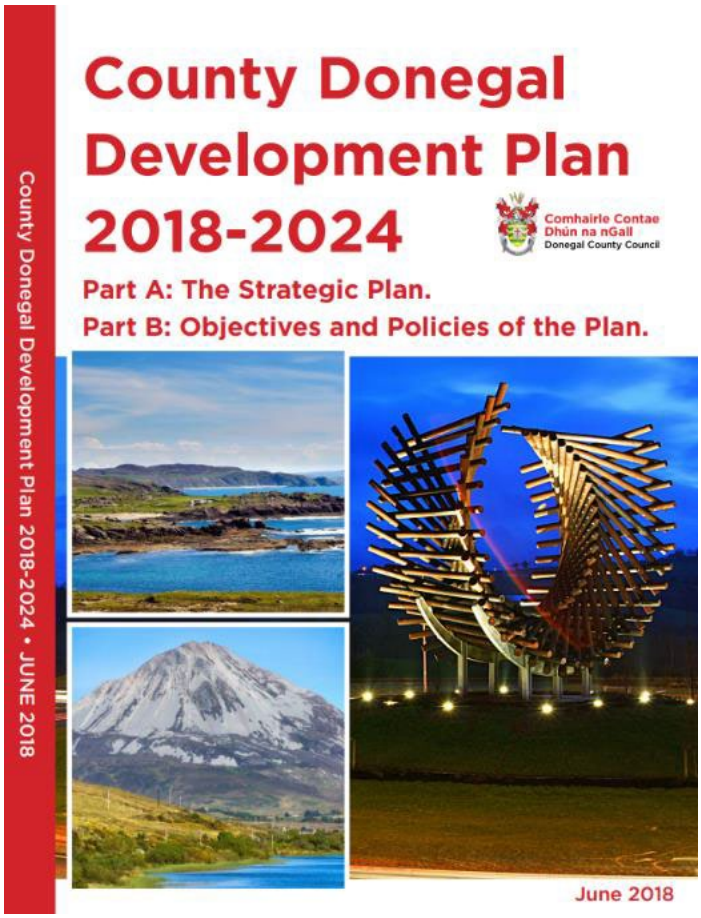
Table 5.1: Policy CCG-P-4 Criteria

Policy CCG-P-4 Criteria	
a)	It is compatible with surrounding land uses existing or approved.
b)	It will not have a significant impact on adjacent residential amenities.
c)	There is existing or imminent programmed capacity in the public water waste infrastructure for developments within urban areas or suitable on-site effluent treatment facilities to EPA standards can be provided in rural areas.
d)	It does not cause a traffic hazard and the existing road network can safely handle any extra vehicular traffic generated by the proposed development.
e)	Adequate parking provision, access arrangements, manoeuvring and servicing areas are provided in line with technical standards and policies of this Plan.
f)	The layout of the development provides for a high level of, and prioritises, pedestrian permeability and access.
g)	It does not create a noise nuisance and will not cause any significant environmental emissions.
h)	The location, siting, and design of the development including associated infrastructure and landscaping arrangements is of a high quality and does not have an adverse impact on the host landscape, rural character, or visual amenities of the area (for developments in rural areas), does not have an adverse impact on/successfully integrates with the streetscape, vernacular character or built environment of the area (for developments in urban areas).
i)	Appropriate boundary treatment and means of enclosure are provided and any
j)	It does not have an adverse impact on the built, scenic, or natural heritage of the area including structures on the RPS/NIAH and Natura 2000 sites.
k)	It is not located in an area at flood risk and/or will not cause or exacerbate flooding.
l)	It does not compromise the water quality of water bodies with River Basin Districts designed under the Water Framework Directive or hinder the programme of measures contained within any associated River Basin Management Plan.

In addition to the above, Policy CCG-P-12 also seeks to ensure that relevant development proposals have appropriate regard for walking and cycling which will promote physical activity and reduce car use.

The Draft Letterkenny Plan and Local Transport Plan 2023 – 2029 (hereinafter referred to as 'the Draft Plan') has been prepared in accordance with the requirements of Sections 18-20 of the Planning and Development Act, 2000 (as amended) (the Act). The Draft Plan sets out an overall strategy for the proper planning and sustainable development of Letterkenny in the context of the National Planning Framework (NPF), the Regional Spatial and Economic Strategy for the Northern and Western Regional Assembly area (the RSES) and the Donegal County Development Plan 2018- 2024 (As Varied) (the CDP). The Letterkenny Plan, once adopted, must be read in tandem with the CDP, as general policies and standards contained with the CDP are also applicable within the Letterkenny Plan area. All proposals for development that are put forward in accordance with the provisions of this LAP must also comply with relevant objectives and policies of the CDP.

The Draft Plan does not envisage any fundamental changes to the land use zoning for the proposed LRSAH site.

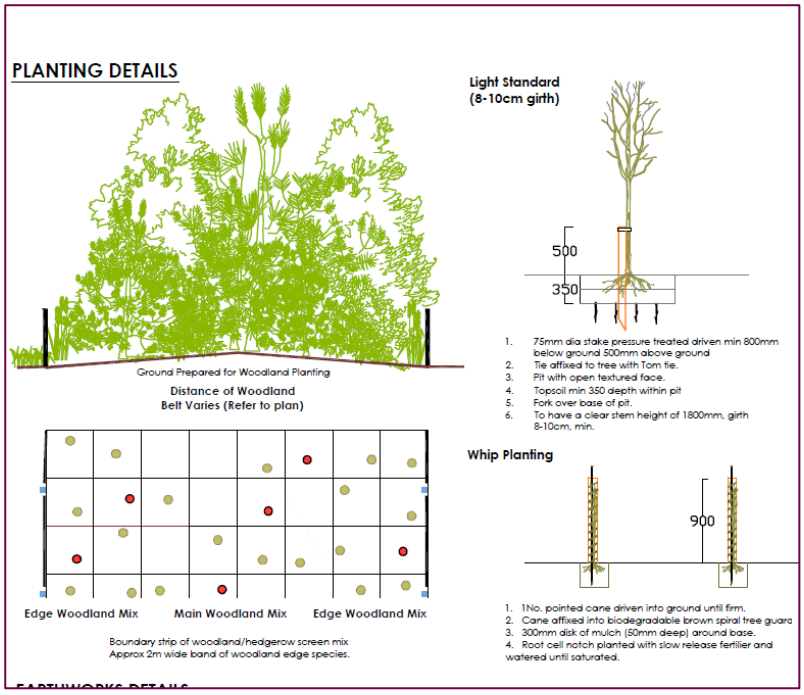


The County Donegal Development Plan (CDP), 2018-2024 was formally made by the Elected Members of Donegal County Council on 9th May, 2018 and has effect until 2024.

6 LANDSCAPE AND VISUAL

A review of the Donegal County Development Plan 2018-2024 has established that the proposed development is not located in proximity to any landscape or scenic designations and as such there are no predicted effects on any primary or secondary amenity area and/or scenic views.

Analysis of the landscape character within the immediate environs of the proposed development site displays 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. In addition, large primarily agricultural floodplains extend inland along the river Swilly through Letterkenny town and beyond into Newmills and some of the floodplains within the town area have been developed for commercial and retail use. The LCA is considered to have the scope and capacity for positive enhancement, and to have a high tolerance to change. During operation, landscape effects will be moderate as the proposed development will be well screened, is consistent with the existing urban fringe green and open space at the site and any visible parts of the development will be able to integrate into the surrounding landscape and will not be detrimental to the character of the area. Remaining portions of the LCA outside of the proposed development boundary are predicted to experience no significant effects.



Of the six viewpoints assessed for impacts during the operational phase, each viewpoint is considered to experience positive visual effects as underused urban fringe land is replaced with a new sports activity hub with extensive landscape treatment that will provide development and employment opportunities along with high quality recreational activities for the surrounding housing developments as well as Letterkenny town.

Additionally, the proposed development is consistent with Development Plan zonings that demonstrates that the development will not be out of character with the surrounding environment.

Overall, the wider landscape and visual resources of the development's surroundings have the capacity to accommodate a development of this type and scale.

