



**P2970**

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT  
VOLUME 2: EIAR MAIN TEXT**

**CAVAN REGIONAL SPORTS CAMPUS**

**CAVAN**

***CLIENT: McADAM***

**MARCH 2024**

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## 1.0 INTRODUCTION

Cavan County Council are planning the development of the Cavan Regional Sports Campus (the proposed development). Further information and context of the proposed development is provided in Chapter 2 of this EIAR. This Environmental Impact Assessment Report (EIAR) is “a report of the effects, if any, which [the] proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive” (see definition of “environmental impact assessment report” in section 2 of the Planning and Development Act 2000 as amended) and has been prepared in respect of the construction and operation of the proposed development alone and in combination with other plans and proposed developments. The EIAR, as presented has been prepared by MCL Consulting and a team of specialist subconsultants in collaboration with the proposed development promoters, Cavan County Council.

The proposed development site is located at lands north, south and west of Royal School Cavan and west of Breffni Park GAA grounds, County Cavan.

The proposed location is shown in Figure 1.1 below.

**Figure 1.1: Site Location**



(Source: Google Earth)

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Certain Appendices within Volume 3 contain drawings which are scaled at A1 or A0. Any drawings at A1 or A0 within Volume 3 have been scaled down to A3 for printing purposes, however full-scale drawings have been provided within the submitted planning drawings.

The site is not located within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site is located approximately 3.69km south-east of the Lough Oughter SPA and Lough Oughter and Associated Loughs SAC. The location of these SACs in relation to the proposed development, and the potential for the proposed development to impact upon them, has been assessed throughout this EIAR as well as in the Natura Impact Statement (NIS).

The need for the proposed development has been identified for a considerable time by Cavan County Council. The details of the need for the development are set out in Chapter 3 of the EIAR.

The proposed development is described in detail in Chapter 2, but will include the following:

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

The proposed development layout can be seen in planning drawing A2156-100-10-Proposed Site Plan.

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This document (Volume 2) comprises the main text of the EIAR. The Non-Technical Summary of the EIAR is presented in Volume 1 whilst all Appendices, which include all technical reports, are presented in Volume 3.

## 1.1 Planning Strategy

The proposed development falls within a number of legislative provisions, as set out below:

- A Screening for Appropriate Assessment has been undertaken for the proposed development, which recommends a Natura Impact Statement (NIS) should be carried out.
- An internal screening exercise was carried out by the project team which concluded that the proposed development falls within a class of development being 10(b)(vi). It is considered that the site is located within a 'built up area' for the purposes of Schedule 5, Part 2, Category 10(b)(iv) and therefore the 10ha threshold would apply. The site is some c. 28ha and therefore above the threshold and a mandatory EIAR been completed;
- The applicant for the proposed development is Cavan County Council;
- As the application is being made by An Bord Pleanála for approval under Sections 175 and 177AE of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended)

The plans and particulars of the development together with the EIAR and the NIS are available online at the following website: [www.cavancoco.ie/cavanregionalsportscampus](http://www.cavancoco.ie/cavanregionalsportscampus)

All policy considerations are presented in Chapter 6.

## 1.2 Contents of the EIAR – Statutory Requirements

The statutory framework giving rise to the requirement to carry out an EIA for the proposed development is set out within Chapter 4 (Screening, Scoping and Consultation).

The EIAR has been prepared in accordance with the requirements of the following legislation and having regard to the following Guidance:

- European Commission Directive 2011/92/EU on the assessment of the effects of certain public and private proposed developments on the environment (codification) as amended by Directive 2014/52/EU;

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- UNEC Convention on Environmental Impact Assessment in a Transboundary Context, 1991;
  - The Planning and Development Act, 2000 (as amended) and the Planning and Development Regulations 2000-2019;
  - European Commission, Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (May 1999);
  - European Commission, Guidance – EIA Scoping (2017);
  - European Commission, Guidance – EIA report (2017);
  - EPA, Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (September 2003);
  - EPA, Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft, August 2017);
  - European Commission, Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (April 2013);
  - European Commission Guidance on the Application of the Environmental Impact Assessment Procedure for Large-Scale Transboundary Proposed developments (2013);
  - Circular Letter PI 1/2017: Implementation of Directive 2014/52/EU on the effects of certain public and private proposed developments on the environment (EIA Directive);
  - The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018),and;
  - The Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment (2018).

The EIAR includes the information specified in Article 5(1)(a) to (f) of the Directive as follows:

- a) A description of the proposed development comprising information on the site, design, size and any other relevant features of the proposed development;*
- b) A description of the likely significant effects of the proposed development on the environment;*
- c) A description of the features of the proposed development and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- d) A description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment;*

- 
- e) *A non-technical summary of the information referred to in points (a) to (d)*
  - f) *Any additional information specified in Annex IV of the Directive/Schedule 6 to the 2001 Regulations, as amended, relevant to the specific characteristics of a particular proposed development or type of proposed development and to the environmental features likely to be affected.*

Article 3 of the EIA Directive states that an “environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a proposed development on the following factors:

- a) *population and human health;*
- b) *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- c) *land, soil, water, air and climate;*
- d) *material assets, cultural heritage and the landscape;*
- e) *the interaction between the factors referred to in points (a) to (d)*

Each of the above factors have been considered within this EIAR.

### **1.3 Format and Content**

The overall EIAR has been structured as follows:

- Volume 1 – Non-Technical Summary
- Volume 2 – EIAR Main Text
- Volume 3 – Appendices for the EIAR

The Environment Protection Agency (EPA) has published guidance on the preparation of environmental impact statements. This guidance is set out in ‘*Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*’ and ‘*Draft Guidelines on the Information to be contained in Environmental Impact Statements*’. The draft Guidelines are provided to help those involved in EIA in the period prior to the transposition to the new national legislation. This EIAR has taken the guidance set out in both these documents into consideration. This EIAR has also been completed in accordance with the guidance published by the European Commission in 2017 –



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Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU).

The EIAR is presented in seventeen chapters as follows:

Chapter 1	Introduction
Chapter 2	Proposed Development
Chapter 3	Need for the Development
Chapter 4	EIA Screening and Scoping
Chapter 5	Consideration of Alternatives
Chapter 6	Policy and Legislation
Chapter 7	Population and Human Health
Chapter 8	Biodiversity
Chapter 9	Lands, Soils and Waters
Chapter 10	Air and Climate
Chapter 11	Noise and Vibration
Chapter 12	Material Assets
Chapter 13	Traffic
Chapter 14	Cultural Heritage
Chapter 15	Archaeology
Chapter 16	Landscape and Visual Impact
Chapter 17	Cumulative Impacts, Interactions & Major Accidents and Disasters

A scoping exercise was carried out in order to inform the exact issues to cover within each of the environmental topics. This is detailed in Chapter 4 (Screening and Scoping) of the EIAR.

## 1.4 Methodology

The broad methodology framework used in each environmental chapter is as follows:

- Introduction
- Methodology
- Existing Environment
- Potential Impacts
- Mitigation Measures

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- Residual Impacts

### Introduction

This section introduces the environmental topic to be assessed and the areas to be examined within the assessment.

### Methodology

Specific topic related methodologies are outlined in this section. This includes the methodology used in describing the existing environment and undertaking the impact assessment. It is important that the methodology is documented so that the reader understands how the assessment was undertaken

### Existing Environment

In order to predict any likely impact of the Proposed development it is necessary to first accurately establish and describe the existing environment. Any available existing baseline environmental monitoring data can also be used as a valuable reference for the assessment of actual impacts from a development once it is in operation.

To describe the existing environment, desktop reviews of existing data sources have been undertaken for each specialist area. Desktop studies are also supplemented by specialised field walkovers or studies, where appropriate, to confirm the accuracy of the desktop study or to gather more baseline environmental information for incorporation into the EIAR.

The existing environment is evaluated with particular consideration given to the character of the existing environment that is distinctive and what the significance of this is. The significance of a specific environment can be derived from legislation, national policies, local plans and policies, guidelines or professional judgements. The sensitivity of the environment is also considered.

### Potential Impacts

In this section, the EIAR predicts how the Proposed development will interact with the receiving environment. Impacts from both the construction and operation phases of the proposed development are outlined. The evaluation of the significance of the impact is also undertaken.

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### Mitigation Measures

If significant impacts are anticipated mitigation measures are devised to minimise impacts on the environment.

### Residual Impacts

The assessment identifies the likely impacts that will occur after the proposed mitigation measures have been put in place.

## **1.5 EIA Study Team**

MCL Consulting and McAdam have coordinated the EIA with MCL Consulting compiling the EIA on behalf of Cavan County Council. Sub-consultants have undertaken specialist assessments where necessary.

The study team members and the chapters they have prepared within the EIA are listed in Table 1.1.

**Table 1.1: EIAR Study Team**

Chapter	Company
Introduction	MCL Consulting
Proposed Development	McAdam
Need for the Development	MCL Consulting with input from Cavan County Council
EIA Screening and Scoping	MCL Consulting
Consideration of Alternatives	McAdam
Policy	Carlin Planning Ltd.
Population and Human Health	Carlin Planning Ltd.
Biodiversity	MCL Consulting
Land, Soils and Water	MCL Consulting with input from McCloy Consulting Ltd.
Air and Vibration	MCL Consulting
Noise and Vibration	MCL Consulting
Material Assets	MCL Consulting and McAdam
Traffic	Hoy Dorman Ltd.
Cultural heritage	Consarc Design Group
Archaeology	Gahan and Long Ltd.
Landscape and Visual Impact	Mcllwaine Landscape Architects
Cumulative Impacts, Interrelationships and Major Accidents & Disasters	MCL Consulting

Regulation 5 of the 2017 EIA Regulations relating to the preparation of the EIA Report states:

*“In order to ensure the completeness and quality of the EIA Report—*  
*(a) the developer must ensure that the EIA Report is prepared by competent experts; and*  
*(b) the EIA Report must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.”*

In accordance with Regulation 5, Statements of Authority for each member of the EIAR team have been provided in Appendix 1.1.

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## 1.6 Errors

While every effort has been made to ensure that the content of this EIA document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIA.

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## 2.0 PROPOSED DEVELOPMENT

### 2.1 Description of Site Location

Cavan County Council (CCC) are planning the development of a regionally significant Sports Campus (hereafter referred to as the 'Proposed Development'). Cavan County Council in conjunction with the Royal School Cavan, and the Cavan GAA County Board have been successful in securing stream 1 funding from the Large-Scale Sport Infrastructure Fund (LSSIF) for the proposed Cavan Regional Sports Campus. Stream 1 funding is for the design stage of the project and will be followed in the future by an application for stream 2 funding for capital grants towards the construction of the designed project. An application has also been made for SEUPB PEACE IV Shared Space & Services funding, with CCC acting as the applicant.

The site is located adjacent to Cavan River which is hydraulically linked to Lough Oughter SAC and SPA. Cavan River hosts several identifiable features including white clawed crayfish, and otters. The site setting and habitat provide a rich ecological environment evidenced by the discovery of a badger sett, and otter activity. Bat activity is designated as high and bat roost surveys have been carried out. Evidence of pine martin activity has also been discovered on site.

The proposed development will extend to a total of 28 hectares on lands to the Southwest of Cavan Town, located between the Kingspan Breffni stadium and the Royal School, Cavan and to the west of Dublin Road, (IGR 242095, 304048).

The site incorporates existing sporting facilities used by the Royal School for physical education and Cavan GAA for training; this includes one shale gravel hockey pitch and adjoining soccer field and a GAA grass training pitch. The remainder of the site lands are undeveloped.

### 2.2 Current Land Use and Receiving Environment

The Project site comprises approximately 28ha. The project site is located adjacent to the Cavan Town Core as defined by the Cavan County Development Plan (CDP) but within the wider Cavan Town Boundary. The site currently consists of several sports pitches and undeveloped land.

The surrounding land consists of a variety of uses. The Cavan Gaels GAA pitches and facilities are situated to the northeast of the site and residential development bounds the site to the north and across Kilnavarragh Lane to the northwest, west and southwest. The Cavan River bounds the majority

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of the site to the east and the Royal School (a protected structure) is situated directly adjacent to the eastern site boundary. Mostly agricultural land lies to the south of the site with the Breffni Park stadium and ancillary sports facilities situated immediately to the southeast. The town of Cavan lies to the north of the site. The town consists of a mixture of residential, public and commercial land use. A recorded monument CV025-074, a large, almost circular raised and grass-covered area is located to the southwest of the site. The potential impacts to this designation, adjacent protected structures and the potential wider cultural heritage impacts have been considered in Chapter 13 Cultural Heritage.

The Regional Spatial and Economic Strategy (RSES) notes that Cavan Town performs a regional function, being the largest town within the Cavan/ Monaghan/Leitrim sub-region and the town which experienced the largest growth within the past 10 years. It has strategic facilities such as the acute hospital, Cavan Institute, Local Authority Headquarters, Agricultural College, Cathedrals and Sports Stadium. The RSES acknowledges that Cavan town is well positioned to deliver the principal strategic function within this sub-region in terms of housing, job delivery and education.

RSES designates Cavan as a Key Town. Key Towns are to have a targeted growth rate of at least 30% to 2040, relative to a Census 2016 population baseline. The Strategy further states that these targets need to be matched by the delivery of critical enabling infrastructure and services, thus ensuring that these places grow as successful significant employment centres and service locations not only for the urban areas themselves but, importantly, for their extensive hinterlands that include smaller towns, villages and rural areas.

Under the CDP the site is subject to two land use zonings – Zoning 2022-2: Sport and Recreation which allows for the development of sports facilities. The site also partially sits within Zoning 2022-28: Public Community, provide for and protect civic, religious, community, education, health care and social infrastructure. Sports facilities are also considered an appropriate use within this zoning.

The site is also subject to Objective C06 of the CDP - “support the provision of a Sport Campus to build on existing sporting facilities, with the provision of additional pitch’s and supporting infrastructure.”

Notable buildings adjacent to and in the surrounding area of the site include several protected structures including Cavan Royal School and its outbuildings, Cavan School and St Clare’s Cottage.

The topography of the Application Site is undulating drumlin landscape with some sections of steep gradient of up to 30%. The highest grounds are to the west of the site adjacent to Kilnavarragh Lane

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rising to a height of 91 m OD. There are some areas of relatively flat areas adjacent to the Cavan River which are subject to regular flooding.

The site remains largely undeveloped as agricultural fields with mature hedge boundaries with a number of sports pitches located within.

A comprehensive description of the current land use of the Proposed Development is provided within the Appendices to Chapter 9.0, "Lands, Soils and Water".

## **2.3 Site Limitations and Constraints**

### **2.3.1 Flooding**

The proposed development will be constructed outside the flood plain\* as indicated on the Cavan Fluvial Flood Extents Map provided by the North Western Neagh Bann CFRAM Study for the proposed Site Area.

\*a minor amount of development with finished levels above the 0.1% AEP present day level encroaches on the floodplain zone - Refer to Volume 3, Appendix 9-1 for detailed Flood Risk Assessment.

### **2.3.2 Ground Conditions**

A preliminary geotechnical investigation has been undertaken to inform the design proposals completed by Northwest Geotech. The interpretative geotechnical reports arising from this investigation are included in Appendix 9.2.

Topographical and utilities surveys have been undertaken to inform the design proposals.

### **2.3.3 Constraints**

The primary constraint for the project is the date of substantial Phase 1 completion April 2027. This may be extended subject to approval from the Funders.

The following are other constraints which relate to the proposed development:



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- Landowner constraint - the site boundary consists of multiple landowners including Cavan Coutry Council (CCC), the planning applicant for the proposed development. Letters of consent have been provided by all landowners of the site.
  - Financial constraint – project must be completed within the final specified budget as agreed with the Client/Employer.
  - Time for project completion – Phase 1 substantially complete earlier than April 2027. It is clear that a fast-tracked approach to the design, approval applications and construction phases will be necessary.
  - Physical constraints – It will be necessary to construct a new bridge over the Cavan River to facilitate an access road, to TII standards, to the proposed development. For foul drainage from the proposed buildings within the site, it will be necessary to construct 2 new sewer lines to connect to the public network, one direct connection to public network and the other connected to existing pumping station within Breffni Park grounds. An existing watercourse / natural catchment ditch discharging into the Cavan River will need to be fully culverted along its length. Storm water drainage will be collected using Sustainable Urban Drainage Systems prior to discharge into the Cavan River to provide necessary Volumetric and Water Quality mitigation to the flows. It will be necessary to carry out statutory process of abandoning an existing badger sett and establishing a new artificial sett including observing statutory time periods and construction exclusion zones. The fluvial flood risks associated with the site, refer to Refer to Volume 3, Appendix 9-1 for detailed Flood Risk Assessment.
  - Ecological sensitivities of the site including existing badger sett, evidence of pinemartin activity and Cavan River hydraulic link to Lough Oughter SAC and SPA and hosting several identifiable features including white clawed crayfish, and otters.

## 2.4 Proposed Development Summary

The Cavan Regional Sports Campus is proposed as a regionally significant Sports Campus within Cavan Town (Co. Cavan), County Cavan and the wider region.

The Development proposals focus on:

- Provision of indoor and outdoor sports facilities to address a deficit of facilities within Cavan Town, County Cavan, and the wider region.
- Provision of sporting facilities for non-mainstream sports to address the need for inappropriate surfaces, safety concerns, high costs of equipment and transportation and neutral venues for competitions.

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- Addressing the deficiency in sporting facilities impedes the ability to target people who are inactive, or fall out of physical activity throughout the lifecycle, specifically older adults, people with a disability, disadvantaged communities, women and girls and young people.
  - Creation of pedestrian and cycle trails and improved connectivity locally by connecting existing routes.

Already used by the local communities as an informal walking route, the new and improved connections will promote walking and cycling routes, ensuring accessibility for all.

The overall project vision is to create a Sports Campus that connects communities within a shared space promoting local heritage and culture, making the most of the existing landscape's unique natural assets.

The site is typified by a green fields, mature hedgerows, undulating topography and a number of sports pitch developments. Whilst ecologically sensitive the site is located adjacent to Cavan town centre and is zoned for sporting and community use with the CDP. The proposed development addresses the ecological sensitivities by maintaining as much of the natural landscape and features as possible, replacing significantly more than is being removed and protecting sensitive ecological features during construction and operational phases. An extensive area of 'wildlife creation zone' is proposed populated with native species trees and shrubs, and foraging corridors are proposed to provide safe access for wildlife affected by the development.

#### **2.4.1 Overall Materials Strategy**

The general design approach has been influenced by many factors initially led by desktop review and site visits. Following which there have been regular meetings with Client, statutory agencies and stakeholders. These meetings provided a platform for discussion which created opportunity to raise queries and manage expectations alongside design development and iterative agreement.

In respect of materiality the design approach has been influenced by the surrounding natural landscape context of the site. Materials and construction techniques have been selected for colour, tone and texture that are in sympathy those of the surrounding natural environment explained as follows;

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## **Proposed Sports Building & Arena**

The building form and massing and its materiality have been developed in the context of the surrounding natural environment to blend with and compliment it as follows:

- Building mass broken into a number of sub-forms to reduce the visual impact within the natural environment and its adjacency to the protected structure of the royal School.
- 2 story south facing façade projects at first floor level to reduce its visual impact and provide an area of shelter outside the changing rooms.
- Corten steel cladding – natural red and orange tones with soft textural feel
- Vertical timber façade battens are selected to soften the façade and provide solar shading to large format windows.
- Dark grey brickwork selected to blend with the environment especially in winter where treelines and hedgerows devoid of leaves take on a particularly dark and moody appearance.
- Timber crib retaining walls have been selected for large bank retention. The materiality of timber is soft and the crib construction system with gaps between members softens the visual impact and over time plants will seed in the gaps further softening its visual appearance and adding to the biodiversity.

## **Existing and Proposed Vegetation**

The Landscape Architects' vision for the project is influenced by the site's existing vegetation as well as including recommendations from the National Parks and Wildlife Service (NPWS), and the Ecologists from the design team. The proposed planting will be primarily native species trees, shrubs & bulbs planting within extensive species rich grass seeded area, in line with the existing plant diversity, the ecological recommendations and understanding of the ongoing campus management. In key locations, for enhanced amenity value, non-native / non exotic ornamental subjects will be specified. Carefully selected from a list of pollinator friendly, species they will extend the flowering season.

The overall campus layout has evolved to ensure that proposed open space, connections and access have been sited to ensure biodiversity sensitivity and ecology benefit is maximised and loss to existing planting is minimal. Where existing hedgerow material must be removed to facilitate development, suitable hedgerow/scrub habitat will be translocated to the boundary of the "wildlife area" accommodating the relocated badger sett. As a general approach there will be enhancement to the existing boundary planting, utilising native species. Existing trees & hedges to be retained, will be protected in accordance with BS 5837:2012 "Trees in relation to design, demolition and construction

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– Recommendations” to minimise loss and / or damage during the enabling works / construction phases. Planting and seeding proposals are indicated on the Site Layout and Landscape Plan and will be managed through BS 4428: 1989 “Code of practice for general landscape operations (excluding hard surfaces)”. Planting has also been considered from a health and safety perspective, to keep clear lines of sight, reducing potential opportunity for anti-social behaviour and creating an improved sense of safety in line with “secured by design” principles.

### **Access (Surface & Edges)**

There are numerous surfaces which will provide long-term vehicular, cycle and foot path solutions. The decision for these has been guided by frequency of use, suitability, maintenance, aesthetic, replaceability and environmental impact in addition to cost. On this basis;

Vehicular roads are proposed to be made up of asphalt / bitmac surfacing, as are main footpaths paths and cycleways. Secondary paths may be constructed with resin bound surfacing depending on the intended use. Feature paving pavements will be constructed around the main building entrance.

### **Proposed Site Furniture (Seating, Bins, Cycle Storage)**

Given that the proposal is for a busy, multi-use sports campus, furniture has been considered in respect of durability through appropriate and robust materials. Around the site timber seating is proposed for comfort, anticipating that people will sometimes want to sit for longer periods of time.

In most cases the timber is supported on galvanised and polyester powder coated steel strap supports, in some locations, for greater user inclusivity, timber has also been detailed into backrests with polyester powder coated steel strap armrests. In the entrance plaza timber seats are integrated into corten steel planters. All timber will be European Union Timber Regulations (EUTR), or Forest Stewardship Council (FSC) certified. Litter bins are proposed as painted ductile iron for vandal resistance and maximum durability and longevity. Bollards, both fixed and removable are to be stainless steel with visibility banding. Cycle shelters are to be galvanised and polyester powder coated steel frames with transparent PETg plastic roof cladding, with stainless steel tube cycle racks.

### **Climate Change**

Landscape proposals are driven by a landscape strategy which seeks to retain, sensitively enhance, and complement the existing landscape to create a campus landscape which will minimise adverse landscape and visual effects and enhance the biodiversity of the site. In response to climate change,

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materials both hard and soft have been chosen for their relevance to the site in terms of provenance, resilience and environmental impact considering, ethics, sustainability and recycled content.

### **Site Limitations & Conditions**

The proposed development will extend to a total of 28 hectares.

#### **2.4.2 Cavan Regional Sports Campus Proposals**

The proposals involve the provision of a Regional Sports Complex as envisaged within the Cavan County Development Plan 2022-28. The project description includes the following:

The description of development reads as follows:

- The proposed development involves the provision of Cavan Regional Sports Campus, consisting of the following components:
- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavaragh Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) have been prepared and included as part of the application for approval in respect of the proposed development.

The proposals can be broken down in detail into the following elements:

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- GAA sports facilities including:
    - 4 no. external floodlit sand mattress grass pitches with ball stop fencing at both ends (12m H x 30m W), pitch dimensions – 143m x 86m plus 5m wide run-off width to all sides
    - Covered Spectator Stand accommodating 599 people
    - Toilet Block
    - Car parking
  - External floodlit 4G multisport pitch with 4.2m high open mesh perimeter fencing, 1.1m high spectator fencing to one side, ball stop fencing at both ends (12m H x 30m W), 2 x pitch side team shelters, and covered spectator stand accommodating 242 people, pitch dimension – 115 x 72m plus 5m (ends) & 3m (sides) wide run-off widths.
  - External floodlit synthetic hockey pitch with 4.2m high open mesh perimeter fencing, 1.1m high spectator fencing to one side, and 2 x pitch side team shelters, pitch dimension – 91.4m x 55m plus 5m (ends) & 4m (sides) wide run-off widths
  - Sports Arena - fabric covered tensile roof structure with cladding side walls and end gables to accommodate internal synthetic pitch with mezzanine level spectator seating along one side, and ancillary accommodation with GIA of 8,280 sqm.
  - Sports Building – 2 storeys with physical link to Sports Arena with a GIA of 6,000sqm incorporating:
    - 8 court sports hall with retractable bleachers spectator seating
    - Changing Rooms
    - Gym, Fitness studios, Reception, café, social spaces
    - Storage and ancillary accommodation
  - 8 Lane external floodlit athletics track with grass soccer pitch to infield including
    - Covered Spectator Stand accommodating 452 people with storage accommodation under.
  - New road junction to Dublin Road for access to the sports campus with the provision of a right-hand turn lane and pedestrian crossings.
  - Internal site access roads including bridge structure over Cavan River
  - Stopping up of the Park Lane /Dublin Road vehicular junction and use for pedestrians only.
  - Relocation of the existing Breffni Park turnstiles to facilitate the reconfiguration of Park Lane,
  - Pedestrian access points off Kilnavaragh Lane and the Dublin Road
  - Car/Accessible Parking for 310+ vehicles
  - Bus Parking for 4 vehicles

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- Cycle Parking for 24 bicycles
  - External and Landscaping works including;
    - Soft and hard landscaping including public realm and connecting paths and steps.
    - Wildlife habitat creation area
    - Wildlife Foraging Corridors and Walking Trails
    - Artificial badger sett.
  - Other ancillary development:
    - Bin Storage Compound
    - Retaining Wall Structures
    - Fencing and ball stop fencing, acoustic fencing.
    - Boundary wall and railings and pedestrian access gates to site boundary with Royal School Cavan
    - Cut and Fill earthworks to provide level surfaces for pitches and buildings and creation of grass banking to GAA pitches and grass terraced banking to athletics track.
    - Drainage works and infrastructure including attenuation tanks, Sustainable Urban Drainage (SuDs) and culverting of a minor watercourse.
    - Storage space
    - ESB Substation and other ancillary electrical engineering works.
    - Ancillary accommodation and all associated site works to accommodate the development.

### **2.4.3 Bridge Proposal**

The vehicular, pedestrian and cycle bridge will provide the connection between the lands either side of the Cavan river ravine.

The proposed bridge location is positioned to minimize the length of crossing of the river minimizing the impact to the watercourse. The bridge will be a single span integral reinforced concrete bridge structure supported on piles foundations. The bridge will have an overall length of just under 32m.

### **2.4.4 General Requirements of Proposed Development**

Sustainable development is central to the design, delivery and implementation ethos of CCC. The proposed development is designed so that it is iconic, of high architectural and landscape quality, sympathetically incorporated within the site whilst reflecting its own importance as a location of regional importance. The design aims to create a beautiful, welcoming, person centred environment

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which optimises opportunities for sporting, recreational, cultural and community activities. In addition, the design includes proposals for landscaping and maximising the potential for the use of external space.

A great deal of effort has gone into optimising the site layout in order that the minimum amount of earth material will need to be removed off site to reduce carbon emissions and landfill. The design elements of the project will support the use of indigenous planting materials with local provenance. Where possible it is the intention to relocate existing indigenous vegetation affected by the development to the habitat creation zones. Sustainable Urban Drainage System (SuDs) has been applied for containment of run-off and attenuation from proposed hard surfaces. Mitigation measures have employed to ensure that there is no short, medium and long term impact to the Cavan River environs, habitats and species. Refer to outline Construction Environmental Management Plan, Appendix 2.1 of Volume 3.

The project aims to deliver sustainable development in materials choice, facilities location, orientation and design features ensuring low environmental impact including:

- The use of timber from sustainable sources
- The use of loose ground cover to facilitate water percolation and minimal impact on the natural water flow to the Cavan River
- Orientation of the main building to maximise solar gain for space heating and use of renewable energy sources including photovoltaics and air source heat pumps.
- Use of existing and realigned site contours for new path networks to minimize site impact and the carbon footprint of new path infrastructure.
- Optimisation of the use and mix of space in terms of functional space, circulation space and provision for services both planned at this stage and flexible in terms of future re-designation of areas.

The design proposal have considered and incorporated:

- Specification of high quality/low maintenance fittings and finishes which are considered aesthetically pleasing while vandalism resistant.
- Maximisation of useable space whilst providing appropriate circulation and atrium spaces.
- High energy efficiency, NZEB, and environmentally sustainable design.
- Low maintenance design and specifications.



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- High quality external finishes and detailing appropriate to the prevailing climatic conditions.
  - Access and facilities for the disabled and emergency services/maintenance requirements.
  - Internal flexibility in terms of grid spacing and adaptable partitioning systems, accessibility to all services for all units for future flexibility.
  - Incorporation of all Mechanical and Electrical services, particularly IT services for ease of access to services for alteration and extension at a later stage.
  - Buildability in terms of economy of construction and programme constraints.

Design life of all structural elements of the campus shall be a minimum of 50+ years with the bridge being 120 years and with 15 years to first significant external maintenance.

## **2.5 Proposed Development**

### **2.5.1 Approach Roads**

Development will include for a new access and road junction to Dublin Road for access to the sports campus. The site entrance will require amendment to the existing R212 Dubin road to incorporate right hand turning lane and uncontrolled pedestrian and cycle lane crossings.

The works will further require stopping up of the current Park lane entrance and diverting this to the new formed access road into the site.

The new access will extent along the existing Breffni Park service road extending to a proposed bridge structure over the Cavan River extending to the internal site infrastructure. Adjacent to this access road it is proposed to provide an amendment to the layout of the Breffni Park access control areas and turnstiles.

Along this access road it is proposed to construct segregated pedestrian / cycle lanes in accordance with the National Transport Authority Cycle Design Manual (September 2023). These are to extend into the development until shared surfacing access implemented at the locations of the site infrastructure / pedestrian and vehicular routes.

All works designed in accordance with DMURS (Design Manual for Urban Roads and Streets) design standards, including roads marking and traffic signs.

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### 2.5.2 Internal Roads and Parking

Two-way traffic flow will be accommodated within the site extending to the proposed car parking areas. Servicing & vehicular access proposed as shared surface extending to the running track and hockey pitch adjacent to the proposed sports centre.

All access routes and car parks proposed to further accommodate

- Bust / coach drop off / pick up
- Staff / public parking
- Electric Vehicle Charging points.
- Disabled car parking spaces.

### 2.5.3 Internal Fencing Arrangements

A variety of types of fencing are proposed within the development site

- 1.2m High timber post and rail fencing – to back of pavement from Dublin Road junction to the proposed bridge
- 600mm High timber knee/diamond rail fence - boundary demarcation generally
- 2m High timber acoustic fencing – to boundary locations as identified in the Noise Impact Assessment.
- 1.1m High galvanised steel road safety guarding – to protect public entering and exiting the Kingspan Breffni Stadium
- 1.2m High open mesh ‘paladin’ style spectator barrier – Athletics’ track, Hockey pitch, 1 x GAA pitch and Multisport pitch.
- 1.2m High open mesh ‘paladin’ style barrier fencing – to top of retaining walls
- 3.0m & 4.2m perimeter open mesh ‘paladin’ style security / ball stop fencing – Athletics’ track, Hockey pitch & Multisport pitch
- 30m W x 12m H High Ball catch – behind goals to the GAA pitches & Multisport pitch

### 2.5.4 Internal Path Networks

In line with the key objectives for the proposed development set out in the Cavan County Development Plan several path / trail zones are proposed as follows:

Zone 1 – A 3m wide shared surface and accessible pedestrian and cycle path linking Dublin Road at the Royal School vehicular entrance to the northwest corner of Kilnavarragh Lane.

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Zone 2 – A 2m wide perimeter trail linking to Zone 1 at the NW corner and running south along the site boundary then teeing in 2 directions to i) provide a linkage access to Kilnavarragh Lane and ii) turning east towards the main campus car park.

Zone 3 – A 2m wide continuation of the perimeter trail running south to the SW corner of the site, then turning east and finally N adjacent to the Cavan River towards the main campus car park.

All paths are surfaced with asphalt / bitmac. Zone 1&2 paths will be lit using 'dark sky' accredited illuminated bollards @ approx. 10m centres as set out in the "External Lighting Proposals".

### **2.5.5 Proposed Indoor Sports Complex & Covered Sports Arena**

The Sports Building and Covered Arena has a pivotal role to play within the Sports Campus. In this regard its orientation and placement centrally, maximise its access to the external pitches as well as connection to the main pathway and cycleway network. It has also been considered in terms of orientation (for passive solar gain), ground profiling (to locate it outside of the 1:100 year flood event flood levels). Externally the landscape complies with Building Access regulations providing adequate and appropriate surfacing for visitor.

The Sports Building is physically linked to the Sports Arena structure and accommodates changing, shower and toilet facilities for the arena. The sports building is zoned as follows:

#### **Ground Floor**

- Main entrance, reception and café, visitor toilets and dedicated community space
- Controlled access to 8 court indoor sports hall, sports hall changing, shower & wc facilities and fitness suite 'village change' space, access to 1<sup>st</sup> floor Fitness Suite
- Dedicated changing, shower & wc facilities for i) external pitches and ii) Sports Arena

#### **First Floor**

- Fitness Suite comprising 500sqm Gym, Fitness and Spin studios
- Open-plan office accommodation
- Event, community, flexible usage space
- Sports hall viewing

The Sports Arena structure accommodates a fully enclosed 103 x 60m synthetic grass pitch with a ridge height of 16m and 9m eaves height. These type of spaces are unheated and do not require mechanical

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ventilation. A tensile fabric roof provides an effective weather barrier whilst reducing the roof structure and overall costs. All sides of the structure will be fully enclosed using composite cladding panels. This solution is effective in reducing construction and operational phase costs and carbon footprint.

Foul sewage from the facility will flow by gravity via a piped sewerage system to link to the Irish Water network near the vehicle entrance to the Royal School on Dublin Road.

### **2.5.6 Building Services Proposals**

The building services shall be designed to operate in line with The Climate Action Plan 2021 by encompassing a Nearly Zero Emissions Building Strategy (NZEB) leading to alignment with the Zero Emissions Building target 2030 set by the EU. This shall be achieved through careful planning and informative design using early thermal modelling, detailed design, close monitoring and targeting of efficiency opportunities both through construction and through the life of the building.

The proposed development requires the provision of complete new mechanical and electrical services installations. The building services systems will be designed in accordance with the following guidelines, this list is not exhaustive.

- Building Regulations Technical Guidance Documents
- All relevant Irish and European Standards
- Local standards and Codes of practice
- Chartered Institute of Building Services Engineers (CIBSE) Guides & Technical Memoranda.
- Energy & Infrastructure Supply Authority Regulations.
- Local & Statutory Requirements
- External Design Temperature Assumptions:
  - Summer: 28°C db / 20°C wb
  - Winter: -4°C db / 100% Saturation

### **Mechanical Systems**

#### Primary Energy Usage

As well as the dynamically modelling the building envelope, the building services design shall seek to serve the buildings energy and carbon targets by first identifying the main energy uses in systems, then

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developing strategies to best reduce that usage. The longevity of the building's performance shall be through monitoring and targeting.

In line with the NZEB design target, the building shall not utilise carbon intense primary energy sources such as fuel oil, natural gas, or LPG. It shall utilise grid electricity fed by primarily renewable sources. Under the Governments Climate Action Plan 2023, the government has set a target of having 80% of the grid electricity sourced from renewable technologies. This will form the basis of the building's energy strategy with additional building-based renewables reducing the buildings carbon footprint further.

### Space Heating

The space heating strategies have been selected based upon the thermal modelling of the building to identify the optimum comfort conditions and also the risk of over-heating due to external and internal gains. Space heating shall be provided by the following systems:

#### *VRF 3-pipe comfort heating and cooling*

This shall be used where there are large areas glazing exposed to solar gains (Reception and main circulation or where the internal space is at risk of high gains through exercise (gymnasium, fitness rooms) or through general occupancy (offices). The VRF system shall provide simultaneous heating and cooling with full zone control. the building shall be separated into major system zones with all systems being fully integrated with the building management system to allow ease of scheduling to suit spatial occupation, for instance fitness suites shall be switched off when not in use. The outdoor units shall be roof mounted as indicated and shall be arranged so full access is available for maintenance.

#### *Air to water Heat-pumps*

These shall be utilised to provide space heating to areas such as the main hall and changing spaces. This shall be via under-floor heating systems. The heat-pumps shall be complete with buffer vessels to allow for off-peak thermal storage. The low-pressure hot water shall be distributed to local under-floor heating manifolds. Each manifold shall be complete with individual 2-port control valves to each room/ zone that shall closely match the flow rate to the spatial load. Each space shall be controlled by both a wall mounted room sensor and also a screed sensor to monitor the thermal lag and occupied zone.

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The manifolds shall be fully integrated with the building management system. This shall allow for temperature control and monitoring of both the system and the building fabric during unoccupied periods.

The building management system shall provide the building with full frost protection during cold periods.

#### *Tubular heaters*

These shall be utilised within plant and tank rooms to protect against frost. These shall be controlled via the building management system. Tank water temperature shall also be monitored for both risk of frost and high temperatures.

#### Domestic Services

The domestic services shall be designed to comply with L8 legionella requirements, water regulations, building regulations and industry codes of practice whilst minimising the water usage from utility sources. The site shall be provided with 2 water supplies.

- There shall be a new fire main taken from Kilnvarragh Road. This shall generally be radial in nature, but it shall feed a ring main formed around the proposed new building. The full ring shall be formed in the first phase of the scheme. This shall also serve internal firefighting hoses. The mains from Kilnvarragh Road operates at a naturally higher pressure than the mains fed from the Dublin Road so is therefore more suited to meet any firefighting need.
- A new domestic connection shall be formed from the mains in the Dublin Road. This mains shall serve all domestic usages within both phase 1 and phase 2 of the building. The route of the mains is convoluted and has several changes in elevation therefore the incoming mains shall be complete with suitably located sluice and venting points.

The incoming domestic supply shall be complete with boundary leak detection monitoring via the building management system. This shall take the form of low flow monitoring on both the boundary meter and the building meter. This shall identify any discrepancy in flow volume between each meter. The domestic cold water shall be complete with a local break tank and booster set to ensure continuity of supply and also provide a more reliable pressure delivery. The distribution shall be via ceiling voids of the build and shall be complete with local manual isolation but also occupancy sensing flow control to mitigate against unwanted water usage when the spaces are not occupied.

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Hot water shall be generated by air to water heat-pumps located on the roof of building with each phase being autonomous of the other. They shall be primarily connected to buffer vessels located within the ground floor plantroom. The buffer vessels shall be heated to 60°C in the ground floor plantroom. The buffer vessels shall be heated to 60°C during low usage periods and then drawn around the building's distribution. The building will be complete with a pumped secondary return to ensure the temperatures of both the distribution and return is compliant with legionella codes of practice.

Hot water outlets shall be complete with thermostatic mixing protection to mitigate against the risk of patrons scalding from hot water. Where appropriate outlets shall be direct 60°C for instance at cleaners sinks, staff taps and café hot water outlets. Water supplies where appropriate shall be complete with flow regulating devices to minimise the water usage. This will save energy in boosting and heating as well as reducing water usage.

Where appropriate the domestic services shall be metered and sub-metered. The sub-meters shall include, but not limited to:

- Café water usage
- Hot water cold feed
- Heat-pump flow measurement
- Cleaners sinks.
- Cold feed to LPHW heating system.
- Cold feed to any external taps via a CAT-5 compliant booster set.

All distribution shall be fully insulated and labelled including all valve fittings, valves and active equipment to minimise system standing losses and to provide ease of maintenance through the building's active life.

#### Above Ground Drainage

All above ground drainage shall be designed and installed in compliance with BSEN 12056: 2010 and shall be suitably vented at roof level away from ventilation in-takes and natural ventilation openings. Drainage shall be complete with suitable gradients, supporting fixings and access points for maintenance in the event of blockages. The routes of the pipework shall be such as to minimise the risk of noise break out. Where the pipework route compromises the fire compartmentation, suitable certified fire collars shall be fitted and recorded within the health and safety file.

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## Mechanical Ventilation

Ventilation shall be provided in line with the recommendations, guidance and statutory requirements set out in the following:

- Building Regulations technical Guidance Document F (2019)
- Chartered institute of Building services Engineers
- BESA (DW144, DW172)
- IS EN ISO 9972: 2015. Thermal Performance of buildings
- BS 8233:2014. Guidance on sound insulation and noise reduction for buildings.

The design, selection and arrangements shall generally be to meet the following criteria:

- Reduce internal pollutants such as odours, vapour, and cooking odours.
- Improve building carbon dioxide and fresh air provision.
- Minimise against the risk of introducing external pollutants to the building.
- Minimise noise generation of equipment from the development that may impact upon the residential areas and the natural habitats surrounding the site.
- Minimise the carbon emissions of the building through careful control of the active equipment. This will be achieved through the building management and sensor control.
- Where appropriate heat recovery shall be utilised to reduce the primary heat source load.

The strategies that shall be utilised shall be as follows:

- Mechanical ventilation heat recovery to areas with high ventilation requirements such as changing spaces, fitness suites and gymnasium.
- Local extract to small areas with low intermittent usage such as cleaners' stores and staff WC areas
- Hybrid natural ventilation utilising roof mounted ventilators operated by internal condition sensors. This will be supported by mechanical ventilation heat recovery.

All primary ventilation systems shall be controlled and monitored by the BMS and shall generally be complete with room CO<sub>2</sub> sensing and temperature control. All primary ventilation systems shall be shut down in the event of the fire alarm being activated. The café extract duct shall be fire rated as it rises through the building and terminates at roof level.



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### Building management system

The site shall be complete with a building management system that shall be the primary source for the control and monitoring of the connected systems. There shall be a central control panel linked to local panels throughout the building. There shall be an engineering front end for the purposes of maintenance and monitoring of energy usage. There shall also be a limited staff access gateway to the reception to allow staff to activate equipment based upon spatial usage. The BMS shall also be utilised for metering and sub-metering of utilities, circuits, sub-circuits, and electrical circuits to allow monitoring and targeting to improve efficiencies. The BMS shall be interlocked with the building fire alarm to allow the safe isolation and shutdown of equipment in the event of fire alarm activation. Remote access to the council's estate office shall also be provided via the buildings data network.

## **Electrical Systems**

### General and Emergency Lighting Installation

Within the new buildings, the general lighting installation will be provided by means of LED light fittings, selected to compliment the areas in which they are installed. Light fittings will be controlled using a combination of detectors with daylight harvesting where appropriate and set to either presence or absence mode. The general lighting levels shall be designed in accordance with the CIBSE guidelines. Emergency lighting will be designed to I.S. 3217:2013+A1:2017. Emergency Lighting shall be tested via Key switches adjacent to Distribution Boards. External Lighting will be strategically provided around the building perimeter to enhance security of the buildings and to allow safe entry and egress to the premises.

Amenity lighting will be provided along all access roads and car parking facilities as well as to a new walking trail. The road and car park lighting will be provided by LED lanterns fixed to 6 metre columns and selected to emit downward light only and have a colour temperature of 2700K to accommodate neighbouring wildlife.

### Fire Alarm and DDA Call Systems

A fully addressable Fire Alarm system will be provided throughout all areas to meet requirements of I.S. 3218:2013+A1:2019 and the Building Regulations. The alarm shall consist of automatic detection devices, flashing beacons and sounders and shall be configured and programmed to facilitate a 'Cause and Effect' matrix to suit the requirements of the building fire strategy which is still under development. The fire alarm panel shall be equipped with the necessary number of auxiliary relay

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outputs required to interface with other systems i.e. door access, lifts, roller shutters, mechanical plant etc. The fire alarm panel shall be linked to a central monitoring station via a GSM module.

A disabled toilet alarm system will be provided to any disabled WC/Shower accommodation. The alarm will be notified at a central panel adjacent to the reception area.

Induction loop systems will be provided in meeting rooms and at the reception desk to facilitate those with hearing difficulties and to comply with Technical Guidance Document M.

#### Small power Installation

13A socket outlets will be provided for general purpose use throughout the building. Additional small power isolators shall be provided and fitted adjacent to items of plant and equipment requiring electrical power. All installation work shall be in compliance with IS 10101.

#### Electrical Distribution

Mains Distribution throughout the building will be sourced initially from a main switchboard which in turn will serve multiple sub switchboards located strategically within the building. Final circuits shall be derived from wall mounted metal clad distribution boards feeding general purpose circuits via appropriately rated RCBOs and MCB's. All electrical distribution equipment shall be housed away from public areas and within dedicated cupboards.

#### Containment Systems

Appropriately sized horizontal containment systems in the form of galvanised cable trays, cable baskets and ladders will be provided to fix major cabling runs throughout the building. Mains cabling, fire alarm, ELV cabling, and data/telecom cables shall be housed within separate containment runs to protect life safety system wiring and to reduce EMC interference.

In addition to horizontal runs, appropriately sized vertical containment systems will be routed through services risers to facilitate services on upper levels.

#### Data & Telecoms

A Cat 6 structured cable installation will be provided throughout the premises to support digital voice and data applications across the network. All hardware will be housed in dedicated data cabinets, and this will be used to house passive and active equipment supporting 'field' devices.

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Wifi outlets will be located throughout the communal areas to ensure complete building coverage. Active Equipment and Hard-Wired Wireless Access Points (WAPs) by others.

#### Intruder Alarm / CCTV / Access Control

A Door entry intercom will be provided for out of hours use, linked to the office.

A CCTV system comprising coverage to both the external of the building and ground floor entrances and communal areas will be provided. The control system will offer full viewing of all cameras in a multi-screen format and both recording and playback facilities will be provided at the digital recorder. The CCTV system will comply with the Data Protection Act and NACP 20 standards.

A hard-wired computer based access control system will be provided to the main entrances and to predetermined controlled doors which shall be agreed at the next design stages.

#### Lightning Protection Installation

Lightning protection shall be installed via a roof network and utilising the structural steelwork in the building as down conductors to meet the requirements of BS EN 62305. All exposed metallic roof mounted elements shall be bonded to the system.

#### Solar Photovoltaics

Provision is currently made to accommodate Roof mounted photovoltaic panels to provide electricity generation during daylight hours and to meet the requirements of the Building Regulations if required at stage 3 design. The amount of Photovoltaics shall be determined following completion of the NZEB calculations. The on-roof system shall be provided to ensure ease of maintenance and replacement.

### **2.5.7 Proposed Athletics Track & Spectator Stand**

A 400m floodlit athletics track is located to the north of the site to provide regional dedicated athletics' facilities. The track is designed to World Athletics and IOC standards. The proposed track surface will be EPDM polymeric rubber surface. A full-size sand-mattress soccer pitch is located in the track 'infield' to optimise the potential of the campus facilities. 2 long jump runways and landing areas are located outside the track to the west opposite the spectator stand. Other integrated athletics facilities include steeplechase water jump, pole vault facility and facilities for throwing events including safety cage.

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A 1.1m high spectator barrier around the perimeter facilitates 360° close-up spectator viewing. It is proposed to utilise the natural topography of the site to create a number of grassed terraces to the west of the track for spectators.

The spectator stand will provide seating for over 450 spectators. The seating terracing is elevated to maximise the viewing potential and to allow undercroft accommodation for equipment storage. Athletes will use the shower and changing facilities located in the main sports building. Accessible toilets and a Changing Places toilet will also be located within the stand structure and a lift will provide accessible access to a dedicated wheelchair viewing area in the stand.

The track and stand will be fully enclosed within 3m high open mesh ‘paladin’ style security fence to both protect the facilities and for public safety during out of hours periods.

### **2.5.8 Proposed Synthetic Hockey Pitch**

A full-size floodlit synthetic hockey pitch with sand dressed hockey turf surface is located to the northeast of the site with key adjacency to the Royal School. As development partners, the Royal School will utilise these facilities following the loss of their existing shale pitch. This will provide a significant upgrade of facilities for the school as well as a top-level facility for the sports campus for local and regional use. The pitch has min. run-off of 4m to all sides and a spectator barrier along the south side with 2 covered team benches integrated into it. The pitch will be fully enclosed within 4.2m high ‘ball stop’ open mesh ‘paladin’ style fence to both protect the facilities and for public safety during out of hours periods. Designs since have been developed in accordance with:

- Hockey Ireland guidelines
- International Hockey Federation (FIH) – Facilities Guidance
- England Hockey – Facilities strategy

These guides and ongoing conversations with the Client and stakeholders have informed play space principles that will be taken forward and developed in more detail following planning approval.

### **2.5.9 Proposed Synthetic Multisport Pitch & Spectator Stand**

A 115 x 72m floodlit synthetic multisport pitch with 3/4G surface is located centrally within the site adjacent to the sports building. This pitch will be a significant asset of the campus and will address the need for all-weather external sports facilities identified by the council. The size of the pitch will provide

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full size facilities for a range of sports and will facilitate sub-division for training, reduced team size games, youth level sports and much more. The pitch has min. run-off of 3m to all sides and a spectator barrier along the north side with 2 covered team benches integrated into it.

The facility is augmented with a small spectator stand, 30m (W) x 12m (H) ball catch nets at either end and will be fully enclosed within 4.2m high “ball stop’ open mesh ‘paladin’ style fence to both protect the facilities and for public safety during out of hours periods.

#### **2.5.10 Proposed Sand Mattress GAA Pitches, Spectator Stand and Toilet Block.**

4 floodlit sand mattress natural turf GAA pitches are proposed within the southern section of the site. They will have physical adjacency to the Cavan County GAA Kingspan Breffni facilities with vehicular and pedestrian linkage over the Cavan River by an existing bridge structure. All pitches will have a playing area of 143 x 86m to match the adjacent stadium pitch with 5m wide run-off areas to all sides. The pitches will be located on 2 terraces formed by cut and fill to the existing sloping topography. These terraces will be located above the existing floodplain 0.1% AEP present day level to facilitate all year around usage and will be separated 4m vertically. A fully accessible pedestrian route will be provided to the upper terrace from the footway network and the car park.

A spectator stand is situated at the pitch adjacent to the proposed car park with seating provision for around 600 people. The stand will be built into the proposed slope between the pitch terraces with stepped access to both sides. This pitch will have a 1.1m spectator around its perimeter. All pitches will have 30m (W) x 12m (H) ball catch nets at goal ends. A standalone toilet block is proposed at the upper terrace level to service this pitch zone.

#### **2.5.11 Ground Reprofilng**

To facilitate the works extensive movement of material is required. Where required the ground will be locally reprofiled to achieve the necessary design parameters for the proposed pavements. The earthwork movements will be in accordance with the Flood Risk Assessment which illustrates the floodplain associated with the adjacent Cavan River. Due to the reprofiling requirements in an designated as a flood plain, all amendments to grounds levels were assessed in the Flood Risk Assessment.

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### 2.5.12 Utilities

Currently the proposed development site has electrical infrastructure on it. The electrical infrastructure includes ESB Overhead Cables which traverse the site in a south-southeast direction from Kilnavaragh Lane towards the Kingspan Breffni stadium.

A new electrical substation will be provided adjacent to the new Sports Building and Arena. This substation will service all new building and pitch facilities proposed for the sports campus.

The ESB overhead cables are to be diverted underground to achieved landscape and health and safety benefits. This will be facilitated by a notified contractor on behalf of ESB.

Telecom infrastructure to facilitate building services and CCTV provision at the bridge will be provided through application to EIRCOM.

### 2.5.13 External Lighting Proposals

These proposals aim to provide an aesthetically pleasing, low maintenance and uniformly lit external space to enable users to orientate themselves, identify other users, detect potential hazards, discourage crime, and engender a feeling of safety and security. All external luminaires will be at least IP66, IK10 where appropriate on glass and coverings, have a minimum warranty of 5 years to cover all LEDs, power packs, drivers, glass covers and other associated parts. Final procurement will consider future costs and availability of equipment after warranty periods expire.

#### **Environmental mitigation measures**

The luminaires will comply with the ILP Guidance note 08/18 Bats and Artificial Lighting in the UK. This will be achieved using fittings with the following parameters:

- LED lamp packages
- Lamps with a Colour temperature – warm white – 2700k
- Upward Light Output Ratio = 0% (except for bridge feature lighting)
- Good lens control to avoid light spillage.

Lighting columns will be positioned so that they are as far as possible from mapped badger runs thereby reducing the disturbance to wildlife.

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## Controls

Controls prevent unnecessary lighting thereby reducing light pollution, electrical energy consumption and carbon emissions. Seasonal lighting and adaptive lighting will be used.

- Seasonal lighting – lighting only comes on at dusk through use of photocells and timeclocks.
- Adaptive lighting – lighting levels can be increased or reduced down to zero depending on the usage expected.

Given the dynamic nature of the lighting controls a Council representative will be designated to take on the responsibility to manage the controls to suit once use of the park has been established over time. Pre-setting the lighting controls at the start is unlikely to give optimum performance over the long term.

**Figure 2.1: Lighting Proposals Vehicle Access Roads**



## Car Parks and Roadways

This area will be illuminated to “BS5489-1:2020 Design of road lighting. Part 1: Lighting of roads and public amenity areas – code of practice” which will provide a minimum average horizontal illuminance of 10 lux with a minimum uniformity of 0.25. The roads will be illuminated using a 6m galvanised conical steel lighting column. The street lighting lanterns will utilise the latest LED lighting technology. The colour temperature will be 2700K (warm white) with a CRI of 80. Luminaires shall be mounted close to pedestrian crossing points. Seasonal lighting and Adaptive lighting controls will apply in this area.

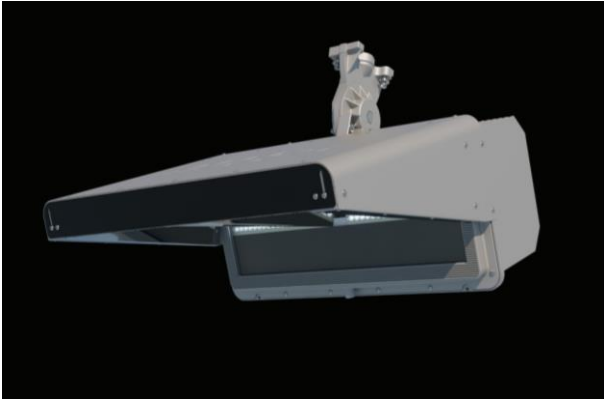
## Pitch Floodlighting

Each Sports pitch will have the capability of being illuminated via column mounted floodlights. The lighting levels are dependent on the sport associated with the particular sport. These have been

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identified and designated at the outset, by the Council. The highest columns will be 21.3m and these surround the running track. The GAA pitches will be illuminated using 18m columns and the hockey and football pitches illuminated using 15.2m columns. The pitch lighting will be controlled, so as they operate only when the pitch is in use and the lighting will be automatically extinguished after a preset time from when the pitch uses is completed.

**Figure 2.2: Floodlighting**



**Indoor Sports Complex & Covered Sports Arena**

The indoor covered sports area will be illuminated using roof mounted ‘ball proof’ LED fittings controlled from automatic time clock-controlled switches located and activated at the reception area. The fittings shall be grouped in banks to allow multi use of the area with different sports being accommodated simultaneously. The ceiling mounted fittings will utilise the latest LED lighting technology. Adaptive lighting controls would apply in this area.



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## 3.0 NEED FOR THE DEVELOPMENT

This chapter describes the need for the Cavan Regional Sports Campus with regards to policies and plans. Further commentary on the need for the proposed development is captured within Chapter 6: Policy and Legislation.

### 3.1 Background/Concept

Within the current adapted corporate plan, the first key strategic action was the expansion of recreational facilities throughout the county, including the development of a regional multi sports facility in Cavan town.

A 'needs analyses' of the county has highlighted that the county does not have sufficient indoor and outdoor sports facilities to meet the demand, particularly for non-mainstream sports.

It is recognised that this deficiency in sporting facilities impedes the ability to target people who are inactive, or fall out of physical activity throughout the lifecycle, specifically older adults, people with a disability, disadvantaged communities, women and girls and young people.

An extensive consultation process was conducted in 2018 as part of a Feasibility study for the need of a Regional Sporting Facility for Cavan, this involved:

- A web-based survey (103 responses),
- The forming of focus groups with 10 National Governing Bodies of Sport,
- A public meeting (17 attendees across 8 sporting clubs), and
- 12 individual meetings with key stakeholders.

In total, 74 different organisations participated in the consultation process.

The review of existing sporting infrastructure revealed that GAA clubs predominantly use their own club facilities, while many other sports clubs utilised the facilities of other clubs for the purpose of training.

The consultation identified key challenges faced by sporting clubs in the promotion of minority sports, these include:

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- inappropriate surfaces,
  - safety concerns,
  - lack of proper pitches and grounds,
  - high costs for equipment and transportation, and
  - insufficient neutral venues for competitions.

Furthermore, mainstream sports like GAA, Soccer, and Rugby face challenges related to space limitations, lack of all-weather surfaces, covered training areas and inadequate changing facilities.

This lack of available facilities is inhibiting the development of cross border and cross-community relationships and resulting in issues of social division and segregation as there are no opportunities for people to come together and connect through safe, shared, and inclusive activities.

This proposal will help to increase cross-community and cross-border integration in Cavan and the surrounding area by utilising lands previously owned by Cavan GAA and the Royal School.

The project partnership has a shared vision to transform the undeveloped town centre site into a sports campus with regional significance.

### **3.2 Regional Spatial and Economic Strategic for the Northern and Western Region**

The Regional Spatial and Economic Strategic for the Northern and Western Region (RSES) provides a high-level development framework for the Northern and Western Region that supports the implementation of the National Planning Framework (NPF) and the relevant economic policies and objectives of Government. It provides a 12-year strategy to deliver the transformational change that is necessary to achieve the objectives and vision of the Assembly.

Cavan Town is noted as a Key Town by the RSES with Cavan Town described as performing a regional function, being the largest town within the Cavan/ Monaghan/Leitrim sub-region and being the town which experienced the largest growth within the past 10 years. It is described as having strategic facilities such as an acute hospital, Cavan Institute, Local Authority Headquarters, Agricultural College, Cathedrals and Sports Stadium.

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The proposed development can achieve one of the key future priorities listed by the RSES as the following,

*Develop a regional standard multi-sports facility to service the current and future needs of the town and wider county.*

There is therefore a clear need for the proposed development as set out in the RSES.

### **3.3 Cavan Development Plan**

Section 2.2.14 of the Cavan Development Plan sets out map based specific objectives for several areas within the Development Boundary. Objective 6 relates specifically to the proposed development.

6. Support the provision of a Sport Campus to build on existing sporting facilities, with the provision of additional pitch's and supporting infrastructure as well as:

- Create permeability and linkages to the central town core and Dublin Road through strategic movement corridors
- Identify appropriate development opportunities
- Create visual and physical linkages to Swellan Lough
- Support and provide amenity opportunities

The proposed development will directly enable the achievement of this objective by providing a sports campus whilst also providing additional pitches and supporting infrastructure. The proposed development will cater to a wide variety of sports and activities thereby supporting and providing amenity opportunities.

The proposed development will also enable greater connectivity. Currently the site consists of a patchwork of agricultural fields which are not accessible by the general public. A number of paths intersect the proposed development, opening up this area of land, creating greater permeability throughout the area and linkages between the east of the town and Swellan Lough.

Objective 14 is also relevant when considering the need for the development.

14. Provide for linear river walk. To maintain an exclusion zone along the length of the river, which would be kept free from development, this would be of appropriate width depending on gradients along both sides of the river. This area will form a linear parkway and wildlife corridor.

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The proposed development is situated adjacent to the Cavan River with the river forming a key consideration in the design process. The proposed development maintains a development free corridor (with the exception of the required access bridge) running along the length of the Cavan River. This riparian corridor will be planted out with scrub/tree/woodland planting, encouraging its use as a wildlife corridor. This approach has been agreed with Inland Fisheries during a site meeting carried out 27/02/24.

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## 4.0 EIA SCREENING AND SCOPING

### 4.1 EIA Screening

An Environmental Impact Assessment (EIA) Screening took place with regard to this Proposed Development in order to determine if an EIAR was required. A mandatory EIAR is required for developments that are a class of development specified within Annex 1 of the EIA Directive (as amended), or within Schedule 5 of the Planning and Development Regulations 2001 (as amended). The Proposed Development (see Section 3) has been screened under Part 2, Schedule 5 of the Planning and Development Regulations 2001, as amended. It is considered that the Proposed Development falls within a class of development being 10(b)(vi):

#### ***10. Infrastructure Project***

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

It is considered that the site is located within a 'built up area' for the purposes of Schedule 5, Part 2, Category 10(b)(iv) and therefore the 10ha threshold would apply. The site is some c. 28ha and therefore above the threshold and a mandatory has been completed in support of the Proposed Development.

#### **4.1.1 Appropriate Assessment**

Appropriate Assessment (AA) is a focused and detailed impact assessment of the implications of a plan or proposed development, alone and in combination with other plans and proposed developments, on the integrity of a Natura 2000 site in view of its conservation objectives. The obligation to undertake AA derives from Article 6(3) and 6(4) of the Habitats Directive.

Prior to AA, screening for AA must be carried out. The screening process concluded that the proposed development was likely to have a significant effect on the nearby European Sites and therefore shall be subject to an appropriate assessment.

The aim of the second stage is for the competent authority to carry out an appropriate assessment to determine if the proposed development will have an adverse effect on the integrity of a European Site; the competent authority may only approve the proposed development where they conclude beyond reasonable scientific doubt that the Proposed development will not adversely affect the integrity of a European Site. In order to provide the competent authority (in this case ABP) with the necessary scientific information to allow them to conduct such an assessment, a Natura Impact Statement has been prepared and included as part of the consent application.

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## 4.2 EIA Scoping

As part of the scoping process for this EIAR, a Scoping Report was prepared to identify the issues, as set out in Article 3 of the Directive, which are likely to be important during the EIA process. The scoping process identified the sources or causes of potential environmental effects, the pathways by which the effects can happen, and the sensitive receptors, which are likely to be affected. As well as identifying which issues should be examined in the EIAR, the scoping process also considered the level of detail that is appropriate to consider for each issue.

A comprehensive scoping process has been carried out to gather feedback and guidance on the requirements for inclusion within the EIAR. A Scoping Report was prepared and submitted to ABP (Ref: ABP-317891-23) however a tight schedule for delivery of the EIA has not allowed for feedback to be received from this Scoping Report. The Scoping Report has therefore been used to internally inform the direction of the EIAR.

The Scoping Report describes the construction and operational impacts likely to be caused by the Proposed Development, the methodology proposed to assess these impacts and suggests some preliminary mitigation measures for each environmental topic. Based on the findings of this report, none of the environmental topics could be scoped out at either the construction or operational stage of the Proposed Development. The final EIAR has therefore assessed the construction and operational impacts of the development for the full suite of environmental topics as assessed within this Scoping Report.

## 4.3 Consultation

Consultation was carried out with Paul O'Doherty (Conservation Ranger), Chris Liu (Conservation Ranger) and Dr. Maurice Evans (Divisional Manager) of the National Parks and Wildlife Service (NPWS). A site meeting was attended by MCL Consulting, representatives from NPWS, McAdam Design and Cavan County Council on 15th February 2024 in order to ascertain the extent of ecology surveys previously carried out on site discuss suitable mitigation measures for the proposed development. All relevant information has been integrated into this EIAR.

Consultation with Inland Fisheries (Ailish Keane- Senior Environmental Officer) has been undertaken, with a site visit on 27<sup>th</sup> February 2024 to discuss proposed mitigation and future survey requirements as well as enhancements within the riparian buffer zone.

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## 5.0 CONSIDERATION OF ALTERNATIVES

This section outlines the Sports Campus layout and design considerations examined during the development of the proposal, including the reasonable alternatives considered and the main reasons for the selection of the proposed park layout and design, taking into account the effects of the project on the environment.

### 5.1 Consideration of Alternatives Approach

In accordance with the Directive 2011/92/EU as amended by Directive 2014/52/EU and, in consideration of the EPA's Guideline on the Information to be Contained in Environmental Impact Assessment Reports Draft August 2017, this chapter addresses alternatives under the following headings:

- 'Do Nothing' Alternative
- Alternative Locations
- Alternative Layouts

### 5.2 The "Do Nothing" Alternative

The "Do Nothing" alternative was reviewed against the Need and Demand (refer to Chapter 2, Volume 2 of this EIA Report, "Need for Development").

Following its completion and commissioning the Cavan Regional Sports Campus will:

- Address the identified deficit in indoor and outdoor sports facilities to meet demand, particularly for non-mainstream sports.
- Promote the development of cross border and cross-community relationships that result in issues of social division and segregation as there are currently no opportunities for people to come together and connect through safe, shared, and inclusive activities.
- Address challenges related to space limitations, lack of all-weather surfaces, covered training areas and inadequate changing facilities for mainstream sports like GAA, Soccer, and Rugby.
- Address a deficiency in sporting facilities that currently impedes the ability to target people who are inactive, or fall out of physical activity throughout the lifecycle, specifically older adults, people with a disability, disadvantaged communities, women and girls and young people.

As a result, the "Do Nothing" alternative was therefore discounted.

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## 5.3 Site Location

### 5.3.1 Proposed Site Location

Within the Cavan County Council current adapted corporate plan, the first key strategic action was the expansion of recreational facilities throughout the county, including the development of a regional multi sports facility in Cavan town.

A ‘needs analyses’ of the county highlighted that the county does not have sufficient indoor and outdoor sports facilities to meet the demand, particularly for non-mainstream sports.

It is recognised that this deficiency in sporting facilities impedes the ability to target people who are inactive, or fall out of physical activity throughout the lifecycle, specifically older adults, people with a disability, disadvantaged communities, women and girls and young people.

An extensive consultation process was conducted in 2018 as part of a Feasibility study for the need of a Regional Sporting Facility for Cavan, this involved:

- A web-based survey (103 responses).
- The forming of focus groups with 10 National Governing Bodies of Sport.
- A public meeting (17 attendees across 8 sporting clubs).
- 12 individual meetings with key stakeholders.

In total, 74 different organisations participated in the consultation process.

Cavan County Council in conjunction with the Royal School Cavan, and the Cavan GAA County Board were successful in securing stream 1 funding from the Large-Scale Sport Infrastructure Fund (LSSIF) for the proposed Cavan Regional Sports Campus. Stream 1 funding is for the design stage of the project and will be followed in the future by an application for stream 2 funding for capital grants towards the construction of the designed project. An application has also been made for SEUPB PEACE PLUS Programme: Building Peaceful and Thriving Communities.

The site benefits of compatibility to the proposals in consideration of:-

- The Regional Spatial and Economic Strategy (RSES) notes that Cavan Town performs a regional function, being the largest town within the Cavan/ Monaghan/Leitrim sub-region, therefore the Cavan Town is of suitable scale to provide and utilise an amenity of this size and significance.



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- its accessibility from the town centre; the site is within walking and cycling distance from the respective town centres.
  - its alignment with National, Regional and Local policies to provide sporting, cultural and community amenities.
  - Zoning and C06 Objective within the CDP.

### 5.3.2 Alternative Site Locations

The Project team initially identified 8 potential development sites, this extended to 11 during the analysis phase. Every site was visited, photographed and initial site assessments conducted by the appointed team. The identified sites were then shortlisted and those carried forward were assessed.

#### Site Options Sifting

To effectively sift or shortlist the site options identified above, each was 'sifted' against the assessment criteria. The following overarching points are noted:

- The council owned sites were not of sufficient scale to enable a one site solution. It became clear from an early stage that any preferred site would require either land transfer or land purchase to the local authority.
- Most sites accessed present major earthworks levelling, access or ground condition barriers and will require significant works.
- Sites to the North of the town centre offer strong links to major road infrastructure but present difficulties in terms of public access.
- Lands to the South-East, South and South-West of Cavan Town present the best connectivity with the town centre regeneration and revitalisation priorities, these sites also demonstrate access in terms of walking/cyclin, whilst still offering connectivity to major infrastructure such as the Dublin Road.
- Swellan Lough was referenced consistently as having significant potential and is an untapped resource for the town, sites that offered connectivity here were found to have been preferable.

#### Shortlist of Site Options

In considering the initial site assessment, the following were shortlisted for further consideration and analysis:

- Approx. 14-hectare Site situated to the South-East of Cavan Town .1
- Approx. 8-hectare Site situated to the East of Cavan Town.
- Approx. 18-hectare Site situated to the South-West of Cavan Town (Located between Breffni Park and The Royal School).

The sites were assessed against the following Criteria:

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## Location

- Orientation
- Access to main roads
- Relation to Town Centre
- Adjoining Properties
- Site Entrance Details
- Access to Public Transport

## Site Details

- Site area/Size
- Shape of site
- Levels
- Boundary Conditions
- Ground Conditions

## Planning Restrictions

- Zoning
- Access
- Impact on Neighbouring Properties
- Site Profile

## Development Impact

- Strategic Alignment of site to consultation findings and wider policy priorities for Cavan.

From this assessment the 'preferred' site was identified.

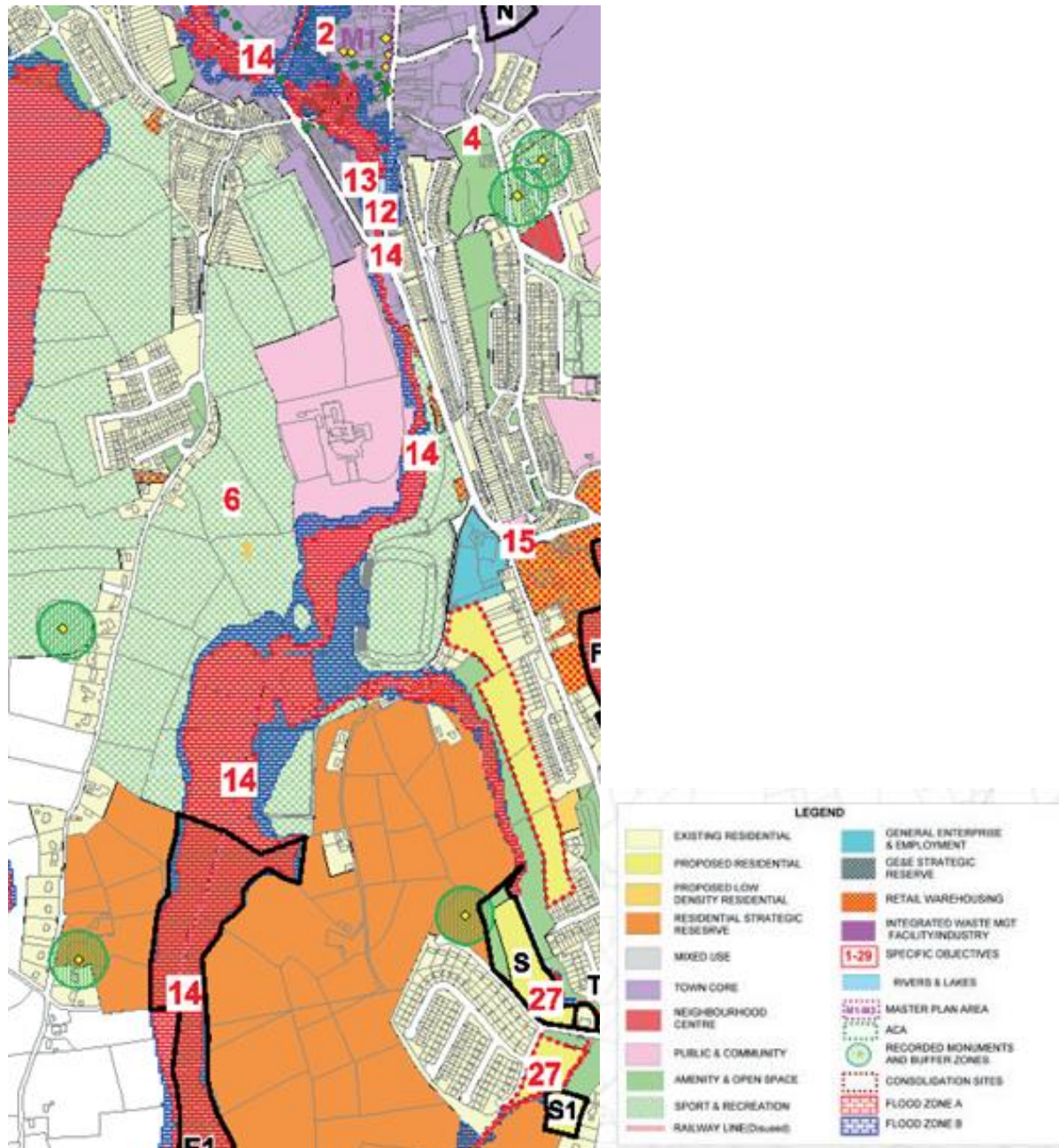
## Site Zoning

The Cavan County Council Development Plan 2022-2028, extract presented in **Figure 5.1**, has zoned the development site for 'Sports and Recreation' uses. This parcel of lands allows for connectivity to Cavan Town, and good vehicular access from the Dublin Road.

The 'Sports and Recreation' zoning also applies to lands close to Cavan Town between Kilnavarragh Lane and Swellan Lough, however vehicular access to these lands for a major sports facility is not as favourable and the lands are topographically less suitable for pitch development.

In consideration of the fact that the site is zoned for sports and community use within the Cavan County Development Plan (CDP) and CDP Objective C06 states ‘support the provision of a Sport Campus to build on existing sporting facilities, with the provision of additional pitch’s and supporting infrastructure’.

**Figure 5.1 Land Zoning (Extract), Cavan County Council Development Plan 2022-2028**



Therefore, the proposed development site is the most optimal location for the facility with important proximity to Cavan Town.

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## 5.4 Alternative Access

The Council undertook an alternative access appraisal assessing various possible options for the site access, looking at the pros and cons of four different options:-

- Kilnavara Lane
- Dublin Road- Crossing Deep Ravine
- Dublin Road Via Breffni Park North Terrace
- Park Lane

This options appraisal document, which concluded that the Dublin Road Via Breffni Park North Terrace as being the most viable site access option, is presented as **Appendix 5.1**.

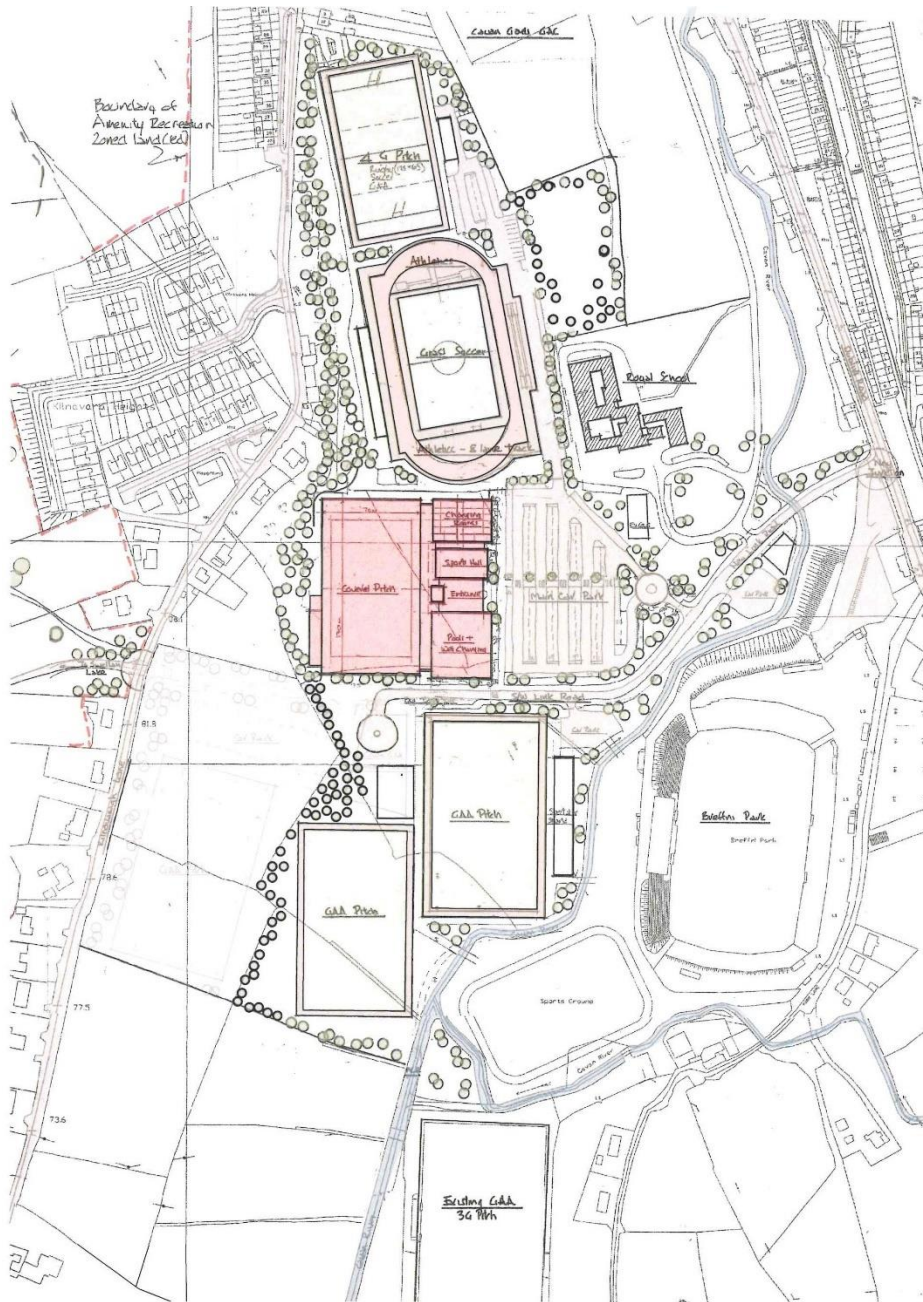
## 5.5 Alternative Site Layouts

An initial concept layout, developed by HPA Architecture working with Cavan County Council was presented to the Design Team. This is presented as **Figure 5.2**.

This concept presented a layout involving different elements of the proposed development, including an enclosed arena with ancillary structures, positioned centrally, an athletics track with 4G pitch to the north, a car park located south of the Royal School, and up to three open GAA pitches in the southern portion of the site.

This is a different layout to the final proposed layout and is also slightly smaller in scale compared to the final design, not extending as far south (smaller site area).

**Figure 5.2: Initial Concept Plan**



As part of the initial Stages of designing the development the Design Team was required to preset at least three alternative layouts for consideration by the Council and other stakeholders. Three layout 'Options' were developed, as presented in **Appendix 5.2**. These alternative layouts were informed by initial environmental survey works, including ecology works, to help identify any major constraints. Feedback from other stakeholders, including the GAA and Royal School was also taken into account to accommodate their needs and expectations for the proposed development.

It was quickly established that the location of the access bridge across the Cavan River as presented in the Concept Plan was going to be significantly impactful to the local ecology, cutting through a small, but ecologically-sensitive



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patch of native riparian woodland. The environmental team advised that this bridge should be located further to the south in a less impactful, more ecologically benign, area of the site.

The development also had to accommodate and incorporate existing development within the site, including a recently completed small car park and access bridge located west of Breffni Park.

Further consultations with key stakeholders were undertaken to help develop development options within the site. The Royal School also identified the need for a Hockey Pitch, ideally positioned close to their existing school site. Various alternative layouts were presented the Council and key stakeholders by the design team, showing different positions and orientations for the main development components and in the end a total of around five (5) main layout options were considered.

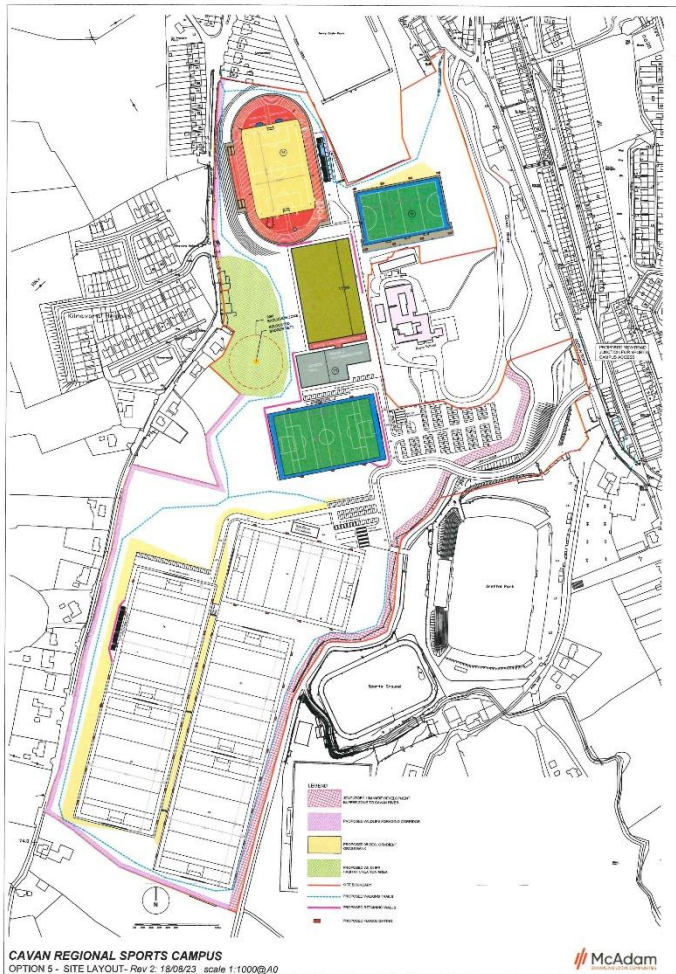
During that process, additional greenfield lands to the south of the original development site extends became available and these lands were therefore considered for incorporation into the development, allowing the additional of two further GAA pitches, making five GAA pitches in total. The GAA identified a need for additional pitches for training and to encourage development of youth teams and this fitted with the decision to expand the development into a larger site. This 'Option 5' design layout for the expanded development site is presented as **Figure 5.3**.

Bat Roost Potential works were undertaken to identify trees within the development site of particular worth in terms of bat habitat. Each design option was considered in terms of habitat loss in relation bat and breeding bird and this, along with other practical and environmental considerations helped drive the decision regarding which design layout option would be brought forward for full design.

Option 5 was selected by the stakeholders to be brought forward for full design, since this layout met all of the stakeholders requirements, and appeared to be the least impactful layout in terms of habitat loss and amenity protection.

Option 5, and the expansion of the development area, also facilitated the opportunity to set-aside a suitably large area within the development for wildlife compensation and visual / noise screening. Option 5 also facilitated the opportunity to propose further wildlife habitat creation of a riparian planted strip extending along the western margin of the Cavan River.

Figure 5.3 'Option 5' Concept Plan



During the detailed design stage, other more minor alterations were made to the layout to further minimise environmental impacts:-

- The main carpark layout was re-designed to allow for the retention of a mature and prominent oak tree south of the Royal School.
- The development layout was slightly modified to allow for the creation of a central wildlife corridor to encourage mammal connectivity between the wildlife set-aside area in the west and the riparian zone in the east.
- Review of published flood mapping, and additional flood modelling carried out as part of the environmental works, identified that some areas of the southern area of the site were prone to fluvial flooding and this constrained the type of development which could be proposed there. The pitch layout in the southern area of the site was modified, resulting in the loss of one GAA pitch (4 now in total).
- Feedback from the local community indicated that some form of 'garden' within the development would be worth considering. A garden area was designed in the flood plain area in the vicinity of the lost pitch.

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However, Further consideration of flood risk policy in relation to acceptable development in the flood plain, led to the removal of the garden area from the development layout plans.

- Feedback from the local community indicated that some walking trails allowing pedestrian access to the site and walking / running opportunities within the development, hence a number of pedestrian access points and path networks were added.

## 5.6 Conclusions

The selection of the site location has been made on sound policy grounds based on Location, Site Details, Planning Restrictions and Development Impact. There is no suitable alternative site in the vicinity of Cavan Town. Having the facility sited close to Cavan Town and the existing Breffni Park is vital to the accessibility and success of the proposed scheme.

The development also incorporates the use of brownfield lands in Cavan Town (lands to west of Dublin Road) to minimise the use of virgin land. The use of brownfield land for redevelopment is in line with the EPA brownfield land and sustainability development policies as described in the EPA Document *'Irelands Environment – AN Integrated Assessment'*. This encourages the use of brownfield land in urban setting for development stating *'Practising sustainable land management and soil conservation principles at the heart of the planning process means shifting away from a reliance on zoning of greenfield lands towards more brownfield development opportunities in and around our major cities and towns'*.

A range of alternative layouts were considered as part of the process to develop a sustainable and low impact solution for the development, and through this process the design layout has been optimised allowing potential environmental and amenity impacts to be minimised.



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## 6.0 POLICY AND LEGISLATION

Key planning legislation relevant to this planning application is contained within the Planning and Development Plan, 2000 (as amended) and the Planning and Development Regulations 2001 – 2023.

Article 15 of the Planning and Development Act, 2000 states that it is a duty of the planning authority to take such steps within its powers as may be necessary for securing the objectives of the development plan. The relevant objectives of the development plan are set out in the next section of this report.

In addition, this planning submission, including this EIAR report has been prepared in accordance with the requirements of the following legislation.

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

- Planning and Development Act, 2000 (as amended);
- Part 11 of the first Schedule of the European Communities (Environmental Impact Assessment (EIA)) (Amendment) Regulations, 1999 S.I. No. 93 of 1999);
- The Local Government Planning and Development Regulations 2001 — 2018 (S.I. No. 600 of 2001, and subsequent amending legislation); and,
- European Union (EU) (Planning and Development) (Environmental Impact Assessment) Regulations, 2018.

The following existing and draft guidance were also considered in preparing this EIAR:

- EPA Advice notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003);
- EPA Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2022);
- European Commission Interpretation of definitions of project categories of Annex I and II of the EIA Directive (European Commission, 2015);
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017) (European Commission, 2001a):
- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft) (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2017) (Department of Housing, Planning and Local Government, 2014 and
- EPA Guidance on Soil & Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011 (Environmental protection Agency (EPA), 2011).

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In addition to the above legislation, additional legislation that is considered relevant is contained and assessed within the relevant chapter of this EIAR.

The following section will set out the relevant national, regional, and local planning policy context relevant to the proposed development. Each policy is considered in further detail within the relevant chapter.

## **6.1 National Planning Policy Context**

### **6.1.1 Project Ireland 2040: National Planning Framework (NPF)**

Project Ireland 2040: National Planning Framework (NPF) is the Government’s high-level framework plan for the future development of Ireland, with a particular focus on strategic growth. It is designed to improve the effectiveness of public investment in infrastructure and other relevant services around the country, and to deliver more balanced social, economic and physical development and population growth across Ireland. The NPF contains 10no. National Strategic Outcomes, one of which involves enhancing amenities and heritage. The NPF notes:

*“This will ensure that our cities, towns and villages are attractive and can offer a good quality of life. It will require investment in well-designed public realm, which includes public spaces, parks and streets, as well as recreational infrastructure”.*

NSO 7 notes that enhancing sports facilities throughout Ireland, including major sporting infrastructure development through the Large-Scale Sport Infrastructure Fund as well as continued investment in the Sports Capital and Equipment Programme is a strategic investment priority.

In support of the Cavan County Development Plan, support has been drawn from the NPF to evidence the town’s position in the settlement hierarchy. The NPF at Appendix 2 identifies population and jobs in all urban settlements in Ireland as defined by the Central Statistics Office (CSO). Cavan Town has been identified as having a very strong Jobs to Resident Workers ratio of 1:388. The town is also the location of the Cavan Business and Technological Park and the newly established Cavan Digital Hub.

### **6.1.2 Regional Spatial and Economic Strategy (RSES)**

The Regional Spatial and Economic Strategy (RSES) is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives (RPO). It provides a framework for investment to better manage spatial planning and economic development throughout the region. The RSES aims to plan for compact growth, prioritise strategic infrastructure, and attract, build and retain talent and business capability.

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Specifically with regard to Cavan, RSES identifies the town as seeing a 13% increase in population. The Strategy recognises that the Cavan alongside Monaghan have an easterly focus and the NPF recognises that the towns comprise part of the Eastern Functional area where the key driver is the Dublin – Belfast cross-border network, that influences both these counties. The Cavan/Monaghan sub-region also provides an important connection between the remainder of the Northern and Western region of the greater Dublin area. Further, Cavan is one of four counties that share the only international land border which brings its specific challenges and opportunities for communities which is evidenced at Section 1.6 of the Plan which shows that the economic downturn has taken its toll on our rural regions more so than our urban.

The Strategy identifies Cavan town as a key town that performs a regional function, being the largest town within the sub-region and has experienced the largest growth in the last 10 years. The Plan highlights the key future priorities for Cavan Town which includes the development of a regional standard multi-sports facility to service the current and future needs of the town and the wider county.

Growth Ambition 4 acknowledges the importance recreational facilities within urban areas and how they have a direct link to physical and mental wellbeing.

### 6.1.3 Local Economic and Community Plans (LECPs)

LECPs are part of the overarching policy framework of Project Ireland 2040 which includes the above national strategies and frameworks (3.1.1.-3.1.2). The LECPs are one of the primary mechanisms (at a local level) to bring forward relevant actions arising from national and regional strategies and policies. The LECP identifies the following key actions for Cavan town:

- A growing youth population is applying pressure to provide an outlet for young people through sport and other appropriate facilities.
- A specific Action states that Cavan County Council will, *'develop a multi-purpose sports facility for the county'*.
- Health and wellbeing is becoming increasingly important aspect of our society. It is recommended that Cavan Sports Partnership and other sporting organisations provide support to organisations and groups on how to develop sporting activities and facilities.

### 6.1.4 National Sports Policy

The National Sports Policy was published in July 2018 and provided for a Large-Scale Sport infrastructure Fund. The aim of the fund is to provide support for larger sports facility projects and in some cases, these may be large scale venues/stadia where the focus is more related to social participation and high-performance sport.

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In response, Cavan County Council submitted an application for proposals for the Cavan Regional Sports Complex, located and associated with the Royal School and the Cavan GAA County Board. The proposals were supported by a wide range of local and national sporting bodies, local stakeholders and community groups.

## 6.2 Local Planning Policy Context

### 6.2.1 Cavan County Development Plan 2022-28

The Cavan County Development Plan, incorporating the Local Area Plan for Cavan Town 2022-28 was adopted on the 11<sup>th</sup> July 2022 and is the statutory development plan for the County and sets out the strategic vision for future growth. The Plan sets out the Council's proposed policies and objectives for the development of the County of the Plan period.

Part V of the Planning and Development Act 2000 (As amended) contains requirements for all Planning Authorities to ensure that their development plans are consistent with the high-level strategic policies and population projects within their county. Councils are required to prepare a Core Strategy that shows that the Plan is consistent with the national and regional objectives as set out above.

### 6.2.2 Strategic Context

The plan is based on achieving the following strategic vision for the County to be a ***“progressive, vibrant county which is smart, connected, innovative, inclusive and sustainable”***.

As set out at Section 2.8.1 of the Development Plan, Cavan Town sits on top of the settlement hierarchy with a population 10,914 (2016) and is described as the Council's only “County Town” which are towns with large economically active services that provide employment for their surrounding areas and with high quality transport links and the capacity to act as growth drivers. Section 2.10.1 of the Plan reiterates that as set out within the Regional Spatial and Economic Strategy (RSES) Cavan Town performs a regional function, being the largest town within the Cavan/Monaghan/Leitrim sub-region and the town which has experienced the largest growth within the last 10 years.

The Plan highlights the strategic importance of Cavan as a Border Region, located close to Co. Fermanagh with excellent transport linkages, nationally, regionally and locally. The town is on the main N3 road that links Dublin with Enniskillen, Ballyshannon and Donegal Town. As the County Town, it has strategic facilities such as an acute hospital, the Local Authority Headquarters, the Department of Agriculture, as well as Cathedrals and Sports Stadium. The town also has a third level college, Cavan Institute, which is the largest provider of FETAC courses in the northeast region.

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The following Core Strategy objectives for Cavan town as a key town are relevant to the proposals and include:

1. **KTC 01:** Support the continued growth and sustainable development of Cavan Town to act as a growth driver in the region and to fulfil its role as a Key Town, focused on employment, retail, quality of life and economic investment.
2. **KTC 02:** Promote Cavan Town as an attractive investment location for the County, utilising Cavan County Economic Forum and building upon the towns proven track record as an excellent investment location, which is aided by the IDA Business Park in the town.
3. **KTC 03:** Support the delivery of additional economic development land to overcome significant recognised deficit that exists in the town.
4. **KTC 04:** Require sustainable, compact, sequential growth in Cavan town by consolidating the built-up footprint through a focus on regeneration and development of town centre infill and brownfield sites, and encouraging regeneration of underutilised, vacant and derelict lands for residential development and mixed use to facilitate population growth.
5. **KTC 05:** Commence the preparation of a Local Transport Plan (LTP) for Cavan town in conjunction with the National Transport Authority (NTA) and other relevant stakeholders within one year of the adoption of the County Development Plan.

It is considered that the proposals for the regional sports complex in this location within Cavan town would further the core objectives for Cavan Town as set out above.

In addition to above, the Plan sets out the following Core Strategy Development Objectives that are considered relevant to the proposals. It is considered that the proposed regional sports complex would further the following objectives:

- **CSD 01:** Ensure that the future spatial development of Cavan is in accordance with the National Planning Framework 2040 (NPF) including the population targets set out under the Implementation Roadmap, and the Regional, Spatial and the Economic Strategy (RSES) for the Northern and Western Region 2020-2032.
- **CSD 02:** Restrict development in areas at risk of flooding in accordance with the Flood Risk Management Guidelines for Planning Authorities (DoECLG/OPW 2009).
- **CSD 03:** Facilitate the delivery of sustainable, compact, sequential growth and regeneration of town and village centres by consolidating the built footprint through a focus on regeneration and development.
- **CSD 04:** Implement all land use planning policy and objectives in a manner which takes account of and is consistent with the Core Strategy in order to accelerate a transition to a greener, low carbon and climate resilient county with a focus on reduced travel demand through the promotion of sustainable settlement patterns.