7 CULTURAL HERITAGE

The Cultural Heritage assessment describes the surveys and assessments conducted as part of the impact assessment for the proposed development. It describes the archaeological baseline (monuments and historic buildings) of the site and the surrounding area; and presents an assessment of the impact of the proposed development on said monuments and historic buildings. This assessment also contains a detailed mitigation strategy outlining steps that should be taken prior to and during construction to minimise any potential impact.

A desk top survey was carried out for the area of the proposed development extending to a wider study area of a radius of up to 1km from the development area. The desk top survey identified no known cultural heritage assets within the development area, although a mill pond is recorded on the 1st edition OS map. In addition, a number of assets were identified within the wider study area, some of which were subsequently excavated, which indicates that the proposed development is located within an area of archaeological significance. As such it is possible therefore that previously unknown archaeological remains could exist subsurface within the development area, for which there are now no surface expressions. Archaeological monitoring of geotechnical investigations under licence 22E0872 identified nothing of archaeological significance although it should be noted that the investigations represent only a very small percentage of the development area.

The proposed development site does not contain any upstanding archaeological or cultural heritage remains although an assessment of the wider area concluded that the proposed development is located within an area of some archaeological significance. Should subsurface remains survive, for which there are now no surface expressions, then these would be negatively impacted upon by the proposed development during construction. Any potential impact would be ameliorated through the implementation of the recommended mitigation strategy.

As noted above the proposed development is located within an area of some archaeological significance. Through the implementation of the recommended mitigation strategy during the construction phase, there will be no impact during the operation phase. While the proposed development has been assessed as being within an area of archaeological potential with a number of cultural heritage assets in the wider study area, none of the adjacent assets have upstanding remains. Given this it is assessed that there will be no impact from the development on the visual aspect of any archaeological monument. In addition, 4 historic buildings are located to the south of the development area at the limit of the study area. Any potential development will be masked by the current built form and as a result there will also be no visual impact on any upstanding buildings.

All recommendations are made subject to the approval of the statutory bodies.

8 LAND USE AND MATERIAL ASSETS

This assessment in the EIAR reports the findings of the assessment on existing land use and material assets which could be impacted by the proposed development.

The assessment of potential impacts on land use considers if there will be severance, loss of rights of way or amenities, conflicts, or other changes likely, which may alter the character and use of the surroundings. It has regard to the character and type of land use activities within the proposed site, and the location of any sensitive neighbouring occupied premises likely to be directly affected by the proposed development.

The assessment of potential impacts on material assets focuses on resources that are valued and are intrinsic to a place - these may be of either human or natural origin, and the value may arise for either economic or cultural reasons. In this context, this assessment focuses on buildings, built services and existing infrastructure within and directly adjoining the indicative study area.

The matters assessed within this section focus on the environmental effects on the following resources:

- Existing Land Use (e.g. Education / community / recreation);
- Land with Development Potential and adjoining Land Use; and,
- Utilities and Infrastructure.

Material assets in the form of cultural heritage sites have been considered within Chapter 7 of the EIAR. Consideration of potential impacts upon surrounding land use in terms of visual amenity and noise and vibration, has been given within Chapters 6 and 9 respectively. Aspects relating to soil, geology, and hydrogeology are considered in Chapter 16. Consideration of impacts on water resources are considered in depth in Chapter 13. Consideration of transportation matters associated with the proposed development, are given in Chapter 19.

The summary of effects from the proposed development during both the construction and operation of the proposed development are outlined in Table 8.1 below. The majority of impacts are temporary, short-term impacts during the construction process which can be adequately mitigated through a range of procedures, good practices on site, and early consultation with statutory consultees and the adjacent landowners.

Table 8.1: Summary of Likely Environmental Effects on Land Use and Material Assets

Receptor	Sensitivity of receptor	Description of Effect	Duration	Magnitude	Significance	Significant Not significant
Construction phase						
Existing Land Use	Low	Clearance /Disturbance	Long Term	Low	Minor (Adverse)	Not Significant
Adjoining Land Use	Low	Disturbance	Short Term	No Change	No change	Not Significant
Land with Development Potential	Low	Disturbance	Long Term	No Change	No change	Not Significant
Water & Sewerage	Low	Removal / Disturbance	Short Term	No Change	No change	Not Significant
Electrical Infrastructure	Medium	Removal / Disturbance	Short Term	Medium	Moderate (Adverse)	Not Significant
Operational phase						
Existing Land Use	Low	Active Use	Long Term	High	Moderate (Beneficial)	Not Significant

Receptor	Sensitivity of receptor	Description of Effect	Duration	Magnitude	Significance	Significant Not significant
Adjoining Land Use	Low	Active Use	Long Term	No Change	No change	Not Significant
Land with Development Potential	Medium	Active Use	Long Term	Medium	Moderate (Beneficial)	Not Significant
Water & Sewerage	Low	Active Use	Long Term	No Change	No change	Not Significant
Electrical Infrastructure	High	Active Use	Long Term	No Change	No change	Not Significant

9 NOISE

This chapter outlines the noise and vibration impact assessment for the proposed development and assesses the potential impacts and likely significant effects of noise and vibration associated with the construction and operation of the proposed development.

During the construction phase, there is potential for noise and vibration impacts at the nearest noise-sensitive properties from the use of associated construction plant and equipment. The operation of the proposed development has the potential to impact nearby noise-sensitive receptors due to noise sources such as plant and equipment, sports activities, traffic movements and car parking.

The effect of construction and operational noise have been assessed in full within this noise and vibration chapter. The construction noise targets are set out along with the assessment methodology and results of the construction noise predictions. Construction noise mitigation measures are detailed such that noise targets are met throughout the construction phases. Operational noise has been assessed, and noise mitigation recommendations made where appropriate.

The specific objectives of the noise and vibration assessment are to:

- Describe the existing noise baseline;
- Define the assessment methodology and significance criteria used in completing the noise and vibration impact assessment;
- Describe the potential effects, including direct, indirect and cumulative effects;
- Describe the mitigation measures proposed to address the likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

The background noise assessment provides quantification and an understanding of the acoustic environment adjacent to and in proximity to the proposed development. A baseline noise monitoring survey consisting of attended noise measurements was conducted within and close to the proposed development site. The noise monitoring locations (NMLs) have been chosen to be representative of the nearest noise sensitive receptors within and in close proximity to the proposed development site. The purpose of the noise monitoring survey was to determine the baseline noise levels at the nearest noise sensitive receptors to the proposed development site and assess these levels in accordance with the relevant guidance.

During the construction phase, the methods of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the proposed works. By their nature, construction phase impacts will be short-term and localised. These impacts will be reduced as far as practicable through compliance with the mitigation measures identified within this EIAR and the relevant industry standards and guidelines.

The TII guidelines state that it takes a 25% increase or a 20% decrease in traffic flows in order to get a 1 dBA change in traffic noise levels. On this basis, the change in traffic noise levels on all road links during the construction phase of the proposed development will be less than 1dB(A).

It is generally accepted that it takes an approximate 3 dB(A) increase in noise levels to be perceptible to the average person, therefore the likely effect of traffic noise increases on all other roads local road network will be imperceptible.

The significance of effects has been determined based on the Magnitude of Impact for each aspect of operational noise which has been assessed and the receptor sensitivity. A summary is shown in Table 9.1.

Table 9.1: Determination of Significance of Effects

Noise Source	Magnitude of Impact	Significance of Effect
Plant and Equipment	Low	Minor
External Sports Facilities	Low/Medium	Minor
Operational Traffic	Low/Medium	Minor/Moderate
Car Parking	Low	Minor

The impact assessment of noise from external sports facilities found a 'Low' impact at the majority of receptors but indicated a potential 'Low/Medium' magnitude of impact at several receptors due to elevated L_{AMax} sound levels. The overall significance of effect was found to be 'Minor', due to the likely infrequency of these elevated levels at the affected properties.

The impact of operational traffic was found to be 'Low' at all receptors, with the exception of receptor 3. This receptor is located adjacent to the entrance to the proposed development and will experience a notable increase in daytime sound pressure levels due to operational traffic arriving and leaving the facility. As such, the significance of effect was found to be 'Moderate' at receptor 3 and 'Minor' at all other receptors.