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- **CSD 05:** In the assessment of development proposals, to take account of transport corridors, environmental carrying capacity, availability and/or capacity to provide waste water and water supply services, potential to conflict with Water Framework Directive objectives, potential to impact on the integrity of European sites and Annexed Habitats and species, features of biodiversity value including ecological networks, impact on landscape and visual characteristics, education and other socioeconomic objectives. Development proposals may require screening for Appropriate Assessment and there shall be no net loss in Biodiversity from development proposals in the lifetime of the plan.
  - **CSD 06:** Promote the integration of land use and transportation policies and to prioritise provision for cycling and walking travel modes and the strengthening of public transport.

### 6.2.3 Sustainable Communities

The Cavan County Development Plan sets out in detail an identified need for the proposed regional sports complex.

Section 2.2.9 of the Plan sets out the Council's aspiration for sustainable communities:

*“There is an identified need for additional facilities within Cavan Town to cater for the large number of sporting organisations. It is recommended that support is provided for community and sporting groups within these identified areas, in particular to avail of funding opportunities under Sports Capital and the newly launched ‘Realising Our Potential: An Action Plan for Rural Development’.*

*The Local Economic and Community Plan (LECP) identified that we have a growing youth population which will result in increased pressure to provide an outlet for our young people through sport and appropriate facilities. A specific action within the LECP states that Cavan County Council is to ‘Develop a multi-purpose sports facility for the county’ and the findings from this report add weight for such a need.*

*The issue of health and wellbeing is becoming an increasingly important aspect for our society and one which should be encouraged. It is recommended that Cavan Sports Partnership and other supporting organisations provide support to organisations and groups on how to develop sporting activities and facilities.*

*Space can be an issue for many of the facilities based within urban areas, with many having limited availability to meet the demands for their use, or in other cases, facilities do not have the sufficient room or size available to cater for larger groups. **As identified within the LECP, there is a need for a new community hub to be developed within walking distance of Cavan Town, which presents itself as a reoccurring issue under various local consultations carried out. A community hub in Cavan town is an important project that is required, and which forms part of Abbeylands URDF project”.***

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#### 6.2.4 Regional Sports Facility

Section 2.2.9.1 of the Plan sets out that Cavan County Council commissioned a feasibility study for the development of a regional sports facility for County Cavan with Cavan Town identified as the most appropriate location for a facility of regional significance for the County.

The consultation process, review of the strategic context and analysis of existing provision has led to the establishment of a recommended capital vision for Cavan. This includes:

- Indoor facility with synthetic pitch surface that is suitable for a range of sports including hockey, soccer, GAA, rugby, tug of war, badminton, tennis, basketball. The indoor facility will include spectator capacity.
- A Sports Centre building including an enhanced four court sports hall, a gymnasium and multipurpose/flexible studio space.
- A 400m athletics track, plus facilities for associated field events such as hammer, javelin, discus, shot putt, long jump, triple jump, high jump, and pole vault and grass soccer pitch inset.
- An outdoor, multi-sport, multi lined and floodlit 3G pitch with dimensions will be sufficient to enable Gaelic games along its length, with soccer and rugby across its width.
- A 25m 6 lane swimming plus secondary pool and wet changing.
- A changing provision and ancillary provision services both indoor and outdoor facilities and a walking & perimeter trail.

The proposed facility mix would establish a sports facility of regional significance and considerably enhance Cavan as a destination for sport and recreation, whilst meeting the need and demand identified in the consultation process. Securing the preferred option will require partnerships with the Cavan County GAA Board and the Royal School regarding the transfer or purchase of lands to Cavan County Council and the integration with the existing capital plans at Kingspan Breffni Park. The development seeks the provision of a link road between the existing Kingspan Breffni Park stadium and the Royal school, connecting Dublin Road to Kilnavara Lane. This opens up access to Swellan and the potential for future development of outdoor activity and lakeside activity. In addition, the link road should be developed to alleviate traffic congestion into the Town Centre on the Dublin Road.

It is considered that the provision of the regional sports facility and associated community facilities would further the following Cavan Town Sustainable Communities Development objectives:

- **CSC 04:** Require proposals for new development to integrate with existing Green Infrastructure networks and contribute to the development and protection of overall Green Infrastructure assets
- **CSC 05:** Support the delivery of the Sports Campus on zoned land in Cavan Town.

- 
- **CSC 06:** Support the provision of social and recreational amenities in Cavan town to address gaps in these important Community facilities.
  - **CSC 07:** Provide for the expansion and development of educational, social, community and recreational facilities in the settlements.
  - **CSC 08:** Promote cycling and walking within the community through the implementation of improved walking/cycling infrastructure within the Town and its hinterlands and at areas of interest and attractions.
  - **CSC 09:** Promote appropriate development opportunities in the vicinity of Swellan Lough, Green Lough and Killymooney Lough to create an amenity site that could provide for a walking cycling route around the Loughs.

### 6.2.5 Land Use Zonings and Objectives

The site is subject to a number of local land use zonings consistent with the above strategic objectives. These are set out at Table 6.1 below. In regard to ‘land use zonings’ Section 14.1 of Chapter 14 of the Plan highlights that ‘permitted uses’ as stipulated within the zoning polices are ‘permitted in principle’ which means that the proposed use is generally acceptable subject to the normal planning process and compliance with the relevant policies, objectives, standards and requirements as set out in the County Development Plan, in accordance with the proper planning and sustainability of the area. If a proposal is indicated to be ‘permitted in principle’ in the zoning matrix, this does not imply that planning permission will automatically be granted as other factors must be considered and each proposal will be considered in their own merits.

The site is subject to a number of zoning and planning/environmental constraints as set out below and illustrated at Figure 6.1: Extract of Zonings Map from the Development Plan.



Figure 6.1: Cavan County Development Plan, incorporating a Local Area Plan for Cavan Town 2022-2028

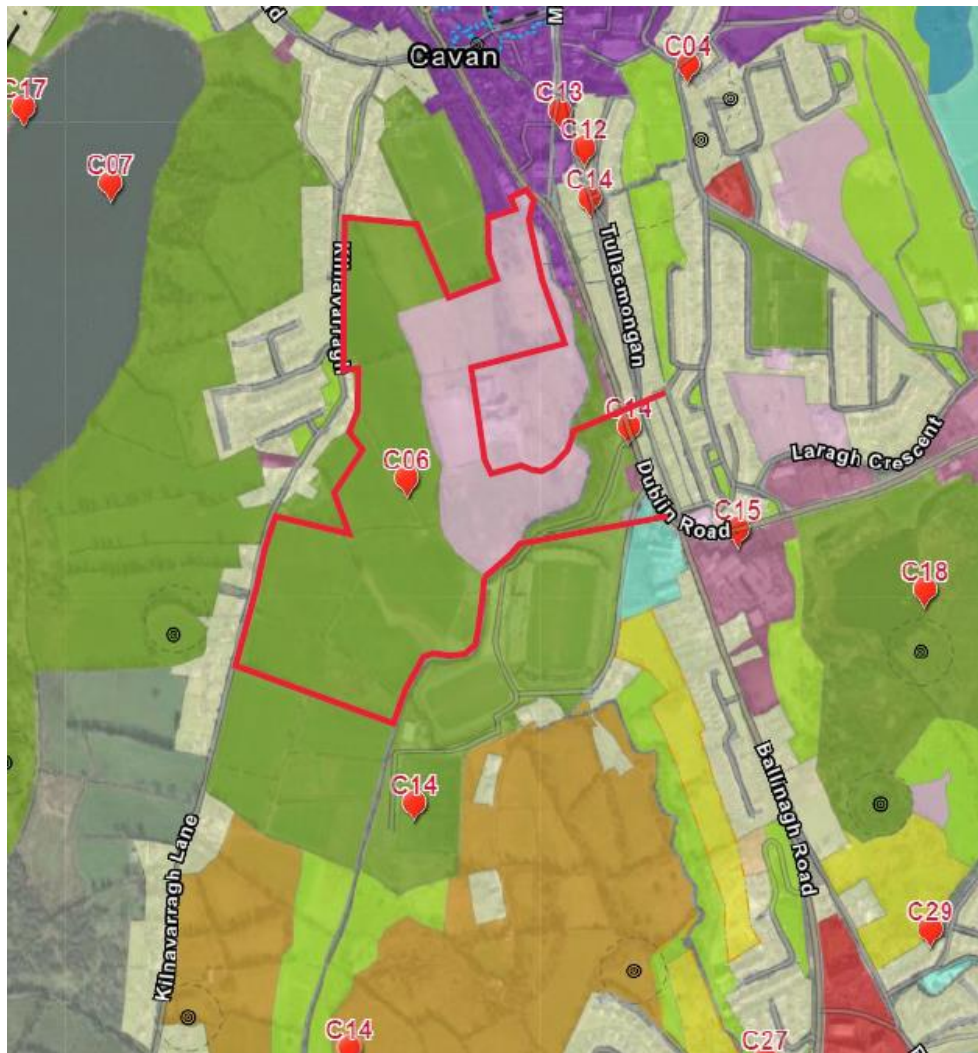


Table 6.1 outlines the zonings and objectives of the Development Plan relevant to the proposed scheme:

Table 6.1 Summary of Zonings and Objectives: Cork County Development Plan 2022-28
Zoning highlighted in 'green' at Figure 6.1 above relates to sport and recreation, which protects and provide for sporting and recreational areas (20ha) –
<b>Permitted Uses:</b>
<ul style="list-style-type: none"> <li>• Allotments</li> <li>• Golf Course/Pitch and Putt</li> <li>• Open Space/Park</li> <li>• Playground</li> <li>• Sports Facility</li> <li>• Tourism-recreational complex</li> </ul>

**Objective C06:** Support the provision of a Sport Campus to build on existing sporting facilities, with the provision of additional pitch's and supporting infrastructure.

*Support the provision of a Sport Campus to build on existing sporting facilities, with the provision of additional pitches and supporting infrastructure as well as:*

- *Create permeability and linkages to the central town core and Dublin Road through strategic movement corridors.*
- *Identify appropriate development opportunities.*
- *Create visual and physical linkages to Swellan Lough*
- *Support and provide amenity opportunities*

**Objective C14:** Provide for linear river walk. To maintain an exclusion zone along the length of the river, which would be kept free from development, this would be of appropriate width depending on gradients along both sides of the river. This area will form a linear parkway and wildlife corridor.

Zoning highlighted in 'pink' at Figure 6.1 above relates to Public Community uses that provide for and protect civic, religious, community, education, health care and social infrastructure (9.64ha)

**Permitted Uses:**

- Allotments
- Cemetery
- Community Hall
- Creche / Nursery
- Education
- Exhibition / Arts Space
- Fire / Ambulance Station
- Halting Site / Traveller Community Accommodation
- Health Care
- Hospital
- Open Space/ Park
- Play of Worship
- Playground
- Residential Institution /Retirement Home
- Sports Facility

- 
- |  |
|--|
| <ul style="list-style-type: none"><li>• Telecommunications</li><li>• Tourism- recreational complex</li><li>• Training Centre</li></ul> |
|--|

The proposals are seeking to deliver on both the strategic and local zonings objectives of the development plan, proposing uses that are entirely compliance with the zoning objectives as set out above. A further analysis of the scheme against the zoning objectives referenced above is contained within the supporting Planning Statement which accompanies this planning application.

Zoning 2022-28 sits beyond the site boundaries, however, is a key consideration in the determination of these proposals. Existing Residential Area zonings seek to protect and enhance the amenity of existing residential areas and to ensure that development sites do not adversely impact on the amenity of existing properties. Development objectives OO-01 – OO-10 relate to overlooking and overshadowing seeks to ensure adequate separation distances to ensure amenities of residents are protected. The proposals are able to demonstrate compliance with all these objectives.

This EIAR provides assessment within the relevant chapters of the potential amenity impacts which are considered to be from noise generation, daylight/overshadowing, impacts from floodlighting and privacy or overlooking impacts. As set out within the relevant chapters and within the supporting Planning Statement, the proposals have mitigated any potential for negative amenity impacts on residents and as such it is considered that the proposals are compliance with this zoning objective.

### **6.2.6 Other Relevant Policies and Objectives**

The following policies and objectives are also considered relevant in the determination of the proposals and have influenced the design process. Consideration of the relevant planning policies / objectives are contained within the relevant chapter / appendix of the EIAR and summarised within the supporting planning statement if demonstrating compliance is considered necessary:

Table 6.2: Relevant Dev

Recreation, Amenity, Open	
<b>RAOS 01</b>	Ensure sufficient land is allocated to provide a variety of open spaces on a hierarchical basis througho
<b>RAOS 02</b>	Develop public open spaces that have good connectivity and are accessible by safe, secure walking an
<b>RAOS 03</b>	Increase the use and potential of existing public open space, parks and recreational areas, both passive by seeking to upgrade existing facilities where appropriate.
<b>RAOS 05</b>	Facilitate and encourage open space to be planned for on a multi-functional basis incorporating ecosy
<b>RAOS 06</b>	Promote the value of the County's recreational and amenity resources as a key asset to the local econ
<b>RAOS 07</b>	Seek a greater variety of provision of recreation and amenity facilities to reflect the demands of an inc
<b>RAOS 08</b>	Support the development of regional scale Recreational Sports facility in Cavan Town.
<b>RAOS 11</b>	Support the provision of new and upgrade of existing walking and cycling routes, trails and greenways
Climat	
<b>RPO 3.5</b>	Identify and develop quality green infrastructure, within and adjacent to City, Regional Growth Centre
<b>RPO 6.29</b>	The management of space in town and village centres should deliver a high level of priority and perm live, shop and engage in community life.
<b>RPO 6.30</b>	Planning at the local level should promote walking, cycling and public transport by maximising the r services, and other services at the local level such as schools. Flood risk management, sustainable wat mitigation and adaptation.
<b>RPO 3.10</b>	Ensure flood risk management informs development by avoiding inappropriate development in areas roofs) to create safe places. Development plans should assess flood risk by implementing the recom PL02/2014 (August 2014).
<b>CC 05</b>	Contribute towards climate mitigation and adaptation, taking into account other provisions of the Plan
<b>CC 06</b>	Promote the benefits to quality of life, public health and biodiversity arising from implementation of p
<b>CC 09</b>	Support the delivery of sustainable development projects under the European Green Deal.
<b>CC 16</b>	Maintain existing green infrastructure and encourage and facilitate, in consultation with relevant stak following: <ul style="list-style-type: none"> <li>• Provision of open space amenities;</li> <li>• Sustainable management of water;</li> <li>• Protection and management of biodiversity;</li> <li>• Protection of cultural heritage; and</li> <li>• Protection of protected landscape sensitivities</li> </ul>
Emp	
<b>LE 01</b>	Facilitate the economic development of Cavan to create a viable and favourable economic environm living for everyone.
<b>QL 01</b>	Facilitate and enhance the collective offering of Cavan as an attractive place to live, work and do busin
<b>QL 03</b>	Build on the This is Cavan brand that exemplifies the core components of Quality of Life factors, includ
<b>GED 01</b>	Ensure that a sustainable approach is taken to enterprise development and employment creation acro
Transport an	
<b>Policy</b>	Promote and facilitate movement to, from and within County Cavan by integrating land use with a hig and traffic management that supports commercial and industrial activity and new development and s the County in an environmentally acceptable manner.
<b>LUR 01</b>	Support and facilitate the integration of land use with transportation infrastructure, through the devel which are well served by public transport.
<b>LUR 03</b>	Provide for alternative forms of transportation and associated infrastructure in order to reduce the de
<b>WC 01</b>	Promote walking and cycling as efficient, healthy and environmentally friendly modes of transport by s

	in urban areas and in vicinity of schools.
<b>WC 02</b>	Design pedestrian, cycling and electric bike infrastructure in accordance with the principles, approach Manual and the Design Manual for Urban Roads and Streets and international best practice
<b>WC 03</b>	Encourage and seek sustainable transport movement at the earliest design stage of development provide spaces for bicycles in development schemes in accordance with Standards in Table 7.4
<b>WC 04</b>	Improve the streetscape environment for pedestrians, cyclists and people with special mobility needs by traffic.
<b>ACT 01</b>	Support active travel within the County and the ongoing engagement with the National Transport Authority
<b>GR 01</b>	Planning for significant development proposals should be accompanied with a 'Traffic and Transport Assessment' in accordance with the Traffic and Transport Assessment Guidelines and which are assessed in association with their cumulative impacts
<b>CP 01</b>	Require development proposals to provide adequate car parking provision and associated servicing areas and its location having regard to the standards set out in Table 7.4.
<b>CP 02</b>	Seek to ensure that all new private car parking facilities are provided to an appropriate standard, proportionate to the development
<b>CP 07</b>	Seek and promote the provision of Age Friendly parking arrangements and further provide for the improvement of existing car parks
<b>CP 09</b>	Require proposed car parks to include the provision of necessary wiring and ducting to be capable of accommodating electric vehicle charging
<b>CP 12</b>	Encourage the use of materials and engineering solutions that optimise natural surface water drainage in large scale car parks.
<b>Environment, Water and Flood Risk</b>	
<b>Policy</b>	To provide for the continued expansion and improvement of the water, wastewater, surface water and groundwater resources in an environmentally friendly manner.
<b>GW 04</b>	Contribute towards, as appropriate, the protection of existing and potential water resources, and the management of water resources in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the Water Objectives (Surface Waters) Regulations 2009 (as amended), the Groundwater Directive 2006/118/EC and the relevant EU Directives, including associated national legislation and policy guidance (including any supplementary guidance documents) such as Document No. 20 and No. 36 which provide guidance on exceptions to the environmental objectives of the Directive
<b>GW 05</b>	In conjunction with Irish Water, have regard to the EPA 2019 publication 'Drinking Water Report for the County of Wick'
<b>GW 11</b>	Promote measures to prevent siltation of water courses from developments including planting and clearing of water courses
<b>FDW 01</b>	Collaborate with Irish Water in contributing towards compliance with the relevant provisions of the Urban Wastewater Treatment Directive as amended
<b>Flood Risk Management</b>	
<b>FRM 01</b>	Support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive, the Flood Risk Assessment Regulations (2009) and Department Circular PL2/2014 or any updated / superseding version.
<b>FRM 02</b>	Protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/large developments in Flood Zone C in accordance with the guidance in the Planning Authorities 2009 (or any superseding document) and the guidance contained in Development Management Guidelines
<b>FRM 03 – 06</b>	Site-specific Flood Risk Assessment (FRA) is required for all planning applications in areas at risk of flooding. The requirements of these site-specific FRAs will depend on the level of risk and scale of development. A detailed site-specific FRA shall consider and provide information on the implications of climate change with regard to flood risk management (or any superseding document) and available information from the CFRAM Studies
	Air Quality, Noise, Lighting
<b>AQ 01</b>	Promote the preservation of best ambient air quality compatible with sustainable development in accordance with the requirements of the emissions associated with new developments are within Environmental Quality Standards, as set out in the Planning Authorities 2009
<b>N 02</b>	Require all developments to be designed and operated in a manner that will minimise and contain noise to the lowest practicable standards, where appropriate. Seek identification and implementation of noise mitigation measures, where appropriate
<b>LP 01</b>	Control lighting in urban, rural and sensitive areas in accordance with Euronats and Darksky Circular, in order to minimise light pollution

<b>LP 03</b>	Ornamental lighting of public buildings, bridges, monuments and public spaces must not fall beyond considered before blue or rich white lights and only used where necessary in accordance with Eurobat
<b>LP 04</b>	Require that the design of lighting schemes minimises the incidence of light spillage or pollution into residential or nearby properties, visual amenity and biodiversity in the surrounding areas.
<b>HH 01</b>	Ensure new developments will not have significant adverse effects on the amenities of an area through measures eliminate adverse environmental impacts or reduce them to an acceptable operating level.
<b>Natura</b>	
<b>Policy NHP 01</b>	Protect conserve and enhance biodiversity, natural heritage, amenity and landscape in order to provide
<b>NPO 59</b>	Enhance the conservation status and improve the management of protected areas and protected species
<b>NH 01</b>	Conserve, protect and manage the County's natural heritage assets for future generations while encourage
<b>NH 02</b>	Maximise the social, economic and environmental benefits that may be derived from the conservation
<b>NH 6</b>	Ensure the protection of species of flora and fauna afforded legal protection under Irish and European
<b>NH 7</b>	Assess the impact on biodiversity of proposals for large developments, particularly those on greenfield protection of biodiversity.
<b>NH 8</b>	Promote the conservation of biodiversity outside of designated areas, including features such as wetlands
<b>NHDS 1 – 14</b>	<p>Protect and conserve Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas and</p> <p>Ensure an Appropriate Assessment is carried out in respect of any plan or project not directly connected to Site(s), either individually or in-combination with other plans or projects, in view of the site's conservation</p> <p>Ensure that any plan or project that could have an adverse impact on a NHA, pNHA, SAC, SPA (either individually or in-combination) will result in the deterioration of any habitat or any species reliant on that habitat will be subject to the requirements of the Habitats Directive</p> <p>Ensure an Appropriate Assessment (AA) in accordance with Article 6(3) and Article 6(4) of the Habitats Directive, the Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and relevant EPAs in respect of any effect on a Natura 2000 site(s), either individually or in combination.</p>
<b>Landscape</b>	
<b>LC 1</b>	Ensure the preservation of the unique landscape character type by having regard to the character, value and
<b>Invasive</b>	
<b>IN 1</b>	Support initiatives, which reduce the risk of invasions, help control and manage new and established invasive
<b>Built</b>	
<b>BCHPO 01</b>	Undertake to preserve, conserve, enhance and promote understanding of the cultural heritage of County Cavan as an educational resource • Developing heritage-based tourism products by facilitating the development of the forthcoming Cavan Heritage Plan (currently in development).
<b>RPS 1</b>	Protect, conserve and manage the built heritage of County Cavan and to encourage sensitive and sustainable
<b>AH 1</b>	Protect and safeguard the county's archaeological resource and ensure the sympathetic enhancement of the built heritage by the Planning Authority in its capacity of being charged with the implementation of the National Monuments Act
<b>AH 2</b>	Protect and enhance archaeological sites and monuments, their settings and zones of archaeological interest which are the subject of Preservation Orders or have been registered in the Register of Historic Monuments. Encompassing National Monuments Places.
<b>AH 3</b>	Development adjacent to or near an archaeological site or monument should not interfere with the setting of the monument. Development which has a negative impact on a site or monument will not be permitted.

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## 7.0 POPULATION AND HUMAN HEALTH

### 7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) sets out an assessment of the likely impacts of the proposed Cavan Regional Sports Campus on the local population and human health. The impacts on human health can be influenced by various social, economic, and environmental factors. The significance of these factors may differ depending on the specific details of the project and the unique circumstances of the local community.

The primary objective of an Environmental Impact Assessment (EIA) is to assess the potential environmental impacts that could pose risks to both the environment and human health during the planning phase of the development. Given to the complexity of health, the planning system categorises health determinants, such as activities and hazards with potential health implications, into separate technical disciplines and chapters within an EIAR. These chapters focus on areas such as air quality, noise, and transport. The purpose of this chapter is to utilise and expand on the main findings presented in each relevant EIAR chapter in order to assess the potential risks posed to local communities. This chapter also provides an overview of the environmental baseline, findings from studies and consultations, and any assumptions and limitations encountered during data compilation.

The environment can be affected by any development, which can have both direct and indirect impacts on humans. These impacts can be positive or negative. It is important to thoroughly address any potential impact on the population and human health that may arise from a development proposal. It is considered that the direct impacts on population and human health can come from air quality, noise, traffic, socio-economic impacts and also potential impacts to the land and water quality.

This chapter will draw out the key components of this EIAR relevant to the population and human health and will cross reference where necessary of other chapters of this EIAR. Interactions are considered as appropriate with other chapters as appropriate.

### 7.2 Methodology

#### 7.2.1 Relevant Policy and Guidance

##### **Environmental Protection Agency (EPA) Guidelines on the Information to be contained in EIAR**

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The guidelines on the Information to be contained in the Environmental Impact Assessment Report (EIAR) by the Environmental Protection Agency (EPA) highlights the amendments that have been made to Article 3(1) of the amended European Union (EU) Environmental Impact Assessment (EIA) Directive. This outlines that:

*“The environmental impact assessment shall 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 factor*

- a) population and human health;***
- b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- c) land, soil, water, air and climate;*
- d) material assets, cultural heritage and the landscape;*
- e) the interaction between the factors referred to in points (a) to (d).”*

In addition, Paragraph 5(d) of Annex IV sets out that an EIAR must contain

*“A description of the likely significant effects of the project on the environment resulting from, inter alia, ‘the risks to human health”.*

The guidance on the preparation of an EIAR provides a comprehensive overview of the scope of environmental factors encompassed within the EIA Directive. The scope of ‘*population and human health*’ is clearly defined:

*“Human health is a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population.”*

When outlining the likely significant effect of any project, it is also the case that the guidance from the European Commission poses the following question for consideration:

*“Have the primary and secondary effects on human health and welfare described and, where appropriate, been quantified? (e.g. health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups).”*



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It is imperative that the methods utilised to assess population and human health are tailored for each specific case and can meet the specific requirements of the projects. These requirements can vary significantly depending on the size and nature of the proposal, and they are influenced by the local context and the unique circumstances and sensitivities of the community involved in that locality.

Extensive guidance exists regarding Health Impact Assessment (HIA) both in general and within the realm of development planning. This guidance has been utilised to create a specific chapter on population and human health within the EIAR. The scope, emphasis, and evaluation procedures of the chapter are tailored to the specific proposal and local conditions.

The assessment methodology combines the findings of the wider technical disciplines. It explores and communicates how and where health is assessed and addressed while setting any potential significant environmental effects into a public context (i.e., health protection, health promotion, and health care).

A baseline demographic, health, and well-being demographic database has been established within the chapter. This database aids in the understanding of the local circumstance of the study area based on demographic and health statistics. The assessment displays mostly quantitative data and records relevant changes in the baseline scenario. A qualitative approach is adopted in instances where quantitative data cannot be obtained. In reviewing both forms of data, the assessment considers the sensitivity of each receptor affected and the extent of any potential impact in determining the significance of effect upon health for each health determinant assessed. Any potential detrimental effects that have potential to be considered significant are weighed up against the significant benefits of the scheme.

## 7.2.2 Policy Context

### **The National Planning Framework (Project Ireland) 2040**

The National Planning Framework (Project Ireland 2040) provides a comprehensive set of guidelines for planning authorities and public bodies to follow during the planning process. It emphasises the importance of certain principles that need to be considered when undertaking any development project, particularly in relation to population and human health.

The following National Strategic Outcomes have been identified as relevant to the proposed development and its potential impact of population and human health:

**Table 7.1: National Strategic Outcomes**

National Strategic Outcomes	Description
<b>Compact Growth</b>	Carefully managing the sustainable growth of compact cities, towns and villages will add value and create more attractive places in which people can live and work. All our urban settlements contain many potential development areas, centrally located and frequently publicly owned, that are suitable and capable of re-use to provide housing, jobs, amenities and services, but which need a streamlined and co-ordinated approach to their development, with investment in enabling infrastructure and supporting amenities, to realise their potential. Activating these strategic areas and achieving effective density and consolidation, rather than more sprawl of urban development, is a top priority
<b>Strengthened Rural Economies and Communities</b>	Rural areas play a key role in defining our identity, in driving our economy and our high quality environment and must be a major part of our country’s strategic development to 2040. In addition to the natural resource and food sector potential as traditional pillars of the rural economy, improved connectivity, broadband and rural economic development opportunities are emerging which offer the potential to ensure our countryside remains and strengthens as a living and working community.
<b>Sustainable Mobility</b>	In line with Ireland’s Climate Change mitigation plan, we need to progressively electrify our mobility systems moving away from polluting and carbon intensive propulsion systems to new technologies such as electric vehicles and introduction of electric and hybrid traction systems for public transport fleets, such that by 2040 our cities and towns will enjoy a cleaner, quieter environment free of combustion engine driven transport systems.
<b>Enhanced Amenities and Heritage</b>	This will ensure that our cities, towns and villages are attractive and can offer a good quality of life. It will require investment in well-designed public realm, which includes public spaces, parks and streets, as well as recreational infrastructure. It also includes amenities in rural areas, such as national and forest parks, activity-based tourism and trails such as greenways, blueways and peatways. This is linked to and must integrate with our built, cultural and natural heritage, which has intrinsic value in defining the character of urban and rural areas and adding to their attractiveness and sense of place.

<p><b>Healthy Communities</b></p>	<p>Our health and our environment are inextricably linked. Specific health risks that can be influenced by spatial planning include heart disease, respiratory disease, mental health, obesity and injuries. By taking a whole system approach to addressing the many factors that impact on health and wellbeing and which contribute to health inequalities, and by empowering and enabling individuals and communities to make healthier choices, it will be possible to improve health outcomes, particularly for the next generation of citizens.</p> <p>National Policy Objective 26: Support the objectives of public health policy including Healthy Ireland and the National Physical Activity Plan, through integrating such policies, where appropriate and at the applicable scale, with planning policy.</p> <p>National Policy Objective 27: Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments, and integrating physical activity facilities for all ages.</p>
<p><b>Diverse and inclusive Ireland</b></p>	<p>Planning affords an opportunity to facilitate and deliver a more socially inclusive society through better integration and greater accessibility at all stages of the life cycle. Housing, education, health and transport are four key areas where social inclusion can be improved; for example, through universal design of buildings to deliver greater accessibility for all, or co-location of community facilities and uses to ensure communities are active during the day and into the evening.</p> <p>National Policy Objective 28: Plan for a more diverse and socially inclusive society that targets equality of opportunity and a better quality of life for all citizens, through improved integration and greater accessibility in the delivery of sustainable communities and the provision of associated services.</p>
<p><b>Quality of Life and Place</b></p>	<p>The National Planning Framework Recognises While the National Planning Framework cannot effect change in all of the dimensions that contribute to quality of life, there are some key elements that it will directly impact on, most importantly ‘the natural and living environment’. This is why place is intrinsic to achieving good quality of life - the quality of our immediate environment, our ability to access services and amenities, such as education and healthcare, shops and parks, the leisure and social interactions available to us and the prospect of securing employment, all combine to make a real difference to people’s lives.</p>

## Cavan County Development Plan

The Cavan County Development Plan 2022 – 2028 sets out a number of objectives relating to population and human Health. These include development objectives that relate specifically to human health, social infrastructure and community facilities:

<b>Table 7.2: Human Health Development Objectives</b>	
<b>Description</b>	
Ensure new developments will not have significant adverse effects on the amenities of an area through pollution by noise, fumes, odours, dust, grit or vibration or cause pollution of air, water and or soil unless mitigation measures eliminate adverse environmental impacts or reduce them to an acceptable operating level.	

<b>Table 7.3: Social Infrastructure Development Objectives</b>	
<b>Policies</b>	<b>Description</b>
<b>SI 01</b>	Work collaboratively with relevant service providers and stakeholders to facilitate the provision of community services and social infrastructure, where appropriate, in order to meet the needs of new and existing communities.
<b>SI 02</b>	Support the relevant actions of the Local Community Development Committee (LCDC) and the Cavan Local Economic and Community Plan (LECP) to deliver social infrastructure needs and to reduce poverty and social exclusion
<b>SI 03</b>	Support the planned provision of easily accessible social, community, cultural and recreational facilities and ensure all communities have access to a range of facilities that meet their needs easily accessible by walking, cycling or public transport.

<b>SI 04</b>	Encourage shared use and co-location of social and community facilities, in order to align service provision, use land more efficiently and facilitate opportunities for further inclusion and community participation.
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<b>Table 7.4: Community Facilities Development Objectives</b>	
<b>Policies</b>	<b>Description</b>
<b>CF 01</b>	Maintain and, where possible, improve the provision of community facilities, including sports facility in the County to ensure that facilities are adequate to meet the needs of the communities they serve, are physically integrated with residential and employment areas and are provided concurrently with new residential development.
<b>CF 02</b>	Consider development proposals for new social and community infrastructure/service related development at:
	<b>A</b> Locations within the settlement boundaries which are within walking distance of local services whereby social inclusion is promoted. An alternative location may be considered where it is clearly demonstrated that there are no suitable sites available within the settlement and strong justification is given to the development of such a particular site.
<b>CF 08</b>	Support and promote the development new and existing sports facilities within the County, subject to the normal planning criteria and the proper planning and sustainable development of the area.
<b>CF 09</b>	Support the provision of a Regional Sports Facility for the County.
<b>CF 11</b>	Ensure that new leisure facilities, where possible, are located in proximity to public transportation routes and where they can best meet the needs of the community that the facilities are intended to serve.

**National Healthy Ireland Framework 2019 - 2025**

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The Cavan County Development Plan also recognises the benefits of sports and the development of a multi-purpose sports facility for the county. Section 2.2.9 of the Plan sets out the aspiration of the council for sustainable communities. It states:

*“There is an identified need for additional facilities within Cavan Town to cater for the large number of sporting organisations. It is recommended that support is provided for community and sporting groups within these identified areas, in particular to avail of funding opportunities under Sports Capital and the newly launched ‘Realising Our Potential: An Action Plan for Rural Development’.”*

The Local Economic and Community Plan (LECP) identified that there is a growing youth population which will result in increased pressure to provide an outlet for our young people through sport and appropriate facilities. A specific action within the LECP states that Cavan County Council is to ‘Develop a multi-purpose sports facility for the county’ and the findings from this report add weight for such a need.

The issue of health and wellbeing is becoming an increasingly important aspect for our society and one which should be encouraged. It is recommended that Cavan Sports Partnership and other supporting organisations provide support to organisations and groups on how to develop sporting activities and facilities.

Space can be an issue for many of the facilities based within urban areas, with many having limited availability to meet the demands for their use, or in other cases, facilities do not have the sufficient room or size available to cater for larger groups. As identified within the LECP, there is a need for a new community hub to be developed within walking distance of Cavan Town, which presents itself as a reoccurring issue under various local consultations carried out. A community hub in Cavan town is an important project that is required, and which forms part of Abbeylands URDF project”.

### **National Healthy Ireland Framework 2013**

The Healthy Ireland Framework, released in 2013, adopts a comprehensive strategy known as ‘*Health in all Policies*’ to tackle the health challenges faced by communities. This approach involves the active participation of the ‘whole-of-government’ and ‘whole-of-society’, aiming to improve the health outcomes for all individuals. The overall vision of the framework is:

*“A healthy Ireland, where everyone can enjoy physical and mental health and wellbeing to their full potential, where well-being is valued and supported at every level of society and is everyone’s responsibility”.*

The specific goals of Healthy Ireland are set out in the framework as follows:

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1. Increase the proportion of people who are healthy at all stages of life;
  2. Reduce health inequalities;
  3. Protect the public from threats to health and wellbeing; and
  4. Create an environment where every individual and sector of society can play their part in achieving a healthy Ireland.

### 7.3 Baseline

To establish baseline conditions for the assessment, the *Cavan County Development Plan 2022 - 2028* and the Department of Public Health document, *Health Profile Cavan 2015* were utilised to inform the assessment on population and human health within this chapter.

### 7.4 Assessment Criteria and Significance

#### 7.4.1 Guidance

The concept of 'health' as defined by the World Health Organisation (WHO) constitution encompasses health as a *"state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"*. In the context of development planning, there exists a substantial body of guidance emphasising the integration of public health considerations into the planning process. This guidance draws upon expert evidence and policy to highlight the importance of adopting a comprehensive socio-economic model of health. This type of model encompasses conventional health impacts that could arise during both operational and construction phases of the development, these include potential contamination and pollutants entering watercourses and potential increase in diseases, respiratory issues as a result of detrimental air quality impacts, potential increases in pedestrian and vehicular safety as a result of increased traffic, potential impacts on quality of life as a result of general disturbance such as noise. These are considered alongside broader determinants crucial for fostering good health and well-being, such as employment and local amenities. Given the nature of the proposed development which seeks to deliver on the objective of the Development Plan which ultimately seeks to deliver and provide access to high quality sport and recreational facilities within Cavan, it is considered that the social and economic benefits of such as scheme are also material considerations when assessing the potential impacts on the local population and their health.

The assessment examines physical, mental, and social well-being impacts, addressing equality and social factors where possible. It acknowledges the intertwined relationship between social and environmental influences on health. By considering both social and ecological determinants, such as access to healthcare and environmental quality, it aims to provide a comprehensive understanding of how the proposed development could affect overall population health.

## 7.4.2 Assessment Methodology and Criteria

The potential significance of an effect is based on the magnitude of an impact and the sensitivity of the receptor, affected by the impact of that magnitude. This section sets out the criteria applied in this chapter to characterise the magnitude of potential impacts and sensitivity of receptors. Table 7.5 outlines the sensitivity of receptors, while Table 7.6 outlines the magnitude of impacts on receptors.

Table 7.5: Definitions of Sensitivity	
Sensitivity	Description
<b>Very High</b>	Very high importance and rarity, international scale and very limited potential for substitution
<b>High</b>	High importance and rarity, national scale, and limited potential for substitution
<b>Medium</b>	High or medium importance and rarity, regional scale, limited potential for substitution
<b>Low</b>	Low or medium importance and rarity, local scale.
<b>Negligible</b>	Very low importance and rarity, local scale

Table 7.6: Definitions of Magnitude	
Sensitivity	Description
<b>High</b>	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements <b>(Adverse)</b> Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality <b>(Beneficial)</b>
<b>Medium</b>	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements <b>(Adverse)</b> Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality <b>(Beneficial)</b>
<b>Low</b>	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements <b>(Adverse)</b> Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring <b>(Beneficial)</b>
<b>Negligible</b>	Very minor loss or detrimental alteration to one or more characteristics, features or elements <b>(Adverse)</b>



	Very minor benefit to or positive addition of one or more characteristics, features or elements <b>(Beneficial)</b>
<b>No Change</b>	No loss or alteration of characteristics, features or elements; no observable impact in either direction

Table 4.6 describes the potential environmental receptors during both construction and operational phases. Due to the temporary nature of the construction phase the impacts are considered to be part temporary and/or part permanent. Due to the localised nature of the potential impacts the receptor for each of the identified impacts is considered to be those residents living within the immediate vicinity of the site and those visiting the site and surrounding land uses.

<b>Table 7.7: Potential Environmental Impacts / Classification / Type</b>			
<b>Receptor: Population / Human Health</b>	<b>Classification of Impact (Construction Phase)</b>	<b>Classification of Impact (Operation)</b>	<b>Impact Type</b>
Noise Impact	Negative	Negative	Part temporary, part permanent, direct, localised impact
Air Quality	Negative	Negative	Part temporary, part permanent, localised impact
Traffic	Negative	Negative / Positive	Part temporary, part permanent, localised impact
Amenity Impacts	Negative	Negative	Part temporary, part permanent, localised impact
Quality of Life impacts as a result of accessibility to open space, sports and recreation	Negligible	Positive	Part temporary, part permanent, localised impact
Community Benefits	Negative	Positive	Part temporary, part permanent, localised impact

Employment	Positive	Positive	Part temporary, part permanent, localised impact
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### 7.4.3 Significance of Effects

The significance of effects is assessed based on the matrix provided in Table 7.8, which considers both the sensitivity of receptors and the magnitude of impact. The terms used within this assessment, such as '*Substantial*', '*Major*', '*Moderate*', '*Minor*', and '*Negligible*', are defined below to provide clarity on the significance levels attributed to various effects. It is important to acknowledge that within a defined population, variations will likely exist in the sensitivity to social-economic and environmental changes within the local population. In the instance of this assessment, a precautionary approach has been adopted, assuming uniform high sensitivity among the population of Cavan town to changes in environmental and socio-economic conditions. Moreover, any effects identified that are deemed to have significance at 'Minor' levels and lower are not considered to be significant for the purposes of the assessment.

- **Substantial:** This level is typically reserved for adverse effects that are crucial considerations in decision-making. They often relate to sites or features of international, national, or regional significance, where significant impact and loss of resource integrity are anticipated. However, substantial changes to local sites or features may also fall into this category.
- **Major:** Both beneficial and adverse effects at this level are highly significant considerations and are likely to materially influence decision-making.
- **Moderate:** Effects categorised as moderate may be important, but they are not usually critical factors in decision-making. However, the cumulative impact of such effects could influence decisions if they contribute to an overall increase in adverse effects on a particular resource or receptor.
- **Minor:** Effects in this category are typically local in nature and may not be crucial in decision-making but can still play a role in refining project design.
- **Negligible:** This category includes effects that are either imperceptible, within normal variation, or fall within the margin of error in forecasting.

Table 7.8: Significance of Effects					
Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	No Change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No Change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No Change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No Change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very High	No Change	Minor	Moderate or Major	Major or Substantial	Substantial

## 7.5 Baseline Environment

### 7.5.1 Strategic and Local Population Context

As set out at Section 2.2 of the Cavan County Development Plan, the implementation Roadmap for the National Planning Framework (July 2018) highlights the Governments focus on achieving alignment between national, regional and local planning policy and guidance. The NPF states; *“The critical population projection periods are to 2026 and 2031, with a particular emphasis on the initial six-year period to 2026, for city and county development plans that are to be formulated during the 2019-20/21 period” (NPF Implementation Roadmap, p4) The Roadmap provides transitional population projections for these milestones at a regional and county scale, in order to inform Development Plans for the period 2026 and 2031. The transitional population projections for the Northern and Western Region are listed in Table 1 below. With specific regard to Cavan, the projected population for 2026 is in the range of 83,000-84,500. For 2031, it is in the range of 86,000-88,000” (Figure 7.1).*

**Figure 7.1: Table 1 of the Cavan County Development Plan – Transitional Regional and County Population Projections to 2031**

Regions and Counties	2016	2026	2031
<b>North West</b>			
Donegal	159,000	173,500-176,500	179,500-183,500
Sligo	65,500	71,500-72,500	74,000-75,500
Leitrim	32,000	35,000-35,500	36,000-37,000
Subtotal	256,500	280,000-284,500	289,500-296,000
<b>West</b>			
Galway	258,000	300,000-308,500	322,000-334,500
Mayo	130,500	142,000-144,500	147,000-150,500
Roscommon	64,500	70,500-71,500	73,000-74,500
Subtotal	453,000	512,500-524,500	542,000-559,500
<b>Mid border</b>			
Cavan	76,000	83,000-84,500	86,000-88,000
Monaghan	61,500	67,000-68,000	69,000-71,000
Subtotal	137,500	150,000-152,500	155,000-159,000
<b>Total</b>	<b>847,442</b>	<b>942,500-986,500</b>	<b>961,500-1,014,500</b>

Cavan Town is of strategic importance within the Border Region and has excellent transport linkages nationally, regionally, and locally. The identification of the N3 Virginia Bypass as a priority development in the National Road Network will further enhance the accessibility of Cavan Town as a strategic location. Cavan’s strategic location was referenced consistently by National Governing Bodies of Sport and other stakeholders during a recent feasibility study process (2019). Cavan was identified as having the potential to become a destination for regional and national events and activity, but the lack of appropriate facilities was preventing it from doing so. Cavan County Council in conjunction with the Royal School, Cavan and the Cavan GAA County Board therefore propose to undertake a scheme of works that will transform the underused site, creating a project of regional sporting significance.

Within County Cavan, the county saw a population increase of 4% (+2993 persons) between 2011- 2016, as the population increased to 76,176 from 73,183<sup>1</sup>.

According to the CSO’s (Central Statistics Office) parameters, a total of 23,258 people (30.5%) were living in urban settlements in Cavan in 2016. 52,918 (69.5%) were living in smaller towns and villages, as well as in the rural remainder of the county. In 2011, census results showed a distribution between the urban and rural population as

<sup>1</sup> <https://www.cavancoco.ie/file-library/planning/development-plans/development-plan-2022-2028/written-statement/cdp-written-statement.pdf>

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30% and 70% respectively. Thus, the urban/ rural split has remained relatively stable over this period, with a marginal increase in the urban population.

The average age of Cavan's inhabitants is 36.7 years old, lower than the national average age of 37.4. 13.7% of the county population were over 65 years old in 2016, in contrast to state figure of 13.4%.

23.1% of Cavan's population is aged under 14. In total, the number of children of pre-school age (0-4) is 5,725 (7.5%). 9,678 (12.7%) are of primary school going age (5-12) and a further 6,596 (8.6%) are of secondary school going age (13-18).<sup>2</sup>

The 2022 Census established that the population of Cavan as a County grew by 7% to 81,704 people. This means that the number of people in the county rose by 5,528 people between April 2016 and April 2022. The Census also found that the average age of the county's population was 38.5 years in April 2022 compared to 37.2 years in April 2016. In 2022, 84% of people in County Cavan stated that their health was good or very good compared the 87% in 2016.<sup>3</sup>

In the 2016, Cavan Town had a population of 10,914 people. The 2022 Census established that from 2016, the population of the town had increased by 1.2% to 11,741 people. The 2022 Census also found that within Cavan Town, 3,320 people were aged 0-17 years, 7,023 people were aged 18-64 years and 1,398 people were 65+ years.<sup>4</sup>

## 7.5.2 Economic Context

County Cavan, one of five 'border' counties, has been identified as having a strategic, accessible location. The county benefits from a strategic position in which it has key corridors that connect domestically with Dublin City and Dublin Airport (via Navan) and Sligo and Galway (via Athlone). Dublin and Cavan are connected by the N3/M3 road, and except for Virginia, this route bypasses or does not pass through any towns or villages. The road continues north, extending into County Fermanagh (A509) to Enniskillen and beyond to Derry.

Cavan is bound by County Fermanagh to the north and its proximity provides important economic trade corridors with Enniskillen, Belfast and Derry. County Cavan is strategically located within proximity to the trade corridors of Dublin and Belfast, while Drogheda, Dundalk and Navan are also accessible. These are all important centres of enterprise and employment, while Dublin and Belfast provide airport and port access, Drogheda also provides port access.

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<sup>2</sup> <https://www.cavancoco.ie/file-library/planning/development-plans/development-plan-2022-2028/written-statement/cdp-written-statement.pdf>

<sup>3</sup> <https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensusofpopulation2022-summaryresultscavan/>

<sup>4</sup> [https://www.citypopulation.de/en/ireland/towns/CN\\_cavan/](https://www.citypopulation.de/en/ireland/towns/CN_cavan/)

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Through these important transport connections, Cavan has high accessibility to Dublin and Northern Ireland. This has helped the County grow with businesses, providing new opportunities for existing businesses and attracting new industries seeking to capitalise on knowledge sectors across the County.

Business demography data indicates steady growth for Cavan County in recent years. Since lows in 2013 (of persons employed and engaged) growth has risen by 25.7% and 30.8% for persons engaged. Since the recorded low in 2014, the number of enterprises has increased by 14.7% (519). With historic information showing a clear rise in employment and enterprises, organic growth is expected to accompany population growth.<sup>5</sup>

### 7.5.3 Health Profile 2015 Cavan

The following key facts are presented in the Department of Public Health document, Health Profile 2015 Cavan and are considered important fact in the determination of a future planning application on this site<sup>6</sup>.