The significance of effect for both plant and equipment noise and car parking is expected to be 'Minor'.

Pre-mitigation, the predicted construction noise impacts are anticipated to result in effects ranging from negligible to major at construction noise receptors. The final Construction Environmental Management Plan (CEMP) will include specific noise and vibration control measures and construction noise monitoring may be requested by Donegal County Council, if deemed necessary. Mitigation by careful scheduling of the works, timing of activities and using best practicable will be implemented such that no significant effects arise, and levels are as low as possible.

Residents will be informed of the timing and duration of activities that may produce high noise. Elevated levels can be tolerated if prior notification and explanation is given. Temporary slight adverse impacts due to construction noise have been identified at the closest receptors to proposed construction works. No permanent residual noise and vibration impacts are predicted during construction of the proposed development. With construction mitigation measures in place the noise impact of construction activities is predicted to be reduced to temporary minor / moderate.

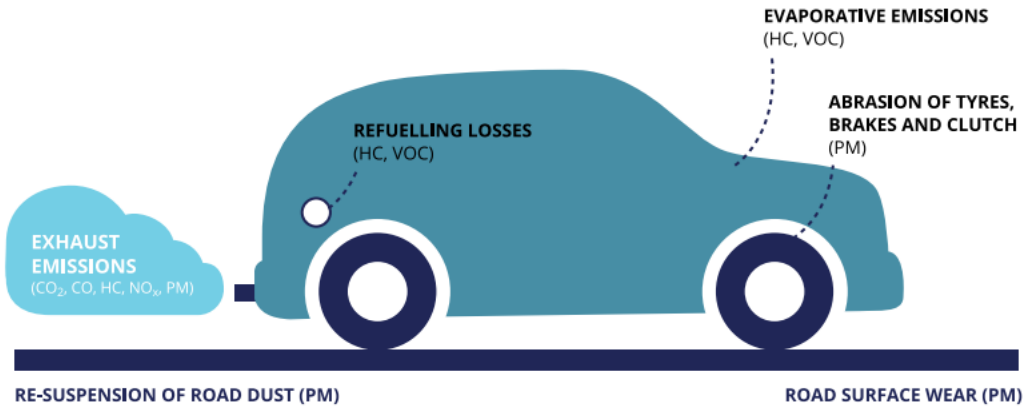
The proposed mitigation measures, including the installation of acoustic barriers are expected reduce the received sound pressure levels at receptors sufficiently to equate to a 'Low' magnitude of impact.

10 AIR QUALITY

This assessment in the EIAR sets out the proposed methodology for assessing the impact on air quality from the construction and operation of the proposed Letterkenny Sports Hub Scheme. It considers air quality within the proposed development and provides information on the key receptors that have the potential to be subject to likely significant effects resulting from the proposed development, and how that assessment is to be conducted. Air Quality relates to pollutants with potential to affect human health and ecosystems at a local level (this includes a construction phase dust and emissions assessment).

Potential effects to air quality may arise during the construction phase, such as from the generation of dusts and from traffic. The construction activities have been examined to identify those that have the potential for air emissions. Each of these potential sources has been identified and emissions have been evaluated using standard procedures.

The different types of emissions from vehicles, and a comparison of the relative amounts of selected pollutants released by the latest Euro 6 petrol and diesel vehicles



Potential air quality effects during the construction phase can occur due to dust emissions and from construction traffic movements. A semi-quantitative approach is recommended to determine the likelihood of a significant impact from dust (nuisance), PM_{10} and $PM_{2.5}$ on human health and on vegetation. The approach should be combined with an assessment of the proposed mitigation measures. The pollutants of most concern in relation to emissions from construction road traffic are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) and NO_X and ammonia on sensitive designated habitats.

According to the TII Guidance, where the potential for likely significant air quality effects have been identified, construction phase traffic data shall be screened against the following criteria:

- Road alignment will change by 5 m or more; or
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more; or
- Peak hour speed will change by 20 kph or more.

Due to the nature and scale of the works, as described above, the construction traffic is deemed to be minimal and does not meet the criteria detailed above. In this regard, employing the TII criteria the construction traffic volumes will not be significant and the resultant air quality impact from construction traffic is **negligible.**

In accordance with the TII Guidelines, where there are construction activities at a development site, there is a risk that dust may cause an impact at sensitive receptors in close proximity to the source of the dust generated. These distances are presented in Table 10.1, as outlined in TII Guidelines.

Table 10.1 TII 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**	**PM_{10}**	**Vegetation Effects**
Major	Large Construction sites, with high use of haul routes.	100m	25m	25m
Moderate	Moderate Construction sites, with moderate use of haul routes.	50m	15m	15m
Minor	Minor Construction sites, with minor use of haul routes.	25m	10m	10m

Source: Appendix 8: Assessment of Construction Impacts taken from "Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes" (TII, 2011)

The proposed development can be considered major in scale and therefore there is the potential for significant dust soiling 100m from the source, as detailed in Table 10.1. There are a number of high sensitivity residential receptors bordering the site working area boundary, some of which are within 100m as can be seen in Figure 10.1 below.

In the absence of mitigation there is the potential for significant, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the proposed development.

Figure 10.1: Air Quality Sensitive Receptors

For the operational phase of the proposed scheme, this assessment focuses on the worse-case year of operation, which is the opening year. Thereafter, as air quality improves, effects are considered to reduce over time. Air quality is anticipated to improve over the next 15 years (long-term) with improvements in vehicle technology and increased penetration of electric vehicles into the vehicle fleet. Further improvements beyond to 60 years, albeit at reduced rates of improvement, will further reduce air quality effects (permanent effects) with reduced numbers of combustion vehicles and further increases in electric vehicles.

The heating systems proposed will employ a range of heat pumps and electrical heating systems. There is no intention at this stage to use gas or oil-fired combustion heating systems. An Ecodan Air Source Heat Pump is an example of a commercial heating system for the provision of hot water and space heating.

Any emergency generators to be used onsite will be electrical and will therefore have no emissions.

In relation to air quality, for the construction phase, an important consideration is dust. In the absence of mitigation there is the potential for significant, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the proposed development. The mitigation measures provided within this assessment will ensure that the risk of adverse dust effects is reduced to a level categorised as “negligible”. Another important issue during the construction phase is construction traffic but due to the nature and scale of the project the construction traffic volumes will not be significant and the resultant air quality impact from construction traffic is “negligible.”

11 CLIMATE AND GREENHOUSE GASES

This assessment in the EIAR identifies, describes and assesses the impact on climate from the construction and operation of the proposed Letterkenny Sports Hub Scheme. It considers climate features within the proposed development and provides information on the key receptors that have the potential to be subject to likely significant effects resulting from the proposed development, and how that assessment is to be conducted.

Climate relates to emissions of greenhouse gases (GHGs). Climate change will continue to cause impacts on the environment. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change.

Potential effects to climate may arise during the construction phase, such as from the generation of dusts and from traffic. Each of these potential sources has been identified and emissions have been evaluated using standard procedures.

The on-site plant, which will be powered by diesel engines or potential generators (if required) and proposed works, will emit carbon dioxide. However, due to the low numbers of on-site plant for a limited amount of time during the construction phase and coupled with the low background concentrations of pollutants potential impact of on-site plant on climate is not quantitatively assessed further.

Emissions of construction generated GHG will arise from embodied emissions in site materials, direct emissions from plant machinery/equipment as well as emissions vehicles delivering material and personnel to the construction site.

The below definitions set out the descriptions of the terms effect and impact:

- **Impact:** Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact);
- **Effect:** Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact to the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.

The term impact is used when discussing impact magnitude – the original impact on a receptor. The term effect is used when talking about significance (as this is the result of the impact and the sensitivity of the receptor). The following are set out:

- Magnitude of impact;
- Sensitivity of receptor;
- Significance of effect.

In terms of the proposed development the following key aspects are summarised:

- Increased frequency of extreme weather - Damage, delay, health and safety impact, increased costs. The sensitivity of construction phase receptors is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor.
- Increased temperatures, prolonged periods of hot weather - Warm and dry conditions exacerbate dust generation and dispersions, health risks to construction workers. Appropriate dust control measures, which will be outlined in the oCEMP, will be put in place during the construction phase of the proposed development to aid in protection from fugitive dust dispersion and potential health impact on construction workers.
- Increased precipitation, and intense periods of rainfall. 1) Flooding of works and soil erosion; 2) Increased risk of contamination of waterbodies; 3) Disruption to supply of materials and goods; 4) Landslides. Appropriate assessment has been undertaken in relation to future flooding. Please refer to Chapter 13 for full assessment details of future flood risk.

The sensitivity of construction phase receptors is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be negligible.

During the construction process, receptors may be vulnerable to a range of climate risks. Potential impacts during the construction phase could include:

- Inaccessible construction site due to severe weather events (flooding, snow and ice, storms) restricting working hours and delaying construction;
- Health and safety risks to the workforce during severe weather events;
- Unsuitable conditions (due to very hot weather or very wet weather, for example) for certain construction activities; and,
- Damage to construction materials, plant and equipment, including damage, material storage areas and worksites, for example from stormy weather.

With regard to climate change risks to the proposed development during the construction period, it is considered reasonable that construction contractors would be able to adapt working methods if necessary.

For example, warmer winter conditions may extend the time certain construction activities such as concrete pouring can be carried out, while a greater chance of summer heatwave conditions may require adaptations such as shading work areas or increased attention to construction dust control measures. Effects are considered to be negligible and not significant. A flood risk assessment is presented in Chapter 13.

Following construction, the area will be utilised as a public space, car parking, with occasional limited access for service vehicles and delivery vehicles. Therefore, emissions to air from traffic within the proposed development will be negligible once operational, and these will not be assessed any further. Due to the nature of the proposed development, i.e., a public social space with a park, it will have likely positive impact on air quality and climate due to the following characteristics:

- Planting of trees and shrubbery and the inclusion of a biodiversity garden in an urban environment will reduce dust levels and absorb carbon
- Use of PV solar panels on the roof (22kW PV array on the pavilion building)
- Sustainable and active modes of transport will be encouraged
- Old Farm Road has been identified as the main route that pedestrians and cyclists will use to travel between the ATU Campus and the site, and is earmarked as an Active Travel Route within DCC's 'Draft Letterkenny Plan and Local Transport Plan 2023-2029'.Provision of safe pedestrian and cycle access across the N56 is a key aspect of the access strategy
- The development will integrate into the surrounding transport network and with the aid of cycleways, walking and running trails
- Safe bicycle storage facilities are proposed, and the project will link into a future town bike scheme
- Designated parking spaces will be provided for electric charging and rental car share

As with any construction site, there are associated vehicle movement, emissions and reuse of materials. With respect to vehicle emissions and materials, the following can help in reducing the GHGs emission to the atmosphere such that impacts will be negligible and not significant:

- Consultation with a wider variety of internal and external stakeholders to ensure all relevant information is included in the development of the plans.
- Implementation of a Traffic Management Plan, as detailed in Chapter 19 of this EIAR, which will be prepared in advance of the construction works and which will form part of the specification for the construction works. This will outline measures to minimise congestion and queuing, reduce distances of deliveries and eliminate unnecessary loads;
- Visual monitoring of plant by operatives to ensure no black smoke is emitted other than during ignition (emissions to air controlled); and

- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturer's limits (emissions to air controlled); and
- Reducing the idle times by providing an efficient material handling plan that minimizes the waiting time for loads and unloads. Reducing idle times could save up to 10% of total emissions during construction phase;
- Turning off vehicular engines when not in use for more than five minutes. This restriction will be enforced strictly unless the idle function is necessary for security or functionality reasons; and
- Regular maintenance of plant and equipment. Technical inspection of vehicles to ensure they will perform the most efficiently.

With the design and mitigation measures proposed, the Development is considered to be resilient to projected climate change. The resilience of the Development to climate change impacts is qualitatively assessed, based on professional expertise and judgement.

As the emissions to air of both pollutants and greenhouse gases during the operational phase will be minimal, there is no requirement for mitigation measures. Nonetheless, design mitigation measures include:

- Recycling of construction materials as appropriate;
- LED lighting, which is proven to use 75% less energy when compared to traditional incandescent bulbs will contribute to further reduce already minimal indirect emissions due to electricity use; and,
- Planting of trees contribute to carbon sequestration and improved air quality, through the inclusion of a biodiversity garden and landscape planting.

Construction and operation of the Development is likely to result in emissions of GHGs from direct sources and indirect sources. It is not anticipated that the scale of projected climate change identified will fundamentally alter baseline conditions or the effects included in this EIAR.

No significant effect on or due to climate change during decommissioning is predicted. The decommissioning phase is not considered due to the long design life of the assets and given that emissions with the end of the life of this type of asset are relatively small and therefore unlikely to be significant.

12 POPULATION AND HUMAN HEALTH

This assessment in the EIAR provides a description and assessment of the likely impacts of the proposed development of Letterkenny Regional Sports Hub Scheme on population and human health on the local/receiving population.

Human health can be influenced (both adversely and beneficially) by a number of environmental and socio-economic determinants which can vary on a project-by-project basis and are further modified by local community circumstance and existing health burden.

It is important to emphasise that the founding principle and purpose of EIA is to investigate potential environmental effects that may pose a risk to the environment and health at a development planning stage. Due to the multidisciplinary nature of health, planning separates health determinants (i.e., activities and hazards with the potential to influence health) into individual technical disciplines and EIAR topic chapters (e.g., air quality, noise, transport).

The assessment of construction and operational effects on population and human health are summarised in Table 12.1.

Table 12.1: Summary of Assessment of Construction and Operational Effects on Population and Human Health

Human Health from Changes to	Magnitude of Impact	Sensitivity of the Receptor	Significance of Effect	Further Mitigation or Enhancement	Residual Effect
Construction Effects					
Air Quality	Construction of the proposed development has the potential to influence human health from nuisance dust and from changes to local air quality associated with construction traffic. Prior to mitigation, the impacts from dust resulting from general on-site construction activities and/or through the movement of vehicles are limited to annoyance. However, following implementation of control measures it is anticipated that construction dust emissions would not be significant. The increase in local particulate matter (PM_{10} and $PM_{2.5}$) levels directly attributable to construction traffic associated with the proposed development is predicted be negligible at all receptors and would remain below air quality objective thresholds set to be protective of the environment and health. The increase in local NO_2 levels is predicted to remain below air quality objective thresholds set to be protective of the environment and health at all of the receptors analysed. The contribution to local NO_2 concentrations directly attributable to construction traffic associated with the proposed development is minimal. Therefore, the human health effects from changes to air quality are predicted to be of local spatial extent, short term duration and intermittent. It is predicted that the impact is not of a concentration or exposure sufficient to quantify any change in baseline health. The magnitude is therefore considered to be negligible.	It is not possible to allocate a fair or accurate sensitivity classification to a population. On this basis, a precautionary approach has been taken, where the sensitivity of residential receptors to human health effects from changes to air quality is considered to be uniformly *high*.	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor adverse effect, which is not significant in EIA terms.	No significant adverse effects have been predicted and no further mitigation is considered to be required.	The residual effect following no mitigation or enhancement is predicted to remain minor adverse, which is not significant in EIA terms.
Noise Exposure	However, non-noisy activities which would not cause disturbance off-site, or construction activities that cannot be interrupted (such as a continuous concrete pour) may be required outside these hours.	A precautionary approach has been taken, where the sensitivity of residential receptors	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor	No significant adverse effects have been predicted and no further mitigation	The residual effect following no mitigation or enhancement is predicted to remain