- Had the second highest percentage increase in population from 2006-2011 at 14.3% (8.2% nationally).
- Has below average rates for those who report their health as being bad or very bad at 1.3% (nationally 1.5%) and for those with a disability at 11.9% (nationally 13.0%).
- The birth rate for all ages was the same as the national rate, however the births to those aged under 20 at 14.4 is higher than the national rate at 12.3.
- Cancer incidence rates for the main causes of cancer are below average, with the lowest rates nationally for female all invasive cancers except non-malignant skin cancers and for female malignant colorectal cancer.
- Deaths from all causes, circulatory diseases and injuries & poisoning were higher than the national rates for those aged under 65 and 75 years of age.
- The rate of suicide of 13.7 is higher than the national rate of 11.3.
- Immunisation uptake at 24 months for MMR1 at 94% and 3rd 6 in 1 at 97% are both above national rates (93% and 95% respectively).

### **Physical Health**

The HSE Profile 2015 Cavan contains statistical analysis on physical health compared to Ireland. In death rates per 100,000 for the four principal causes of death over the period 2007 - 2012 it was reported in regard to cancer, heart disease and stroke, injury and poisoning and respiratory related deaths, Cavan had more deaths than the national average<sup>7</sup>. More recent national health statistics are available in the Healthy Ireland Survey (2021). It shows

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<sup>5</sup> <https://www.cavancoco.ie/file-library/planning/development-plans/development-plan-2022-2028/written-statement/cdp-written-statement.pdf>

<sup>6</sup> <https://www.lenus.ie/bitstream/handle/10147/583955/Cavan.pdf?sequence=1&isAllowed=y>

<sup>7</sup> <https://www.lenus.ie/bitstream/handle/10147/583955/Cavan.pdf;jsessionid=F8CBA4B2F204614A39E8ED758A6AB753?sequence=1>

that 84% of the Irish population perceive their health to be good or very good, 3% rate their health as bad or very bad. The most commonly diagnosed conditions are high blood pressure (6%), arthritis (5%), asthma (4%), diabetes (4%) and high cholesterol (3%).<sup>8</sup>

### **Mental Health**

Among less affluent socio-economic groups it has been established that levels of depression and admissions psychiatric hospitals are higher. Mental health problems are directly linked to deprivation, poverty and inequality. According to the HSE 2015 Cavan profile, around 76% of Cavan’s population live below the average level of deprivation. Mental health is a growing health, social and economic issue and it is believed that depressive mental illnesses will be the leading cause of chronic disease in high income counties by 2030 (Healthy Ireland, 2013). Ireland has the fourth highest mortality rate from suicide in the EU among 15–24-year-olds and the third highest among men.

## **7.6 Impact Assessment**

### **7.6.1 Assessment of Construction Phase Impacts**

The construction phase of a development is often pinpointed as the main source of environmental health issues. Even though the activities during this phase are temporary and typically confined to specific working hours, they can still result in alterations to the air quality, noise levels, and traffic volume in the vicinity. Additionally, the construction phase has the capacity to affect the quality of water and soils, as well as influence the local economy in terms of income and job opportunities. These issues have been set out in more detail below.

<b>Air Quality</b>	
<b>Magnitude of Impact</b>	During the construction phase, there will be a low magnitude of impact on air quality due to the potential generation of construction dust from various activities such as demolition, excavation, and transportation of materials.
<b>Sensitivity of the Receptor</b>	Receptors such as nearby residential areas and sensitive environmental zones are deemed to have low sensitivity to changes in air quality in relation to human health.
<b>Significance of Effect</b>	The significance of the effect on receptors during the construction phase is expected to be minor. While there are potential localised increases in particulate matter levels, these are anticipated to be short-lived and reversible once construction activities cease.
<b>Further Mitigation or Enhancement</b>	Enhanced communication channels and stakeholder engagement plans will be developed to foster community involvement and transparency throughout the

<sup>8</sup> <https://www.gov.ie/en/publication/9ef45-the-healthy-ireland-survey-2021/>

	<p>construction process. Rigorous site inspections, especially during activities prone to dust generation, will also be conducted more frequently to promptly identify and address any potential issues. Advanced dust suppression technologies will be adopted to minimise dust emissions, and waste management practices will be refined to reduce environmental impact. Continuous monitoring of air quality and adjustment of mitigation strategies based on real-time data are to be utilised to ensure their efficacy in mitigating construction-related air quality impacts to the lowest practicable level.</p>
<b>Residual Effect</b>	<p>The impact on air quality during the construction phase will be minimal, with any residual effects expected to be limited in geography and duration.</p>

<b>Noise Exposure</b>	
<b>Magnitude of Impact</b>	<p>During the construction phase, noise and vibration levels are anticipated to have a medium impact on sensitive receptors. Predicted sound levels from construction activities such as clearing sites and ground excavation, exceed the threshold values for noise-sensitive receptors based on the approximate distance to the construction areas.</p>
<b>Sensitivity of the Receptor</b>	<p>The receptors are sensitive to changes in noise and vibration levels during the construction phase. With predicted sound levels exceeding the threshold values at noise-sensitive receptors, it is considered to be of medium sensitivity.</p>
<b>Significance of Effect</b>	<p>The significance of the effect on receptors during the construction phase is deemed to be moderate. Predicted noise levels without exceeding the threshold values, particularly for receptors closest.</p>
<b>Further Mitigation or Enhancement</b>	<p>In addition to the engagement methods outlined previously, to mitigate the impacts of noise and vibration during the construction phase, various measures have been proposed. These include the implementation of noise barriers around the perimeter of the construction site, proactive community engagement to address concerns and complaints, and regular monitoring of noise and vibration levels to ensure compliance with established thresholds. Additionally, adopting low-vibration construction methods and adhering to best practices outlined are recommended to further mitigate the impact. This will reduce the magnitude of impact, sensitivity of the receptor and significance of effect to low, low and negligible / minor respectively.</p>
<b>Residual Effect</b>	<p>Residual effects on noise and vibration levels during the construction phase are</p>



	<p>expected to be ongoing throughout this phase, however, are varying levels (as set out in the Noise Chapter), albeit at reduced levels in the short-term. The implementation of noise barriers and other mitigation measures will alleviate some of the impacts on nearby receptors. Residual effects may still be experienced by receptors closest to the construction sites, necessitating ongoing monitoring and proactive management to minimise disturbances and ensure compliance with regulatory standards.</p>
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Transport	
<b>Magnitude of Impact</b>	<p>During the construction phase of the project, the magnitude of impact on traffic flow and surrounding infrastructure is expected to be low. The addition of construction traffic is projected to increase the overall traffic volume by 0.75% and 0.62% during Phases 1 and 2, respectively. This slight increase indicates a manageable impact on the existing traffic patterns in the area.</p>
<b>Sensitivity of the Receptor</b>	<p>The sensitivity of the receptor, in this case, the surrounding community and road users, to the construction phase impacts is considered medium. While the increase in construction traffic may lead to temporary disruptions and minor delays, the Traffic Management Plan in place aims to address and mitigate these issues effectively.</p>
<b>Significance of Effect</b>	<p>The significance of the effects resulting from the construction phase of the project is deemed to be minor. The projected increase in traffic volume and construction activities are expected to have minimal adverse effects on the overall traffic flow and safety of the surrounding area.</p>
<b>Further Mitigation or Enhancement</b>	<p>Construction work will only take place during designated hours to avoid disruptions during late hours. The schedule will be restricted to weekdays between 08:00hrs and 18:00hrs, as well as Saturdays from 08:00hrs to 13:00hrs, with no work planned on Sundays or Bank Holidays.</p>
<b>Residual Effect</b>	<p>The residual effect of construction traffic on transport post-construction is expected to be minimal. Once the construction phase is completed, any temporary disruptions caused by construction activities are anticipated to dissipate.</p>

Soil, land and Water Quality	
<b>Magnitude of Impact</b>	During the construction phase, any impacts on soil, land or water quality have potential for low-medium impacts on population and human health.
<b>Sensitivity of the Receptor</b>	It is considered that any impacts on soil and water quality on population and human health and in particular those nearby receptors such as residents is considered to be moderately to highly sensitive due to the potential for contamination and pollution and the potential knock-on impacts on human health (i.e potential disease, respiratory problems etc.).
<b>Significance of Effect</b>	<p>With regard to land and soils the chapter states that that there is no specific geological significance and therefore no impact likely, there is no gravels present on the site and therefore no potential for any impacts on human health.</p> <p>The chapter does indicate that most of the site is devoid of made ground and ground gas. Areas of made ground are identified around the access road and bridge crossing, however there is no significant cut-fill works planned for the access road area of the site and the potential human health risks from exposure to the made ground are reduced.</p> <p>The re-use of site-derived materials shall be prioritised to minimise the volume of imported materials required. Some topsoil and clay may need to be imported. These materials have the potential to be contaminated or have levels of naturally occurring components in excess of safe human health limits.</p>
<b>Further Mitigation or Enhancement</b>	<p>It should be noted that the area of made ground associated with the access road and bridge cross site, as described in Section 9.6.12 were not sampled or assessed as part of the GQRA investigation. This area will require further assessment prior to construction works commencing to determine any human health or environmental risks posed and develop appropriate remediation / mitigation if required.</p> <p>The development will involve a degree of cut-fill. The re-use of site-derived materials shall be prioritised to minimise the volume of imported materials required. Some topsoil and clay may need to be imported. Controls on the quality of materials being imported will need to be implemented. Importation of materials will be in compliance with all regulatory requirements for re-use of waste / importation of soils.</p>

<b>Residual Effect</b>	Implementation of the mitigation measures outlined in the <b>Error! Reference source not found.</b> section, in line with good construction practices, will minimise the risk to the water environment during the construction phase of the proposed development and any residual impacts will be neutral and temporary.
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<b>Income and Employment Generation</b>	
<b>Magnitude of Impact</b>	Steady income and stable employment significantly influence overall health. During the construction phase of the Cavan Regional Sports Complex, job opportunities would arise, primarily for construction workers. However, due to the nature of the construction industry, not all those employed may be local. The human health effects, predicted to be regionally impactful and short-term, stem from direct and indirect employment opportunities. These changes however to income and employment are insufficient to measure baseline health alterations and therefore result in a negligible magnitude of impact.
<b>Sensitivity of the Receptor</b>	A precautionary approach has been used in the instance of this metric and assumes uniformly high sensitivity among residential receptors to health effects from income and employment generation.
<b>Significance of Effect</b>	It is anticipated that there will be a minor impact on income and employment generation. As has been indicated at Section 4.3, any effects identified that are deemed to be significance of 'minor' levels and lower are not considered significant for the purposes of the assessment.
<b>Further Mitigation or Enhancement</b>	No further measures for mitigation or enhancement are proposed.
<b>Residual Effect</b>	The residual effect of income and employment generation during construction is expected to be positive. The employment that was facilitated through the construction of the facility will dissipate upon completion.

## Assessment of Operational Effects / Phase

Air Quality	
<b>Magnitude of Impact</b>	During the operational phase, the magnitude of impact on air quality is expected to be negligible. The mitigation measures outlined indicate that there will be no significant impact on air quality, and strict adherence to the applicable air quality regulations will be maintained.
<b>Sensitivity of the Receptor</b>	The receptors are considered to have low sensitivity during the operational phase of the development.
<b>Significance of Effect</b>	The significance of the effect on receptors during the operational phase is expected to be negligible or minor.
<b>Further Mitigation or Enhancement</b>	No further measures for mitigation or enhancement are proposed.
<b>Residual Effect</b>	The impact on air quality during the operational phase will be minimal, with any residual effects post-construction phase to be limited in geography and duration.

Noise Exposure	
<b>Magnitude of Impact</b>	During the operational phase, noise and vibration levels are anticipated to have a low impact on sensitive receptors given the mitigation measures that have been operationalised.
<b>Sensitivity of the Receptor</b>	The receptors are considered to have low sensitivity during the operational phase of the development.
<b>Significance of Effect</b>	The significance of the effect on receptors during the operational phase is expected to be negligible or minor.
<b>Further Mitigation or Enhancement</b>	A 2m noise barrier will be erected along the south / south-eastern boundary of the site. This barrier will be designed to reduce the operational noise levels by at least 5 dB. The barrier will be continuous in length with a surface density of at least 10 kg/m <sup>2</sup> .
<b>Residual Effect</b>	The residual impact of noise and vibration levels post- construction is projected to be negligible. The suggested mitigation measures will ensure that the proposal remains below the 50 dB(A) noise threshold, in accordance with the established standard for sports activities and the guidelines set by the WHO for external amenity.

Land, Soils and Waters	
<b>Magnitude of Impact</b>	Potential impact on population and human health during the operational phases of the development are considered to be low.
<b>Sensitivity of the Receptor</b>	The sensitivity of nearby residents following completion of the development and incorporation of the relevant mitigation measures during the construction phase, the sensitivity of nearby residents and the wider population of Cavan is considered to be low.
<b>Significance of Effect</b>	As a result of the significance of the impact during the operation phase of the development, the significance of the impact is considered to be low.
<b>Further Mitigation or Enhancement</b>	Sustainable Urban Drainage Design System (SuDS) will be employed along with flow-control attenuation systems to allow for containment of run-off along, with engineered end-of-pipe controls deployed as part of the attenuation measures for managing runoff from hard surfaces (interceptors for vehicular routes and car parks). Mitigation measures will be put in place, through consultation with NPWS and Inland Fisheries Ireland to ensure that the Cavan River remains unaffected throughout the construction and lifespan of the proposed development.
<b>Residual Effect</b>	Subject to relevant mitigation no residual impacts are expected during the operation phase of the development.

Income and Employment Generation	
<b>Magnitude of Impact</b>	Steady income and stable employment significantly influence overall health. During the operational phase of the Cavan Regional Sports Complex, direct employment opportunities would arise and would cater primarily to the local population in Cavan town. These changes are however insufficient to measure baseline health alterations and therefore result in a negligible magnitude of impact.
<b>Sensitivity of the Receptor</b>	A precautionary approach has been used in the instance of this metric and assumes uniformly high sensitivity among residential receptors to health effects from income and employment generation.
<b>Significance of Effect</b>	It is anticipated that there will be a minor impact on income and employment generation. As has been indicated at Section 4.3, any effects identified that are deemed to be significance of 'minor' levels and lower are not considered significant for the purposes of the assessment.
<b>Further Mitigation or Enhancement</b>	No further measures for mitigation or enhancement are proposed.

<b>Residual Effect</b>	The development of the Cavan Sports Regional Complex will have a significant impact on the local economy of Cavan town and the wider county in terms of income and employment generation. The development will generate a number of direct and indirect employment, both from the development of the facility and the increased footfall that would be anticipated to Cavan town.
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<b>Health and Wellbeing</b>	
<b>Magnitude of Impact</b>	Regular physical activity has been linked to numerous health benefits, including reduced risk of chronic diseases, improved mental health, and enhanced social cohesion. With the development of the sports complex, residents will have greater opportunities to engage in physical activities, fostering a culture of active living and healthier lifestyles. Additionally, participation in sports and recreational activities can promote social interaction and community bonding, contributing to overall psychological well-being. These enhancements to Health and Wellbeing would result in a medium magnitude of impact
<b>Sensitivity of the Receptor</b>	A precautionary approach has been used in the instance of this metric and assumes uniformly high sensitivity among residential receptors to health effects from income and employment generation.
<b>Significance of Effect</b>	The significance of effect for the Regional Sports Facility on health and wellbeing is considered moderate. The scale and scope of the facility extend beyond individual users to influence the health and wellbeing of a broader segment of the population within the county. By providing enhanced access to sports facilities and organised groups, the Cavan Regional Sports Complex holds significant potential for promoting physical activity and healthier lifestyles among residents.
<b>Further Mitigation or Enhancement</b>	No further measures for mitigation or enhancement are proposed.
<b>Residual Effect</b>	The development of the Cavan Sports Regional Complex will have a significant impact on the local economy of Cavan town and the wider county in terms of health and wellbeing. This will include sustained improvements in public health indicators such as increased physical activity levels, reduced rates of chronic diseases associated with sedentary lifestyles, and enhanced social cohesion within the community.

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## 7.6.2 Assessment of Population

### Construction Phase

All construction impacts are considered to be temporary in nature and with mitigation, not considered to be significant.

The construction phase of the proposed development is anticipated to stimulate economic activity within the vicinity of the development site and the surrounding locality of Cavan town, notably benefiting the construction sector and related industries. This boost highlights the sustained trend of growth within the construction sector in Ireland. The development of the Cavan Regional Sports Campus is poised to contribute positively to the continued growth of the sector in the Irish economy.

### Operational Phase

The operational phase of the proposed development is expected to yield significant benefits for the socio-economic health of the local population, both directly and indirectly, facilitated by induced employment opportunities and associated income generation. It is anticipated that the nature of the proposals for a regional sports facility will extend these benefits to the population and human health of those within Cavan town as well as the wider communities in the council area. The anticipated benefits to the local population include:

- Enhanced health and wellbeing through increased access to sport and recreational activities;
- Creation of employment opportunities and potential generation of additional revenue, bolstering the local economy;
- Improved accessibility to sports facilities, fostering a culture of physical activity and healthy lifestyle choices;
- Mitigation of anti-social behaviour through the provision of activities and community initiatives; and
- Improved sense of safety and security amongst local population.

## 7.7 Cumulative Effects

The assessment of population and human health interacts with other chapters within the EIAR, and the cumulative impacts assessed within those chapters and their conclusions are incorporated into this assessment. As such, this has assessment indirectly takes into account the combined impacts that may result from both the proposed development and those developments which are to be considered cumulatively.

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## **7.8 Overall Mitigation**

### **7.8.1 Construction Mitigation**

No mitigation measures are recommended specifically with regard population and human health as there are no anticipated significant effects from the construction phase. Mitigation however is considered within various chapters within this EIAR and are relevant to a broader range of sensitive receptors. Mitigation however is considered to further reduce or completely eradicate the potential for any significant impact upon population and human health.

### **7.8.2 Operational Mitigation**

No mitigation measures are recommended for population and human health as there are no anticipated significant effects from the operational phase.

It is considered that the impacts to the population and human health will be generally positive and will support many of the strategic and local objectives set out within the National Policy Framework (NPF) and the Cork County Development Plan in relation to communities, health and wellbeing and quality of life.

### **7.8.3 Future Monitoring**

No future monitoring will be required for population and human health metrics due to the nature and scale of the development.

## **7.9 Summary of Effects and Conclusions**

It is unlikely that the construction or operation of the proposed development will have any significant effects on human health. This assessment is made on the basis that any potential changes in health indicators would not be substantial enough to observe any noticeable shifts in the overall health and wellbeing of the locality or community.

## **7.10 Limitations**

The population and human health assessment in the EIAR is intricately linked with and builds upon technical outputs from various chapters such as air quality, noise, and transport assessments to scrutinise changes in environmental and socio-economic conditions directly linked to the proposed development. Consequently, limitations inherent in the supporting assessments, along with the conservative assumptions applied to address them, impact the assessment.

Enhancing the reliability and usefulness of assessments for EIAR purposes requires effectively managing the limitations of baseline data. This involves cross-referencing national statistics to determine the specific health



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conditions and individual health pathways being evaluated at the local level. Despite the difficulties encountered, the existing information is considered satisfactory for undertaking a comprehensive assessment of human health.

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## 8.0 BIODIVERSITY

### 8.1 Introduction

In 2023 MCL Consulting were appointed by McAdam Design Ltd to undertake an ecological appraisal of a proposal for a sports campus to be located on lands north, south and west of Royal School Cavan and west of Breffni Park GAA grounds, County Cavan.

Following an initial ecological assessment and subsequent recommendations, MCL Consulting were appointed to undertake a suite of protected species surveys including, breeding birds, otter, pine marten and badger, as well as undertaking an Appropriate Assessment and Natura Impact Statement. Further surveys for white clawed crayfish and freshwater pearl mussel are to be undertaken during early 2024. Further bat roosting assessments and bat activity surveys of the site were undertaken by AECOMM. MCL Consulting were appointed to provide further stage 2 ecology assessments and suitable mitigation measures regarding potential impacts on the proposed sites local habitats, flora and fauna populations and ensure the proposed development is environmentally and ecologically sensitive. A detailed badger sett relocation is to be undertaken, with closure of an existing breeding sett, and provision of a new, artificial sett within a dedicated habitat compensation zone. Riparian zone planting is to be undertaken to provide a habitat buffer between the development and the Cavan River, as well as further habitat compensation enhancement works including partial hedgerow translocation and woodland planting.

This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development on ecologically sensitive receptors. Effects considered include both protected species and habitat scale assessments within the Site and off-Site. It also describes the assessment methodology, baseline conditions, any primary and tertiary mitigation adopted for the purposes of the assessment, a summary of the likely significant effects taking into account legislation, the further mitigation measures required to prevent, reduce or offset any significant negative effects, and the likely residual effects after these measures have been employed.

This Chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to Chapter 9 (Land Soils and Water) and Chapter 11 (Noise and Vibration). The assessment has been made in relation to current baseline conditions on the Site based upon desk-study and field-based survey. Full details are provided in:

- **Appendix 8.1:** Preliminary Ecological Appraisal (2024);
- **Appendix 8.2:** Badger Survey (2024);
- **Appendix 8.3:** Otter Survey (2024)
- **Appendix 8.4:** Bat Survey report (AECOMM, 2024);
- **Appendix 8.5:** Pine Marten Survey (2024);

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- **Appendix 8.6:** Breeding Bird Survey (2024);
  - **Appendix 8.7** Appropriate Assessment and Natura Impact Statement (2024);

Whilst this Chapter provides details on relevant mitigation measures in relation to assessing environmental impacts of the scheme, further detailed planting schemes and ongoing maintenance requirements for these mitigation schemes are to be detailed in subsequent biodiversity management plans. Detailed construction environmental management plans are also beyond the scope of the assessment and will be provided at a later stage.

### 8.1.1 Site Description

The proposed project relates to circa 27.5ha situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School, Cavan. The site incorporates existing sporting facilities used by the Royal School for physical education; this including one shale gravel hockey pitch and adjoining soccer field. The remainder of the school lands are undeveloped. The site also includes lands to the southwest of Breffni Park. A site location map is presented in figures below.

**Figure 8.1: Site Location**



**Figure 8.2: Site Boundary**



### **8.1.2 Project Description**

The proposed development is described in detail in Chapter 2, but will include the following:

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

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### 8.1.3 Survey/Authors

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

#### **Amy Skuce BSc (Hons) MCIEEM – Principal Ecologist**

Fieldwork and reporting was carried out by Amy Skuce, a Principal Ecologist at MCL Consulting. She has a BSc (Hons) in Countryside and Environmental Management from Harper Adams University and is a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She has nine years of experience as a professional ecologist undertaking extensive survey work as well as designing appropriate mitigation for a range of schemes. Amy holds a Level 4 Field Identification Skills Certificate (FISC) and is an experienced botanical surveyor and is proficient in extended phase one habitat surveys, UKHABs and Biodiversity Net Gain assessments as well as National Vegetation Classification (NVC) surveys. She also has experience in undertaking bat roost potential surveys, bat activity surveys, badger surveys as well as a range of riparian mammal and herptile surveys.

#### **Emily Taylor BSc – Graduate Ecological Consultant**

Field work and reporting was assisted by Emily Taylor, a graduate ecological consultant at MCL Consulting. She is currently working towards an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council. She has two years of professional experience having worked as a part of the membership team for the RSPB, before becoming a graduate associate for PwC. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, as well as a seasonal volunteer for the Bat Conservation Trust and regularly takes part in newt, lizard and bat surveys.

#### **Ryan Boyle BSc MSc – Principal Ecologist**

Field work was carried out by Ryan Boyle who was principal ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 8 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys,

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breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

#### **Peter McKnight BSc MSc – Consultant Ecologist**

Field work was carried out by Peter McKnight, a consultant ecologist at MCL Consulting. He graduated from Queen’s University Belfast with a bachelor's degree (BSc) in Planning, Environment and Development as well as a master's degree (MSc) in Ecological Management and Conservation Biology. He has previous employment experience with EcoSeeds where he would assist in the growing, cleaning and distribution of wildflower seeds including hydroseeding. He also worked for Ulster Wildlife as a Nature Reserve Assistant, treating invasive species and managing the bespoke needs of nature reserves across Northern Ireland including scrub removal, path/fence maintenance and botanical surveys. During this job he obtained LANTRA certification in the Safe Use of Pesticides, Brushcutters and Woodchippers as well as a Rescue Emergency Care certificate in Essential First Aid for the Outdoors including Emergency First Aid at Work. During his BSc, he went to Peru with Operation Wallacea to the Amazon Rainforest for 4 weeks, surveying varying tropical species including fishing bats, caiman and tropical birds. He also holds a Construction Skills Register (CSR) card.

#### **Zachary Rose BSc MSc – Consultant Ecologist**

Field work and reporting was carried out by Zachary Rose, a consultant ecologist at MCL Consulting. He has an MSc in Ecological Management and Conservation Biology as well as a BSc (Hons) in Zoology both from Queen’s University Belfast. He has 3 years of experience volunteering with Ulster Wildlife, treating invasives, maintaining nature reserves and helping with the native oyster project at Bangor marina. During his time at Ulster Wildlife, he completed weeklong hedgehog surveys in the summer of 2021 and 2022 as well as gaining a LANTRA certification in the safe use of pesticides. He has 2 years of experience working for the consultancy company Tetra Tech as a seasonal field ecologist. During this time, he led several emergence and re-entry bat surveys alongside completing otter, badger, hare and smooth newt surveys. He also gained experience doing video analysis and writing PEA reports during this time. He has also led several guided bat walk and talk evenings for Newtownards Community group in the summer of 2022 and summer 2023. He also holds a Construction Skills Register (CSR) card.

## **8.2 Ecological Receptors**

The following items have been identified as ecological receptors for the scheme, which are subject to potentially significant effects in the absence of mitigation measures.

### **8.2.1 Construction Phase – Habitats and Designated Sites**

- Retained habitats – a number of key habitats are to be retained and enhanced within scheme including mature trees, river corridor and the area within the proposed habitat compensation zone. These habitats



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provide opportunities for commuting bats as well as other terrestrial and aquatic fauna. In the absence of avoidance measures, compaction of tree root systems and pollution from site works could reduce the functionality of these retained habitats. This would result in a significant long-term negative effect that was irreversible in the absence of mitigation.

- The site is hydrologically linked to Lough Oughter SPA/SAC which could be negatively impacted by silt and pollution run off entering the River Cavan during the construction process.

### **8.2.2 Construction Phase - Species**

- Bats – Potential roosts in trees could be damaged/mortality of bats during construction, lightspill onto foraging corridors. The construction effects are considered to have the potential to be negative and significant (effect to a European protected species when considering potential roosts off-Site);
- Nesting birds – the habitats onsite provide scope for a range of amber and red listed bird species to breed within the site. Vegetation clearance works has the potential to damage and destroy active nests as well as killing individual birds.
- Badger – significant negative effects to the active badger sett and resident badgers on-Site are considered to be possible.
- Pine Marten- significant negative effects to the recorded pine marten are possible during construction phase.
- Otter- significant negative effects from direct impacts to individual otter as well as habitat degradation of the Cavan River from possible pollution.

### **8.2.3 Operation Phase – Habitats and Designated Sites**

- Woodland corridors – increased use of these areas by new residents of the Proposed Development and loss of their functionality for terrestrial and avian species is considered to result in a probable, significant negative effect.
- The site is hydrologically linked to Lough Oughter SPA/SAC which could be negatively impacted by silt and pollution run off entering the River Cavan during the operational phase.

### **8.2.4 Operation Phase - Species**

- Bats - adverse lighting could sever foraging and commuting links within the local area. This could lead to abandonment of off-Site roosting sites. These effects are considered probable resulting in a significant negative effect which is not reversible on European protected species. Conversely, there is likely to be a negligible positive effect on the foraging opportunities for bats as a result of the creation of diverse habitats within the habitat compensation zones.

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- Nesting birds – loss of suitable nesting habitat within the proposed development footprint could have a significant negative effect on the breeding success of local bird populations. Creation of the onsite habitat compensation area has the potential to provide a diverse range of habitats of higher value than some existing habitats.
  - Badger - in absence of mitigation, effects to the resident badger clan from the loss of foraging habitat and disturbance from new residents of the Proposed Development would be a significant long-term negative effect that is irreversible.

## 8.3 Assessment Methodology

### 8.3.1 Desk Study

Extensive desk studies were carried out prior to species specific field work was carried out on site. data was requested and received from governing bodies such as:

- NPWS (see Appendix 8.1)
- NPWS Designations Viewer
- National Biodiversity Data Centre

### 8.3.2 Consultation

Consultation was carried out with Paul O'Doherty (Conservation Ranger), Chris Liu (Conservation Ranger) and Dr. Maurice Evans (Divisional Manager) of the National Parks and Wildlife Service (NPWS). A site meeting was attended by MCL Consulting, representatives from NPWS, McAdam Design and Cavan County Council on 15th February 2024 in order to ascertain the extent of ecology surveys previously carried out on site discuss suitable mitigation measures for the proposed development. All relevant information has been integrated into this report and appendices.

Consultation with Inland Fisheries (Ailish Keane- Senior Environmental Officer) has been undertaken, with a site visit on 27<sup>th</sup> February 2024 to discuss proposed mitigation and future survey requirements as well as enhancements within the riparian buffer zone.

### 8.3.3 Field Methods

#### Preliminary Ecological Appraisal (PEA) – Appendix 8.1

This assessment comprised of a combination of desk study and field investigations, and used the following scope of works as a basis for the assessment:

- Desk study and review of potential development proposals;



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- Site visit and walk over;
  - Identification of onsite habitats and key species, GIS mapping;
  - Habitat classification map using standardised Fossitt Habitat Classification Survey
  - Recording of geo-referenced target notes and production of GIS databases;
  - Review of land designation GIS datasets (to include NPWS designations, Natura 2000 network sites etc.);
  - Assessment on the potential impacts that the proposed development may have on local ecological environs and designated sites; and
  - Recommendations for further ecological assessments, as required.

Survey methods followed the Fossitt habitat methods. This involved a systematic walkover of the site during April 2023, mapping and broadly describing habitat types and identifying the presence of the dominant flora species and non-native invasive weeds.

The approach to the field surveys is based on accepted standard practice and methods. Habitats within the study area were classified after 'A Guide to Habitats in Ireland' (Fossitt, 2000). The dominant plant species present in each habitat type were recorded during the field surveys and this is considered sufficient to allow accurate classification of the habitats present.

A systematic search was carried out for evidence of and the site's potential to support protected mammal species, including but not limited to the following:

**Badger *Meles meles*** - The survey area and 25m beyond the site boundary was surveyed for signs of badger activity including the presence of setts, latrines, badger paths, bedding and hair caught on barbed wire fences. In addition, a note was made of any well-worn mammal track that was observed within the survey area.

**Bats *Chiroptera sp.*** - An assessment of the suitability of habitats and features within the survey area for their roosting, foraging and commuting places.

**Otter *Lutra lutra*** - The application site was surveyed for signs of otter activity. The survey involved searching for evidence of otters including the presence of holts (otter dens), couches (laying up areas), spraints (faecal droppings), otter paths, slides and otter paw prints.

**Breeding Birds** - An assessment of the suitability of the habitats and features within the site to support breeding bird species was made and a record of incidental bird sightings was conducted during the site visit. Special emphasis was placed on the suitability of the site for species listed in Birds of Conservation Concern in Ireland

published by BirdWatch Ireland and the RSPB NI. The Birdwatch Ireland website was studied for information on birds of conservation concern.

Pine marten *Martes martes*. The application site was surveyed for signs of pine marten activity. The survey involved searching for evidence of pine marten including the presence of dens, scats, feeding remains and tracks.

#### Badger Survey – Appendix 8.2

During the walkovers, a systematic search of the entire site area was undertaken, in addition to a search of 25m beyond the site boundary. This was to investigate badger activity and determine if badgers are currently occupying or present within the site. An extended badger survey was also undertaken on accessible land up to 1km from the site, to ascertain presence of other badger setts locally.

Any identified entrance structures were photographed, and the location of the entrances recorded using high accuracy Trimble R8 GNSS VRS survey equipment. In any given active site, a social group of badgers may have a main sett structure along with other smaller subsidiary or annex structures within their territory. Table 8-1 denotes the various sett structures that could be expected within an active site.

**Table 8.1: Method criteria for categorising badger sett structures**

Sett Category	Criteria
Main	This category represents the largest and most used sett structure, typically exhibiting several holes with large spoil heaps and established paths between sett entrances usually marked with latrines. In continuous use for breeding.
Annex	Normally less than 150m from main sett structures and are typically connected to it by one or more well established paths. Can have several entrances but not always in use.
Subsidiary	Typically consists of fewer entrances and are usually at least 50m from the main sett. There is no obvious path connecting with another sett and they are not always in use.
Outlying	Typically consists of one or two holes with no obvious paths connecting to other local sett structures. Often with only small spoil heaps outside the holes indicating that they are no extensive underground. Sporadic use often inhabited by foxes or rabbits when not used by badgers.

Field signs of badgers can be of importance when determining if badgers are currently active within an area or occupying a sett. Table 8-2 summarises the various field signs that can give an indication of the presence of badgers.

**Table 8.2: Field signs of badger**

Field signs	Description
Setts	Holes shaped like a D on its side which are between 200mm and 300mm wide and 100 and 200mm high.
Bedding at sett entrance	Bedding can be found at the entrance to setts.
Footprints	Footprints can be found near the sett entrance or along trails.
Latrines	Can be found near a sett entrance or mark a badger's territory.
Hairs on barbed wire fences	When badger's crawl under barbed wire fences, their coarse hairs can get caught on the barbs.
Scratch marks	Badger tend to scratch the lower trunks of trees or roots.
Snuffle holes	Snuffle holes are small scrapes in the ground created by badgers searching for tubers or worms.
Paths	Well-worn paths created by badgers on route to other setts or foraging areas.

### Otter – Appendix 8.3

During the walkovers, a systematic search of the entire site area was undertaken, in addition to a search of 30m beyond the site boundary. This was to investigate otter activity and determine if otters are currently occupying or present within the site.

Field signs are important when determining if otters are present or absent within a site. The following field signs are used to evidence:

- Spraint;
- Anal jelly;
- Forage remains (e.g. fish heads);
- Slides;
- Couches/hovers and;
- Holts.

Surveys were undertaken during dry periods, and local weather conditions had not been subject to heavy rainfall during the days previously.

### Bat Roost and Activity Survey– Appendix 8.4

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A site wide assessment for bat roost potential was undertaken. This survey was undertaken using best practice guidance produced by the Bat Conservation Trust (Collins, 2016). The Bat Roost Potential Survey (BRP) is to identify potential bat roosts which are likely to be affected by site development and determine whether specialist bat surveys are required for works to proceed.

The GLTA was carried out to search for the presence of potential roost features (PRFs) in trees (e.g. cavities, trunk and branch splits, rot holes, knot holes etc.). In addition to presence of PRFs, evidence of the presence of roosting bats was also searched for. External signs that bats are using a tree as a roost site include:

- Bat droppings: black droppings, 5-10 mm long that crumble to a fine dust when crushed and may be located on the ground or stuck to the tree.
- Staining: secretions from bat fur, which can cause oily brown stains in the vicinity of roost entrances. Urine stains which may be present below the entrance to the roost.
- Audible squeaking from within the roost site.
- Odour, which may be indicative of a large roost.
- Flies around the entrance of a roost, attracted by the smell of bat droppings.

The results of the PRA were used to grade trees as having Negligible, Low, Moderate, or High suitability for roosting bats in general accordance with BCT guidelines (Collins, 2016)

One tree (T2) classified as having Moderate suitability for roosting bats had PRFs which were difficult to access for emergence surveys. This tree was subject to an endoscope survey from the ground carried out under licence (DER/BAT 2022-133) by AECOM Ecologist Jenny Hunter (licensee) on 27 July 2023, by which the features were fully inspected to gain a better understanding of the PRF's suitability to host roosting bats. In this case, the features were "downgraded" from Moderate to Negligible, and no follow-up emergence surveys were recommended. Another tree (T41) classified as having Moderate suitability for roosting bats within the extended site boundary was inspected with an endoscope under licence (DER/BAT 2022-133), by AECOM Ecologist Scott McCollum on 3 October 2023 This was carried out with the aim further describe and characterise the PRFs, and to determine whether or not a PRF's is being used by roosting bats, as a substitute for an emergence survey.

Emergence surveys were conducted in accordance with the BCT Guidelines and where possible were assisted with night vision aids. Full methodology and equipment specifications are provided in Appendix 8.4.

Bat activity surveys were carried out within the site on four occasions between June and September 2023. These were supplemented with periods of static monitoring. The surveys used the transect method, based on Bat Surveys:

Good Practice Guidelines (3rd Edition), produced by Bat Conservation Trust (BCT) (Collins, 2016). Three different transects were surveyed a varying number of times, depending on the suitability of the habitats. Full details on transect routes and equipment specifications are provided in Appendix 8.4.

#### Pine Marten Survey – Appendix 8.5

Transects where possible, were located along the riparian woodland areas and along linear habitat features. Transects were walked slowly with any prominent features searched were applicable. Particular attention was given to track intersections, stream crossings, prominent rocks, and tree stumps etc. as these are preferred scatting points. The proximity of scats to mammal tracks and foraging signs was also noted.

Any identified den structures were photographed, and the location recorded using handheld Garmin Etrex 22X survey equipment. Table 8.3 denotes the various field signs that could be expected within an active site.

**Table 8.3: Pine Marten Field Signs**

Field signs	Criteria
Dens	Pine marten dens can occur within features within mature trees, squirrel dreys, bird nests, windthrow and up-turned root plates, rock faces, burrows, and buildings
Footprints	Footprints can be found near the dens or along trails and will display 5 toes around 5 – 6cm in size
Scat	Can be found near a den or mark a pine marten’s territory and are usually dark and coiled and often contain lots of berries and / or hair and bone with a distinct sweet smell
Paths	Well-worn paths created by pine martens on route to dens or foraging areas.

#### Breeding Bird Survey – Appendix 8.6

The survey methodology broadly followed the ‘Common Bird Census’ (CBC) devised by the British Trust for Ornithology (BTO) and those described by Bibby *et al* 1992, 2000, where the site was slowly walked with each area of the site being covered within 100m of the transect. This technique records the location and movements of individual birds present within a defined survey area. The site was visited on 4 occasions with the surveys undertaken during the breeding season (May-August) by suitably qualified ecologists using high powered binoculars (42 x 8). All bird species were recorded (using the standard BTO codes) onto a scaled map. Birds that exhibited nesting or territorial behaviours such as singing, gathering nesting material, territorial displays or feeding of young were recorded.

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## 8.4 Receiving Environment Baseline Conditions

### 8.4.1 Stage 1 Appropriate Assessment

The stage 1 screening process identified two European sites (Lough Oughter SAC and SPA) within 15km of the proposed development. Following the screening process, it was concluded that there were hydrological links between the development site and the European sites and as such a Stage 2 Appropriate Assessment (Natura Impact Statement) was required.

### 8.4.2 Stage 2 Appropriate Assessment

The stage 2 process evaluated the identified sites resulting from Stage 1 assessment with regards to their conservation actions, proposed site developments and proposed mitigation measures within the scheme. The stage 2 assessment identified that all potential impacts that have been predicted for the proposed scheme are localised to within the Cavan River which lead to Lough Oughter SAC and SPA and of which, otter are a qualifying feature. There is no direct impacts to the designated site through for example, land take or noise impacts and requires mitigation in regard to indirect impacts only. (See Appendix 8.7).

### 8.4.3 Species Specific Survey Results

#### PEA (Appendix 8.1)

The PEA carried out by MCL Consulting identified a range of grassland and woodland habitats onsite. These were generally agricultural in nature and of limited diversity, and were primarily of value for their ability to support a range of protected species, rather than their botanical value. The Cavan River was present adjacent to the red line boundary and provided intrinsic habitat value as well as scope for supporting protected species.

The initial survey indicated presence of badger, otter and white clawed crayfish as well as suitable habitat for foraging and commuting bats and pine marten. Further surveys were recommended for the species discussed below (see Appendix: 8.1).

#### Badger (Appendix 8.2)

An in-depth badger survey combined with remote camera monitoring was undertaken due to the presence of an onsite badger sett. An extended badger survey, beyond the site boundary, within 1km, was also undertaken. A sow and two cubs was recorded using the onsite sett and in the absence of further, larger setts in the immediate vicinity the sett was classified as a main sett. The grassland, scrub and woodland habitats within the site provide extensive foraging habitat for the onsite clan. Further extensive foraging habitat is present in comparable quality offsite. In the absence of an alternative main sett having been identified within the search radius, it is considered that the sett onsite should be classified as a main sett and mitigated appropriately.

(see Appendix 8.2).

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### Otter (Appendix 8.3)

An in-depth otter survey was undertaken, combined with remote camera monitoring. Tracks and evidence of foraging were identified adjacent to the Cavan River. No evidence of holts was identified within the area of river adjacent to the site boundary. Camera monitoring recorded otter using the river and they are considered to be present onsite at low levels, suggesting that they primarily use the stretch of river for foraging but reside elsewhere, (see Appendix: 8.3).

### Bat Roost and Activity Surveys (Appendix 8.4)

A total of six trees were categorised as having “low” roosting potential, three as having “moderate” and three as having “high”. As no specific tree felling proposals were provided at the time of survey, further surveys are still required prior to felling of any high and medium valued trees.

The proposed development site consists primarily of improved grassland fields bordered by hedgerows and trees which provide connectivity to the wider rural landscape which consists of semi improved grassland, woodland, hedgerows, treelines, streams, rivers and lakes.

The bat assemblage identified during this suite of surveys consisted of all species of bat found in Ireland except for lesser horseshoe bat. Soprano pipistrelle, and to a lesser extent common pipistrelle, were the most frequently occurring species recorded across all transect surveys and through static recording. No evidence of roosting bats identified emerging from or entering into any of the trees surveyed during dusk emergence surveys, and no evidence of bats were noted during the endoscope surveys. Generally, bat activity at the site was relatively high due to the abundance of suitable foraging and commuting features, namely woodland edge habitat, mature trees and hedgerows, and the Cavan River.

### Pine Marten (Appendix 8.5)

Following the PEA ascertaining that the range of habitats onsite and the adjacent river corridor provided suitable habitat for pine marten, a detailed survey was undertaken. Remote camera monitoring recorded a maximum of 1 adult and 4 kits foraging and commuting within the site. No den was identified during the surveys however it is considered likely that one is present onsite or in nearby woodland. (see Appendix 8.5).

### Breeding Birds Surveys (Appendix 8.6)

Breeding bird surveys were carried out during May-August 2023. The surveys identified a diverse range of species actively using or commuting across the site (x31 species in total). There were several species observed on site that are currently amber listed on the BoCCI scale (Birds of Conservation Concern Ireland 2020-2026), as well as x1 red listed species (Golden Plover), however this species was just flying by the site. Only x1 active nest was identified on

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site during the surveys (Jackdaw). Sightings and activity are shown in Appendices III-VI in the Breeding Bird Report. It was determined that the site provides suitable habitat for breeding and non-breeding birds in the form of scrub, hedgerows, trees and riparian woodland, and that enhancement of these habitats would result in increased biodiversity on site. (Appendix 8.6)

It is noted that a barn owl and long eared owl were observed foraging within the site, during nocturnal bat surveys, be AECOMM ecologists. No evidence of roosting was observed during surveys of onsite trees.

#### White Clawed Crayfish and Pearl Mussel

White-clawed crayfish and Freshwater Pearl Mussel surveys were recommended on this site as the Cavan River provides suitable habitat, and previous evidence of these species had been identified. Ecofact Environmental Consultants have been commissioned to undertake this survey work however as of February 2024 no results have been provided due to the river within the site having high water levels that has not allowed survey work to be completed at this current time. However, upon inspection of this water body and surrounding environment earlier in the season during 2023 when the water levels were lower, remains of White-clawed Crayfish were identified alongside observations of live freshwater pearl mussels, indicating that they are present within this habitat.

Further surveys are to be undertaken in Spring/Summer 2024 when water levels have decreased.

#### Invasive Species

No evidence of invasive plant species was recorded onsite however Japanese Knotweed is present nearby. It is located within the river corridor, adjacent the Cavan Royal School entrance gate. Due to this location there is a low risk of spread within the site and its possible presence within the working area should be considered.

Mink were recorded onsite during remote camera monitoring as part of the detailed species surveys.

## **8.5 Potential Impacts**

### **8.5.1 Habitats**

The development requires removal of, semi improved grassland, as well as areas of scrub, trees and woodland, resulting in an overall loss of natural habitat cover on site. Some areas of habitat are being retained and enhanced within the scheme, however these could be subject to risks during the construction period. Retained grasslands could be damaged by accidental ingress during construction as well as pollution and site run off damaging aquatic habitats on and offsite. Compaction of tree root systems could reduce the functionality of this wildlife corridor. The sensitivity of the habitats is considered to be medium and there is likely to be a direct, long-term **major negative**



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**(significant)** effect on the habitats at the local level that is irreversible prior to the implementation of mitigation measures.

### 8.5.2 Species Specific

#### Badgers

Proposed site development plans could potentially cause disturbance and the loss of habitat for the local badger populations. The onsite sett is situated within the proposed development area and without mitigation is to be destroyed as part of proposals. The extent of proposals removes a range of scrub and grassland foraging resources and also poses the risk of severing habitat connectivity within the site. Furthermore, excavations and earthworks further from the sett (left overnight could injure or trap foraging individuals).

The sensitivity of badgers to destruction and disturbance is considered to be high, and the magnitude of change prior to mitigation, is also considered to be high due to the potential loss of a breeding/main sett, potential harm to individuals and reduced foraging opportunities. Therefore, there is likely to be a direct, long-term effect on the badgers of major negative (significant) effect at the Site level prior to the implementation of mitigation measures.

#### Otters

Due to the presence of otters onsite there is the potential that otters will be impacted upon by the proposed development. While no holts were located the site is considered important foraging/hunting grounds for local otters and may impact them through loss of foraging habitat, pollution of water bodies and river systems, disturbance to fish stocks impacting otter prey items as well as sound and light pollution impacting otter activity and hunting throughout the site.

#### Bats

*NB. These results pertain solely to habitat and tree removal associated with the proposed development layout rather than any trees requiring removal on health and safety or tree health grounds. As such an updated suite of surveys will be required and provided as an addendum.*

Proposals currently indicate removal of trees with bat roosting potential resulting in direct loss of roosting provision locally. No bats were recorded during the 2023 survey season however tree roosts tend to be transient in nature and may provide ongoing roosting opportunities. The removal of woodland, treelines and hedgerow will significantly reduce the availability of foraging habitat and remove important linear features likely to be used as commuting corridors. Loss of these features is likely to have a negative impact on the local bat population as although there is alternative habitat in the wider landscape.

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The majority of habitat on site is improved grassland which is suboptimal for foraging bats, and will be replaced by lower value habitats, with some compensatory woodland and scrub planting within the habitat compensation area.

Proposed lighting across the site may also impact the local bat population, operating as a deterrent, altering the bats current commuting and foraging routes where habitats are retained. Alternatively, it may cause a change in behaviour as insects drawn to the lights may lead to the local bats utilising the proposed lighting as feeding stations making them more susceptible to predation. Overall, in the absence of mitigation there is considered to a significant negative impact to bats on a local level.

#### Pine Marten

Removal of woodland and individual trees could result in loss of foraging and commuting habitat as well as den sites. Construction works may cause injury or mortality to individual pine marten present within the site. The development may lead to increased lighting and disturbance levels which could impact on remaining habitat suitability for this species as well as disturbance during breeding season by construction activities. Overall, without suitable mitigation this could lead to a significant negative impact to this species on a local level.

#### Birds

Birds are not restricted with specific niches habitats and other boundaries like other species and as such all proposed development plans will lead to disturbance to the local bird population through the loss of habitat, sound and light pollution. There is also the potential to impact on hunting opportunities for certain species such as grey herons due to the proposed bridge structure and works along the riverbanks.

Whilst a range of bird species were recorded onsite, only green list birds were recorded nesting. Therefore, there is likely to be a direct, mid-term effect on the nesting birds of conservation concern of low negative (not significant) effect at the local level prior to the implementation of mitigation measures.

#### White Clawed Crayfish and Aquatic Fauna

Evidence of white clawed crayfish was identified during the preliminary site visit, in otter foraging remains. In the absence of detailed aquatic survey information at this stage, presence has been assumed for white clawed crayfish and other protected aquatic species. The Cavan River is to be retained with a minimum of 10m habitat buffer throughout the works. However, a bridge is proposed across the river to provide new site access, and so there is the possibility of impacts to fauna within this habitat during this construction process.

There is potential for releases of suspended solids and other substances associated with bridge construction as well as general development works which result in increased silt runoff. Suspended solids in even quite small

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quantities may have a serious effect on the aquatic fauna within the Cavan River. Engineering works in the vicinity of rivers/streams or at river/stream crossings can also impact directly on physical habitat, for example white clawed crayfish refuge sites or the spawning or nursery areas of fish. Any operations which result in loss of sediment will also result in increased nutrients being released from the soil. This has the potential to cause eutrophication of streams thereby lowering the potential of the streams to support fish and invertebrate fauna. As such there is considered to be a major negative (significant) effect at the Local level prior to the implementation of mitigation measures.

## **8.6 Mitigation Measures**

### **8.6.1 Construction Phasing**

Mitigation has been designed and will be implemented in accordance with the proposed construction phasing plans<sup>9</sup>, to ensure maximum habitat cover throughout the construction phase. An Ecological Clerk of Works will be present across all phases of the construction where required to safeguard protected species onsite and ensure implementation of appropriate mitigation and precautions.

Phase One is expected to be undertaken between Q2 of 2025 and Q3 2026 and will incorporate construction of wildlife habitat creation area, riparian planting adjacent River Cavan, Dublin Road access and River Cavan bridge construction as well as the main arena, hockey pitch, plus 2 sand mattress GAA Fields and two car parks. Construction of the artificial badger sett will also be undertaken in Phase 1, or in advance, pending planning conditions. This sett should be in use for 6 months prior to the exclusion and destruction of the existing badger sett, anticipated within Phase 1.

Phase 2 is expected to be undertaken between Q4 2027 and Q4 2029 and include construction of a further sports building, athletics track and two further sand mattress GAA Fields.

Inclusion of the habitat compensation planting areas within Phase 1 ensures a maximum chance of more mature established vegetation being present prior to full operational phase of the development and provides suitable screening habitat for disturbance sensitive species to acclimatise.

Existing habitats within the Phase 2 areas of the site will be retained and protected, with appropriate fencing, throughout Phase 1 of construction, ensuring ongoing provision of commuting and foraging habitat for local fauna throughout this period, whilst compensatory habitats are establishing.

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<sup>9</sup>A2156-100-20-PHASE 1, A2156-100-30-PHASE 2

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### 8.6.2 Habitat Mitigation and Compensation

A detailed Construction Environmental Management Plan should be provided showing full detail of protection measures for retained habitats. This should incorporate use of heras fencing around root protection areas of retained hedgerows and trees, as well as maintaining the 10m works exclusion buffer from the Cavan River. A Surface Water Management Plan (SWMP) should also be implemented. Detailed planting and management of habitats within the habitat compensation area should be provided in a subsequent habitat management plan. However, it should comprise a mosaic of native, species rich habitats including but not limited to species rich grassland, tussocky wet grassland, incorporation of wetland scrapes, native scrub planting and native woodland planting. Planting should be undertaken in accordance with the objectives of the All Ireland Pollinator Plan utilising native species of local provenance to ensure long season provision of nectar and pollen sources for native pollinators.

The large central hedgerow adjacent to the onsite drainage ditch/stream is to be lost in its entirety as part of the proposals. Consultation with NPWS proposed a partial translocation of this habitat, into the habitat compensation area. This would be of benefit in allowing for early establishment of mature vegetation within this area, allowing for screening of the artificial badger sett. Translocation should incorporate mature and semi mature scrub and trees (with the exception of ash as these are largely subject to ash dieback) as well as the understorey habitats and species. Brash piles should be created from offcuts of this habitat and placed within the habitat compensation area, creating valuable dead wood and refugia for faunal species. A full Woodland Enhancement strategy should be provided to enhance the onsite, retained woodland. Where possible this should be collaborative with adjacent landowners such as Royal School to ensure a cohesive approach to habitat management for value of biodiversity locally.

Creation of new hedgerow planting should incorporate a minimum of 6 species, which may include blackthorn (*Prunus spinosa*), field maple (*Acer campestre*), alder (*Alnus glutinosa*), common dogwood (*Cornus sanguinea*), hazel (*Corylus avellane*) and elder (*Sambucus nigra*), Standard trees such as English oak (*Quercus robur*) and wild cherry (*Prunus avium*) can also be planted at 50m intervals.

### 8.6.3 Stage 2 Appropriate Assessment

Suggested mitigation proposed for the stage 2 assessment was amassed and recommended based on mitigation suggested for species specific surveys carried out at the proposed riverine site and can be found within these individual appendices, (see Appendix: 8.7). This assessment concluded that there is no likely residual effect on this ecological receptor. This mitigation is detailed within the sections below.

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#### 8.6.4 Standard Mitigation for all Wildlife

The following best practices are to be followed for protection of the range of wildlife present onsite as well as those transient through the site. An Outline Construction Environmental Management Plan should be provided showing full detail of protection measures for onsite habitats and fauna.

All noise caused by machines should be minimised and should operate during daytime hours only as agreed with the council. With regards to dust, it should be ensured that an adequate supply of water is available on site for effective dust suppression. Similarly, no light should be directed onto woodland and riparian corridors during the construction or operational phase.

During the construction phase management and protection measures should be implemented prior to works commencing on site, these include:

- No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as wildlife may fall in or enter in search of food and become trapped.
- No buildings or storage units are to be left open overnight, as wildlife may enter and become trapped.
- No poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- No vehicles or machinery are to be used installing any wildlife fencing or exclusion gates.

If any priority species is discovered or any activity suggesting priority species have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how to proceed.

#### 8.6.5 Badgers

In order to protect the onsite badger clan it is proposed that the sett is to be closed, under guidance from NPWS, and a replacement, artificial sett to be built within a habitat compensation zone in the west of the site. This habitat compensation zone has been carefully designed to ensure ongoing site connectivity for foraging and commuting badgers. Sett closure will be undertaken following guidance from NPWS and in accordance with all appropriate best practice guidance (NRA, 2006). Artificial sett creation will also be conducted following guidance from NPWS and best practice guidance such as “Guidance for the creation of artificial setts” (NatureScot, 2018), NRA Guidelines (2006) and those published by Badger Trust, 2023. Full details of the closure methodology can be found in the separate Badger survey report (Appendix 8.2)

To ensure ongoing provision for the badger clan, the artificial sett must be completed at least 6 months prior to the exclusion and destruction of the existing sett. Due to the sett classification as breeding/main sett, this exclusion

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should be undertaken between June and the end of November. Badgers can be encouraged to colonise the new sett with baiting with sweetened peanuts and transfer of bedding and spoil from the existing sett. Under best practice guidelines the new sett should be occupied for 6 months prior to exclusion and destruction of the existing sett.

Due to the phasing of the development there is not considered to be an immediate, large scale loss of foraging area, and establishment of the habitat compensation area before final phases is envisaged. This will also allow a phased level of disturbance pressures from the site operation which, combined with buffer planting, will allow for greater likelihood of adaptation by the badger clan. Phasing plans<sup>10</sup> show that artificial sett creation and sett closure works can be implemented alongside phase one of the development, as this construction work will be undertaken beyond the 30m zone of protection for the existing badger sett.

General construction mitigation as detailed in section 8.6.2 should be followed throughout construction and an ecological clerk of works is to be appointed throughout the construction process. A badger activity check every six months for the duration of works to ensure no new setts within 30m have been created; and if any fresh sett digging is observed notify an ecologist immediately and leave a 30m buffer around the area until an assessment can be made.

A habitat compensation area is to be provided within the scheme. A detailed drawing of the proposed habitat enhancements is shown in relevant drawings and further details are provided in the badger report (Appendix 8.2). Full planting schedule and ongoing maintenance details will be provided in a subsequent habitat management plan. A species rich grassland mix comprising 80% grass and 20% wildflower will be sown in the main habitat compensation area. Scrub and tree planting will also be carried out in this area to provide visual and physical protection for the badger sett. Use of fruit and nut bearing species is proposed to provide a further foraging resource for badgers within the site. Species such as rowan, elder, hawthorn, blackthorn, hazel and oak are recommended.

A badger underpass is proposed to allow for connectivity under the proposed roads and avoiding severing of east-west connectivity within the site. This should be designed in accordance with NRA Guidance (2006), comprising a 600mm concrete pipe, with guidance mesh fencing installed to prevent direct access onto the road. Further native planting should be undertaken at the entrances and exits to encourage use by badger. Some light spill is anticipated within this area, until 10pm, when lights are timed to go off. This is considered to be a limited impact on connectivity as badgers are active throughout the nocturnal period. Additionally, the ongoing activity disturbance during pitch and car park usage will discourage badgers from using the pathways in these hours, with full use anticipated after 10pm. Proposed shrub planting in this area as shown will also lessen the light spill impacts. It is

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<sup>10</sup> A2156-100-20-Phase1, A2156-100-30-Phase 2

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noted that the provided light spill plans do not take into account topography, or proposed planting and the possible screening effects of these elements.

Provided lighting plans<sup>11</sup> have been reviewed, and general advice has been provided by the consultant ecologist. Sensitive habitat areas generally show lightspill less than 1 lux with some exceptions where lights are required on the bridge. In accordance with this, it is recommended that the lighting scheme is sympathetic to nocturnal fauna such as badger. Screening tree and shrub planting should be undertaken between the habitat compensation area/replacement sett and any pitches to reduce light spill on this area.

As part of the general acoustic mitigation for the development, it is envisaged that acoustic fencing will be required on the western side of the proposed pitches. This will be a minimum of 3m in height and is required to be full, closed board fencing. Where this fencing is proposed and considered to form a barrier to dispersal for badger and other mammals there will be a requirement for mammal passes to be installed at the base of the fence and should have a width of approximately 300m. This will allow ongoing commuting links for onsite badgers, whilst still providing required acoustic mitigation.

The bridge construction works are considered beyond the zone of impact for the badger setts, however as further mitigation the piling design works for the bridge landing sites have been outlined as requiring CFA Piling for ecological protection reasons and CFA or other low vibration piling technique for the wider site to minimise impact.

### 8.6.6 Otters

Much of the mitigation measures relating to otters on the site are concerned with the bridge construction across the Cavan River that runs through the site. It is important that habitat connectivity in this area is maintained. **Mammal ledges** should be installed within the bridge structure to ensure that no connectivity is lost for any otters that utilise this area as a commuting route. These ledges should be 45-60cm wide, approximately 15cm above the highest flood level and at least 60cm below the top of the bridge. Bridge design incorporates a minimum of 5m setback from banksides.

An updated otter survey must be undertaken before the bridge works construction and a 250m works exclusion be put in place from any identified holts under suitable licences can be obtained for works.

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<sup>11</sup> 9955-JCP-ZZ-00-DR-E-63002, 9955-JCP-ZZ-00-DR-E-63001, G-DWG-0002337376-EX1-R00-220224

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A suitable **Surface Water Management Plan (SWMP)** should be developed and submitted for review prior to the commencement of the construction phase. This plan will include spill action plans, specify spill kit contents, and outline a robust method for ensuring that no construction related suspended solids enter the river system.

Provision of measures to prevent the release of sediment during the construction work will be installed prior to the commencement of site clearance. Protective measures may include but are not limited:

- to the use of silt fences and sedimentation mats.
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces will be enacted to prevent sediment washing into the receiving water environment.
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence.
- If pouring of cementitious materials is required for the works adjacent to the watercourses, this will be carried out in the dry
- If dewatering is required, water will be treated via SuDS system infiltrating to ground with no direct discharge to the existing watercourse. This will include treatment for silt removal either via silt trap, settlement tanks or ponds.
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time.
- Foul drainage from site offices and compounds, where not directed to the existing waste water network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses.

It is understood that the operational phase mitigation for sediment control will comprise bypass separators to reduce the risk of sediment and other pollutants reaching the Cavan River during storm events. Given the context of the development this is considered sufficient mitigation at this stage. Full details are provided within the drainage layout schedule associated with the application.

An ecological clerk of works (ECoW) should be appointed prior to the commencement of on-site works and a visual check of the works area must be undertaken every day to look for any presence or evidence of otter.

During the construction phase, general management and protection measures should be implemented prior to works commencing on site, these include:



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- The use of noisy machinery should cease at least 2 hours before sunset
  - Security lighting should be directed away from identified mammal trails and denning sites
  - An adequate supply of water should be made available on site for effective dust suppression
  - Any exposed open pipe systems must be capped to prevent access
  - No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as otter may fall in or enter in search of food and become trapped
  - No buildings or storage units are to be left open overnight, as otter may enter and become trapped
  - No poisonous or potentially harmful substances or materials are to be left unsecured overnight
  - Chemicals should be stored as far from the river as possible
  - Special care should be given to protect water sources, as these are likely to be utilized by otter

It is recommended that enhancement planting of native species be undertaken in riparian buffer areas, following consultation on suitable species and schemes with Inland Fisheries Ireland. This will help to support any otter populations utilising the river on site, as well as acting as a natural buffer between the water body and the proposal site, therefore, reducing the impact of any human disturbance and improving the surface water drainage path by reducing the speed of the flow of the water. Indicative planting is shown within relevant plans with full details to be provided in a subsequent habitat management plan post planning.

Whilst otters can become used to low/moderate level of artificial lighting, the current on-site habitat is a dark corridor and so increased lighting is likely to result in increased disturbance. And so, it is recommended that artificial lighting around the river corridor and newly installed bridges should be avoided where possible. Where this is not possible, such as for safety reasons, then the lighting design should consider the guidelines outlined below:

- Install lamps and the lowest permissible density; (waist high bollards)
- Lamps should be positioned to direct light to avoid upward spill onto any green corridors that could be used by commuting pine marten or features with den potential;
- LED lighting – with no/low UV component is recommended;
- Lights with a warm colour temperature – 3000K or 2700K have significantly less impact on bats;
- Light sources that peak higher than 550nm also reduce impacts to bats; and

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- The use of timers and dimmers to avoid lighting areas of the site all night is recommended.

### 8.6.7 Bats

Following best practice guidelines (Colins, 2023), prior to felling, all trees identified as having High and Moderate suitability for bats will require further survey to ensure that removal of this tree will not impact roosting bats. This can be either emergence surveys or an endoscope survey (were appropriate) May and September. Trees categorised as Low do does not require further survey but must be retained where possible and felled using soft fell methodology if required. Bat boxes should be provided on retained trees where feasible within dark corridors. Provision of native planting in the habitat compensation area will be of benefit to bats and should aim to utilise a range of pollen and nectar rich species to encourage invertebrate prey sources.

However, there are current plans<sup>12</sup> to erect low level lighting Urba bollards around the site that are DarkSky compliant. To achieve this DarkSky approved status for Commercial Luminaires, the following requirements must be achieved:

- Luminaire must be fully shielded and omit no direct upward light
- Luminaires may have an in-direct upward light allowance of 0.5 % of total output, or 50 lumens; whichever is lower, with no more than 10 lumens in 90–100 degree UL zone. Allowable uplight as a byproduct of the structure and not the source, i.e. the luminaire is fully shielded
- Luminaires must be mounted as photometered and products with tilt mounting can be no more than +/- 10 degrees
- Products must have full installation instructions to ensure luminaires are mounted as photometered
- Luminaires must have a dimming capability of 10 % of full output
- Products must not have sag or drop lenses or side light panels
- Light sources shall have a maximum CCT of 3000 K
- Luminaires must have safety certification by an independent laboratory
- Luminaires must have full photometric files to validate performance characteristics

It is recommended that any wider on-site lighting scheme should follow the guidance set out in Bats and Artificial Lighting in the UK (BCT and ILP, 2018). As such, any associated site lighting proposals must consider the following:

- Avoid lighting where possible in woodland areas and adjacent to habitat compensation areas.

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<sup>12</sup> 12 9955-JCP-ZZ-00-DR-E-63002, 9955-JCP-ZZ-00-DR-E-63001, G-DWG-0002337376-EX1-R00-220224

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- Install lamps and the lowest permissible density; (waist high bollards).
  - Lamps should be positioned to direct light to avoid upward spill
  - LED lighting – with no/low UV component is recommended.
  - Lights with a warm colour temperature – 3000K or 2700K have significantly less impact on fauna.
  - Light sources that peak higher than 550nm also reduce impacts to fauna.
  - The use of timers and dimmers to avoid lighting areas of the site all night is recommended.

During consultation NPWS did not provide specific maximum lux levels, however suggested that best practice guidance was adhered to (1LUX) and encouraged the use of red wildlife lighting in sensitive areas where artificial lighting could not be avoided. Lighting plans show some exceptions of the 1Lux limit along the river corridor, which should be minimised where possible with additional screening. It should also be noted that these plans do not take into account the mitigating aspects of the site topography and proposed planting, and in effect show a “worst case” assumption lighting impacts.

In order to further limit impacts on bats it is proposed that the pitches to north of the central arena/building, are to be restricted to a 9pm cut off for artificial lighting during periods of bat activity (March-May and August-September). This is due to the higher levels of bat activity and presence of more light sensitive species. Pitches and parking in the southern part of the site are proposed to have a cut off of 10pm year-round. This is considered to have limited impact on bats as activity levels were lower in this area and there was already significant lightspill from the existing pitches.

As such due to the loss of habitat and residual lighting impacts, there are considered to be some limited residual impacts to foraging and commuting bats, however this is not considered to be significant provided the above mitigation is undertaken.

### **8.6.8 Pine Marten**

Boundary vegetation is to be retained, including areas of woodland where the pine marten were frequently recorded. Pine marten were also recorded along the Cavan River and a riparian buffer is being maintained from this habitat. However, in the northernmost block of woodland, proposals for a pedestrian pathway will require some isolated tree felling and low-level artificial lighting.

Where possible tree felling of trees in forestry areas will be limited to time periods outside which Pine Martens may have young in dens (March and April). If this is unavoidable than areas to be clear felled will be surveyed in advance by a suitable qualified ecologist to determine whether any occupied Pine Marten dens are present. A necessary license under the wildlife act will be applied for should any sites have to be disturbed.

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Due to the presence of pine marten and other nocturnal fauna in this area it is proposed that waist high bollards are utilised. Current lighting plans (9955-JCP-ZZ-00-DR-E-6301) show use of bollards which are “dark sky” approved. No lighting is proposed within the riparian woodland zone.

Pine marten are generally nocturnal and as such the proposed operating hours will also mitigate for disturbance. No pathways are to be provided in the riparian woodland corridor or habitat compensation areas, limiting public access to these zones. Signage should be provided on pathways encouraging people to stick to the route and not to trample vegetation. Allowing dense shrub vegetation to establish adjacent to the pathways (native species without spines such as dogwood, hazel and elder are suitable) is recommended as a low intervention way to restrict public access beyond the provided footways. Full details of all mitigation measures is provided in Appendix 8.8 and provided this is adhered to there is not considered to be a residual significant effect on this species.

#### **8.6.9 Breeding Birds**

There are no species-specific mitigation measures required to be implemented on site. However, it is recommended that general mitigation be put in place to enhance the habitats present and enhance the biodiversity on site. There are already plans within the site proposals to plant native trees along the boundaries of the site and keep existing trees where possible. This will provide sufficient habitat for many species as they will provide shelter, nesting and foraging opportunities, as will hedgerows and areas of scrub. Planting a mix of native species such as conifers, willow and hawthorn will provide suitable habitat for birds using the site and will help to increase biodiversity on site. Consideration should be given to inclusion of swift boxes on suitable buildings as well as providing a range of artificial nest boxes on retained mature trees.

Removal of habitat such as mature trees, hedgerows and scrub will negatively impact nesting birds and so, if any habitat is to be removed, it is recommended that replacement habitat be put in place. However, where this is not possible, bird boxes/nesting boxes should be installed in appropriate areas to cater for the diversity of birds observed on the site.

It is therefore recommended that scrub clearance should be kept to a minimum and should be undertaken outside of the breeding season (1<sup>st</sup> March – 31<sup>st</sup> August). Should clearance during the breeding season be required, this must be carried out under the supervision of a qualified ecologist and the appropriate surveys and checks must be undertaken prior to any scrub clearance to ensure no active nests are present.

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Whilst Kingfisher have not been recorded onsite, there is a residual chance of them being presence in the wider Cavan River catchment. Adherence to strict pollution control measures as detailed in section 8.6.5 will protect the water quality and therefore their foraging resource.

#### 8.6.10 White-clawed Crayfish and Freshwater Pearl Mussel

Further detailed mitigation will be provided as an addendum following completed surveys and additional consultation with Inland Fisheries. The detailed sediment control measures as detailed in section 8.6.6 are also of relevance to these species.

##### Mitigation measures:

- Reduction of sediment run-off and reduce overall water pollution
- Add vegetation and woody material to habitat
- If WCC are recorded within the works area it may be necessary to undertake translocation under licence during the works duration.
- Sediment traps to collect and trap any sediment run off from site works, prevent sediment entering the river.
- Reduce disturbance to riverbanks, use of CFA low vibration piling is proposed.
- Reduce sediment run-off upstream of mussel beds by fencing off riverbanks and sediment traps.
- If proposed works can't mitigate for harm, then compensation measures must be in place, such as improving the size and quality of mussel habitat and fix any broken connections to the habitat. Also compensate by investing in breeding and reintroduction programmes

Use of heavy-weight **silt mats** whilst construction works near the river are ongoing to capture and trap fine silt and sediment to prevent run-off and prevent pollution of rivers and watercourses. These could also be placed within the river channel to capture any sediment downstream of the pollution source.

#### 8.6.11 Invasive species

Invasive plant species are not recorded onsite however are present within the immediate vicinity. As such the presence of invasive species (primarily Japanese Knotweed and Himalyan Balsam) should be considered within the Construction Environmental Management Plan. A detailed Mink Management plan should also be produced in order to mitigate for the presence of onsite mink. Provided these are undertaken and adhered to there should be no residual effect on this factor.

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## 8.7 Conclusion

Overall, the Site is of moderate ecological value primarily due to the presence of protected species rather than value and diversity of habitats. Scheme design has followed the mitigation hierarchy and retained aquatic habitats with suitable buffers as well boundary vegetation and high value trees where feasible. Mitigation measures are recommended to ensure the functionality of these retained habitats are maintained during and post construction.

Due to the presence of commuting bats on Site, mitigation measures are provided that reduce effects during construction and operation from lighting and disturbance. The use of a buffer and sensitive light schemes will be key to maintaining dark corridors across the Site. With these in place, the effects reduce from major to minor residual effect.

Detailed mitigation is provided in relation to protection of aquatic habitats and associated fauna, and further documentation such as a surface water management plan and CEMP are required to provide full details and will result in negligible impacts.

The active badger sett on Site is to be closed under ecological supervision, with a replacement sett and suitable habitat compensation and underpasses provided. However, there could be an overall reduction in foraging opportunities within the site and therefore, the maintenance of ecological corridors around the Site through underpass provision, allows ongoing access into the wider landscape to allow movement of badgers to alternative foraging grounds. The result of this is likely to be a minor negative effect to badger foraging.

Following the creation of the habitat compensation area and other landscape planting to incorporate woodland and grassland habitats across the Site, it is anticipated that there will be an offset of negative impacts from habitat loss.

Therefore there is not considered to be any residual significant effect, with the exception of bat foraging, as a result of the scheme, provided the detailed mitigation is adhered to.

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## 9.0 LANDS, SOILS AND WATER

### 9.1 Introduction

#### 9.1.1 Terms of Reference

This assessment considers the likely significant effects on the land, hydrogeological and hydrological environment associated with the construction and operation of the proposed Cavan Regional Sports Campus, Co. Cavan, Cavan Town (here after referred to as the proposed development).

This assessment and techniques used are aimed at identifying the environmental impacts of the proposed development on the Soils and Waters environments with mitigation measures developed for the construction and operation stages to ensure that the development is sensitive to the location and impacts are minimal.

#### 9.1.2 Structure

This chapter draws on and summarises information and assessments considered in detail by technical reports, submitted as Technical Appendices in Volume 3 of the EIAR and presented in the form expected by the competent authority when consulted in relation to the planning application.

Reference should be made to Chapter 2 for information regarding the details of the proposed development.

Changes to the land use, hydrogeology and hydrological regime may create resultant effects on ecology within water dependent ecosystems. Therefore, this chapter is further supported by Chapter 8: Biodiversity.

The assessment has been carried out by MCL Consulting an independent multi-disciplinary environmental consultancy specialising in the soils and waters environments, with specialist knowledge of land quality, water chemistry and hydrological assessments. In relation to flood risk, all that work has been provided by McCloy Consulting Ltd.

The key staff members involved in this project are as follows:

- David McLorinan BSc MSc FGS CGeol MCIWM – Chartered Geologist, Chartered Waste Manager and Fellow of the Geological Society with over 30 years environmental consultancy experience in hydrogeology, hydrology, contaminated land and waste management in the UK and Ireland.
- Thomas Martin BSc MSc AMIENVSc with five years environmental consultancy experience in Contaminated Land, Environmental sampling and reporting, Hydrology and Waste.

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- Kyle Somerville BEng (Hons) CEng MIEI – Associate and Chartered Senior Engineer specialising in the fields of flood risk assessment, flood modelling, drainage and surface water management design for a variety of developments in the UK and Ireland.

## 9.2 Cavan Impact Assessment Criteria

This assessment determines the nature, scale and significance of the effects of the proposed development on the baseline (current) scenario in accordance with a methodology stated within The Institute of Environmental Management and Assessment guidance<sup>13</sup>.

The significance of any potential impact has been determined based on:-

- the importance of the feature to be protected.
- the magnitude of the impact on the receiving geological / hydrogeological / hydrological environment.

Using information from the desk study and data from the site investigation, an estimation of the importance of the soils, geological and waters environment within the study area is assessed using the criteria set out in **Table 9.1**). An estimation of the magnitude of the effect using the criteria set out in **Table 9.2**). Following this, an overall impact significance is determined by considering the potential impact significance (**Table 9.3**) and the likelihood of the effect occurring (**Table 9.4**).

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<sup>13</sup> Institute of Environment Management and Assessment (2004) Guidelines for Environmental Impact Assessment



**Table 9.1: Evaluation of Receptor Sensitivity Criteria**

Scale / Sensitivity of the Environment (Receptor)		Definition of Criteria
International and / or Very High	Attribute has a very high quality / rarity at an international scale.	River, wetland or surface water body ecosystem protected by EU legislation e.g., ‘European sites’ designated under the Habitats Regulations or ‘Salmonid waters’ designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
National and / or High	Attribute has a high quality and rarity at a national scale.	<ul style="list-style-type: none"> <li>• ‘High’ overall WFD status</li> <li>• River, wetland or surface water body ecosystem protected by national legislation – Natural Heritage Area (NHA) status</li> <li>• Floodplain protecting more than 50 residential or commercial properties from flooding</li> <li>• Nationally important amenity site for wide range of leisure activities</li> </ul>
Regional and / or Medium	Attribute has a medium quality and rarity at a regional scale.	<ul style="list-style-type: none"> <li>• ‘Good’ overall WFD status</li> <li>• Salmon fishery</li> <li>• Flood plain protecting between 5 and 50 residential or commercial properties from flooding</li> <li>• Locally important amenity site for wide range of leisure activities</li> </ul>
Local and / or Low	Attribute has a low quality and rarity at a local scale.	<ul style="list-style-type: none"> <li>• ‘Moderate’ or less overall WFD status</li> <li>• Coarse fishery</li> <li>• Floodplain protecting between 1 and 5 residential or commercial properties from flooding</li> <li>• Amenity site / utility used by large numbers of local people</li> </ul>
Hydrogeological Features		
Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface

Scale / Sensitivity of the Environment (Receptor)		Definition of Criteria
		<p>water body ecosystem protected by national legislation – e.g. NHA status.</p> <p>Regionally important potable water source supplying &gt;2500 homes</p> <p>Inner source protection area for regionally important water source.</p>
High	Attribute has a high quality or value on a local scale	<p>Regionally Important Aquifer.</p> <p>Groundwater provides large proportion of baseflow to local rivers.</p> <p>Locally important potable water source supplying &gt;1000 homes.</p> <p>Outer source protection area for regionally important water source.</p> <p>Inner source protection area for locally important water source.</p>
Medium	Attribute has a medium quality or value on a local scale	<p>Locally Important Aquifer</p> <p>Potable water source supplying &gt;50 homes.</p> <p>Outer source protection area for locally important water source.</p>
Low	Attribute has a low quality or value on a local scale	<p>Poor Bedrock Aquifer.</p> <p>Potable water source supplying &lt;50 homes.</p>
Geological Features		
Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	<p>Loss of high proportion of future quarry or pit reserves</p> <p>Irreversible loss of high proportion of local high fertility soils</p> <p>Removal of entirety of geological heritage feature</p> <p>Requirement to excavate / remediate entire waste site</p> <p>Requirement to excavate and replace high proportion of peat, organic soils and/or soft mineral soils beneath alignment</p>
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	<p>Loss of moderate proportion of future quarry or pit reserves</p> <p>Removal of part of geological heritage feature</p> <p>Irreversible loss of moderate proportion of local high fertility soils</p> <p>Requirement to excavate / remediate significant proportion of waste site</p>

Scale / Sensitivity of the Environment (Receptor)		Definition of Criteria
		Requirement to excavate and replace moderate proportion of peat, organic soils and/or soft mineral soils beneath alignment
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Loss of small proportion of future quarry or pit reserves Removal of small part of geological heritage feature Irreversible loss of small proportion of local high fertility soils and/or high proportion of local low fertility soils Requirement to excavate / remediate small proportion of waste site Requirement to excavate and replace small proportion of peat, organic soils and/or soft mineral soils beneath alignment
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage feature
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

Note 1: Refer to Annex 1, Method C, Annex 1 of HA216/06 (UK DMRB)

Note 2: Refer to Appendix B3/ Annex 1, Method D, Annex 1 of HA216/06

### 9.2.1 Magnitude of Effect

The magnitude of change / effect is influenced by the timing, scale, size and duration of the hazardous effect; magnitude has been categorised on a scale of “High” to “Low” as defined in the below **Table 9.2**.

**Table 9.2: Evaluation of Magnitude of Effect Criteria**

Magnitude of Effect / Description		Definition of Criteria	
High	Fundamental change resulting in loss of an attribute and /or the quality and integrity of conditions.	Water Quality	Potential high risk of pollution to water changing water quality status or usability.
		Aquifer yield	Reduction in baseflow to surface water and abstraction capability
		River morphology / fluvial geomorphology	Significant and permanent change over large scale i.e. Large changes in erosion and deposition regimes.
		Flood Risk / Erosion Potential	Significant increase in risk due to a significant change in the proportion of hard standing and altered surface water flows. Major change in conveyance capacity or flood storage area.
		Surface Water Dependent Ecosystem	Loss of or extensive change to a surface water dependent ecosystem or fishery.
Medium	Detectable change to conditions resulting in non-fundamental temporary or permanent consequential changes.	Water Quality	Potential medium risk of pollution to water, changing water quality status.
		Aquifer yield	Partial reduction in baseflow to surface water and abstraction capability
		River morphology / fluvial geomorphology	Detectable change to river morphology / fluvial geomorphology over a small scale i.e. some changes in erosion and deposition regimes.
		Flood Risk / Erosion Potential	Detectable increase in flood risk and erosion potential due to a medium change in the proportion of hardstanding and altered surface water flows. Moderate change in conveyance capacity or flood storage area.
		Surface Water Dependent Ecosystem	Partial loss or change to a surface water dependent ecosystem or fishery.
Low	Results in minor effect on attribute of insufficient magnitude to affect the use or integrity.	Water Quality	Minor deterioration in water quality unlikely to affect the most sensitive receptor or insignificant change in water quality conditions not exceeding those expected due to naturally occurring fluctuations.
		Aquifer yield	Unquantifiable change in aquifer yield
		River morphology / fluvial geomorphology	Unquantifiable or unqualifiable change to river morphology / fluvial geomorphology.
		Flood Risk / Erosion Potential	Minor changes in the proportion of hardstanding and altered surface water flows result in no detectable increase in flood risk and erosion potential. Minor change in conveyance capacity or flood storage area.
		Surface Water Dependent Ecosystem	Any measurable change to a surface water dependent ecosystem or fishery.

Magnitude of Effect / Description		Definition of Criteria	
Negligible	Results in negligible effect on attribute	Water Quality	No perceptible change in water quality.
		Aquifer yield	No perceptible change in baseflow or yield characteristics
		River morphology / fluvial geomorphology	No perceptible change to river morphology / fluvial geomorphology.
		Flood Risk / Erosion Potential	No measurable change in the proportion of hardstanding and altered surface water flows result in no detectable increase in flood risk and erosion potential.
		Surface Water Dependent Ecosystem	No measurable change to a surface water dependent ecosystem or fishery.

### 9.2.2 Impact Significance Criteria

The magnitude of effect and receptor sensitivity are combined to evaluate and qualify if an impact is of high, moderate, low or negligible significance as outlined in **Table 9.3**.

**Table 9.3: Evaluation of Potential Impact Significance**

Scale / Sensitivity of the Environment	Effect Magnitude			
	Negligible	Low	Medium	High
International / Very High	Moderate	Moderate	High	High
National / High	Low	Moderate	Moderate	High
Regional / Medium	Negligible	Low	Moderate	Moderate
Local / Low	Negligible	Negligible	Low	Low

### 9.2.3 Likelihood of Occurrence Criteria

The likelihood of the potential effects occurring is assessed based on historical data, quantitative analysis and professional judgement based on relevant experience as shown in **Table 9.4** below.

**Table 9.4: Likelihood Criteria**

Likelihood of occurrence	Criteria
Certain	Likely consequential effect in medium term and inevitable in long term (within the life of the development).
Likely	Possible consequential effect in the medium term and likely but not inevitable in the long term.
Unlikely	Unlikely that any consequential effect would arise within the lifetime of the development.
Rare	It is unlikely that any consequence would ever arise.

### 9.2.4 Determination of Overall Impact Significance

Potential Impact Significance (**Table 9.3**) and Likelihood of Occurrence (**Table 9.4**) are combined to determine an Overall Impact Significance as shown in the matrix in **Table 9.5** below.

**Table 9.5: Evaluation of Overall Significance**

Potential Significance	Likelihood of Occurrence			
	Rarely	Unlikely	Likely	Certain
High	Minor	Moderate	Major	Major
Moderate	Minor	Minor	Moderate	Major
Low	Not Significant	Minor	Minor	Moderate
Negligible	Not Significant	Not Significant	Minor	Moderate

## 9.3 Methodology

### 9.3.1 Scope of Assessment

This report will assess the effects of the proposed development on the Soils (geology, land contamination) and Waters (surface water, groundwater and flood risk) environment. The assessment covers construction and operational phases of the proposed development.

This assessment provides a baseline assessment and impact appraisal on the hydrological, hydrogeochemical and land quality constraints within the proposed development boundary and assesses the potential effects of the development on the following:

- 
- Land Quality and Contamination Risks.
  - Hydrogeology, Groundwater Quality and Groundwater Resources.
  - Hydrology: Existing natural and artificial drainage systems.
  - Water quality of surface water.
  - Surface water dependent ecosystems.

In order to quantifiably assess the preceding, this report:

- Outlines relevant policy relating to the water environment and land quality.
- Provides baseline information and identifies sensitive receptors.
- Identifies potential likely effects, including potential likely cumulative effects.
- Assesses the significance of any adverse effects and resulting impacts based on the magnitude of the impact and the sensitivity of the receptors.
- Provides a residual impact assessment.
- Discusses the cumulative effects of the proposed development in conjunction with other proposed and existing developments in the vicinity.

### 9.3.2 Cavan Legislation and Planning Policy

Environmental planning policy and industry best-practice guidance relevant to an assessment of hydrology and the water environment are summarised in **Table 9.6** below and in the following sections.

**Table 9.6: Relevant European and National Legislation**

Legislation	
EU	Water Framework Directive (2000/60/EC)
	Priority Substance Daughter Directive to the Water Framework Directive (2008/105/EC)
	Environmental Liability Directive (2004/35/EC)
	Floods Directive (Directive 2007/60/EC)
	Environmental Impact Assessment Directive 2011/92/EU as amended (2014/52/EU)
	Integrated Pollution and Prevention Control Directive (2008/1/EC)
	Drinking Water Directive (98/83/EC)
	Nitrates Directive (91/676/EEC)
	Habitats Directive (92/43/EEC)
	Birds Directive (2009/147/EC) on the Conservation of Wild Birds, 1979
	Groundwater Directive (2014/80/EU)
Republic of Ireland	S.I. No. 722/2003 - European Communities (Water Policy) Regulations 2003.
	S.I. No. 122/2014 - European Union (Drinking Water) Regulations 2014.
	Water Services (Amendment) Act 2012
	Local Government (Water Pollution) Act 1977 and amendments to 1990
	SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998
	S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 and amendment (S.I. 327 of 2012).
	S.I. No. 684 of 2007 Waste-Water Discharge (Authorisation) Regulations, 2007, as amended (S.I. 231 of 2010).
	S.I. No. 489/2011 - European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011.
	S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 and amendment S.I. No. 355/2015
	S.I. No. 296/2009 - The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009
	S.I. No. 293 of 1988 Quality of Salmonid Water Regulations, resulting from EU Directive 78/659/EEC on the Quality of Fresh Waters Needing Protection or Improvement in order to Support Fish Life.
	S.I. No. 349 of 1989, European Communities (Environmental Impact Assessment) Regulations, and subsequent amendments (S.I. No. 84 of 1994, S.I. No. 352 of 1998, S.I. No. 93 of 1999, S.I. No. 450 of 2000 and S.I. No. 538 of 2001).



Legislation	
	S.I. No. 473 of 2011, European Union (Environmental Impact Assessment and Habitats) Regulations 2011.
	S.I. No. 584 of 2011, European Union (Environmental Impact Assessment and Habitats) (No. 2) Regulations 2011.
	S.I. No. 600/2001 - Planning and Development Regulations, 2001 and subsequent amendments including, S.I. No. 364 of 2005 and S.I. 685 of 2006.
	S.I. No. 350/2014 - European Union (Water Policy) Regulations 2014.
	S.I. No. 278/2007 - European Communities (Drinking Water) (No. 2) Regulations 2007.
	S.I. No. 122 of 2010 European Communities (Assessment and Management of Flood Risks) Regulations 2010.
	S.I. No. 457 of 2008 European Communities (Environmental Liability) Regulations which bring into force the Environmental Liability Directive (2004/35/EC).
	S.I. No. 261/2018 - European Union (Water Policy) (Abstractions Registration) Regulations 2018.
	S.I. No. 355/2015 - European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015.
	S.I. No. 246/2012 - European Union (Environmental Impact Assessment and Habitats) Regulations 2012.
	S.I. No. 282/2012 - European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) Regulations 2012.
	S.I. No. 410/2012 - European Union (Environmental Impact Assessment) (Aquaculture) Regulations 2012.
	S.I. No. 419/2012 - European Union (Environmental Impact Assessment) (Planning and Development Act, 2000) Regulations 2012.
	S.I. No. 457/2012 - European Union (Environmental Impact Assessment) (Integrated Pollution Prevention and Control) (No. 2) Regulations 2012.

#### Regional and Local Planning Policy

The proposed development has been reviewed in relation to local planning policy specific to the water environment. A detailed planning policy and legislation review is included within Chapter 6: Policy.

#### National Planning Framework (NPF) Project Ireland 2040

The NPF promotes a sustainable approach to enhance water quality and resource management by:

- Ensuring flood risk management informs place-making by avoiding inappropriate development in areas at risk of flooding in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities.
- Ensuring that River Basin Management Plan objectives are fully considered throughout the physical planning process; and
- Integrating sustainable water management solutions, such as Sustainable Drainage (SuDS) to create safe places.
- Ensuring impact to surface water quality is minimised.
- Ensuring impact to water quality and hydraulics of groundwater systems is minimised.

### Cavan County Council Development Plan 2022-2028

The Cavan County Council Development Plan 2022-2028 recognises the important of natural water resources, stating as follows:

#### **8.4.1 Ground Water and Surface Water**

Ground waters are of importance as a water source for private wells, group schemes and local authority supplies and for use in a range of commercial activities. Groundwater directly and indirectly contributes to and sustains a variety of important ecosystems. If groundwater becomes contaminated, surface water quality can also be affected and so the protection of groundwater resources is an important aspect of sustaining surface water quality.

The council ensures that groundwater is protected by ensuring compliance with the following:

- The appropriate control of development in areas of high groundwater vulnerability.
- Implementation of the Programme of Measures as required in the River Basin Management Plan
- Licensing of discharges of effluent to groundwater, having particular regard to the requirements of the EC Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010)
- Implementation of the EC (Good Agricultural Practice for Protection of Waters) Regulations (S.I. No. 610 OF 2010, which give effect to several EU Directives, including in relation to protection of waters against pollution from agricultural sources ('the Nitrates Directive'), dangerous substances in water and protection of groundwater.
- It is essential that ground water resources and abstraction points are recognised, and as such ensures sources and their zones of contribution are protected and safeguarded in the interests of common good and public health.

The Strategy sets a number of objectives in relation to water quality to ensure ongoing protection of water resources and prevent siltation of watercourses from development and having regard to National targets and measures set out in the River Basin Management Plan for Ireland 2018-2021.

### Industry Guidelines

Below is a non-exhaustive list of the principal reference documents and industry guidelines used in this assessment:

- CIRIA C532 - Control of Water Pollution from Construction Sites (2001);
- CIRIA C692 - Environmental Good Practice On-Site (2010);
- CIRIA C609 - Sustainable Drainage Systems: hydraulic/structural/water quality (2004);

- 
- CIRIA C753- The SuDS Manual (2015);
  - CIRIA C689- Culvert Design and Operation Guide (2010);
  - Environmental Protection Agency (EPA) (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft);
  - EPA (2015) Advice Notes of Current Practice in the Preparation of Environmental Impact Statements (Consultation Draft 2015);
  - EPA (2003) Advice notes on current practice in the preparation of Environmental Impact Statements;
  - Department of Housing, Planning and Local Government (DoHPLG) (2007) Development Management Guidelines;
  - DoHPLG (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment; and
  - National Road Authority (NRA) (2009) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
    - SEPA / NIEA (2021) Guidance for Pollution Prevention (GPPs):
      - GPP 1: Understanding Your Environmental Responsibilities – Good Environmental Practice;
      - GPP 2 Above Ground Oil Storage Tanks;
      - GPP 4 Treatment and disposal of wastewater where there is no connection to the public foul sewer;
      - GPP 5 Works and maintenance in or near water;
      - GPP 8 Safe storage and disposal of used oils;
      - GPP 13 Vehicle washing and cleaning;
      - GPP 20 Dewatering underground ducts and chambers;
      - GPP 21 Pollution incident response planning
      - GPP 22 Dealing with spills; and
      - GPP 26 Safe storage - drums and intermediate bulk containers.

In the absence of revised specific guidance, this assessment shall similarly consider the lapsed Pollution Prevention Guidance Notes (PPGs):

- PPG 3 Use and design of oil separators in surface water drainage systems;
- PPG 6 Working at construction and demolition-sites;
- PPG 7 Safe Storage - The safe operation of refuelling facilities; and
- PPG 18 Managing fire, water and major spillages.

## 9.4 Proposed Development

### 9.4.1 Development Description

An overview layout of the proposed development is provided as Drawing Reference (100-10). The proposed development comprises the following components:-

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

### 9.4.2 Development Phasing

The construction works and implementation of the development will be delivered in two Phases, as shown in the Outline Programme presented in **Table 9.7**. The facility will commence operation after Phase 1 and will be operational during the construction of Phase 2.

**Table 9.7: Outline Programme**

Phase	2025				2026				2027				2028				2029			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1																				
2																				

---

Phase One is expected to be undertaken between Q2 of 2025 and Q3 2026 and will incorporate construction of wildlife habitat creation area, riparian planting adjacent River Cavan, Dublin Road access and River Cavan bridge construction as well as the main arena, hockey pitch, plus 2 sand mattress GAA Fields and two car parks. Construction of the artificial badger sett will also be undertaken in Phase 1, or in advance, pending planning conditions. This sett should be in use for 6 months prior to the exclusion and destruction of the existing badger sett, anticipated within Phase 1.

Phase 2 is expected to be undertaken between Q4 2027 and Q4 2029 and include construction of a further sports building, athletics track and two further sand mattress GAA Fields.

### **9.4.3 Key Components (Soils and Waters Impacts)**

The proposed development includes a number of key components which have triggered the need to assessment of possible impacts to the soils and waters environments, as follows:-

#### **Major Cut and Fill Land Reprofilng**

The development will involve significant land reprofiling, which will be achieved by a programme of cut-fill operations during Phase 1 and Phase 2. The cut-fill plans are presented in Appendix 2 of the oCEMP and will results in a total of 223,402m<sup>3</sup> of materials being cut and 222,270m<sup>3</sup> of materials being reused as fill materials within the development. In line with a sustainable earthworks strategy , only a small quantity of material, amounting to 1,301m<sup>3</sup> will need to be removed from the site for authorised off-site re-use or landfill disposal.

The cut will involve excavation of significant depths into the underlying geology. The fill will involve emplacement of those materials over existing geology to form a more benign landform suitable for the development of flat pitches and building structures. The development will involve the piling into underlying geology and the construction of retaining structures, vertical concrete walls and various steeply-inclined earthen revetments.

#### **Cavan River Bridge**

It is proposed to construct a two-way pedestrian and vehicular access bridge across the Cavan River as part of the development scheme.

The proposed bridge is a single span integral reinforced concrete bridge, supported on piled foundations. The foundations will be a minimum of 5m away from the edge of the river channel.