Human Health from Changes to	Magnitude of Impact	Sensitivity of the Receptor	Significance of Effect	Further Mitigation or Enhancement	Residual Effect
	Based on this information, potential human health effects from changes in noise exposure would be limited to increased annoyance from a reduction in local amenity during the daytime. This would be a direct and local impact resulting from on-site construction activities and associated transport movements. Due to the nature of the construction period, the impact would be short term and intermittent. Chapter 9 Noise and Vibration assesses the magnitude of impact at human receptors where it is predicted that noise levels from on-site construction activity associated with the proposed development will be below the lower cut-off value during the day of 65 dB L_{Aeq} and therefore not significant in noise terms. While certain construction activities have the potential to overlap, resulting in a cumulative noise impact upon receptors, it is not anticipated that this would result in an exceedance of the daytime cut-off value for more than one month. Regarding noise impacts associated with construction traffic is also not considered significant in noise terms. Overall, the human health effects from changes in noise exposure are predicted to be of local spatial extent, short term duration and intermittent. It is predicted that the impact will affect the receptor directly, but is not of a magnitude, exposure, duration or timing to quantify any change in baseline health. The magnitude is therefore considered to be negligible.	to human health effects from changes in noise exposure is considered to be uniformly *high*.	would result in a minor adverse effect, which is not significant in EIA terms.	is considered to be required.	minor adverse, which is not significant in EIA terms.
Transport Nature and Flow Rate	An increase in HGVs and vehicle movements has the potential to change the transport nature (composition and flow rate on local roads). Depending on the magnitude of change, there is the potential for an increased risk of accident and injury; feelings of isolation from increased severance; and loss of amenity from increased severance or transport disruption. Any change to transport nature and flow rate would be a direct and local impact where due to the nature of the construction period, the impact would be short term and intermittent.	A precautionary approach has been applied, where the sensitivity of residential receptors to human health effects from changes to transport nature and flows is considered to be uniformly *high*.	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor adverse effect, which is not significant in EIA terms.	No significant adverse effects have been predicted and no further mitigation is considered to be required.	The residual effect following no mitigation or enhancement is predicted to remain minor adverse, which is not significant in EIA terms.

Human Health from Changes to	Magnitude of Impact	Sensitivity of the Receptor	Significance of Effect	Further Mitigation or Enhancement	Residual Effect
	The human health effects from changes in transport nature and flow rate are predicted to be of local spatial extent, short term duration and intermittent. It is predicted that the impact will affect the receptor directly but is not of an order of magnitude sufficient to quantify any change in baseline health outcome. The magnitude is therefore considered to be negligible.				
Income and Employment Generation	Having a consistent income and being in long-term employment are two of the most important wider determinants of health. The construction phase of the proposed development would offer a number of job opportunities; while job opportunities would vary in type, the majority of jobs available would be for construction workers. This would be an indirect impact which, dependent on procurement, has the potential to benefit some construction workers in and around Letterkenny. However, it should be noted that due to the highly mobile nature of the construction industry and as construction companies tend to bring much of their labour force with them to undertake developments, it is unlikely that all of the construction companies and contractors commissioned on the proposed development would be based in and around Letterkenny. The human health effects from income and employment generation are predicted to be primarily of regional spatial extent and short term duration. It is predicted that the impact will affect the receptor directly through employment and indirectly via indirect and induced income and employment opportunities important to health. However, the magnitude of direct, indirect and induced income and employment opportunities are not sufficient to quantify any change in baseline health. The magnitude is therefore considered to be negligible.	A precautionary approach has been applied, where the sensitivity of residential receptors to human health effects from income and employment generation is considered to be uniformly *high.*	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor beneficial effect, which is not significant in EIA terms.	No further mitigation or enhancement measures are recommended.	The residual effect following no mitigation or enhancement is predicted to remain minor adverse, which is not significant in EIA terms.
Operational Effects					
Air Quality	It can be concluded that the change in concentration and exposure directly attributable to the proposed development are not of a level to quantify any change in	A precautionary approach has been applied, where the sensitivity of	Overall, it is predicted that negligible magnitude of impact on the high	No significant adverse effects have been predicted and no further mitigation	The residual effect following no mitigation or enhancement is

Human Health from Changes to	Magnitude of Impact	Sensitivity of the Receptor	Significance of Effect	Further Mitigation or Enhancement	Residual Effect
	baseline health. The magnitude of impact on human health is therefore considered to be negligible.	residential receptors to human health effects from changes to air quality is considered to be high.	sensitivity receptor would result in a minor adverse effect, which is not significant in EIA terms.	is considered to be required.	predicted to remain minor adverse, which is not significant in EIA terms.
Noise Exposure	The human health effects from changes in noise exposure are predicted to be of local spatial extent, short term duration and intermittent (i.e. during peak demand). It is predicted that the impact will affect the receptor directly, and will not be of a magnitude, timing, duration or exposure sufficient to quantify any change in health baseline. The magnitude of impact on human health is therefore considered to be negligible.	A precautionary approach has been applied, where the sensitivity of residential receptors to human health effects from changes in noise exposure is considered to be uniformly high.	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor adverse effect, which is not significant in EIA terms.	No significant adverse effects have been predicted and no further mitigation is considered to be required.	The residual effect following no mitigation or enhancement is predicted to remain minor adverse, which is not significant in EIA terms.
Transport Nature and Flow Rate	Sustainable and active modes of transport will be encouraged in relation to the proposed development which will have a positive impact on operational phase road traffic. Old Farm Road has been identified as the main route that pedestrians and cyclists will use to travel between the ATU Campus and the site and is earmarked as an Active Travel Route within DCC's 'Draft Letterkenny Plan and Local Transport Plan 2023-2029'. Provision of safe pedestrian and cycle access across the N56 is a key aspect of the access strategy. The development will integrate into the surrounding transport network and with the aid of cycleways, walking and running trails. Furthermore, safe bicycle storage facilities are proposed, and the project will link into a future town bike scheme. Through the provision of designated parking spaces for electric charging and rental car share, sustainable active travel is encouraged with regards to the operational traffic aspect of the proposed development. Therefore, the human health effects from changes to transport nature and flow rate are predicted to be of local spatial extent, short term duration and intermittent. It is	A precautionary approach has been applied, where the sensitivity of residential receptors to human health effects from changes to transport nature and flows is considered to be uniformly high.	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor adverse effect, which is not significant in EIA terms.	No significant adverse effects have been predicted and no further mitigation is considered to be required.	The residual effect following no mitigation or enhancement is predicted to remain minor adverse, which is not significant in EIA terms.

Human Health from Changes to	Magnitude of Impact	Sensitivity of the Receptor	Significance of Effect	Further Mitigation or Enhancement	Residual Effect
	predicted that the impact is not of a concentration or exposure sufficient to quantify any change in baseline health. The magnitude is therefore considered to be negligible.				
Income and Employment Generation	The human health effects from income and employment generation are predicted to be primarily of local spatial extent and short-term duration. It is predicted that the impact will affect the receptor indirectly but will not be of level sufficient to quantify any change in health baseline. The magnitude is therefore considered to be negligible.	A precautionary approach has been applied, where the sensitivity of residential receptors to human health effects from income and employment generation is considered to be high.	Overall, it is predicted that negligible magnitude of impact on the high sensitivity receptor would result in a minor beneficial effect, which is not significant in EIA terms.	No further mitigation or enhancement measures are recommended.	The residual effect following no mitigation or enhancement is predicted to remain minor beneficial, which is not significant in EIA terms.

As no significant effects as a result of the construction or operational phase have been predicted, no mitigation measures are proposed for population and human health.

It is not anticipated that there would be any significant human health effects resulting from the construction, or operation of the proposed development. This has been concluded on the basis that any change in health determinant would not be sufficient to quantify any change in baseline health outcomes within the surrounding community.

13 FLOOD RISK AND DRAINAGE

This Chapter addresses the potential impact of the proposed development on flooding and drainage. It sets out the methodology employed in the assessment, summarises the baseline flood risk as defined through desk-based assessments, and then assesses the potential impact of the development and the residual impact following mitigation. The assessment has been prepared in accordance with 'The Planning System and Flood Risk Management Guidelines for Planning Authorities'. These Guidelines introduce comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process.

Based on the indicative pluvial flood mapping presented in the Office of Public Works (OPW) Preliminary Flood Risk Assessment, it is estimated that the subject site is not at risk from pluvial flooding during an extreme 0.1% AEP pluvial flood event. Surface water arising at the site will be managed by a dedicated stormwater drainage system designed in accordance with Sustainable Drainage Systems (SuDS) principles, limiting discharge from the site to greenfield runoff rates. The landscaping and topography of the developed site will provide safe exceedance flow paths and prevent surface water ponding to minimise residual risks associated with an extreme flood event or a scenario where the stormwater drainage system becomes blocked.

There is no evidence to suggest groundwater as a potential source of flood risk to the proposed development site. Based on previous flood studies in the area by the OPW and the location of the subject site, the proposed development is not at risk of coastal flooding.

The Catchment Flood Risk Assessment and Management Study (CFRAM) mapping of existing fluvial flood extents, indicates portions of the subject site may be at risk of flooding during a 0.1% AEP fluvial flood event. Accordingly, vulnerable portions of the subject site are located within Flood Zones B, while the majority is within Flood Zone C. There are no statutory records of any past flood events within the subject site. In addition to this, from the anecdotal evidence collect by TOBIN during the site survey, there is no anecdotal evidence of any flooding in the vicinity of the subject site. Therefore, it is estimated that risk of fluvial flooding associated with the proposed development is minimal.

Of the three watercourses in close proximity to the proposed development, all of which are mapped on the CFRAM study, only one features on the CFRAM strategic flood maps as having potential to exceed its channel capacity under 1 in 1,000-year flood events. However, it is noteworthy that the extent of floodwaters is limited to the immediate vicinity of the channel and increases in width in inverse proportion to the gradient of the streambed. In addition, this mapping is expressly for use in identifying 'general areas prone to flooding as opposed to the hazard to individual properties'.

The main drainage system will receive the discharge from the pitches at controlled rates and will receive runoff from the hardened areas. Runoff from hardened surfaces will, where possible, pass through point-of-entry SuDS features before being picked up by the main drainage system. Where SuDS measures are employed at point-of-entry, exceedance measures are also provided to allow for seasonal variations in capacity or outright failure of individual SuDS features. Roads will be serviced by gulleys at a rate of no more than 200 sqm per gulley, with double gullies at critical points. Collected surface water will then pass through petrol interceptors to remove hydrocarbons lifted from the carparks and roads before passing into attenuation tanks located upstream of discharge points. The attenuation tanks will be sized to achieve the desire 2 l/s/ha greenfields runoff rate.

Based on the results of Flood Risk Assessment and Drainage Assessments, it is estimated that the risk of flooding to the proposed development will be minimal, and that the development will not increase the risk of flooding elsewhere.

14 BIODIVERSITY

An Ecological Impact Assessment (EcIA) has been undertaken on lands to the north of the N56 Road in Letterkenny, in respect of the proposals for proposed flood relief works at this site, as described within Chapter 2 Project Description of this Environmental Impact Assessment Report (EIAR). The scope of this Ecological Impact Assessment (EcIA) is to identify ecological constraints within the study area in Letterkenny, Donegal by means of the following:

- Identifying the Zone of Influence (ZoI) of the proposed development on the natural environment;
- Establishing the baseline regarding terrestrial and aquatic habitats, ecotopes, flora and fauna (volant and non-volant mammals, invertebrates, avifauna etc.) within the zone of influence of the proposed regeneration scheme;
- Ascertaining the potential impacts upon all ecological receptors within the development footprint and zone of influence to include, but not be limited to, species protected under the European and National Legislation, including the EU Habitats and Birds Directives and Irish Wildlife Acts (1976 to 2012, as amended); and,
- Presenting measures to avoid or minimise potential damage to any sensitive ecological receptors supported within the receiving environment.

A summary of the construction and operational predicted effects and proposed mitigation is set out below in Table 14.1.

Table 14.1: Summary of Assessment of Construction and Operational Effects on Population and Human Health

Receptor	Sensitivity of receptor	Description of Effect	Duration	Magnitude	Magnitude of Effect	Significant Not significant	Significant or Not significant Post Mitigation
Construction phase							
Designated Sites of Natural Heritage Importance	High	Water quality and habitat deterioration: release of sediments or pollutants into the freshwater environment.	Short term	Medium	Major adverse	Significant	Not significant
Designated Sites of Natural Heritage Importance	High	Invasive species: inadvertent spread of invasive species to hydrologically linked sites.	Short term	Medium	Moderate adverse	Significant	Not significant
Terrestrial Habitats	Low	Habitat loss	Short term	Medium	Minor adverse	Significant	Significant
Birds	Medium	Destruction of bird nests or disturbance to nesting birds.	Short term	Medium	Moderate adverse	Significant	Not significant
Operational phase							
Bats	Medium	Disturbance to foraging and commuting habitats through artificial lighting.	Long term	Medium	Minor adverse	Significant	Not Significant

The proposed development has limited potential to give rise to significant impacts upon natural heritage and biodiversity receptors.

Predicted significant impacts are limited to potential water quality and habitats deterioration effects arising as a result of proposed works to and in close proximity of watercourses; the loss of habitats of low ecological value at construction phase, the potential for spread of invasive non-native species, potential for disturbance to nesting birds and lighting impacts upon foraging and commuting bats at operational phase.

No residual effects on natural heritage and biodiversity are predicted as a result of the proposed development.

Residual impacts are limited to operational phase impacts to foraging and commuting bats associated with the proposed lighting regime, in addition to construction phase impacts to habitats associated with the loss of habitats of low ecological value including hedgerows, scrub, short rotation coppice and improved agricultural grassland.

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15 WATER QUALITY

The baseline water quality was defined through desk-based assessment and consultation with relevant statutory organisations. Information on the water bodies that could potentially be impacted by the proposed development have been collated from the most recent published information from the Water Framework Directive (WFD) monitoring programme. This ensures the potential impact from the proposed development is considered based on the most up to date information on water quality and to ensure that the development does not compromise the achievement of the environmental objectives of the water bodies affected as established under the WFD. The water bodies that could potentially be affected by the proposed development are the Swilly (Donegal)_010 river water body (within the site boundary) and the Swilly Estuary transitional water body (south east of the site). These river and transitional water bodies ultimately discharge into the Outer Swilly Estuary.

In summary, the downstream Swilly Estuary and Outer Swilly Estuary were classified as “poor” and “high” ecological status respectively, while the Swilly (Donegal)_010 has been assigned “good” ecological status. The downstream Swilly Estuary has most recently been reported as “poor” status due to the condition of phytoplankton status.

The core objectives of the WFD are for all water bodies to achieve ‘good status’ where they are currently at less than good status and to prevent the deterioration in status. In addition, WFD objectives requires that the water dependent protected areas linked to the water bodies must not be compromised. It will be a requirement that this project does not result in any deterioration of the current status of the relevant water bodies and does not prevent the improvement in status where this is required under the WFD.

The key focus of the water quality impact assessment is to ensure the development can be undertaken in a way which is consistent with the objectives of the WFD. Therefore, likely significant effects were assessed for construction and operational stages of the project with particular regard to the objectives of the WFD.

The potential construction phase impacts include increased suspended solids in the water environment, potential risks to water quality and WFD objectives as a result of pollution from concrete, oils and other chemicals. During the operational phase, there is a potential for impacts from contaminated storm water run-off and inadequate sewage infrastructure to service the development.

Proposed mitigation measures include careful management, implementation and adherence to best practice guidelines during construction and operation particularly when working in the vicinity of water features within the site which are connected to the downstream water bodies identified above. The operational phase will include a variety of Sustainable Drainage Systems (SuDS) techniques to counteract the potential increased runoff as a result of increased hardstanding. The specific measures adopted for the proposed development to achieve the desired runoff rates include; permeable pitch surfaces, French drain bedding, optimally-sized piping and manhole junctions, a 30% void stone attenuation tank within the subbase, and a hydrobrake outlet before the outfall. It is proposed that surface water will discharge via a class 1 bypass separator and flow control device prior to discharging to the receiving environment.