#### **Stream Culverting and Diversion Works**

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The proposed development involves the culverting and diversion of c.650m of a minor watercourse, the Kilnavarragh Stream. The watercourse will be temporarily diverted into an above ground pipework system through the site to facilitate the construction of a suitable c. 600mm diameter culvert approximating the route of the current open watercourse. The route of the culvert through the site is shown on the McAdam Design Drawing Ref:XXXXXXXX (Manhole reference D1 -D11 on the drawing).

### **Drainage Works**

The development will benefit from a new runoff drainage management system, which will direct runoff over the site to a number of drainage outlets discharging to the Cavan River. Drainage from Vehicular access roads and car parks will be treated with a range of SuDS measures to encourage infiltration of water to ground with outfalls from these areas passed through bypass separators prior to discharge to the Cavan River.

## **9.5 Cavan Baseline Characteristics**

A range of environmental surveys have been undertaken as part of the works to assess the site baseline conditions as follows:-

- Preliminary Risk Assessment (PRA) (**Appendix 9.1**).
- Generic Preliminary Sources Study Report (PSSR) (**Appendix 9.2**).
- Generic Quantitative Risk Assessment (GQRA) (**Appendix 9.3**).
- Water Features Survey (**Appendix 9.4**).
- Flood Risk Assessment (**Appendix 9.5**).

### **9.5.1 Study Area**

Potential effects were considered within the study area, defined as the area within the planning application boundary (here after referred to as the 'Application Site').

The study area includes:-

- The surrounding soils and waters environments within 2km of the site.
- Upstream and Downstream watercourses.
- Upgradient and Downgradient Groundwater Resources.

The Red Line application area of the Proposed Development Site is presented in **Figure 9.1**:

**Figure 9.1: Development Red Line**



### 9.5.2 Desk Study

The desktop study carried to produce this chapter involved collation and assessment of the relevant information from a range of sources including:

- Site and Environs Walkovers.
- Previous Site Investigations.
- Recent Site Investigations.
- Review of other environmental reports prepared for this EIAR.
- Environmental Protection Agency database.
- Geological Survey of Ireland - Groundwater Database.
- EPA River Basin Management Plans (<https://www.epa.ie/water/watmg/wfd/rbmp/>).
- EPA sensitive receptor datasets.
- EPA river quality data and natural heritage data.
- EPA Discharge Licensing Database.
- Conservation area mapping (<https://www.npws.ie/>).

- 
- Anecdotal Information.
  - EPA maps (designated sites etc) (<https://gis.epa.ie/EPAMaps/>).
  - Water Framework Directive “Catchments” Map Viewer (<https://www.catchments.ie>)
  - OPW Flood Plans and Flood Maps (<http://www.floodmaps.ie/>).
  - OPW River Monitoring Data.
  - Previous environmental report and assessments of the area.
  - Other published environmental data.

Field walkover surveys were undertaken during the spring and summer 2023 and early months of 2024, with the purpose of identifying / verifying existing natural and artificial site drainage characteristics, hydrological features and land status.

The walkover surveys included lands under applicant control and the surrounding area, with particular emphasis on land use and water features in order to fully assess potential issues with regards to:

- Site Water Features and Associated Features.
- Sources of pollution.
- Site hydraulics and sensitivities.
- Disruption to watercourses through construction of roads/hard standing etc.
- Likelihood of adverse effects on the soil and water environment due to construction and operation of the development.

An intrusive ground investigation, including soil, groundwater and surface water sampling and level monitoring was carried out by Northwest Geotech to provide additional information relating to the geological and hydrogeological setting of the site. The borehole logs from this are provided in the (**Appendix 9-6**).

## 9.6 Receiving Soils & Waters Environment

This land, soil and water environment assessment has been undertaken using a qualitative assessment based on experienced professional judgement and assessment of compliance with statutory and industry guidance, including site visits for verification.

### 9.6.1 Site Description

The development site is located in the southern portion of Cavan town in County Cavan. The development site lies adjacent to and is transacted by the Cavan River, with a range of small unnamed drainages ditches present on site.



The development area surrounds Royal School, with a portion of the school ground included in the site area. The site area is c.28 Hectares.

### 9.6.2 Meteorological Data Summary

Rainfall data from the Ballyhaise climate station<sup>14</sup> (c.7.8km northeast from the proposed development) recorded a monthly average rainfall total of 82.3mm, and an annual average rainfall of 934.2mm during the 1941 – 2023 climatic period. Based on the Meteorological Office banding of annual average rainfall (1981 – 2010), rainfall in the vicinity of the site is within the second lowest of six bands (500 – 1000 mm).

### 9.6.3 Topography

A Topographical Overview of the site, developed from published topographical data is presented as **Figure 9.2**.

**Figure 9.2 Topographical Setting, Contours mOD**



<sup>14</sup> Met Office, Ballyhaise Climate. Available at: <https://data.gov.ie/dataset/ballyhaise-agrcoll-climate-data>

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The site topography is dramatic in its variability, but generally the lands to the west of the Cavan River fall from west to east to the river and the lands to the east of the Cavan River fall from east to west to the river.

On the western site, the northern portion of the site falls from an elevation of up to 91mOD along the boundary with Kinnavarragh Lane to c.64mOD at the river margin, with the southern portion less steep, falling from c. 75-80mOD along Kinnavarragh Lane to c.65mOD at the river margin. In The southern portion of the site a flatter area at c60mOD is present west of the Cavan River.

On the eastern site, the site generally slopes down from the Dublin Road at c 80mOD to the river channel at c.65mOD, though a large ridge (c80mOD) falling steeply away to the west and particularly to the east is present in the northern portion of the site.

#### **9.6.4 Site Features**

For ease of reference, the site has been subdivided into individual field parcels as presented in **Figure 9.3**, with main site features annotated as presented in **Figure 9.4**.

Figure 9.3: Site Divisions

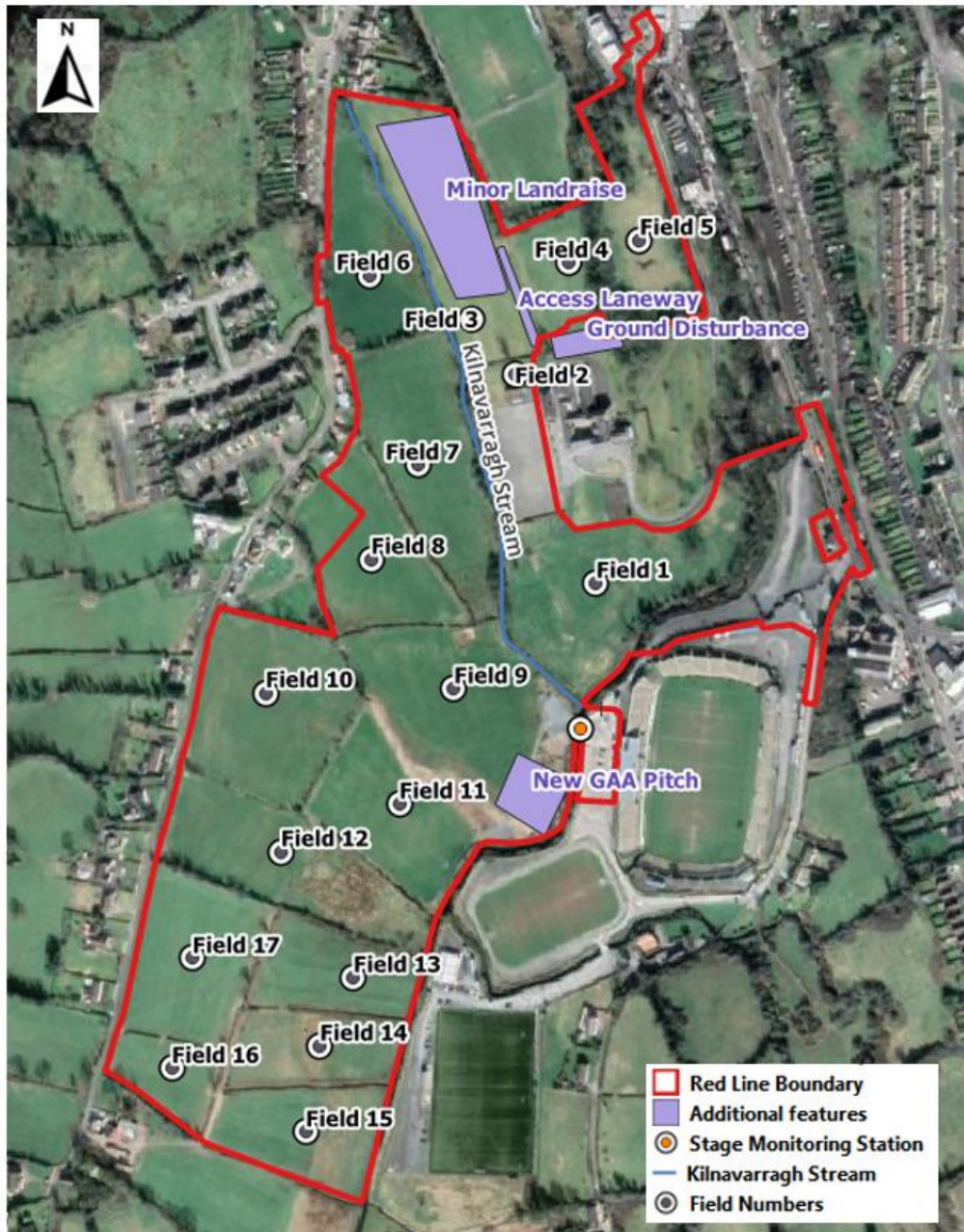




Figure 9.4: Site Features



A comprehensive description of the current land use for the proposed development is provided within the Preliminary Risk Assessment (PRA) (**Appendix 9.1**) and Geotechnical Preliminary Sources Study Report (GPSSR) (**Appendix 9.2**).

The site is predominantly greenfield lands, however, there has been some previous development at the site, including a small access bridge across the Cavan River leading to a car park on the opposite bank of the Cavan River to Breffni Park, and a new grass pitch south of that car park, and areas of minor land raise / land disturbance in the north. The site also incorporates previously developed lands to the east of the Cavan River associated with the existing Breffni Park development, where the site overlaps with this development.

### 9.6.5 Designations / Protected Areas

A 15km buffer zone of influence (ZoI) has been chosen as a precautionary measure, to ensure that all potentially affected European Sites are included in the screening process, which is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG, 2009, rev. 2010). **Figure 9.5** presents the locations of European Sites relative to the development site.

**Figure 9.5: Distances to European Sites**



The site is not located within any sites that are nationally or internationally designated for their nature conservation importance. However, the proposed development site is located approximately 3.6km south-east of the Lough Oughter SPA and Lough Oughter and Associated Loughs SAC. The hydraulic distance between the site and the SPA / SAC is c.5km. There are no Proposed Natural Heritage Areas within 15km of the site with the nearest designated Proposed Natural Heritage Areas, Lough Oughter and Associated Loughs pNHA and Drumkeen House Woodland pNHA, located approximately 3.69km north-west / west and 3.02km north respectively.

#### Designated Geological Receptors and Features of Geodiversity Interest

No geological SSSI or GCR sites are present within the study area.

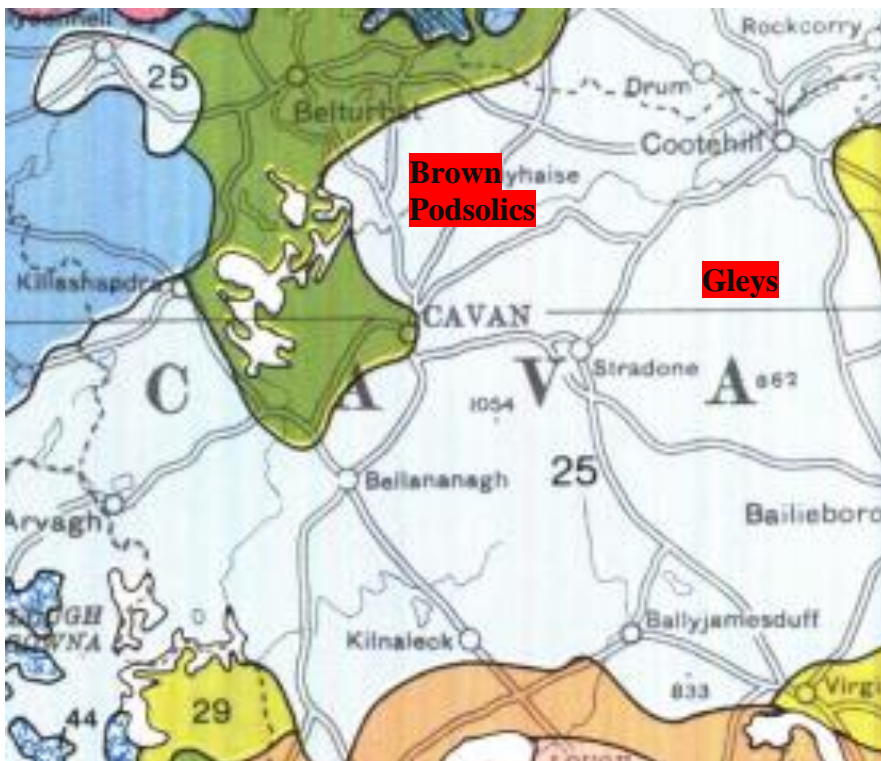
### 9.6.6 Soils

Review of Teagasc General Soil Map (Second Edition, 1:575,000, 1980), **Figure 9.6**, indicates it is unknown precisely which soil type is on site, due to the scale of the map, however it is either one of the below or a combination of:-



- Drumlin Gleys (50%). The associated soils within the Gleys Principal Soils are Acid Brown Earths (40%), Interdrumlin Peat and Peaty Gleys (10%). The parent material is mostly Ordovician-Silurian shale sandstone glacial till.
- Drumlin Grey Brown Podzolics (60%). The associated soils within the Grey Brown Podzolics Principal Soils are Gleys (20%) Interdrumlin Peat and Peaty Gleys (20%). The parent material is mostly limestone glacial till.

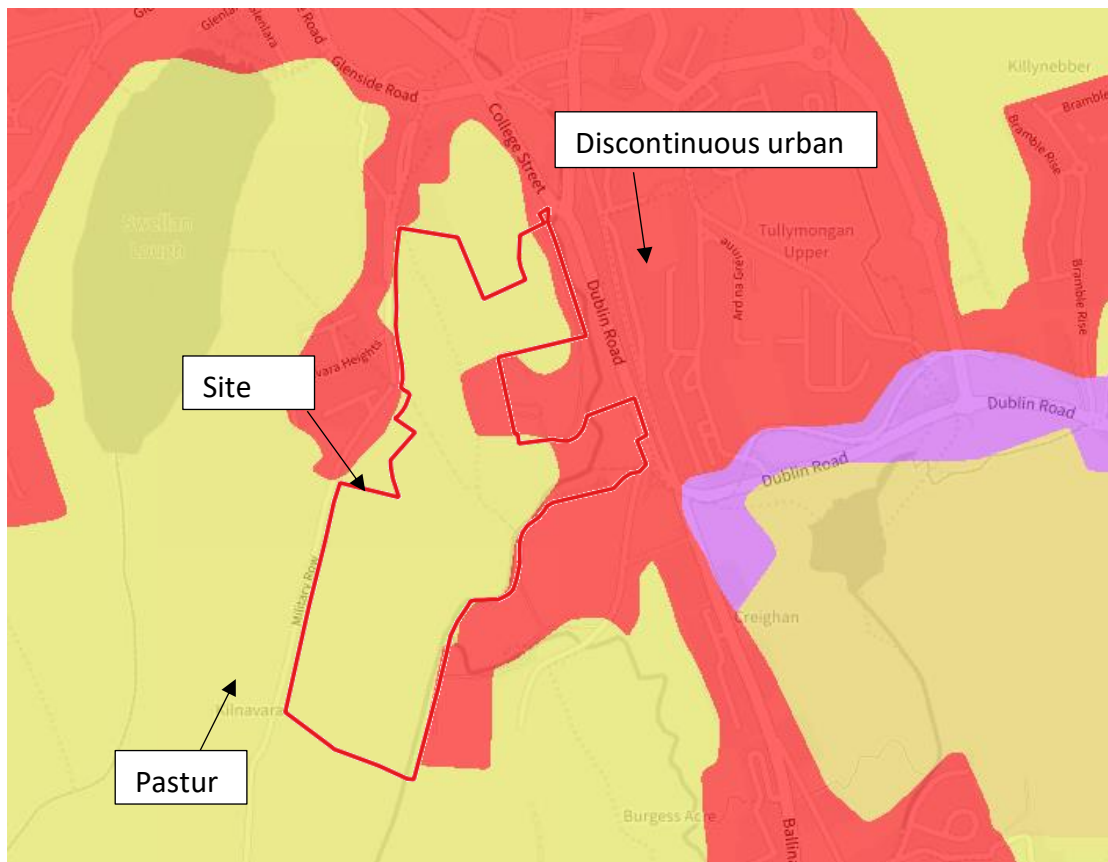
**Figure 9.6: Teagasc General Soil Map (Second Edition, 1:575,000, 1980)**



These soil types are not uncommon in Ireland and are used primarily for grazing.

Land cover within the Application Site is denoted on the Corine 2018 land cover mapping as covered predominantly by ‘pastures’. The eastern-most section of the Application site overlaps onto an area denoted as ‘discontinuous urban fabric’ (Figure 9.7).

**Figure 9.7: Land Cover**



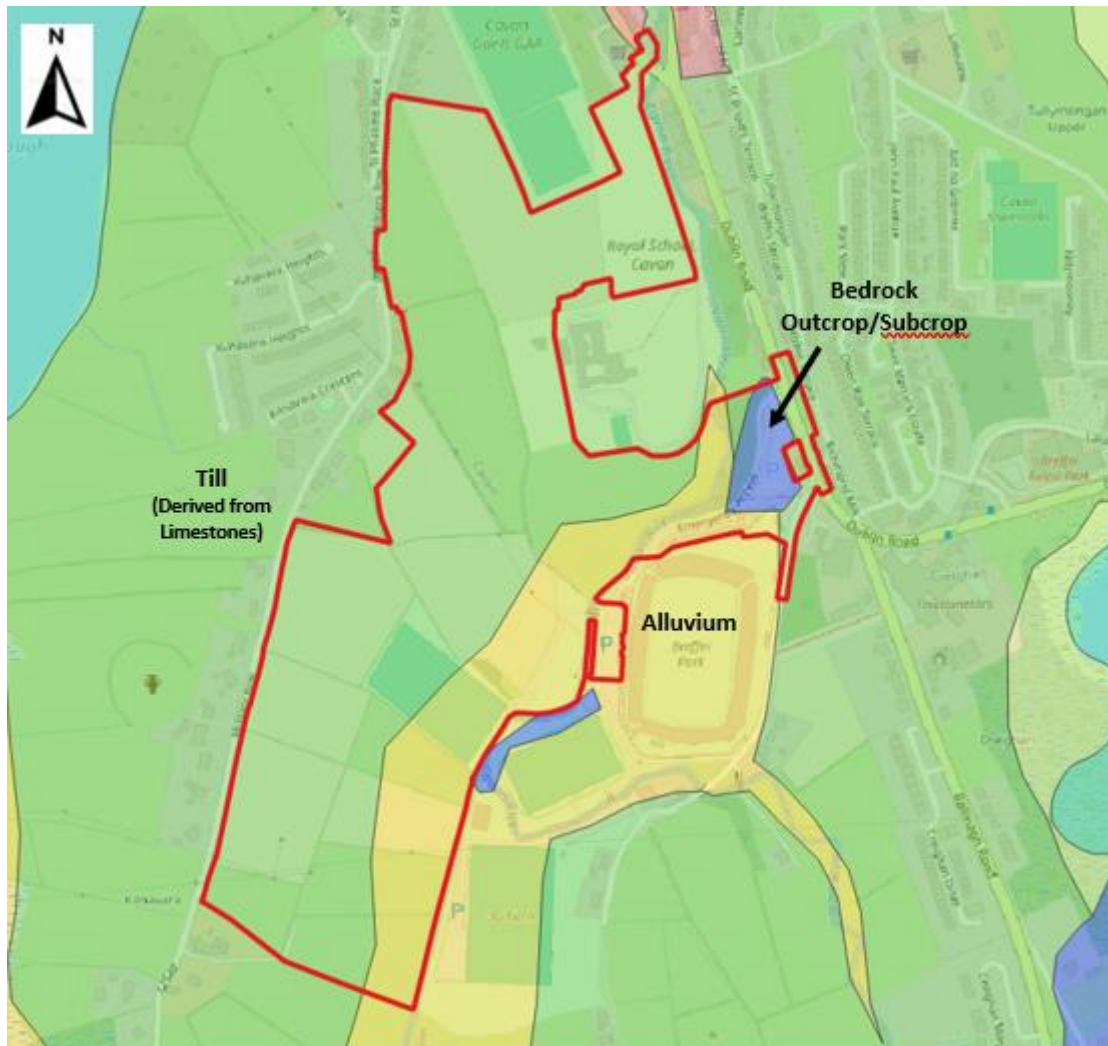
Red Shading – artificial surfaces Yellow Shading – agricultural land/greenfield

### 9.6.7 Drift Geology

The published drift geological mapping is presented as **Figure 9.8**. Geologically the drift geology is a product of repeated glaciation depositing moraine sediments, which were then repeatedly reworked, likely throughout multiple glaciation periods, to form a drumlin environment consisting of Glacial Till deposits which are over 15m thick in western parts of the site.

Close to the Cavan River, these tills mapped as being overlain by thin Alluvium, accumulated through river deposition. It is also possible that narrow river gravels may underlie the area mapped as alluvium along the margins of the Cavan River and also under the riverbed.

**Figure 9.8: Superficial Geology**

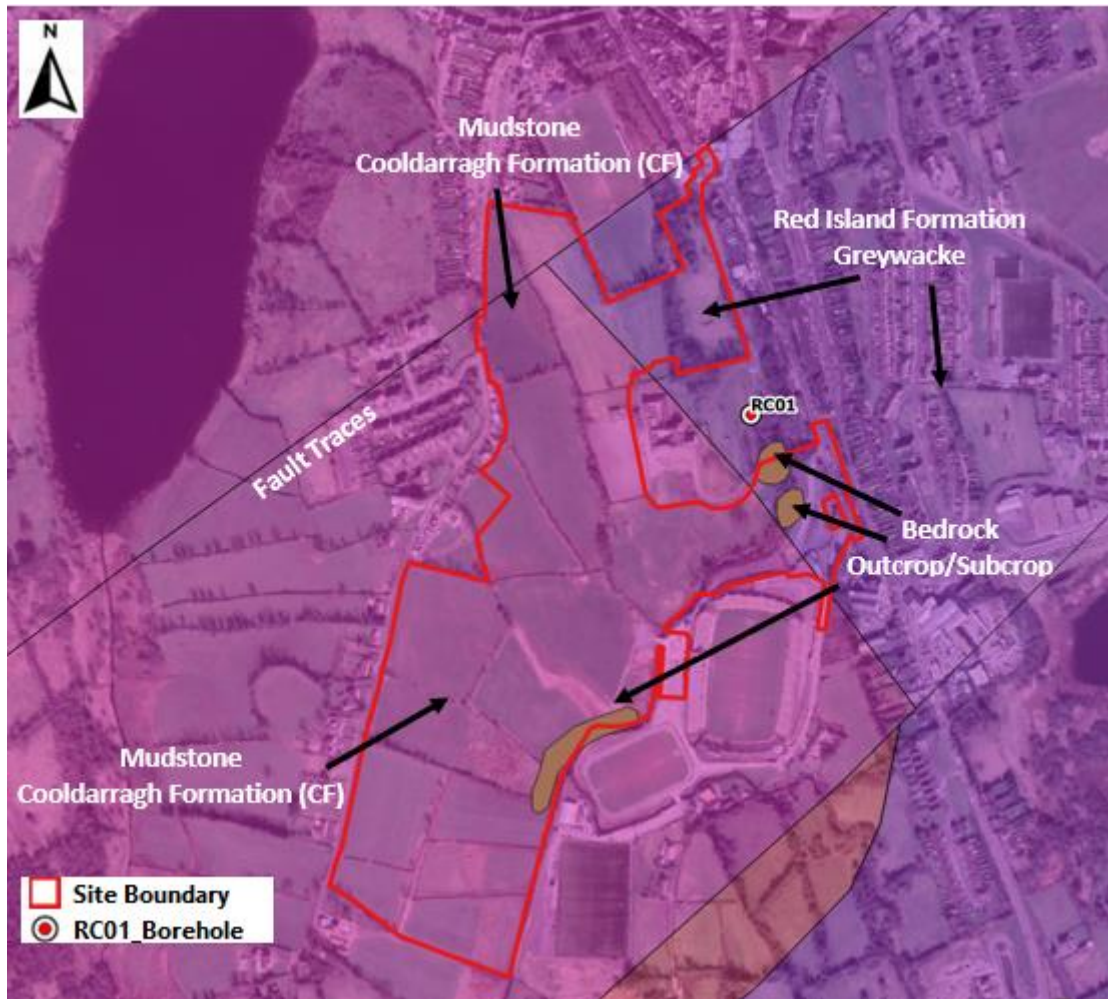


### 9.6.8 Bedrock Geology

The published bedrock geological mapping is presented as **Figure 9.9**. The mapping indicates that the majority of the site is underlain by the Carboniferous-age evaporitic to marginal marine Cooldaragh Formation, described in geological publications as a sequence mainly consisting of pale brown-grey calcareous siltstone, mudstones and evaporites up to 125m thick. The mapping indicates that the eastern portion of the site is underlain by much older Greywacke of the Ordovician Red Island Formation. The much older greywacke of the Red Island Formation juxtaposes the Carboniferous sequence along an unconformity fault line running roughly northwest to southeast through the northern area of the site. A second fault running southwest to northeast also traverses the northern corner of the site.



Figure 9.9: Bedrock Geology



Bedrock is mapped as being exposed / at or close to surface in eastern areas of the suite, specifically along portions of the Cavan River channel (Cooldarragh Formation) and over some lands in the east at Breffni Park west of the Dublin Road (Greywacke).

### 9.6.9 Mineral Extraction

A review of the GSI database confirms that there are no known active quarries within the study area or within close proximity (1km). There are no records of historic or current mining within the study area.

Given the lack of historical quarrying within the local area and adjacent land use (urban developments), the potential for future exploitation and mineral resource is expected to remain limited.

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### 9.6.10 Abandoned Mines and Shafts

A review of the EPA Ireland online map viewer indicates there are no mapped mine shafts or workings within 1km of the site.

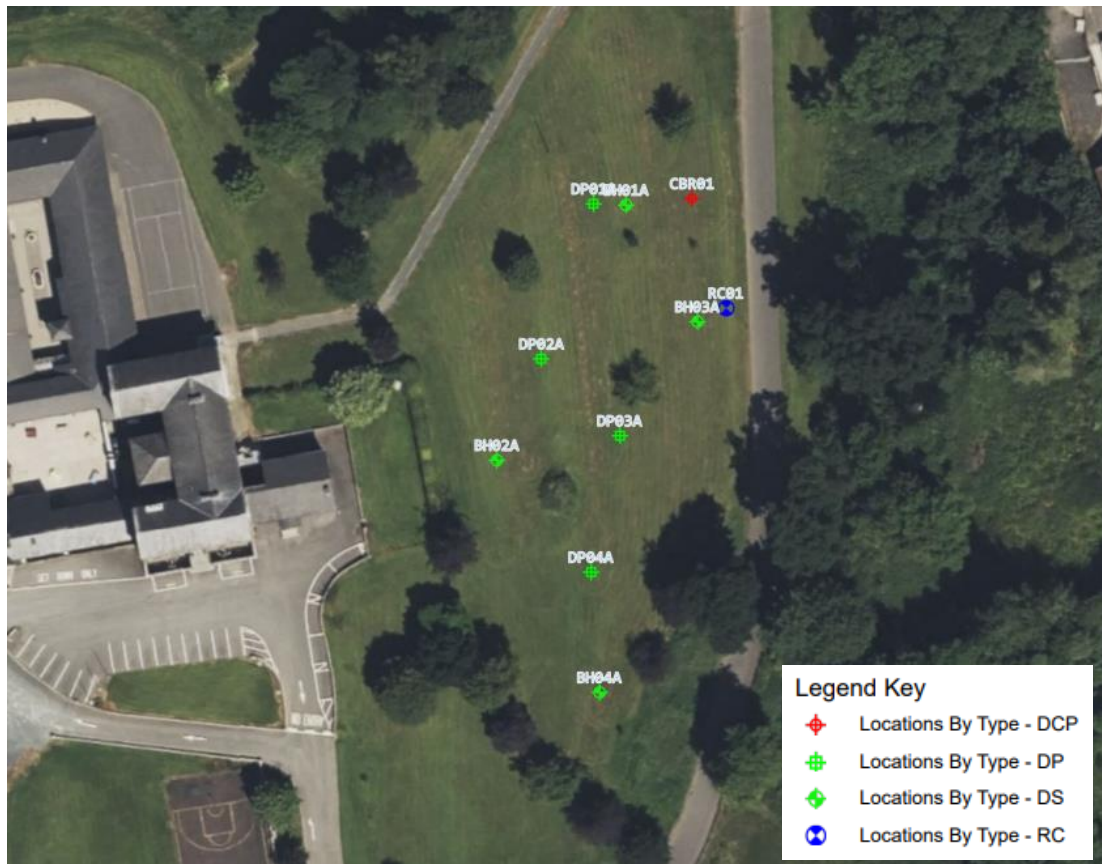
### 9.6.11 Karst and Dissolution Features

A review of the GSI Groundwater Karst Data (ROI/NI) indicate that there are no mapped features within 1km of the site. No field evidence of surface karstic features, such as sinkholes etc., was observed during the geological walkover survey. It is however possible that the limestones of the Cooldaragh Formation, likely to be present underlying at least a portion of the site, may contain unrecorded karstic features, such as open conduits or cave structures.

### 9.6.12 Site Investigations

A Geotechnical Ground Investigation, completed by Causeway Geotech Ltd (Report No.22-0788, Appendix 5 of the PRA), was carried out to the east of the site, east of the current school building. Although not within the Red Line Boundary, these works provide a useful insight into the underlying conditions of the general area. The ground investigation was undertaken between 22<sup>nd</sup> June and 28<sup>th</sup> July 2022. The works involved drilling four windowless sampling boreholes (BH01A-BH04A) and one rotary drilled borehole (RC01). The locations are shown below in **Figure 9.10**.

**Figure 9.10: Causeway Geotech Investigative Locations**



Below summarises the ground types encountered in the exploratory holes, in approximate stratigraphic order:

- Topsoil: encountered typically in 300mm thickness across the site.
- Glacial Till: sandy gravelly clay, frequently with low cobble content, typically soft or firm in upper horizons, becoming stiffer with increasing depth.
- Bedrock (Limestone): Medium strong light grey thickly laminated limestone rockhead was encountered at a depth of 3.70m in RC01.

The borehole logs are presented in Appendix 5 of the PRA. Sandy gravelly Clay was encountered at every windowless sampler borehole location until termination, to a maximum depth of 4.45mbgl (BH01A). At RC01, gravelly Clay overlies the bedrock which was encountered at 3.50mbgl, until termination at 6.70mbgl.

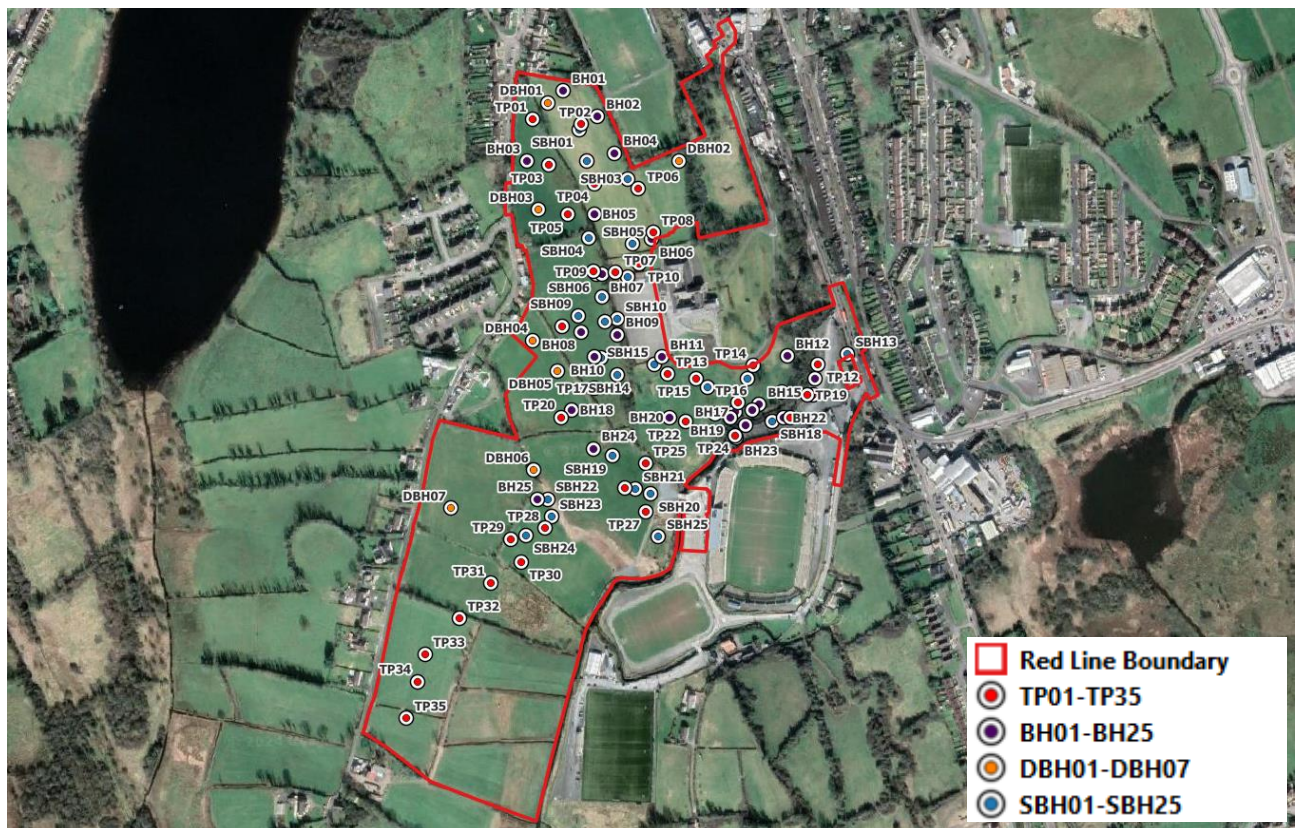
A ground investigation was carried out by Northwest Geotech as part of this development scheme. The works were completed in late 2023 - early 2024. The borehole locations for the investigations are presented in **Figure 9.11 (a) and 9.11 (b)**, and the drillers logs from that report are presented in **Appendix (9.7)**.



The site investigation comprised the following:-

- Window Sample Drilling of 25no. Shallow Boreholes (SBH01-SBH25) to depths of c3.0m.
- Cable Percussive Drilling of 25 No. Boreholes to depths of up to c.9.6m.
- Rotary Core Drilling of 7 No. deeper boreholes to depths of up to 15m.
- Trial Pitting: A total of 35 No. trial pits (TP1 – TP35) were excavated across the site to depths of up to c.4.0m.

**Figure 9.11 (a): Northwest Geotech Investigative Locations (ALL)**



**Figure 9.11 (b): Northwest Geotech Investigative Locations (Deep SI)**



The geological sequence encountered under c0.2m-0.5m of topsoil generally comprised a thick layer of gravelly Glacial Till. The till was found to be between c. 6.4m-7.4m (BH23, DBH06) and >15m thick (DBH01, DBH02, DBH03, DBH04, DBH05, DBH07) and directly overlying bedrock (where penetrated).

No evidence of the presence of alluvium or river gravels was identified close to the Cavan River or elsewhere on site, with all intrusive investigation points close to the river channel showing gravelly glacial till only.

Bedrock was encountered at three locations across the site. Limestone is recorded at a depth of 7.4m below ground level at DBH06 in the central western portion of the site. Limestone was also recorded at 5.2m below ground level at BH21 and at 6.4m below ground level at BH23, both of which are located close to the Cavan River at the proposed bridge crossing site.

Made ground was encountered by the site investigation in particular in the east of the site along the route of the proposed access road from the Dublin Road and extending to lands on the east side the Cavan River channel at the bridge cross site. At BH13, over 9.6m of fill was encountered (not penetrated) above glacial till, below existing ground level. Further downslope at BH18, 5.6m of fill was encountered, which thickened to 7.3m thick at BH22. At the bridge cross site, the fill to the east of the Cavan River was found to be 5.2m thick at BH21 and 6.2m thick



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at BH23. This fill was described by the driller as comprising gravelly sandy clay / silt with fragments of brick and timber recorded in most locations.

Thin areas of made ground comprising re-worked site-derived till from recent development works at the Royal School were encountered in the northern area of the development site (c1m thick, as observed as land raise during the site walkover, not recorded in the drillers logs from this area, SBH1, SBH2). No other significant occurrences of made ground were recorded across the wider site, with the main area of fill / made ground appearing to be essentially restricted to previously developed lands at Breffni Park, east of the Cavan River.

No fill was present in the bridge crossing area on the eastern side of the riverbank, demonstrating that the fill does not appear to extend any further westwards than the eastern riverside.

### 9.6.13 Land Quality / Contamination

A GQRA land contamination report was prepared as part of this study and this is presented in **Appendix 9.3**. During the recent drilling works, a total of 29 soil samples were obtained at depths of between 0.5m and 2.0m below ground level across the site and sent to UKAS accredited Eurofins Chemtest Ltd for selected analysis.

All locations were compared against the Public Open Spaces (Park) 1%SOM LQM/S4UIs. There were no exceedances detected in the underlying soils.

In order to assess the risk from ground gas, ground gas monitoring was undertaken on 16<sup>th</sup>, 20<sup>th</sup>, 26<sup>th</sup> and 1<sup>st</sup> March 2024 across 25 no. monitoring boreholes within the site boundary.

The site has been classified as CS1 Very Low Risk as all Hazardous Gas Flow rates were <0.07l/hr. Therefore, no ground gas mitigation measures are required.

It should be noted that the area of made ground associated with the access road and bridge cross site, as described in Section 9.6.12 were not sampled or assessed as part of the GQRA investigation. This area will require further assessment prior to construction works commencing to determine any human health or environmental risks posed and develop appropriate remediation / mitigation if required.

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#### 9.6.14 Hydrology

A Water Features Survey has been undertaken as part of this assessment and is presented in **Appendix 9.4**. A summary of the hydrological baseline is provided as follows.

The local site hydrology is presented in **Figure 9.12** (wider area) and **Figure 9.13** (site and environs) and also **Figure 9.14** (Local Catchment Divide) and **Figure 9.15** (Catchment Area). The site is located in the Cavan River catchment, which is part of the wider Upper Lough Erne Catchment.

The Cavan River flows eastwards from its upland source toward Cavan Town. East of Cavan Town, a tributary of the system emerges flowing southward from the southern end of Swellan Lough (L1, **Figure 9.13**), and drains into the main Cavan River. Swellan Lough comprises an open waterbody c720m long and 260m wide, with wetland margins, located on lower land c320m west of the development site. The Cavan River flows southwards from this convergence before turning northwards and flowing through the centre of Cavan Town. Its route through the town takes it passed the development site, where it skirts portions of the eastern site boundary.

From here the Cavan River continues to flow northwards and eventually drains into Coal Pit Lough and hence joins the Lough Oughter system of waterways and lakes. The total Catchment area of the Cavan River, as presented in **Figure 9.12** at the site location is measured as c.60km<sup>2</sup>.

**Figure 9.12: General Hydrology (Wider Area)**



The site hydrology comprises mainly reasonably free-draining grasslands, through some waterlogging of soils is observed in the lower portions of the relatively flat southern area of the site close to the Cavan River. A number of small field drains, not extending further that the western site boundary, flow eastwards across the site to the west of the Cavan River.

A small unnamed watercourse (referred to as 'main Stream bisecting site', **Figure 9.13**) transects the site from north to south, entering the site via a culvert opening in the northwestern corner close to Kilnavarra Lane and flowing in an open wooded channel through the site. This receives inputs from various site drains and discharges to the Cavan River close to the small river bridge.



**Figure 9.13: General Hydrology (Site and Environs)**



Field mapping has indicated that the main watercourse bisecting the site has a very limited surface water catchment upgradient of where it enters the site (**Figure 9.15**). This small catchment comprises an area of urbanised development (residential) and surrounding farmland. A catchment divide, as shown in **Figure 9.15** must be present a short distance north of the site, since most drainage here falls to Swellan Lough, via a small northerly flowing watercourse (**Figure 9.15**). The winter flow rates in the Kilnavarragh Lane stream were observed from site walkover to be in 10-15 L/second range. It is proposed to culvert this watercourse through the site to facilitate the proposed development.

The Green Lough Stream, draining from lands to the east, northeast and southeast of Cavan Town, converges with the Cavan River along the southeastern site boundary.

Figure 9.14: Cavan River Catchment Extents

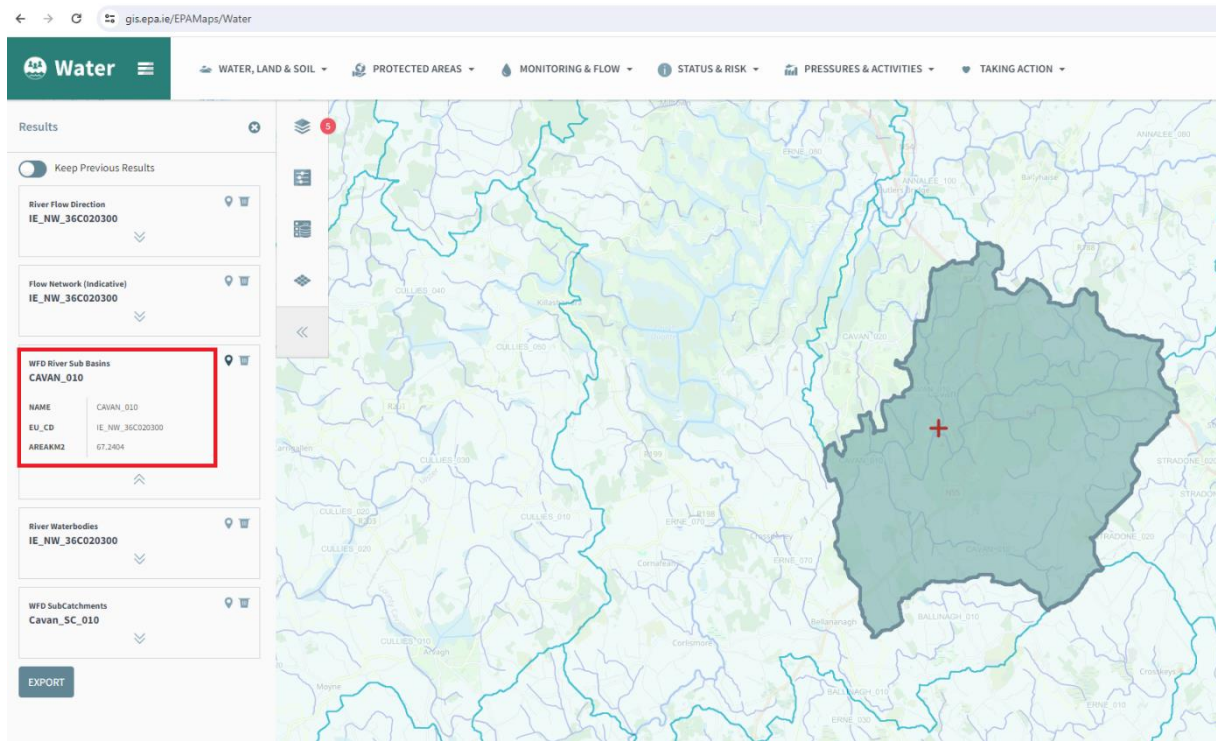
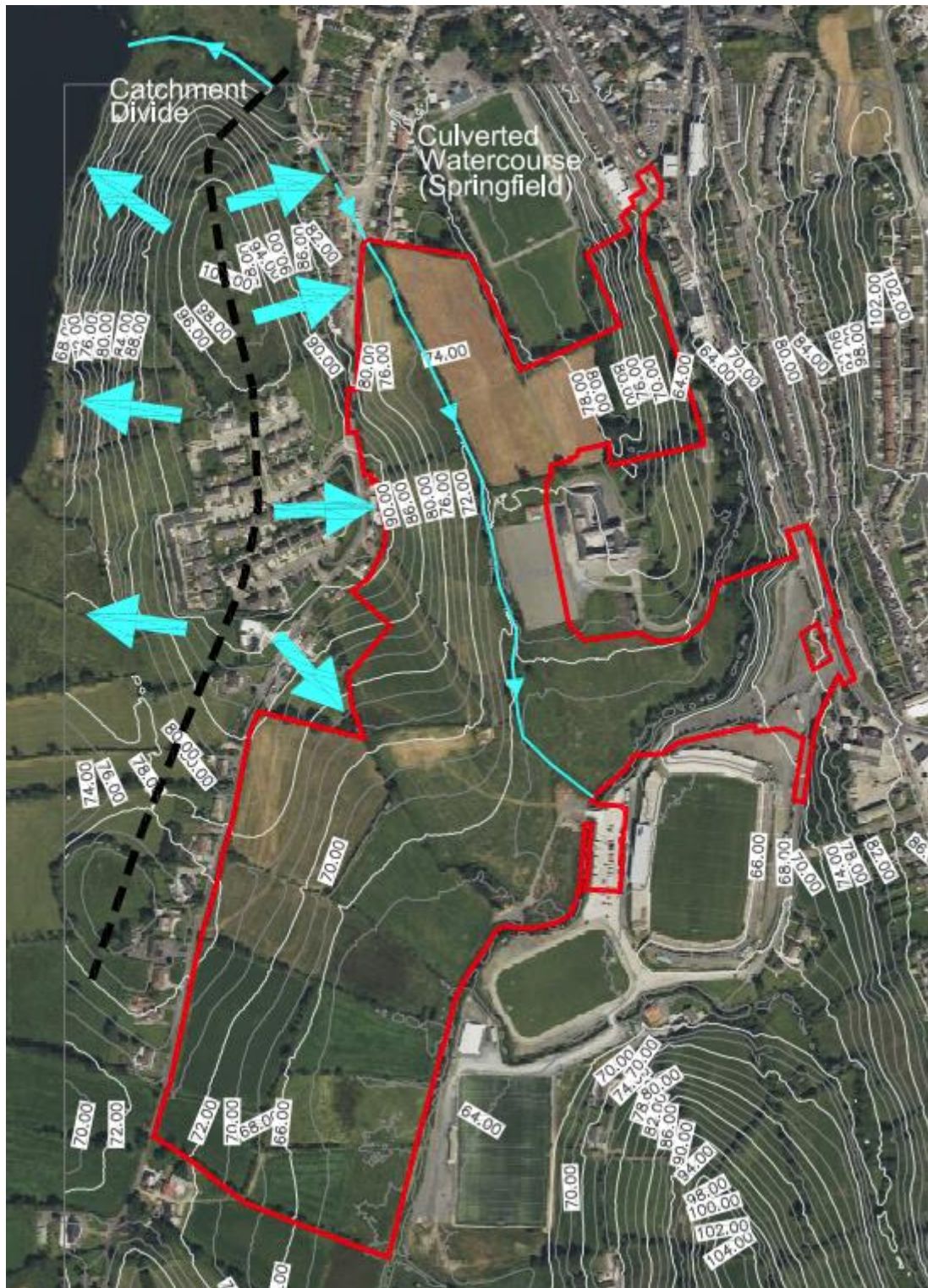




Figure 9.15: Local Catchment Divide North of Site

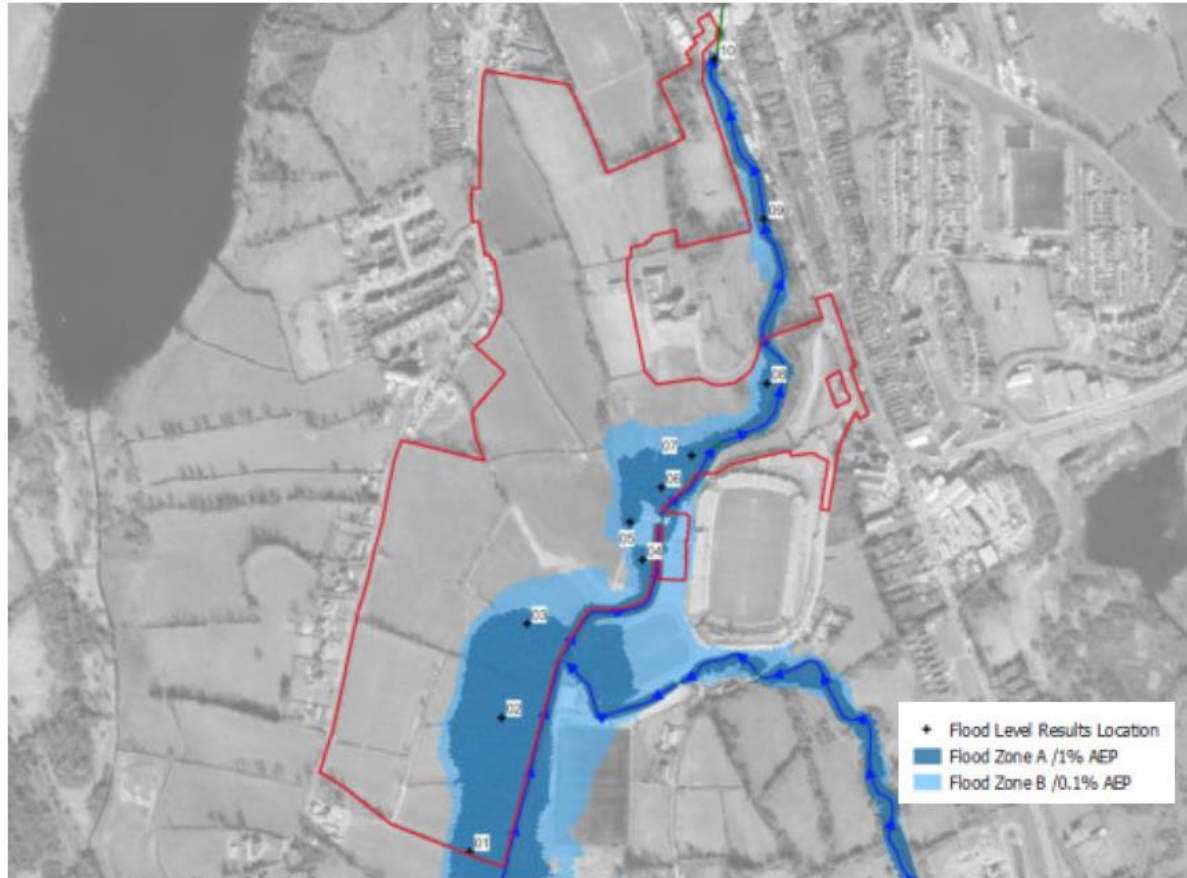


### 9.6.15 Flood Risk

A Flood Risk Assessment has been undertaken by McCloy Consulting and this is presented in **Appendix 9.5**.