Foul water will be separated from storm water and discharged into the existing foul sewer network. The foul water will then be treated at Letterkenny WWTP prior to discharge. Full implementation of the mitigation measures will ensure that no adverse impacts on the water environment will occur.

An assessment of the significance of the residual impacts for the construction and operational phases of the project with the implementation of the mitigation measures proposed, resulted in a residual impact considered to be negligible with no likely significant effects on the objectives of the water bodies affected.

There are also no likely significant effects from the Proposed Development during the construction and operation which would result in either positive or negative cumulative effects with other Proposed Developments on the existing water resource in the area.

16 CONTAMINATED LAND, GEOLOGY AND SOILS

This chapter provides an assessment of the effects of the existing ground conditions on the proposed development and addresses the potential effects of the proposed development on the soils, geology and hydrogeology of the site and surrounding areas.

The assessment is based on information gathered from an intrusive ground investigation to establish the soils, geology and groundwater conditions beneath the site.

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The trial pits were excavated using a 8T tracked excavator. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings.

The soakaway testing was carried out in selected trial pits and were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising's upon completion.

The percussion boreholes were carried out at the locations shown in the location plan in Appendix 16.A using a Tecopsa SPT Tec 10 percussion drilling rig. The percussion sampling consists of a 1m long steel tube with a cutting edge and an internal plastic liner which is mechanically driven into the ground utilising a 63.5kg weight falling a height of 760mm. Upon completion of the 1m sample, the tube is withdrawn and the plastic liner removed and sealed for logging and sub sampling by a Geotechnical Engineer/Engineering Geologist. Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a weight of 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60º cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil.

The rotary coring was carried out by a track mounted T44 Beretta rig and were completed from the ground surface or alternatively, where noted on the individual borehole log, from the base of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring. The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the "overshoot" recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered.

Groundwater and or Gas Monitoring Installation were installed upon the completion of the boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm uPVC/HDPE slotted pipe with a pea gravel response zone and bentonite seal

installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround.

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design. Environmental & Chemical testing as required by the specification, including the Rilta Suite/Engineers Ireland Suite E, H, I pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria. Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), hydrometer, California Bearing Ratio (CBR), Moisture Condition Value (MCV) tests were carried out in NMTL's Geotechnical Laboratory in Carlow.

Locations, techniques and results of the ground investigation a programme of intrusive investigation are fully detailed in Volume III Appendix 16.A Geological Investigation Report

Construction impacts may also include noise, dust, odour and site traffic generation problems as well as potential contamination issues arising with the use of fuel storage tanks, vehicles and the use of paints and oils.

During the operational stage of the proposed development there will be no likely significant ongoing impacts on the underlying soil and geology. Any hydro-geological impacts are temporary and associated with the construction of the proposed development.

There are no key issues in relation to geology and soils environment throughout the operational phase of the proposed development provided mitigation measures are employed. The proposed development is therefore not expected to have a significant effect on geology and soils.

17 WASTE

This assessment in the EIAR assesses the waste management aspect of the proposed development. It discusses the potential waste streams that will be generated during the construction and operational phases of the proposed development.

A summary of the significance of environmental impacts during the construction and decommissioning phases is provided in Table 17.1 below.

Table 17.1 Significance of Environmental Impact from the Construction Phase

Impact	Significance of Effect
Construction Phase	
Excavated soils to be disposed offsite	**Negligible or Minor** - Potential to require disposal to landfill if reuse options onsite cannot be utilised.
Construction related waste generated from the construction works Surplus construction/excavation materials including: metals, waste packaging, wrapping, waste cabling, pipework, ductwork etc	**Negligible or Minor** - Likely to require disposal to landfill if segregation and recycling initiatives not put in place on site during construction.

A summary of the anticipated operation and maintenance phase impacts is provided in Table 17.2.

Table 17.2 Significance of Environmental Impact from the Operational Phase

Impact	Significance of Effect
Operational Phase	
Moderate increase in waste quantities currently produced during operation and increased public footfall capacity. Mainly general waste, non-hazardous	**Minor** - Moderate increase in quantities of general waste which are managed for disposal using recycling methods for recyclable materials followed by methods lower down the waste hierarchy for non-recyclable materials such as landfill and incineration with energy recovery

The summary of effects on waste is detailed in Table 17.3

Table 17.3: Summary of Effects on Waste

Receptor	Sensitivity of Receptor	Assessment of Magnitude	Predicted Effect	Adverse/ Beneficial	Permanent/ Temporary	Mitigation Measures	Significant / Not Significant
Construction Phase							
Non – Hazardous and Inert Landfill Void Capacity	Medium	Negligible	Negligible or Minor	Adverse	Temporary	See section 17.5.1 of Chapter 17.	Not significant
Operational Phase							
Non – Hazardous and Inert Landfill Void Capacity	Medium	Minor	Minor	Adverse	Permanent	See section 17.5.2 of Chapter 17.	Not significant

18 ARTIFICIAL LIGHTING

This assessment in the EIAR considers the proposed LED pitch floodlighting installation for the proposed development.

The proposed floodlighting layout, and design light levels (illuminance) based on lighting calculation results, are outlined for each pitch.

Design parameters include:

- Design light level (lux)
- CIBSE minimum guidance light level (lux) to be exceeded
- Light fitting (luminaire) quantity
- Electrical loading
- Control strategy
- Plan drawings showing column positions incl. sub-pitches

Additionally, due to the high-powered floodlights, an obtrusive lighting analysis is included to assess the degree of spill lighting that would manifest from the proposed floodlighting installation. Obtrusive properties of the installation that are assessed include:

- Obtrusive light level (lux)
- Upward light ratio

The construction and operational phase effects of the proposed development on artificial lighting are summarised in Table 18.1.

Table 18.1: Summary of Likely Environmental Effects on Lighting

Receptor	Sensitivity of receptor	Description of Effect	Duration	Magnitude	Significance	Significant Not significant
Construction Phase						
Residential	High	Light spill from construction lighting	Short term	Minor	Minor Adverse	Not Significant
Road Users	Low	Light spill from construction lighting	Short term	Minor	Minor Adverse	Not Significant
Operational Phase						
Residential	High	Light spill from construction lighting	Long term	Medium	Moderate adverse	Not significant
Road Users	Low	Light spill from construction lighting	Long term	Medium	Moderate adverse	Not Significant

Following the implementation of appropriate mitigation, the proposed development will comply with the relevant policies, legislative requirements and best practice guidance in relation to external lighting and minimising light pollution. This will ensure that there is no significant light intrusion on any sensitive receptors during both the construction and operational phase.

19 TRAFFIC AND TRANSPORTATION

This Chapter of the EIAR considers the potential impacts on traffic and transportation. It outlines the key issues and provides an overview of the likely significant effects of the proposed development on transportation. The scoping report and subsequent scoping study was used as a basis of initial consultation with the transportation related statutory authorities including Donegal County Council (DCC) as the statutory road authority and Transport Infrastructure Ireland as the relevant authority for the strategic road network, including the N56, the closest strategic road to the site.

In order to establish the baseline traffic flows, Junction Turning Count (JTC) and Automatic Traffic Counts (ATC) were undertaken in March 2023, as shown in **Figure 19.1**.