In terms of Baseline (pre-development) conditions, OPW CFRAM data indicates parts of the site are affected by fluvial flooding from the Cavan River and a tributary stream, as shown in **Figure 9.16**.

**Figure 9.16: Flood Zone Map – Existing Scenario Present Day**



### 9.6.16 Discharges

The EPA Ireland online map viewer indicates that there are 5no. Wastewater Discharge Authorisations within 500m of the site as shown in **Figure 9.17** and summarised in **Table 9.8**. These discharges are located upflow of the site and therefore are not expected to have any impact on the development.



Figure 9.17: EPA Discharges within 500m

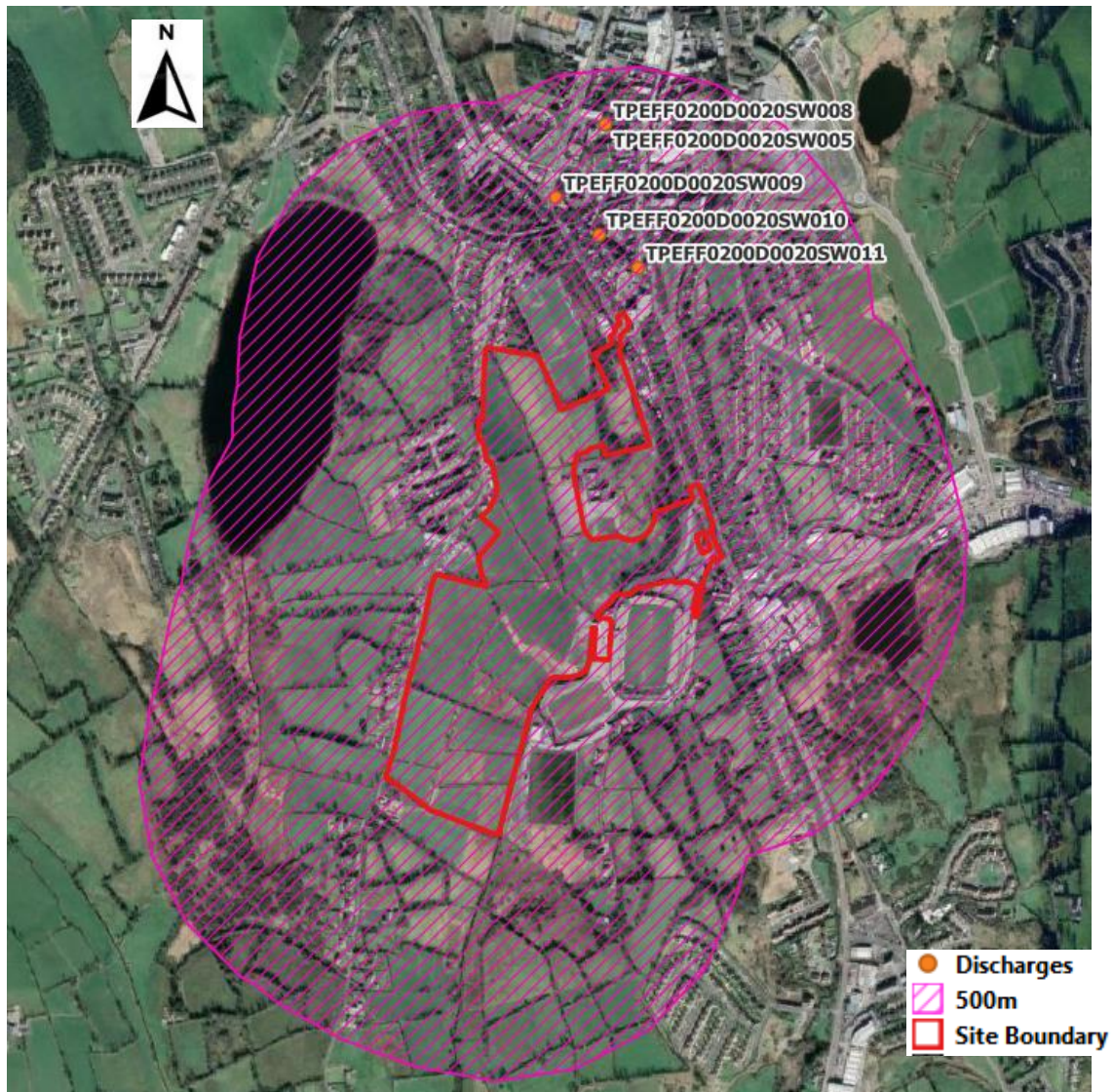


Table 9.8: Summary of EPA Discharges within 500m

Discharge Location Emission ID	Distance	Emission Type
TPEFF0200D0020SW005	c.420m north	Storm Water Overflow
TPEFF0200D0020SW008	c.420m north	Storm Water Overflow
TPEFF0200D0020SW009	c.300m north	Storm Water Overflow
TPEFF0200D0020SW010	c.210m north	Storm Water Overflow
TPEFF0200D0020SW011	c.140m north	Storm Water Overflow

### 9.6.17 Surface Water Quality

Following the publication of the Water Framework Directive, waterbodies are given a classification based on annual average / percentile results from several individual monitoring stations. The WFD classification is a combination of

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chemical, biological and hydromorphological elements; whereby, the overall status is the lowest of the combined constituents<sup>15</sup>.

The receiving surface waterbody is the Cavan River water body. The Cavan River flows northwest, with the Ballymackinroe River c.3.1km northwest of the development. The Cavan River then discharges into the Coalpit Lough c.4.1km downstream from the proposed development.

EPA mapping and Catchments.ie data sets were reviewed to establish current WFD status of the receiving waterbodies. The data indicates that at present, both the Cavan River and the Ballymackinroe Rivers, and the Coalpit Lough have been designated as having poor quality waters.

As described in the Water Features Survey (**Appendix 9.4**), an In-situ Electrical Conductivity survey was undertaken along all relevant surface water features identified, as shown in Figure 15 of the WFS, using a multiparameter waterproof meter. A descriptive location of the readings and the results of the In-Situ Electrical Conductivity survey are presented in Table 6 of the WFS.

By far the highest EC recorded was in the Kilnavarragh Stream where it flows into the norther end of the site from lands to the north. EC gradually declines downstream in this watercourse. With an EC of 1,180 $\mu$ S/cm at the inflow point, this strongly suggests that the stream is a limestone groundwater-fed watercourse, perhaps derived from a buried natural spring in the urbanised area immediately north of the site. Historical Maps (see Water Features Survey) do not show this watercourse extending further than the northern boundary of the site, and one from 1897-1913 (Figure 6 of WFS) show the presence of a well in the field to the north of this rising, which is the likely source of this surface water feature. This feature is no longer obvious.

The EC Survey also suggests a groundwater input to the small watercourse north of the catchment divide which feeds northwards into Swellan Lough, with EC here in the order of 650 $\mu$ S/cm.

All other watercourses and the Cavan River demonstrate much lower EC in the order of 250 $\mu$ S/cm, more typical of fresh (chemically immature) surface waters.

A total of 6 no. surface water samples were obtained on 25<sup>th</sup> January 2024 at sample points (SW1 to SW6), as presented in Appendix C and Table 3 of the GQRA. These comprised upflow, midflow and downflow samples from

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<sup>15</sup> The European Water Framework Directive (2000/60/EC) has been transposed into Irish legislation via S.I. No. 722/2003 - European Communities (Water Policy) Regulations 2003

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the Cavan River to allow assessment of water quality variations / changes as it passes the site. Upflow and downflow samples were also obtained from the main on-site watercourse transecting the site.

All Surface Water results were compared against available Environmental Quality Standards (EQS). The following exceedances were detected:

- Chromium EQS of 4.7ug/l exceeded at SW5 5.9ug/l
- Copper EQS of 1.0ug/l exceeded at SW1 4.3ug/l, SW2 5.3ug/l, SW3 3.7ug/l, SW4 4.9ug/l, SW5 1.8ug/l and at SW6 3.2ug/l. The EQS of 1ug/l is a relatively low EQS based on trying to achieve a Good standard for the watercourse. These results are significantly below the DWS of 2,000ug/l.
- Iron EQS of 1,000ug/l exceeded at SW2 1500ug/l and at SW6 1,500ug/l
- Lead EQS of 1.2ug/l exceeded at SW2 1.5ug/l, SW4 1.6ug/l and SW6 1.9ug/l
- Manganese EQS of 123ug/l exceeded at SW2 360ug/l, SW5 140ug/l and at SW6 250ug/l

These metals are likely to be naturally occurring in the watercourse, given that there are no nearby anthropogenic sources. The exceedances are unlikely to be environmentally significant. There were no detections of, Phenol, Cyanide, Hydrocarbons or VOCs in any of the surface water samples. There are no significant changes in water quality between up flow, midflow and downflow locations. Overall, there is no concern with baseline surface water quality.

### 9.6.18 Hydrogeology

The underlying Superficial Deposits comprising Glacial Till are not recognised as a potential Superficial Aquifer, due to its low permeability and inability to transmit significant quantities of groundwater.

Similarly, generally low permeability silt-dominated alluvium mapped along the river margin is considered an aquitard, however drilling indicates this to be essentially absent at the site.

Drilling has indicated that river gravels, which if significantly thick and laterally continuous along the river channel can transmit useable quantities of groundwater and provide important baseflow to the river, are essentially absent at the site. Therefore, the only groundwater system present will be associated with the glacial till.

Information from the Causeway Geotech Ltd Site Investigation of a portion of the Royal School lands to the west of the Cavan River indicates that the shallow drift would appear to be reasonably dry, though some groundwater was encountered in a sand layer at a depth of 3.1m.

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The EPA Ireland online map viewer indicates that the Greywacke Bedrock Aquifer which encroaches into northern site area has an Aquifer Code of 'P1', characterised as a *Poor Aquifer, which is generally unproductive except for Local Zones*. The aquifer is located within the Red Island Formation with Greywacke units.

The majority of the site is underlain by the Cooldaragh Formation This is described in geological publications as a sequence mainly consisting of pale brown-grey calcareous siltstones, limestones, mudstones and evaporites up to 125m thick. An intrusive site Investigation report prepared by Causeway Geotech Ltd (Appendix 5 of the PRA) covering a portion of the Royal School lands to the west of the Cavan River identified Limestone bedrock at a depth of 3.5m below ground level. This was described as laminated with white calcite veins and also as fractured. No groundwater was encountered in the upper 3m of bedrock, with the borehole terminated in dry limestone.

The EPA Ireland online map viewer indicates that this hydrogeological unit has an Aquifer Code of 'L1', characterised as a *Locally important Aquifer – Bedrock which is Moderately Productive only in Local Zones*'.

A report entitled 'The County Cavan Groundwater Protection Scheme, December 2008' lists the Cooldaragh Formation as having an aquifer class of 'L1', Locally Important only in local zones' fissured aquifer with usually modest yields, however in major fracture zones groundwater flows can be much higher. In area of the aquifer elsewhere in Cavan, the karstic limestones of the Cooldaragh Formation have 'Excellent' groundwater yields: in excess of approximately 400 m<sup>3</sup>/d (4000 gph).

Karstic groundwater systems, and groundwater systems relying on fracture flow are characterised by groundwater being restricted to the network of interconnected fractures and joints, and the groundwater within these systems is usually confined (under pressure). Therefore, where the cut-fill engineering associated with the development has the potential to encounter or intersect a bedrock groundwater zone, groundwater could potentially enter excavations with significant force and rise to a much higher level than the elevation of the groundwater zone.

A review of the GSI Groundwater Vulnerability indicates that the site is largely characterised by a vulnerability rating of 'Moderate', with the southeast of the site along the margins of the Cavan River listed as having a vulnerability rating of 'High' to 'Extreme', as shown in **Figure 9.18**. The latter vulnerability rating is likely in relation to the possible existence of shallow unconfined groundwater occurring in permeable drift deposits (Sand/Gravel) along the river margin.



**Figure 9.18: Groundwater Vulnerability Map**



**Figure 9.19** presents data from a review of a GSI Historical Groundwater Flood Map (1:20K, Ireland ITM). This historic groundwater flood map presents the observed peak flood extents caused by groundwater in Ireland. This map was made using satellite images (Copernicus Programme Sentinel-1), field data, aerial photos, as well as flood records from the past. Most of the data was collected during the flood events of winter 2015 / 2016, as in most areas this data showed the largest floods on record.

**Figure 9.19** shows that the southeast of the site is susceptible to groundwater flooding. This is likely to occur during times of high rainfall when the Cavan River overflows and the underlying Alluvium becomes saturated. This area of groundwater flooding is therefore associated with fluvial flood risk which is considered in the impacts section.

Beyond the site boundary, groundwater flooding is likely around the extents of Swellan Lough, as well as along the banks of the watercourse which flows south out of Swellan Lough. Groundwater flooding is also likely to lands around and south/south east of Green Lough.

Figure 9.19: Teagasc General Soil Map (Second Edition, 1:575,000, 1980)



### Licensed Abstractions

A review of the Groundwater Data Viewer online map viewer indicates there are no abstractions (licensed or private) within 500m of the site.

### Other Abstractions

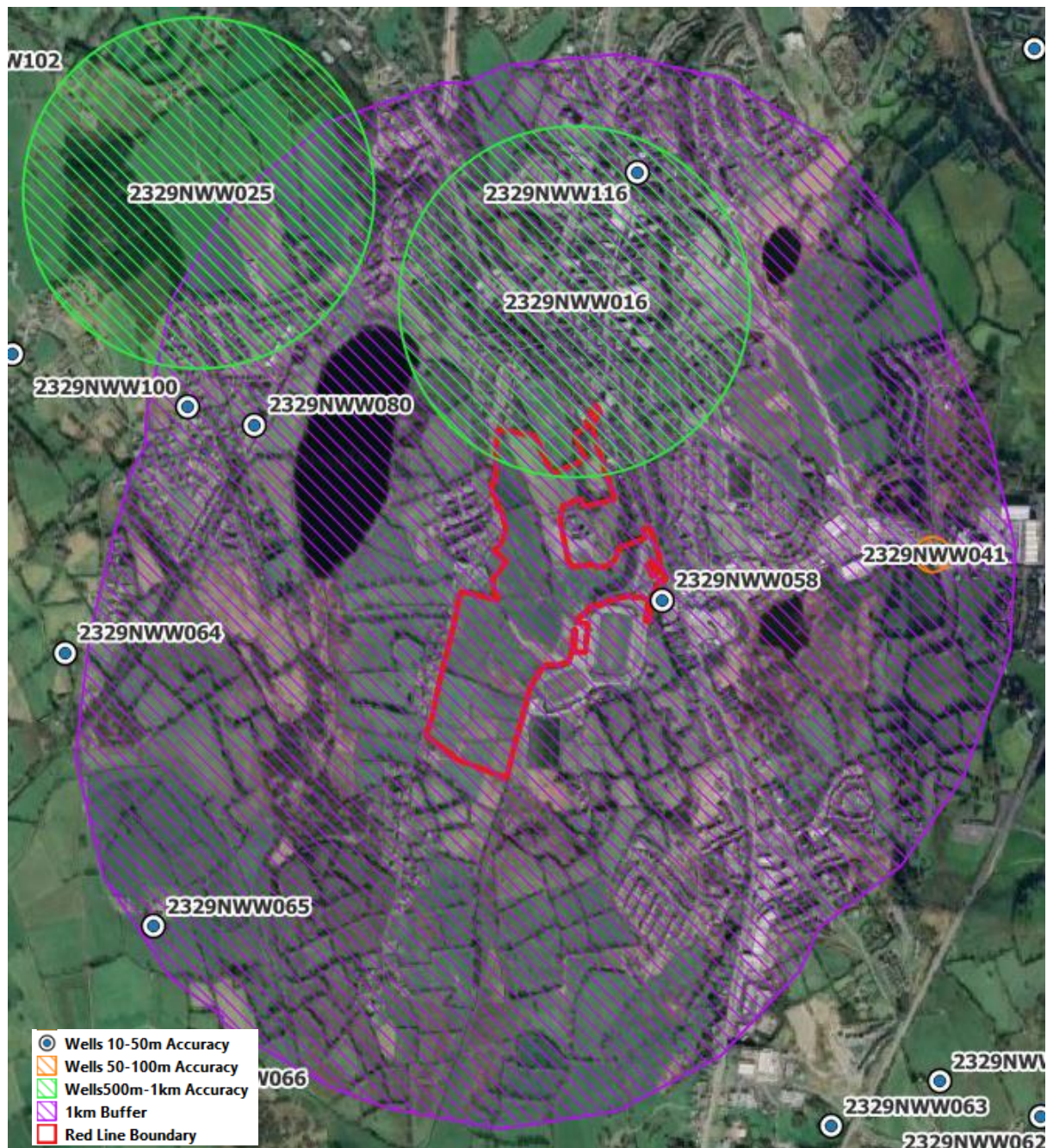
Figure 9.20 presents data from a review of GSI Groundwater Wells and Springs Ireland. This data contains records of boreholes, dug wells, springs, and site investigations. Data are derived from GSI drilling, fieldwork and surveys, Local Authorities and other state bodies, Private Well Grants, Drillers, Consultants, Group Water Schemes and Academia. The locations of records have different precisions depending on the source data. The location accuracy given with each well record ranges from 10m to more than 1km. Table 9-10 presents the data of historic Boreholes located within 1km of the site.

**Table 9.10: Historic Boreholes within 1km**

I.D	Accuracy	Type	Distance from site (m)	Use	Total Depth (m)	Rockhead Depth (m)
2329NWW058	10 to 50m	Borehole	c.30m East	Agri and Domestic	80	18.2
2329NWW025	500m-1km	Borehole	c.670m NW	Agri and Domestic	22.9	N/A
2329NWW116	10 to 50m	Borehole	c.690m North	Agri and Domestic	10	2
2329NWW080	10 to 50m	Borehole	c.700m West	Agri and Domestic	15.2	12.2
2329NWW041	50m-100m	Borehole	C.730m East	Agri and Domestic	29	N/A
2329NWW0100	10 to 50m	Borehole	c.930m West	Agri and Domestic	30	9
2329NWW065	10 to 50m	Borehole	c.950m SW	Agri and Domestic	5.8	N/A
2329NWW016	500m-1km	Borehole	Unlikely to be located on site. Within 1km north of the site	Industrial	67	19.8



Figure 9.20: Historic Boreholes within 1km



The GSI Database identifies a c.80m deep groundwater abstraction borehole used for agricultural and domestic supply c.30m east and upgradient of the development site. Rockhead here is recorded at 18.2m depth. It is not clear whether this borehole is still in use.

### Historical Records Results of Previous Site Investigations

The Water Features survey identified the presence of a moderate number of natural springs / shallow wells were identified in the general area around the site, including a historical well at the Royal School (now disused and abandoned).

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An Electrical Conductivity Survey undertaken as part of this assessment recorded a relative high EC value of 1,180µS/cm at the inflow point of a small stream entering the site from Kilvarragh Road from a culvert to the north (see Water Features Survey, **Appendix 9.4**). The survey also showed EC gradually declining downstream in this watercourse. With an EC of 1,180µS/cm at the inflow point, this strongly suggests that the stream is a limestone groundwater-fed watercourse, perhaps derived from a buried natural spring in the urbanised area immediately north of the site. Historical Maps do not show this watercourse extending further than the northern boundary of the site, and one from 1897-1913 (Figure 6 of the Water Features Survey) show the presence of a well in the field to the north of this rising, which is the likely source of this surface water feature. This feature is no longer obvious.

The latter, which appears to be groundwater-fed with little surface water catchment beyond the site, is proposed to be culverted from where it enters the site in the north to the point of discharge to the Cavan River in the south.

A search of the GSI Groundwater Wells and Springs records did not record any features in the immediate vicinity of the site.

Groundwater was encountered at BH04A at a depth of 3.10mbgl and was not encountered at any other location. The report states that; *Groundwater was not noted during drilling at any of the other borehole locations. However, it should be noted that the casing used in supporting the borehole walls during drilling may have sealed out additional groundwater strikes and the possibility of encountering groundwater during excavation works should not be ruled out.*

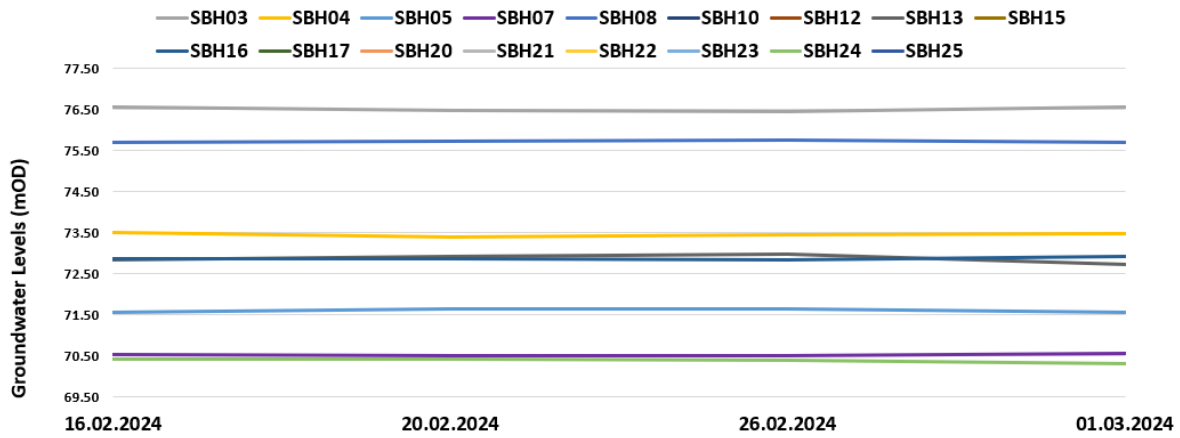
### **Hydrogeological Results of Site Investigation**

A recently-completed site investigation (logs presented in **Appendix 9.6**) has enabled a good understanding of the local geology and hydrogeology. As part of the Land Quality Ground Investigation, a total of 25 No. groundwater monitoring wells were installed throughout the site.

The drilling results record a range of shallow groundwater strikes in the till during the drilling works, although some boreholes were recorded as dry on completion. A programme of manual dip readings was undertaken at all installed groundwater monitoring points on 4no. occasions throughout the monitoring period between 16/2/24 and 1/3/24. This indicated a slightly confined system in the till with water levels rising slightly from the depth of water strike. This is not unexpected in a low permeability system such as the till, where water is likely to be restricted to gravelly layers within the sequence, which are likely confirmed by overlying less permeable clay-rich layers.

Hydrographs were produced from this data and are presented as **Figure 9.21** (Shallow Groundwater Hydrographs, mOD).

**Figure 9.21: Shallow Groundwater Hydrographs, mOD**



The groundwater level monitoring data enabled to production of a Groundwater Flow Map for the shallow groundwater system within the till. This is presented as **Figure 9.22**.



**Figure 9.22: Shallow Groundwater Flow Map, mOD**



The groundwater flow map and hydrographs indicate a general west to east groundwater flow direction over lands to the west of the Cavan River, and a general east to west groundwater flow direction over lands to the east of the Cavan River. This confirms, as expected, that all shallow groundwater flow is toward the Cavan River. The Cavan River will therefore receive baseflow from the shallow groundwaters at the site. The shallow groundwater system underlying the site is therefore hydraulically connected to the Cavan River.

The groundwater flow data, in showing reasonable flow patterns, also indicates a good degree of hydraulic continuity is present between individual boreholes and the wider groundwater and surface water system. Therefore, the groundwater system is likely to have some reasonable, albeit modest permeability, and active flow.

The groundwater data indicates shallow groundwater elevation ranging widely, falling from c 66mOD in the west to c.62mOD close to the river channel and 77mOD in the east (close to the Dublin Road), again falling to c 62mOD close to the river channel.

Seven (7) No. deeper boreholes (DBH01 – DBH07) were drilled by rotary core technique to 15m depths across the cut fill zone of the development to assess deeper groundwater conditions in the lower drift and underlying bedrock.

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The drillers logs are presented in **Appendix 9.6**. Only one of these boreholes encountered bedrock, which was identified as Limestone, at 7.4m below ground level (DBH06). The borehole was extended into the bedrock to a total depth of 15m (7.6m into the bedrock) and was found to be completely dry. Therefore, the upper bedrock in the main cut-fill zone appears to be devoid of groundwater. All the other deeper boreholes in the main cut-fill zone terminated in the glacial till at 15m depth and were also dry / devoid of groundwater.

Deeper groundwater was however encountered in some other deeper boreholes drilled at the bridge crossing site. At BH21 (**Figure 9.11 (b)**), groundwater was struck at the interface between the made ground and rockhead at a depth of 5.2m below ground level. At BH23 (**Figure 9.11 (b)**), groundwater was struck at the interface between the till and rockhead at a depth of 6.4m below ground level. This would suggest that the limestone bedrock is a water-bearing aquifer in some areas of the site.

### 9.6.19 Groundwater Quality

Groundwater samples were obtained on 12<sup>th</sup> February 2024 from SBH02, SBH07, SBH09, SBH12, SBH16, SBH19, SBH20, SBH22, SBH24 and SBH25.

All groundwater results were compared against available Drinking Water Standards (DWS). The following exceedances were detected;

- Iron DWS of 200ug/l exceeded at SBH22 300ug/l and at SBH25 280ug/l
- Nickel DWS of 20ug/l exceeded at SBH22 37ug/l and SBH25 29ug/l

These exceedances are not considered environmentally significant. It is possible that these exceedances are naturally occurring. The groundwaters were located within the natural gravelly Clay.

There were no detections of Phenol, Cyanide, Hydrocarbons or VOCs in any of the groundwater samples. Overall, there is no concern with baseline groundwater quality.



## 9.7 Impact Assessment

The baseline assessment has determined the site setting and current site conditions and has established that the site area in its current state is not causing pollution, nor is there any significant pollution to water or land.

The main environmental receptor from a soils and waters perspective is the Cavan River. All overland and throughflow site drainage flows to the Cavan River. The shallow groundwater system is hydraulically connected to the Cavan River, and likely provides modest baseflow to the river in times of low flow.

### 9.7.1 Receptor Sensitivity

**Table 9.11** Provides a Baseline Receptor Sensitivity Assessment to support the establishment of sensitive soils and waters receptors.

**Table 9.11: Baseline Receptor Sensitivity and Rational**

Type	Receptor	Sensitivity	Rational
Land and Soils	Glacial Till	Low	No specific geological significance. No significant impact likely.
	Gravels	High	Not Present at the site, therefore the development poses no risk. No significant impact likely.
	Made Ground	Moderate	Most of site is devoid of made ground and ground gas. Areas of made ground around access road and bridge crossing, impact not yet assessed. There are no significant cut-fill works planned for the access road area of the site and hence potential human health risks from exposure to the made ground are lessened.
	Bedrock	Low	Bedrock is between c.6m and >15mbgl in the vicinity of the site. The cut-fill operations may potentially intersect the bedrock, exposing it.  No specific geological significance or risk of damage due to the development. No significant impact likely.
Groundwater Quality & Yield	Glacial Till	Moderate	Low permeability deposits, considered aquitard but locally transmit very modest quantities of groundwater to ward surface water receptor.  Cut-Fill Excavations may encounter shallow groundwater, requiring groundwater control / management for construction and operational phases. There is a hydraulic link to the Cavan River. Therefore the shallow groundwater is a relevant environmental receptor.
	Made Ground	Moderate	Areas of made ground around access and bridge crossing, impact not yet assessed. May contain shallow groundwater and have hydraulic link to Cavan River. Made ground is a possible pollution source.

Type	Receptor	Sensitivity	Rational
	Bedrock	Moderate	Whilst the upper bedrock appears to be devoid of groundwater within the main cut-fill zone, it appears to be water-bearing in some areas of the site (including the bridge crossing site). There is likely to be some hydraulic connection to the Cavan River. Therefore, the deep groundwater is a relevant environmental receptor.
	Groundwater Abstraction Borehole (Bedrock)	Moderate	The GSI Well Database has identified the presence of a private abstraction borehole use for agricultural / domestic supply c 30m east of the site. At 80m depth, if active this must draw groundwater from the bedrock aquifer. Therefore, this source is a relevant receptor.
Surface Water Quality	Cavan River and Tributaries	High	The Cavan River adjacent to, upstream and downstream of the proposed development is hydraulically connected to the Lough Oughter SAC.  Hydrological connectivity to the proposed development may affect water quality from the upstream catchment to designated sites downstream of the site area
	On-Site Watercourses	Moderate	Off-site minor watercourses are characterised by artificial arterial drainage channels (as mapped by OPW mapping) and have low fisheries and other ecological potential and have no other use of significant value.
Designated Sites	Lough Oughter SAC/SPA	Low (Distance)	The proposed development site is located approximately 3.6km south-east of the Lough Oughter SPA and Lough Oughter and Associated Loughs SAC. The Cavan River provides a direct hydraulic link to the SAC. The SAC is therefore a relevant receptor.
Flood Risk	The Proposed Development	Moderate	The Proposed Development comprises buildings and hardstanding and is noted to be located in an area at risk of fluvial flooding. Possible increased risk of site flooding requires consideration.
	Downstream Receptors	High	The proposed development is located upstream of Cavan Town centre. If the development results in loss of flood plain storage, then downstream flooding impact might increase. Possible increased risk of downstream flooding requires consideration.

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## 9.8 Assessment of Potential Impacts

This section outlines and describes the potential impacts of the proposed development on the soils and waters environments (surface waters and groundwaters) on the site, and in the downstream environment at Lough Oughter SAC, that have the potential to arise prior to any avoidance through careful design development, or additional mitigation.

Pre-mitigation evaluation of impacts assumes a conservative scenario that includes no adherence to legislative and best practice requirements.

### 9.8.1 Flood Risk

A Flood Risk Assessment has been undertaken by McCloy Consulting and this is presented in **Appendix 9.5**.

The nature of the development as use of the land for outdoor recreation is deemed Water Compatible in line with OPW Planning Guidelines for The Planning System and Flood Risk Management, and so is suitable in Flood Zone A. The nature of the development comprises ancillary land uses which are deemed “less vulnerable”. The proposed development has adopted the approach of substitution to ensure that, wherever possible, less vulnerable land uses are sited in areas of least risk (Flood Zone C).

The proposed development includes a proposed bridge crossing of the Cavan River, and land raising in Flood Zones A and B, the cumulative effect of which has been assessed by detailed flood modelling. The detailed assessment determined that there will be no unacceptable effect to flooding on land elsewhere because of the proposed development.

Proposed development levels have been sited to ensure that key areas of the proposed development are not at risk of flooding, including for the effect of climate change. All new built development and grass pitches are resilient to flooding to a minimum of the 1% AEP / Q100 climate change flood, including freeboard. Aspects of the development at higher risk of flooding comprise a riverside walkway where the flood risk is inherent to its location and intended use, and the use of an access via an existing bridge to Breffni Park carpark. Where development is at risk of flooding, mitigation is proposed in the form of selection of flood resilient palettes of materials and construction methods, and a Flood Management Plan to manage risk to site users, to mitigate risk to an acceptable level.

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### 9.8.2 Potential Hydrogeological Impacts

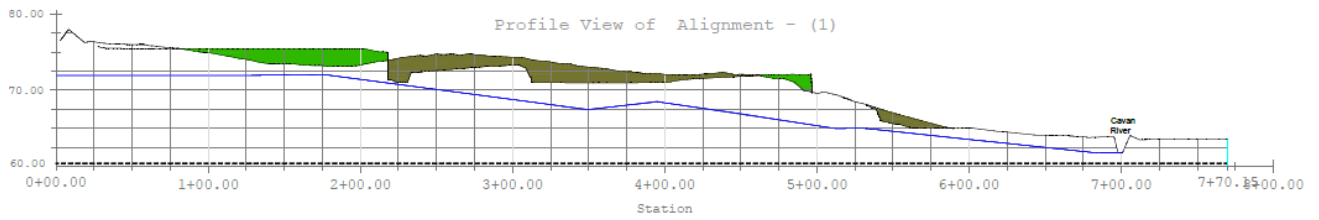
The proposed cut-fill works and construction works and operations associated with the development, if left unmitigated, have the potential to impact shallow groundwater systems through the following source-pathway-receptor pollution risk mechanisms:-

- The possible need for construction phase and operational phase groundwater control / dewatering, which would potentially reduce baseflow to the Cavan River and result in the possible need to discharge groundwater to the Cavan River.
- The removal of topsoil, overburden and/or confining layers within the till above water-bearing zones could increase aquifer vulnerability and therefore increase potential pollution risk.
- Piling works might create preferential pathways for vertical pollution migration from construction activities.
- Piling works might interfere with groundwater flow patterns / groundwater yield to nearby abstraction borehole/s from deeper bedrock groundwater aquifer.
- Potential transfer of pollutants from construction works / site operations to the Cavan River via shallow groundwater system. The river at the site has a known assemblage of sensitive and protected species (otter, trout, freshwater pearl mussel, white-clayed crayfish).
- Potential downstream impact to SAC through release of pollutants to shallow groundwater.
- Loss of recharge to shallow groundwater through loss of greenfield runoff, which may affect river baseflows in the Cavan River.

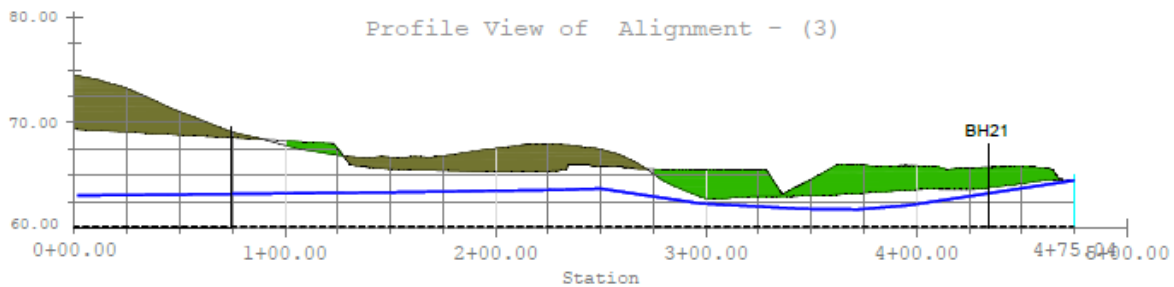
#### Hydrogeological Cross Sections

In order to assess these risks, a range of Hydrogeological Cross Sections (North-South and East-West) were produced through the site to assist our understanding of how the cut-fill plan may affect the geology and hydrogeology and those are presented, along with the Line of Section in **Appendix 9.7**. These present the existing topographical data, the finished profile following completion of the cut, the shallow groundwater table / piezometric surface and the approximate rockhead. All cross sections are presented relative to Ordnance Datum (OD). Selected cross sections are also extracted as **Figure 9.23 and Figure 9.24**.

**Figure 9.23: Hydrogeological Cross Section, North-South (extracted version)**



**Figure 9.24: Hydrogeological Cross Section, East-West (extracted version)**



The Hydrogeological Cross Sections show areas of land cut (lowering of levels) in brown and areas of land raise (raising of levels) in green. The water table / piezometric surface is shown in blue and the estimated rockhead level is shown as a black dashed line. Other sections through the site completed for this study, are provided in **Appendix 9.7** and show a similar hydrogeological situation to that shown in the above sections.

The Hydrogeological Sections demonstrate that the cut-fill is not likely to intersect the bedrock or come near to rockhead. The Sections also demonstrate that the cut-fill works should not encounter shallow groundwater during the construction phase, nor is the cut-fill works likely to impact on groundwater flow patterns or recharge patterns, since no construction phase or operational phase groundwater control is likely to be required.

Given that the development construction works will not involve excavation or dewatering of the bedrock aquifer anywhere on site, the risks to any nearby groundwater abstraction during the construction phase are not significant. The development will have no long term effect on groundwater flow patterns or groundwater yield from any abstraction boreholes in the vicinity.

There are no significant cut-fill works planned for the access road area of the site. Therefore, the risk of liberation of pollutants from made ground is considered to be low.

A Piling Risk Assessment has been prepared to consider the potential risks to the waters environments from piling works. This is presented in Appendix 9-8 and the findings are summarised as follows:

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The piling design works for the bridge landing sites have been outlined as requiring CFA Piling for ecological protection reasons and CFA or other low vibration piling technique for the wider site.

Overall, the risk assessment has concluded a low risk associated with the use of permanently installed CFA piles as the foundation solution.

CFA piling solution would appear to be good practice and an appropriately conservative approach in terms of ensuring protection of groundwaters, surface waters and local ecological receptors. The CFA Pile method, being a low vibration option, also provides adequate protection for ecological purposes.

It should be noted that the area of made ground associated with the access road and bridge cross site, as described in Section 9.6.12 were not sampled or assessed as part of the GQRA investigation. This area will require further hydrogeological impact assessment prior to construction works commencing to determine any environmental risks posed and develop appropriate remediation / mitigation if required.

### 9.8.3 Potential Hydrological Impacts

The proposed cut-fill works and construction works and operations associated with the development, if left unmitigated, have the potential to impact surface water systems through the following source-pathway-receptor pollution risk mechanisms:-

- Discharge of sediment-laden water from the construction site areas to the Cavan River, either by overland flow, or throughflow.
- The disturbance of ground will expose underlying bare soils / clays and lead to site stockpiling of excavated materials. During rainfall events this could liberate sediment from as water flows over these areas and transport the sediment toward and into sensitive watercourses.
- Risk of introduction of contaminants to surface water through discharges of groundwater to sensitive surface waters.
- Risk of oil spills and fuel leaks from construction machinery being flushed to the watercourse.
- Risk of releasing sediment and pollutants to the watercourse through bank disturbance, in-river works, culverting works (minor watercourse), cement / concrete washing / pouring / mixing.
- Reduction of baseflow to river due to loss of greenfield runoff / reduced infiltration due to introduction of hard surfaces.
- Release of sediment and contaminants to the watercourse through site runoff discharges.

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## 9.8.4 Construction Phase Impacts

### Works on Land

The proposed construction works within the development are not harmful to land and therefore will have a **negligible impact on land quality** and is **not significant**. However, there is a **likely major impact** to the connected surface water system from the mobilisation of sediments and the spillage of fuels and chemicals/construction materials which may indirectly enter the Cavan River or directly into the multiple smaller watercourses on site.

These risks can be summarised as the toxicity effects of hydrocarbons and high pH of cement dust, and the smothering effects of high particulate loading if stockpiled materials are mobilised. Any risk to the Lough Oughter SAC Cavan River is considered to be low to negligible due to the distance, which would dissipate sediment loads and would allow the pH of cement dust to be neutralised, however locally, the Cavan River is still at risk. The risk from accidental hydrocarbon spillages to the Cavan River is considered to be a **likely major impact** on water quality as the river is directly linked to the site.

The risk to the directly connected Cavan River from accidental fuel or chemical spillages, or sediment is a **likely major impact**. This risk pathway is both in relation to direct (runoff) and indirect (shallow groundwater) routes to the river.

### Soil Stripping and Excavation

Site clearing and various elements of construction disturbs the soil surface and removes existing vegetation. Erosion is exacerbated as exposed soils also lose their organic content that helps bind them together. The large plant required for construction will also contribute to the potential sediment source by further pulverising materials to finer particle sizes, thus making them more easily transportable by water and inhibiting infiltration by compacting ground surfaces.

The generation of run-off with silt / sediment, if uncontrolled, would exit the site potentially entering the multiple watercourses on site and the Can River resulting in a **likely minor negative impact** to surface water quality in the vicinity of the proposed development. As the watercourses are hydrologically connected to the Lough Oughter and associated Loughs SAC, SPA and Natural Heritage Site, excess silt / sediment entering the water environment may result in a **likely major negative impact** on the designated site without implementation of preventative measures.

Significant excavations may also act as barriers to runoff resulting in ponding, or development of preferential flow routes, diverting surface water away from existing routes. Consequently, temporarily or permanently redirected

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surface water flows may starve areas where water currently flows, or cause flooding of areas where water currently does not flow resulting in a **likely moderate negative impact**.

#### Material Transport

The proposed scheme will have a requirement for imported materials (likely comprising fill, stone, hardcore and concrete for foundations, tarmac and asphalt) for e.g., road pavement construction and car parking areas. Any unusable materials excavated on site may require to first be stockpiled before being removed off site. Any imported clay and topsoil may be contaminated and may therefore result in a **likely major negative impact** on the designated site if the quality of imported materials is not mitigated.

Unsecured loads during transport pose a potential risk to the water environment should there be an accidental leakage / spillage of materials. Depending on the magnitude of any spills, the release of materials into nearby watercourses on site for the Cavan River surface water would have a **negligible impact**. As the watercourses are hydrologically connected to the Lough Oughter and Associated Loughs SAC, SPA and NHA an accidental leakage/ spillage of materials may result in a **likely major negative impact** on the designated site.

#### Stockpiling

Stockpiles of granular material containing a high proportion of fines presents a risk for mobilisation of sediment-laden water during periods of heavy rainfall. Depending on the magnitude of any silt transport, the release of materials into nearby watercourses on site or the Cavan River surface water would have a **negligible impact**. As the watercourses are hydrologically connected to the Lough Oughter and Associated Loughs SAC, SPA and NHA, an accidental leakage/ spillage of materials may result in a **likely major negative impact** on the designated site.

#### Impermeable Areas

New impermeable surfaces used for construction of the site (e.g., buildings, roads, and hardstanding), as well as compaction of soils caused by construction phase plant and site traffic movements, may increase the rate and volume of surface water runoff due to the reduced permeable area on the site through which rainfall can infiltrate.

Impermeable surfaces will cause an increased “flashy” response to rainfall events within the construction site comparative to existing runoff characteristics i.e., greenfield conditions. Consequently, the effect would be likely to cause temporary or permanent increases in surface water runoff rates and volumes, leading to increased flood risk and increased effects of erosion and scour in downstream watercourses.

The proposed development is to be located on a greenfield site resulting in increased impermeable surface areas compared to existing conditions. In the absence of appropriate mitigation this may result in a **likely moderate**



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**negative impact.** Compaction may also include the temporary compaction of soils caused by construction phase plant and site traffic movements.

#### Works in and adjacent to Watercourses

A bridge is to be constructed across the Cavan River as part of the development.

There are a number of aspects of the proposed development which will directly affect the Cavan River. These involve:-

- Piling works proximal to the river channel. The design includes a 5m buffer between the river channel and piles.
- Construction of in-river discharge headworks and associated pipework outfalls for site drainage control.
- Construction Works proximal to river channel, including culverting of minor watercourse.
- Cut Fill works across the sider site, will result in large-scale excavations and machinery movements (dozers, excavators, dump trucks etc) and possible increased sediment generation and release and increased risk of oil / fuel spills occurring.

The risk from sedimentation and spillages from works adjacent to watercourses is considered to be a **potential major negative impact** on the Cavan River. This includes the disturbance of soils adjacent and in watercourses connected to the Cavan River during the construction phase of the development. This is of particular concern in fields present in the south of the site in which extensive surface water flooding was noted at elevations similar to that of the Cavan River, indicating a direct flow pathway into the river. Disturbance of the soils and potential spills from equipment used in construction is therefore considered to be a **likely major negative impact** on the Cavan River.