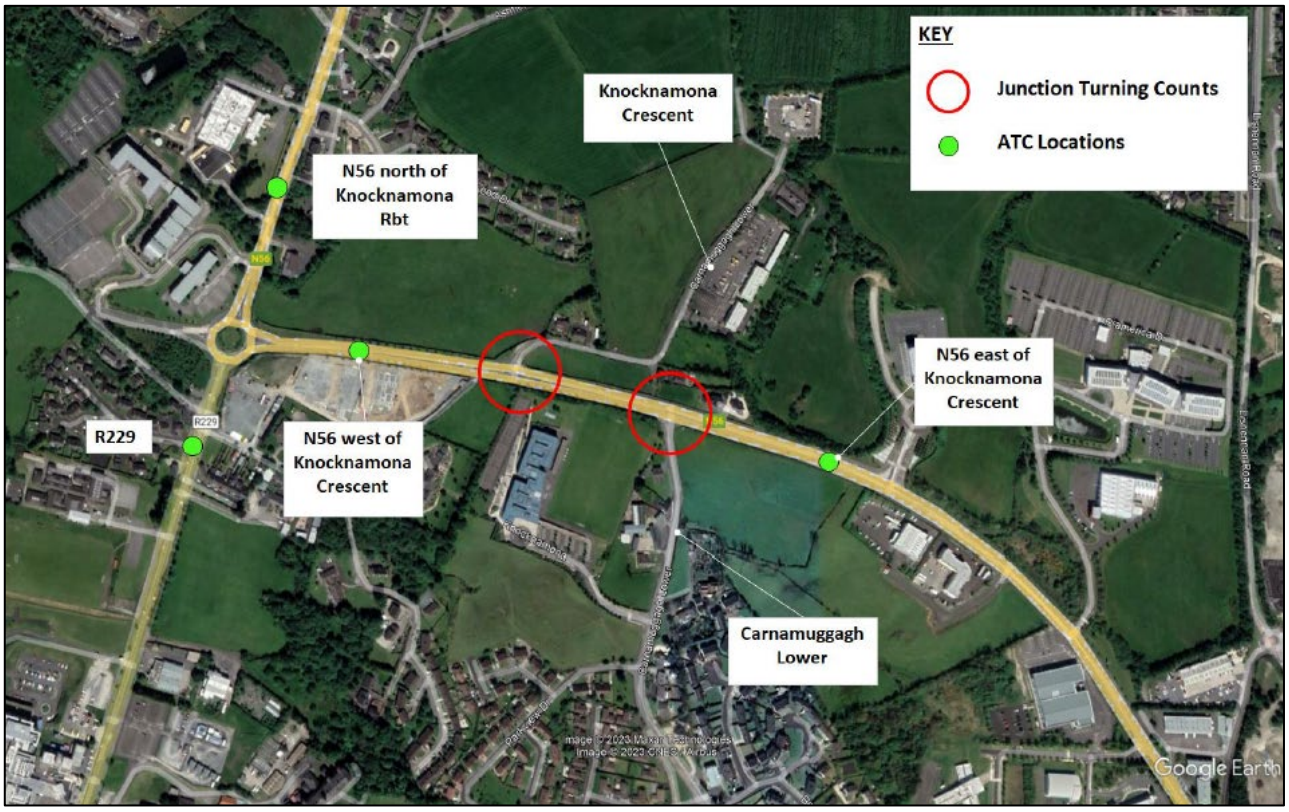

Figure 19.1: Traffic Count Locations

Junction Turning Count (JTC) surveys were undertaken at:

- N56 / Knocknamona Crescent priority junction; and
- N56 / Carnamuggagh Lower priority junction.

Automatic Traffic Counters (ATC) were in place for a 7-day period between 9th March and 15th March, recording classified traffic volumes and speeds. ATC were placed on:

- The N56 to the north of Knocknamona Roundabout;
- The R229 to the south of Knocknamona Roundabout;
- The N56 to the west of Knocknamona Crescent; and
- The N56 to the east of Carnamuggagh Lower.

Table 19.1 presents the recorded traffic flows at each location.

Table 19.1: Baseline Traffic Flows

Link	Base 2023		
	24hr AADT (5-day, veh)	% HGV	Ave. Speed (kph)
Site A - N56 north of Knocknamona Rbt	19,741	5.9%	50.3
Site B - R229 south of Knocknamona Rbt	17,312	0.6%	46.9
Site C - N56 west of Knocknamona Crescent	13,256	1.7%	56.3
Site D - N56 east of Carnamuggagh Lower	12,254	1.7%	73.8
Knocknamona Crescent	348	3.3%	-
Carnamuggagh Lower	1,870	3.2%	-

The following scenarios have been considered in the assessment, with and without the development as per the TII PE- Traffic and Transport Assessment Guidelines (PE-PDV-02045):

- Base 2028 (Year of Opening); and
- Base 2043 (Year of Opening + 15).

Future traffic growth between 2023, 2028 and 2043 has been calculated using the Link-Based Growth Rates for the 'West' region set out in Table 5.3.2 of TII Project Appraisal Guidelines for National Roads (PE-PAG-02017). The calculated growth factors are:

- 2023 – 2028: 1.049; and
- 2023 – 2043: 1.138.

The busiest construction period in traffic terms will be during Phase 1, when the bulk earthworks exercise is undertaken. This will involve a cut and fill operation across the entire site, to reduce the need for future import or export of sub-soil material.

Table 19.2 shows the predicted impact of construction traffic.

Table 19.2: Impact during Construction Phase

Link	24hr AADT (5-day, veh)				
	Base 2028	Base 2043	Development Traffic	2028 Dev Impact	2043 Dev Impact
N56 north of Knocknamona Rbt	20,706	22,466	60	0.3%	0.3%
R229 south of Knocknamona Rbt	18,158	19,701	60	0.3%	0.3%
N56 west of Knocknamona Crescent	13,904	15,086	60	0.4%	0.4%
N56 east of Carnamuggagh Lower	12,853	13,946	60	0.5%	0.4%
Knocknamona Crescent	389	421	60	15.4%	14.2%
Carnamuggagh Lower	2,082	2,255	60	2.9%	2.7%

The biggest construction impact is expected on Knocknamona Crescent itself, but is considered by SYSTRA not to be significant, resulting in an increase of around 60 trips during the course of the working day, or around 8 trips per hour. As per the rating of effects in traffic contribution, the proposed development is expected to result in 'Imperceptible' effects on the N56, R229, and Knocknamona Crescent, a and a 'Moderate Effect' on Knocknamona Crescent.

The distribution of vehicular trips generated by the operation of the development has been based on the assumption (based upon information supplied by the ATU), that 80% of trips will originate from within Letterkenny, and 20% from the N20 (to the north or south).

Table 19.3 presents the predicted traffic impact during the operational phase of the development.

Table 19.3: Impact during Operational Phase

Link	24hr AADT (5-day, veh)				
	Base 2028	Base 2043	Development Traffic	2028 Dev Impact	2043 Dev Impact
N56 north of Knocknamona Rbt	20,706	22,466	68	0.3%	0.3%
R229 south of Knocknamona Rbt	18,158	19,701	375	2.1%	1.9%
N56 west of Knocknamona Crescent	13,904	15,086	443	3.2%	2.9%
N56 east of Carnamuggagh Lower	12,853	13,946	157	1.2%	1.1%
Knocknamona Crescent	389	421	711	182.8%	168.8%
Carnamuggagh Lower	2,082	2,255	111	5.3%	4.9%

The results demonstrate that during the operational phase, the proposed development will increase daily traffic flows by a maximum of 2.9% along the N56, and 4.9% on Carnamuggagh Lower, thus classed as 'Not Significant'.

The impacts on the performance of the transport network are addressed in this EIAR and the Traffic and Transport Assessment (that supports the Planning Application) report produced by SYSTRA.

20 INTERACTIONS

The EIA Directive and its transposing Regulations requires that in addition to assessing impacts on human beings, fauna, flora, soil, water, air, climate, landscape, material assets and cultural heritage, the interrelationship between these factors in-combination must be taken into account as part of the environmental impact assessment process.

Inter-relationship Matrix – Potential Interaction between Environmental Disciplines

	Landscape & Visual	Contaminated Land, Geology &Soils	Water Quality	Biodiversity	Air Quality	Noise & Vibration	Cultural Heritage	Land use & Material Assets	Flood Risk & Drainage	Climate & GHGs	Population & Human Health	Waste	Artificial Lighting	Traffic & Transportation
Landscape and Visual		X		X		X	X	X						
Contaminated Land, Geology &Soils	X		X	X	X	X		X						
Water Quality		X		X					X					
Biodiversity	X	X	X										X	
Air Quality		X								X	X			X
Noise & Vibration	X	X		X							X			X
Cultural Heritage	X													
Land use & Material Assets	X	X												
Flood Risk & Drainage			X							X				
Climate & GHGs					X				X		X	X		
Population & Human Health					X	X				X				X
Waste	X									X				
Artificial Lighting				X										
Traffic & Transportation					X	X					X			