### 9.8.5 Operational Phase

#### Site Infrastructure

The operational phase of the development is as a sports campus.

The general public amenity activities intended or expected to be undertaken are considered as being a **negligible impact** on land and water quality.

Impacts from fuel and oil spillages during the operational phase are limited to either small scale leaks from private vehicles accessing the site and general use of tarmac roads, or to the storage of relatively small volumes of fuel and

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lubricants in the maintenance depot. Small scale leakages on site will cause a **negligible impact** to land or water. Fuel or oil spillages to land will cause a **moderate negative impact** until the spillage is cleaned.

Cut Fill works across the sider site, will result in large-scale alteration of existing site topography which may impact on catchment and recharge characteristics, affecting water flows in the Cavan River.

A small-scale accidental fuel spillage directly entering the Cavan River is expected to cause a **likely moderate negative impact**.

Sewage for the facility will be managed via a subsurface piped public sewer system hosted by Irish Water. No on-site sewage storage or treatment will occur.

For stormwater management a SuDS scheme designed to attenuate flow to Greenfield Runoff rates resulting in a **negligible impact** on the receiving waters. The SuDS discharge to the Cavan River from the site will be via a piped drainage network with geocellular attenuation tanks and associated flow control manholes with hydrobrake chambers to maintain greenfield runoff rates. This system will mitigate water quality risks to the Cavan River.

For sewerage management, the system will be served by public sewer connection. Foul is to be collected in two distinct networks. The main sports building and infrastructure to the north will flow by gravity sewer to Irish Water infrastructure. GAA toilet blocks will flow to an existing sewerage pumping station sited within Breffni Park. This has proven capacity for the flows. Therefore there are no risks to the Soils and Watrs environment from foul sewage management.

#### Works on Watercourses

The main impacts of outfalls during the operational phase of the proposed development include: increased erosion (leading to increased sediment supply to downstream reaches of rivers), accumulation of sediment, direct loss of bank side / riparian habitat, resulting in a **likely minor negative impact**.

#### Displacement of floodwater

The proposed development will result in changes in ground levels with associated with new development including access paths, roads, buildings and play areas within a floodplain. Displacement of floodwater has potential to cause loss of flood storage and re-route floodwater elsewhere, including to adjacent flood-sensitive receptors. The proposal could cause a **likely major negative impact**.

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## 9.9 Mitigation Measures

In relation to the potential impacts identified, it is therefore necessary to develop a range of mitigation measures for the construction phases and operational phase of the development to ensure that the potential impacts to the soils and waters environments are properly mitigated.

This section describes remedial and mitigation measures designed to avoid, reduce or offset any potential adverse impacts to the soils and waters. The primary objective of the mitigation measures should be to avoid any potential adverse impacts in the first instance, and where this is not possible then to reduce the impacts on the receiving environment.

### 9.9.1 Construction Phase

#### Construction Environmental Management Plan

A project-specific Construction Management Plan (CEMP) will be established and maintained by the Contractor during construction of the proposed development. The plan will cover all potentially polluting activities, including those caused by erosion and flood risk and as a minimum consider:

- Pollution Prevention Plan to be prepared prior to the commencement of works.
- Emergency Response Plan to be implemented following spillage events.
- Pluvial flooding management.
- Good stockpile management to prevent erosion.
- Ground surface management to prevent erosion after vegetation/topsoil clearance and during vegetation colonisation following placement of landscaped features.
- Buffer zones of 10m around water courses for stockpiling and concrete pouring.
- Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks. Bankworks should avoid periods of high river flow.
- Silt management prior to sediment laden flow entering watercourses.
- The use of quick setting cements, grout and concrete for use near watercourses.
- Concrete pouring near or in watercourses to be within protective barriers to dispersion.
- Fuels and chemicals to be stored within bunded areas with at least 110% storage volume and buffer zone of 10m from a water course.
- Spillage kits to be immediate available in working areas.

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- Stationary plant to be fitted with drip tray that are regularly emptied or stored within bunded area on an impermeable surface.
  - Vehicles to be regularly inspected and maintained.
  - On-site Personnel training.
  - Obtain relevant consents for all proposed environmental discharges.
  - Undertake environmental monitoring at sensitive site boundaries for deposited dust.
  - Undertake environmental monitoring for surface waters and groundwaters in accordance with the Environmental Monitoring Plan (**Appendix 9.9**).

The piling works have designed to minimise impacts to the soils and waters environments. In terms of piling works the following mitigation measures will apply to the construction phases:-

- Works Method Statements and Risk Assessments to be provided and approved in advance see **Appendix 7** for appropriate templates).
- Spillages / Pollution Risk Assessment to be provided and approved in advance see **Appendix 8** for appropriate templates).
- Appropriate PPE to be worn during works.
- Piling operatives to have appropriate levels of operational training and experience.
- Appropriate records of piling works to be retained for inspection by designers.
- In advance of works soils and ground gas testing to be carried out on materials likely to be generated from piling works to assess human health risks (construction workers).
- All piling should be low vibration techniques to protect terrestrial and aquatic species from noise and vibration risks.
- Groundwater occurrences should be recorded and reported to design engineers.
- Piling shall not exceed design depths. Any changes to piling designs to be agreed by designers.
- Appropriate storage of stockpiled piling wastes, 10m from nearest watercourses.
- Concrete pouring near or in watercourses to be within protective barriers to prevent dispersion.
- Silt fencing to be deployed between piling excavations and the nearest watercourse.
- No site runoff from working areas should enter the watercourse directly.
- Temporary SuDS systems such as swale collection trenches, infiltration trenches / sumps should be used to control surface water runoff.
- The use of quick setting cements, grout and concrete for use near watercourses
- Fuels and chemicals to be stored within bunded areas with at least 110% storage volume and at least 10m away from any minor watercourse, ditch or drainage channels.
- Spillage kits to be immediately available in working areas.

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- Stationary plant to be fitted with drip tray that are regularly emptied or stored within bunded area on an impermeable surface.
  - Vehicles / piling equipment to be regularly inspected and maintained.

Once the site has revegetated following completion of construction works temporary infrastructure shall be removed and the ground reinstated following completion of each construction phase.

A detailed oCEMP is provided in **Appendix 2.1**. An outline SWMP and Outline Water Quality Monitoring Plan are provided in **Appendix 9.9**. Specific aspects of concern include:-

#### Earthworks / Excavations

To minimise the risk of erosion, topsoil stripping shall be undertaken in a phased manner and limited to areas where earthworks are immediately programmed.

There shall then be restoration of bare surfaces (seeding and planting) throughout the construction period as soon as possible after the work has been completed or protecting exposed ground with geotextiles if to be left exposed. Existing topsoil will be retained on site to be used for the proposed development.

Removal of vegetation from the riparian corridor shall be limited and retaining vegetated buffer zone should be considered wherever reasonably practicable. A buffer zone of 10m will be in place around watercourses where there are no works currently being undertaken to reduce risk of pollution events or sedimentation.

Dust control measures shall be employed where there is the potential for wind to erode earth works (particularly in exposed areas). Common methods for dust control in soil include; water suppression and the use of covers / screens (where practicable) for fine materials e.g. sand.

The development will involve a degree of cut-fill. The re-use of site-derived materials shall be prioritised to minimise the volume of imported materials required. Some topsoil and clay may need to be imported. These materials have the potential to be contaminated or have levels of naturally-occurring components in excess of safe human health limits. Controls on the quality of materials being imported will need to be implemented. Importation of materials must be in compliance with all regulatory requirements for re-use of waste / importation of soils.

#### Dewatering

It is not anticipated that it will be necessary to undertake any significant shallow or deep aquifer dewatering to facilitate the construction phase. The shallow aquifer is a low permeability unit comprising glacial till. The

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Hydrogeological assessment has confirmed there is a shallow partially-confined (under pressure) groundwater system, but this would be expected to be reasonably benign, with very low yields / volumes of groundwater. The shallow water table is below the level of the excavation, so no significant groundwater should be encountered. However, where any shallow groundwater is encountered and requires pumping out, this water should be directed by overland pipework to the nearest swale and infiltration basin for treatment and infiltration discharge and NOT discharged to the any watercourse.

Similarly, if there is a need to pump out any area of standing surface water which could accumulate 'naturally' in hollows after a rainfall event, then this water should be directed by overland pipework to the nearest swale and infiltration basin for treatment and infiltration discharge and NOT discharged to the any watercourse.

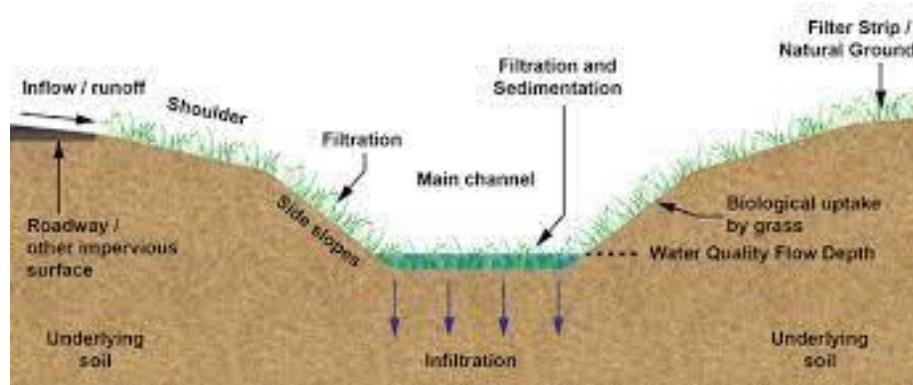
In the unlikely event of excavations for geocellular attenuation tanks encountering groundwater, they will be constructed with impermeable membranes and will be designed to prevent uplift.

#### Construction Phase Silt Management Drainage Features

All construction runoff water will be passed through SuDs treatment facilities prior to discharge to the ground and groundwater system through infiltration. Direct discharges of site runoff should be avoided during the construction phase. The control mechanisms can be a combination of temporary settlement lagoons, SuDS ponds (constructed in advance of the main earthworks but may be utilised during the construction stage).

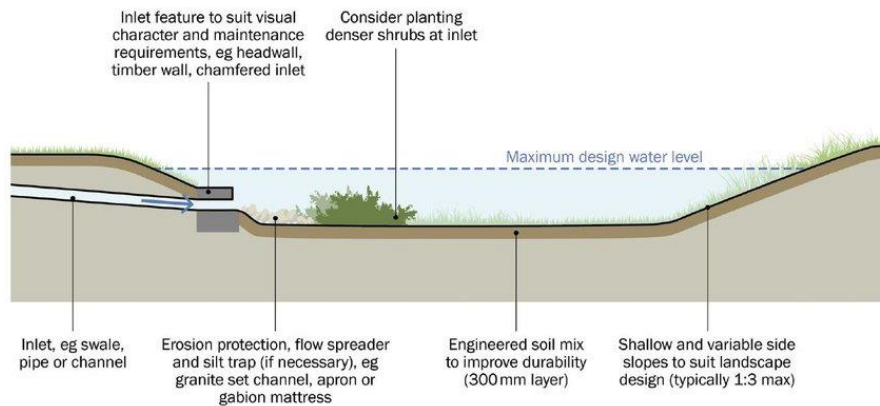
Examples of Construction Phase temporary SuDS Engineering to be deployed are as follows:-

## Swales



A swale is an elongate vegetated drainage channel designed to capture runoff drainage from upgradient areas of the construction site. The swale is designed to encourage / maximise infiltration of runoff waters through the permeable base / sides as it is transferred to the end point of the swale. The swale is vegetated to provide attenuation of sediment and other pollutants which may be present and therefore also comprises a source-control treatment step.

## Infiltration Sump / Pond



A temporary depression can be made at the end of or within a swale complex, or downgradient of the construction site area / area of ground disturbance, cut / fill or other works which may generate sediment. This can receive treated overflow waters from swale outfall or direct input from land runoff. It will generally be grassed / vegetated and lined with aggregate to encourage infiltration to substrate.

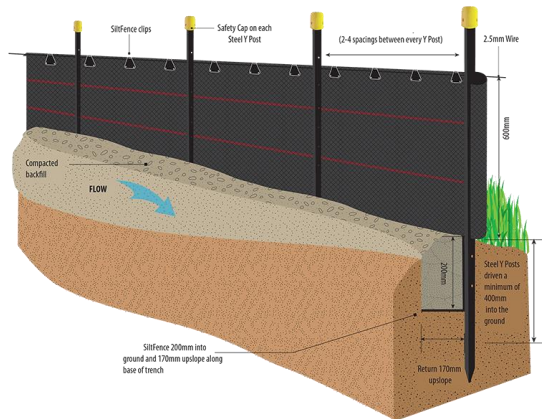
It is inevitable that some water will enter the construction site and runoff will entrain sediment. Measures to control this sediment and minimise the amount travelling off site into the wider water environment may include the installation of silt fences, check dams, bunds, and other sediment trap structures as appropriate.

Positioning of these measures will be an important aspect of their efficacy i.e., downslope of overland flow paths, sufficiently setback from water edges to minimise pollution in the event of failure. Retaining a grassed buffer zone or compacted earthen berms can also prevent direct runoff of waters from the construction site to watercourses. Any of these control measures will require regular inspection and maintenance to remove sediment that may compromise the efficiency of the measure.

Non-engineering solutions and green engineering (e.g., vegetation, geotextile matting) can also be placed downslope of earth works to help capture silt laden runoff from earthworks.



## **Silt Fencing**



Silt fencing, with associated capture trench, shall be installed across any working areas upflow of the nearest watercourse to act as an emergency capture in the event of failure of other containment measures. Several sections of parallel silt fencing can be installed in high risk situations to act as additional barriers to sediment release.

## **Silt Matting and Straw**

Sediment matting and straw bales can be used as sediment trap where silt fencing is difficult to install, or as an additional sediment control measure. These can be laid in elongate sections along ridges of excavations, at the base of excavation slopes, and within swales / infiltration basins etc.



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It is important that silt fencing and other pollution protection measures are regularly inspected, sediment removed and systems maintained to ensure ongoing efficiency. This infrastructure should therefore be inspected by the ECoW on a daily basis and any flaws / failures reported to the main contractor. Works should not proceed unless all measures are in place to the satisfaction of the ECoW.

Any areas where land formation is completed shall be planted out / seeded as quickly as possible to minimise the timeframes for soils to stabilise and limit the areas of exposed soils to minimise the generation of sediment-laden runoff. Protection measures shall remain in place until the ECoW has agreed that the risk of sediment release has been normalised.

#### Timing / Phasing of Works

The timing of specific construction works can help minimise erosion and reduce sediment controls needed on site. For example, checking weather forecasts to avoid heavy rainfall events or take preparatory actions. Programmes of Works should also be mindful of restricted time periods e.g., known migration / spawning periods (where applicable). Refer to **Chapter 8: Biodiversity** for further detail on specific ecological constraints.

#### Stockpiling

Unnecessary stockpiling of materials will be avoided. Any required stockpiling should be minimised on site (spatially and in duration) to reduce the amount of contaminated run-off generated.

Areas of stockpiling / material deposition shall be appropriately lined, located away from watercourses (e.g., minimum setback of 10m). Stockpiles of topsoil / soils will be covered / dampened during dry weather to prevent spreading of sediment / dust.

In advance of construction, silt fences and bunds shall be provided around the footprint of any stockpiles. Any runoff generated on the construction site around the stockpiles shall be captured by peripheral cut-off ditches and directed to settlement lagoons and / or sediment tanks which will be provided upstream of the outfall to the receiving watercourse.

Stockpiles shall be protected against rain splash and wind erosion by geotextile matting. Plastic sheeting should be avoided as this has the propensity to transfer erosion problems because water will sheet flow off the plastic at high velocity.

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### Works on Watercourses

Works to existing surface watercourses (such as installation of temporary or permanent culverts) have the potential to cause an obstruction to flow and may alter conveyance capacities, potentially causing temporary restrictions in watercourse channels, affecting upstream water levels and increasing flood risk.

The same principles of good practice that apply to permanent crossings also apply to temporary river crossings. Their design should prevent access track / road run-off from entering watercourse, reduce risk of erosion and not increase flood risk. Inappropriately sized crossings can cause flooding by being too small to cope with the flow and / or becoming blocked by debris, therefore, hydrological calculations and examining available flow and rainfall records should be undertaken when considering crossing design.

Good practice methods should be adhered to in order that installation of outfalls does not cause or generate erosion of land, banks or beds during construction phase.

### Concrete, Cement and Grout

The use and management of concrete, cement and grout should be carefully controlled to avoid spillage which could potentially have an adverse impact on the water environment. Quick setting products (cement, concrete and grout) will be used for structures that are in or near to watercourses.

Wash-water should not be discharged to the water environment but should be disposed of appropriately through containment and disposal to an authorised waste disposal site.

### Chemical Storage, Handling and Re-use

Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and at least 10m from any watercourse. The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.

Pesticides, including herbicides, will only be used if there are no alternative practicable measures, and will be used in accordance with the manufacturer's instructions and application rates.

### Refuelling and Storage of Fuels

Only designated trained and competent operatives will be authorised to refuel plant and all refuelling will be undertaken at designated refuelling areas (e.g., construction compounds). Appropriate measures will be adopted to avoid spillages.

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### Oil / Fuel Leaks and Spillages

Stationary plant will be fitted with drip trays and emptied regularly, and plant machinery will be regularly inspected for leaks with maintenance as required. Spillage kits will be stored at key locations on-site, and all construction activities will comply with a Pollution Incident Control Plan to be prepared by the appointed Contractor prior to commencement of works.

### Construction Compounds

It is envisaged that there would be a number of Construction Compounds for each phase of the development site, as shown in the Construction Layouts, **Appendix 5**.

Compounds will be located at least at least 10m away from any open minor watercourse, ditch or drainage channel. Measures will also be implemented to manage silt laden surface water runoff from the compound to direct water to treatment facilities as not to discharge directly to nearby watercourses. The compounds shall not be constructed in areas known to be at risk of flooding.

There will be no discharge of effluent to surface water during the construction phase. All wastewater from the construction facilities will be stored for removal off site for disposal and treatment.

### Wheel Washes / Plant Washes

For vehicles and plant leaving material deposition / stockpile areas, self-contained wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.

To prevent the spread of hazardous Invasive Species and pathogens, high pressure steam cleaning of all items of plant and equipment to be used at and adjacent to waters must be undertaken prior to use.

### Monitoring

Daily visual water quality assessments should be undertaken by the appointed Environmental Clerk of Works (ECoW) who will remain on site to monitor construction activities for signs of pollution and advise on the deployment of control measures. A Pollution Prevention Plan (PPP) must be prepared by the Contractor prior to the commencement of works.

An outline Water Quality Monitoring Programme has been developed which sets out locations and sampling schedules for appropriate surface water quality and groundwater sampling points. This programme will be implemented to monitoring for any degradation of water quality during the works, with procedures in place to



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manage any breaches. Baseline monitoring is included to establish relevant Control and Trigger levels of key parameters. Post-Construction monitoring is included for confirmation against baseline conditions.

### On Site Personnel Training

The CEMP will form part of the site induction for site operatives and a record of inductions will be kept in the site compound and be available for inspection. All site personnel will be made aware of the importance of the requirement to avoid pollution of all types, throughout all stages of the construction phase.

The Contractor will be obliged to ensure no deleterious discharges are released from the site to surrounding watercourses during the construction stage. Throughout the works the Contractor will also take account of relevant legislation and best practice guidance including but not limited to the following:

- CIRIA C649: Control of water pollution from linear construction projects (2006).
- CIRIA C741 Environmental Good Practice on Site Guide (2015).
- CIRIA C753 The SuDS Manual (2015).
- CIRIA C769 Guidance on the construction of SuDS (2017).
- DEFRA Good Practice Guide for Handling Soils (MAFF 2000).
- BS 8582:2013 Code of practice for surface water management for development sites.
- Guidance on Pollution Prevention (GPP) SEPA & NIEA, 2018.

### **Pollution Prevention**

To address potential impacts upon the nearby sensitive watercourse arising because of the construction works, in respect of potential emissions to the Cavan River water system including pollutants and sediments and aerial noise and visual disturbance during construction, a range of mitigation measures will be implemented.

The following mitigation measures will be implemented to prevent pollutants entering the storm drainage system on site and reaching the Cavan River from the construction site:

1. New drainage infrastructure will be bunged at the end of each working day to prevent water ingress and accidental contamination. Final connections will be made post-completion of road construction. Self-contained recirculating wheel washes will be used by the contractor at the entrance and egress points of the site.
2. The contractor will dedicate specific areas for oil storage and refuelling, at least 10m away from any minor watercourse, ditch or drainage channel and comply with legislation, including providing bunds sized to contain 110% of fuel storage capacity. The contractor will use fill point drip trays, bunded pallets and

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secondary containment units. The site will be enclosed and secured, and fuel storage areas will be secondarily secured.

3. All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.
4. There will be no stockpiling of materials within 10m away from any minor watercourse, ditch or drainage channel.
5. Equipment, such as chutes, portable mixers, barrows, pump lines, shovels, will be washed out in a designated area of hard standing drained to a sealed sump and subsequently removed from site (no environmental discharge).

### 9.9.2 Operational Phase

Sustainable Urban Drainage Design System (SuDS) will be employed along with flow-control attenuation systems to allow for containment of run-off along, with engineered end-of-pipe controls deployed as part of the attenuation measures for managing runoff from hard surfaces (interceptors for vehicular routes and car parks). Mitigation measures will be put in place, through consultation with NPWS and Inland Fisheries Ireland to ensure that the Cavan River remains unaffected throughout the construction and lifespan of the proposed development.

## 9.10 Evaluation of Impacts

### 9.10.1 Construction Phase

Implementation of the mitigation measures outlined in the Error! Reference source not found. section, in line with good construction practices, will minimise the risk to the water environment during the construction phase of the proposed development and any residual impacts will be neutral and temporary.

### 9.10.2 Operational Phase

Following implementation of mitigation outlined in the Error! Reference source not found. section, potential impacts to the water environment are related to flood waters and will be avoided / prevented, reduced or offset. Residual impacts would be reduced to neutral significance, due to the adoption of appropriate additional mitigation measures. For example, a 'not significant' impact for flood risk has been achieved with the provision of SuDS designed to achieve greenfield runoff rates.

A Risk Matrix has been developed to consider the impacts of the development once all mitigation measures are implemented. This is presented as **Table 9.12** and **Table 9.13**.

**Table 9.12: Summary of Predicted Construction Phase Impacts**

Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures (Summary)	Residual Significance after Mitigation
Cut-Fill and other Earthworks	Surface Waters Cavan River and Tributary	Erosion of exposed soils/subsoils and entry of sediment laden run-off to nearby surface water	Very High	Very High	Negative	Likely	Major	A Construction Environmental Management Plan (CEMP) will be prepared, agreed by statutory consultees and implemented prior to commencement of construction works. A detailed oCEMP is provided detailing required mitigation in <b>Appendix 2.1</b> .	Not Significant
								Earthworks shall be carried out in a phased manner, limiting exposed areas and timed to avoid sensitive periods.	Not Significant
								Stockpiles of topsoil / soils will be covered/dampened during dry weather to prevent spreading of sediment / dust.	
								Infiltration of Run-off from the construction site through the implementation of SuDS drainage controls (swales, infiltration basins etc), will comprise the primary disposal method, no direct discharge to the Cavan River.	
								Top-soiling and landscaping of the works will take place as soon as finished levels are achieved.	
								10m buffer to be in place Cavan River for cut—fill / earthworks.	
								Silt fences will be erected adjacent to watercourses during construction. Matting may also be used to capture silt-laden runoff. (Refer to Error! Reference source not found. section for further detail).	
Cut-Fill and other Earthworks	Natural hydrological regime	Excavations may act as barriers to runoff diverting surface water away from existing routes or cause flooding elsewhere	High	Low	Negative	Likely	Negligible	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to swales / infiltration basins. Infiltrated waters will recharge local shallow groundwater system which will provide recharge to the Cavan River, thus mitigating any loss of recharge.	Not Significant
								10m buffer to be in place Cavan River for cut—fill / earthworks, no direct discharge to the Cavan River.	
Piling of Bridge Foundations	Surface Waters Cavan River	CFA Piling works close to river channel may generate sediment which could migrate into river via overland flow.	Very High	High	Negative	Likely	Major	Concrete pouring near or in watercourses to be within protective barriers to prevent dispersion. Silt fencing to be deployed between piling excavations and the nearest watercourse. No site runoff from working areas should enter the watercourse directly. Temporary SuDS systems such as swale collection trenches, infiltration trenches /	Not Significant



Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures (Summary)	Residual Significance after Mitigation
								<p>sumps should be used to control surface water runoff. Works Method Statements and Risk Assessments to be provided. The use of quick setting cements, grout and concrete for use near watercourses.</p> <p>Fuels and chemicals to be stored within bunded areas with at least 110% storage volume and at least 10m away from any minor watercourse, ditch or drainage channels.</p> <p>Spillage kits to be immediately available in working areas. Stationary plant to be fitted with drip tray that are regularly emptied or stored within bunded area on an impermeable surface.</p>	
Material Transport	Surface Waters Cavan River and Tributary	Unsecured loads during transport pose a potential risk to the water environment should there be an accidental leakage/spillage of materials	Very High	High	Negative	Likely	Major	<p>Fine materials (e.g. sand and / or cementitious products) shall be covered and secured with heavy duty canvas / tarpaulin. Routine checks should be made for rips and tears and repaired immediately.</p> <p>For vehicles and plant leaving material deposition / stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.</p> <p>10m buffer to be in place Cavan River for cut—fill / earthworks, no direct discharge to the Cavan River.</p>	Not Significant
Stockpiling	Surface Waters Cavan River and Tributary	Stockpiling of materials may pose a risk as they can be a ready source of loose material if not adequately protected from water and wind.	Very High	High	Negative	Likely	Major	<p>Avoid unnecessary stockpiling. Stockpiling areas should be appropriately lined and positioned away from watercourses.</p> <p>Stockpiles of topsoil / soils will be covered / dampened during dry weather to prevent spreading of sediment/dust.</p> <p>In advance of construction, silt fences and bunds shall be provided around the footprint of any stockpiles.</p>	Not Significant
Impermeable Areas	Off-site receptors	Temporary compaction of soils caused by construction phase plant and site traffic movements, may increase the rate and volume of surface water runoff	High	Medium	Negative	Likely	Moderate	<p>Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to cut-off ditches and directed to swales / infiltration basins.</p> <p>10m buffer to be in place Cavan River for cut—fill / earthworks, no direct discharge to the Cavan River.</p>	Not Significant

Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures (Summary)	Residual Significance after Mitigation
Works on Watercourses	Surface Waters Cavan River and Tributary	<p>Works to existing surface watercourses (i.e. installation of headwalls for new drainage culverts</p> <p>Installation drainage system outfalls can cause damage to bank side / riparian habitats, mobilising sediment and releasing material into the surface watercourse.</p> <p>Culverting and diversion of Tributary (Lisnavarragh Stream)</p>	Medium	Medium	Negative	Certain	Major	<p>Outfall design and culvert design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks. Bankworks should avoid periods of high river flow.</p> <p>Tributary to be diverted into temporary above-ground pipework to facilitate culverting and diversion works.</p>	Not Significant
Impacts to Lough Oughter SPA / SAC	Surface Waters Cavan River and Tributary	<p>Discharges to Cavan River may potentially impact SPA/SAC</p> <p>The hydraulic distance between the site and the SPA / SAC is c.5km.</p>	Very High	High	Negative to water quality	Negligible	High	<p>Rage of site protection measures designed to protect water quality locally in River Cavan, as detailed in EIAr and oCEMP.</p> <p>Significant hydraulic distance means risk of pollution migration from site to SPA / SAC is LOW.</p>	Not Significant

Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures (Summary)	Residual Significance after Mitigation
Cement material of other potentially polluting substances	Surface Waters Cavan River and Tributary	Potential leakage or spillage of cement or other potentially polluting substances resulting in surface water contamination	Very High	High	Negative	Likely	Major	<p>CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works.</p> <p>No concrete mixing and washing on-site. Isolation of working area, protective sheeting to be utilised.</p> <p>Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and &gt;10 m from any watercourse. The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.</p> <p>Spill kits to be retained on-site.</p> <p>For vehicles and plant leaving material deposition/ stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.</p> <p>10m buffer to be in place Cavan River for any cement storage.</p>	Not Significant
Construction Compounds	Surface Waters Cavan River and Tributary	Potential leakage or spillage of cement or other potentially polluting substances resulting in surface water contamination	Very High	High	Negative	Likely	Major	<p>CEMP / Pollution Prevention Plan (PPP) including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works.</p> <p>No concrete mixing and washing on-site. Isolation of working area, protective sheeting to be utilised.</p> <p>Chemical, fuel and oil storage will be undertaken within a site compound, which will be located on stable ground at a low risk of flooding and &gt;10 m from any watercourse. The stores will also be locked and sited on an impervious base within a secured bund with 110% of the storage capacity.</p> <p>Spill kits to be retained on-site.</p> <p>For vehicles and plant leaving material deposition/ stockpile areas, wheel wash facilities shall be installed at the exit and all vehicles will be required to pass through them.</p>	Not Significant

Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures (Summary)	Residual Significance after Mitigation
								10m buffer to be in place Cavan River for any cement storage, no direct discharge to the Cavan River.	
		Temporary compaction of soils caused by construction phase plant and site traffic movements, may increase the rate and volume of surface water runoff	High	Medium	Negative	Likely	Moderate	Overland flow should be captured by strategically sited peripheral cut-off ditches and directed to swales / infiltration basins.	Not Significant
Hydrocarbons from construction vehicles/ machinery / equipment	Surface Waters Cavan River and Tributary	Potential accidental leakage or spillage of hydrocarbons from vehicles/ machinery resulting in surface water contamination	Very High	High	Negative	Likely	Major	<p>CEMP/ PPP including emergency response plan shall be prepared, agreed by statutory consultees and implemented prior to commencement of construction works.</p> <p>Stationary plant will be fitted with drip trays and emptied regularly, and plant machinery will be regularly inspected for leaks with maintenance as required. Spillage kits will be stored at key locations on-site, and all construction activities will comply with a Pollution Incident Control Plan to be prepared by the appointed Contractor prior to commencement of works.</p> <p>Only designated trained and competent operatives will be authorised to refuel plant and all refuelling will be undertaken at designated refuelling areas (e.g. on hardstanding, with spill kits available, and &gt;10 m from water features) where practicable. Appropriate measures will be adopted to avoid spillages.</p>	Not Significant

**Table 9.13: Summary of Predicted Operational Phase Impacts**

Activity / Source	Environmental Receptor	Impact predicted	Sensitivity	Magnitude	Type of impact	Probability of effect occurring	Significance level (pre-mitigation)	Mitigation Measures
Hardstanding areas	Surface Waters Cavan River and Tributary	Potentially polluting substances such as hydrocarbons, heavy metals, and polycyclic aromatics hydrocarbons (PAHs) may be contained in runoff from roads and car parking areas.	Very High	Low	Negative	Low	Negligible	Water quality risk management techniques shall be used to determine the appropriate stormwater management system required for the site. The approach shall utilise SuDS mitigation indices (i.e., those outlined in the SuDS Manual (C753) – Chapter 26) to inform the design of the stormwater management system.
Hardstanding areas	Flood Risk / Off-site receptors	Potential to increase flood risk by reducing the area of permeable land cover compared to existing conditions (i.e., greenfield site).	High	Low	Negative	Likely	Minor	The proposed drainage design will incorporate SuDS components to drain the site. These will be designed in accordance with industry good practice guidance and current planning standards and regulations. Final flows discharged from the site will be controlled to calculated greenfield run-off rates up to the 1 in 100 year plus allowance for climate change rainfall event.
		Potential to increase flood risk elsewhere by displacement or re-routing of floodwater	High	Low	Negative	Unlikely	Negligible	Detailed assessment confirms that the proposal causes no measurable effect flood extents or floor levels elsewhere, including transboundary effects. No further mitigation required.
Works on Watercourses	Surface water	Works to existing surface watercourses have the potential to disrupt flow and sediment regime.						Outfall design should comply with good practice and should consider directing each outfall downstream to minimise impacts to flow patterns, avoiding projecting the outfall into the watercourse channel, directing an outfall away from the banks of a river to minimise any potential risk of erosion (particularly on the opposite bank), and minimising the size / extent of the outfall headwall where possible to reduce the potential impact on the banks.
Interaction with Groundwater  Dewatering	Shallow Groundwater (Sands and Gravels)  Deep Groundwater (Limestone Bedrock)	Groundwater impacts from pollution release if encountered / exposed in excavations.  Likelihood of Dewatering being required is low	High	High	Negative	Unlikely	Negligible	Detailed assessment shows likelihood of encountering groundwater in excavations is low. Water table is well below maximum excavation depths across the site. Groundwater system is in glacial till aquitard, low flow and low volumes.  In the unlikely event that any dewatering is required, where any shallow groundwater is encountered and requires pumping out, this water should be directed by overland pipework to the nearest swale and infiltration basin for treatment and infiltration discharge and NOT discharged to the any watercourse.

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## 9.11 Conclusions and Residual Impacts

This assessment identifies the potential impacts to land, groundwater and interconnections with surface water. This assessment summarises the state of the land and water quality. It summarises the relevant legislation and guidance and provides appropriate baseline information, enabling the potential effects to be identified.

Aspects of the design, construction and operation of the proposed development that may potentially impact on the receiving water environment have been identified and the pathways for impacts assessed. It has been determined that without mitigation of the proposed development would be likely to cause negative impacts to the water environment due to sedimentation mobilisation and fuel / cement spillages if not appropriately managed during the construction phase.

The implementation of a Construction Environmental Management Plan combined with best practice and rapid response to spillage events eliminates or reduces the potential significance to all water receptors to “not significant”. An Outline CEMP has been developed to support the proposed development and guide the process of preparing a Final CEMP.

All potential long term impacts to land, soil and water are related to surface water runoff, which will be managed by a SuDS scheme.

The Flood Risk Assessment confirms that the proposed development causes no change to predicted flood extents or flow routes outside the site, and no measurable effect to flood levels outside the site, and no increased pollution loading which is not properly managed, therefore cumulative effects are considered insignificant.

Implementation of the mitigation proposed eliminates or reduces the potential significance to all receptors to “not significant”. Therefore, there are no significant residual effects to the soils and waters environments from the proposed development.

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## 10.0 AIR AND CLIMATE

### 10.1 Introduction

MCL Consulting was commissioned by McAdam Design on behalf of Cavan County Council to undertake an Air Quality Impact Assessment in support of a planning application for the proposed development of a sports campus to be located on lands north, south and west of Royal School Cavan and west of Breffni Park GAA grounds, County Cavan. This Chapter sets out the Air Quality and Climate Impact Assessment for the development as a whole.

#### 10.1.1 Overview of Air Quality Assessment

With regard to Air Quality this assessment is based on published best practice guidance such as the National Society for Clean Air Development Control: Planning for Air Quality and the Government Technical Guidance (LAQM TG(16)). There are two main methods by which a development's impact on air quality can be determined:

- Air quality screening assessments
- Atmospheric dispersion assessments

As stated in the Air Quality and Land Use Planning document, in areas where air quality is not currently of particular concern, an initial screening assessment of the potential impact of the potential development should be carried out. If this screening process identifies that the development may have a significant impact on air quality, a more detailed atmospheric dispersion modelling assessment may be required. For both methods, the minimum requirements for a satisfactory assessment are:

- a prediction of the current air quality within the vicinity of the proposed development,
- a prediction of the air quality within the vicinity of the proposed development for the year that the development is due to be operational without the development in place, and
- a prediction of the air quality within the vicinity of the proposed development for the year that the development is due to be operational with the development in place.

A proposed development may be considered to have a significant adverse impact on air quality when it:

- generates air pollution in excess of the National Air Quality Strategy Objectives or EU Limit Values,
- causes a significant increase in ambient concentrations,
- interferes with the implementation of the Air Quality Action Plan (AQAP), or
- exposes people to poor air quality.

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The background air quality in the proposed site area is recognised to be of very good quality and the site is located in the 'Zone D' area, as denoted by the EPA. Concentrations of air quality pollutants in Zone D are very low and well below the relevant air quality limit values.

The requirements of an AQIA to the satisfaction of the Cavan County Council include:

- A Construction Dust Impact Assessment has been undertaken in accordance to Guidance on the Assessment of Dust from Demolition and Construction (IAQM) 2014 to predict the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is "not significant".
- An assessment of the existing and predicted traffic flows generated by the development and any potential future air pollutant sources, if any;
- A screening model (or detailed atmospheric model, if required) of the air quality impact of the proposed development due to increased traffic flows. This prediction has taken account of any forecasted increased traffic flows as a result of the development;
- In order to demonstrate that AQ issues have been adequately addressed, all input data, assumptions, predictions and output data are clearly presented; and
- All model outputs and predicted construction dust impacts and elevated air pollutant concentrations have been compared against the relevant NAQS Objectives and EU Limit Values.

### 10.1.2 Site Location

The proposed development relates to circa 28ha. situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School. The site incorporates existing sporting facilities used by the Royal School for physical education; this including one shale gravel hockey pitch and adjoining soccer field. The remainder of the school lands are undeveloped. The site also includes lands to the southwest of Breffni Park. A site location map is presented in Figure 10.1.

The site is currently occupied by agricultural land surrounding Royal College, County Cavan. The surrounding area is characterised as largely residential, with mixed recreational and commercial land uses surrounding.

#### **Figure 10.1: Site Location Map**





### 10.1.3 Proposed Development

The proposed development is described in detail in Chapter 2, but will include the following:

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

The ambient air quality in the vicinity of the proposed development is impacted mainly from nearby traffic flows. Therefore, the Air Quality Impact Assessment has focused on those pollutants that are produced by vehicular traffic. Therefore, the pollutants that have been addressed in detail in this study are Nitrogen Dioxide (NO<sub>2</sub>) and fine Particulates (PM<sub>10</sub>).

## 10.2 Methodology

### 10.2.1 The Air Quality Standards Regulations

Air quality impacts have been assessed in accordance with the Directive on ambient air quality and cleaner air for Europe (2008/50/EC), which has been transposed into Irish Legislation through the Air Quality Standards Regulations (S.I. 180 of 2011) (See Table 10.1). These regulations outline the limit values / objectives for oxides of nitrogen (NO<sub>x</sub>), nitrogen dioxide (NO<sub>2</sub>), particulates, carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>) and other air pollutants.

**Table 10.1: Air Quality Standards Regulations (S.I. 180 of 2011)**

Pollutant	Criteria	Limit Value
Nitrogen Dioxide (NO <sub>2</sub> )	Hourly limit for protection of human health - not to be exceeded more than 18 times / year	200 µg/m <sup>3</sup>
	Annual limit for protection of human health	40 µg/m <sup>3</sup>
Nitrogen oxides (NO <sub>x</sub> )	Annual limit for protection of vegetation	30 µg/m <sup>3</sup>
Benzene (C <sub>6</sub> H <sub>6</sub> )	Annual limit for protection of human health	5 µg/ m <sup>3</sup>
Carbon Monoxide (CO)	Maximum daily hour running mean	10 µg/ m <sup>3</sup>
Lead (Pb)	Annual limit for protection of human health	0.5 µg/ m <sup>3</sup>
Sulphur Dioxide (SO <sub>2</sub> )	Hourly limit for protection of human health - not to be exceeded more than 24 times / year	350 µg/ m <sup>3</sup>
	Daily limit for protection of human health - not to be exceeded more than 3 times / year	125 µg/ m <sup>3</sup>
	Annual limit for protection of vegetation	20 µg/ m <sup>3</sup>
Particulate Matter (PM <sub>10</sub> )	24-hour limit for protection of human health - not to be exceeded more than 35 times / year	50 µg/ m <sup>3</sup>
	Annual limit for protection of human health	40 µg/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> )	Annual target value for the protection of human health (Stage 1 to be achieved by 2015)	25 µg/m <sup>3</sup>
	Indicative limit for the protection of human health (Stage 2 to be achieved by 2021)	20 µg/m <sup>3</sup>

## 10.2.2 Assessment of Significance of Potential Effects

In terms of the ‘Significance of Potential Environmental Effects’ the magnitude (scale of change) has been determined by considering the impacts of the proposed development on air quality with reference to the baseline conditions and environmental assessment criteria.

### Describing the Impact:

The rationale for describing the impact of the proposed development is derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) “Land- Use Planning & Development Control: Planning for Air Quality (January 2017). The two-stage process is as follows;

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts

The suggested framework for describing the impacts is set out in Table 6.3 of the EPUK & IAQM guidance document and is shown in Table 3 below. The term Air Quality Assessment Level (AQAL) has been adopted as it covers all pollutants, i.e. those with and without formal standards. AQAL is used to include air quality objectives or limit values where these exist. The Environment Agency uses a threshold criterion of 10% of the short term AQAL as a screening criterion for the maximum short-term impact. The EPUK & IAQM guidance adopts this as a basis for defining an impact that is sufficiently small in magnitude to be regarded as having an insignificant effect.

**Table 10.2: Impact descriptors for individual receptors**

Long term average Concentration at Receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Moderate
103-109% f AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

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Explanation

AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.

The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.

The Table is only designed to be used with annual mean concentrations.

Descriptors for individual Receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one Receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.

When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.

The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.

It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

### Assessing Significance:

The rationale for the assessment of significance is derived from the EPUK & IAQM Guidance (paragraphs 7.1-7.12 referring to Table 6.3) and relates to Table 10.2 above. Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as 'significant' or 'not significant'. An 'impact' is the change in the concentration of an air pollutant, as experienced by a Receptor. This may have an 'effect' on the health of a human receptor, depending on the severity of the impact and other factors that may need to be taken into account. The impact descriptors set out in Table 3 are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual Receptors. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more Receptors, the overall effect may not necessarily be judged as being significant in some circumstances.

Any judgement on the overall significance of effect of a development will need to take into account such factors as:

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- the existing and future air quality in the absence of the development;
  - the extent of current and future population exposure to the impacts; and
  - the influence and validity of any assumptions adopted when undertaking the prediction of impacts.
  - Other factors may be relevant in individual cases.

The impacts descriptor table points to a conclusion of significant effect in cases where concentrations of a regulated pollutant are in excess of the objective value. Where the baseline concentrations are close to the objective value at a receptor, but not exceeding it, a case may be made for the development's predicted contribution being significant. It will always be difficult, however, to attribute the exceedance of an objective to any individual source.

Magnitude (scale of change) is determined by considering the predicted deviation from baseline conditions. Quantifiable assessment of magnitude has been undertaken. Impacts of the proposed development on air quality have been assessed with reference to the baseline conditions and environmental assessment criteria.

### 10.2.3 Construction Dust

As prescribed within [Environmental Protection UK and the Institute of Air Quality Management, Land- use Planning & Development Control: Planning For Air Quality \(January 2017\)](#) the proposed development has been assessed in accordance to Guidance on the Assessment of Dust from Demolition and Construction (IAQM) 2014. This guidance has been referenced to assess the potential dust impact from demolition, earthworks, construction and trackout of the vehicle movements during the construction phase of the proposed works. Good practice construction mitigation measures are recommended to be implemented to minimise emission quantities during construction.

### 10.2.4 Dust Deposition Guidelines

Dust particles can be classified into those that are easily deposited and those that remain suspended in the air for long periods. This division is useful as deposited dust is usually the coarse fraction of particulates that causes dust annoyance, whereas suspended particulate matter is implicated more in exposure impacts. Airborne particles have a large range of diameters, from nano-particles and ultrafine particles (diameters less than 0.1µm) to the very large particles with diameters up towards 100µm. There is no clear dividing line between the sizes of suspended particulates and deposited particulates, although particles with diameters >50 µm tend to be deposited quickly and particles of diameter <10 µm (PM10) have an extremely low deposition rate in comparison. Therefore, the size of suspended and deposited dust particles affects their distribution and as such requires two very different approaches to sampling these fractions. PM10 is the fraction of airborne (suspended) particulates which contains particles of diameter less than 10µm. PM2.5 is the fraction of airborne (suspended) particulates which contains particles of diameter less than 2.5µm. PM10 and PM2.5 particles can penetrate deep into the respiratory system increasing the risk of respiratory and cardiovascular disorders. Total Suspended Particles (TSP) is the term used

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when referring to larger particles which do not have a specified size limit. It is common for TSP to be measured alongside PM10 and PM2.5 particularly at industrial sites when dust monitoring is undertaken.

Particulate matter can emanate from natural and anthropogenic sources. Natural sources include sea salt, forest fires, pollen and moulds. Natural sources are unregulated and harder to control. Anthropogenic sources can be regulated and understanding the sources of particulate matter is very important. PM10 is most commonly associated with road dust and construction activities. Wear and tear of brakes and tyres on vehicles and crushing activities at construction sites can all contribute to a rise in PM10. PM2.5 is associated with fuel burning, industrial combustion processes and vehicle emissions. Larger particles (100µm diameter) are likely to settle within 5-10m of their source under a typical mean wind speed of 4-5 m/s, and particles between 30-100 µm diameter are likely to settle within 100m of the source. Smaller particles, particularly those <10 µm in diameter, i.e. PM10, have a greater potential to have their settling rate impeded by atmospheric turbulence and to be transported further from their source. Dust emissions are exacerbated by dry weather and high wind speeds. The impact of dust therefore, also depends on the wind direction and the relative location of the dust source and receiver.

Currently no Irish statutory standards or limits exist for the assessment of dust deposition and its tendency for causing nuisance. Similarly, no official air quality criterion has been set at a European or World Health Organisation (WHO) level, although a range of national 'yardstick' criteria from other countries is found in literature.

The German TA Luft Regulations, "Technical Instructions on Air Quality Control" state that total dust deposition (soluble and insoluble, measured using Bergerhoff type dust deposit gauges as per German Standard Method for determination of dust deposition rate, VDI 2119) should not exceed a dust deposition rate of 350 mg/m<sup>2</sup>/day (when averaged over a 30+/-2 day period). The use of this limit value is appropriate to minimise the impact of airborne dust levels on the receiving environment beyond the site boundary. The German TA Luft criteria for '*possible nuisance*' and '*very likely nuisance*' are 350 mg/m<sup>2</sup>/day and 650 mg/m<sup>2</sup>/day, respectively.

These go some way to addressing the view that the annoyance impact (and hence potential for complaints) depends on the worsening of dust levels above existing background levels. In 2005, the UK Highways Agency released an Interim Advice Note 61/05 '*Guidance for Undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs*' as a supplement to the Design Manual for Roads and Bridges (DMRB) Guidelines. This interim guidance states that dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. The literature suggests that the most sensitive species appear to be affected by dust deposition at levels above 1,000 mg/m<sup>2</sup>/day which is considerably greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. As such, once dust deposition rates are maintained within the guidelines for human nuisance

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the impact of dust deposition on sensitive ecosystems is considered negligible. Therefore, the following dust deposition limits are typically recommended;

- Dust Deposition Rate limit = 350 mg/m<sup>2</sup>/day (averaged over a 30+/-2 day period using Bergerhoff Gauge Method).
- Dust Deposition Rate limit affecting sensitive ecological receivers = 1,000 mg/m<sup>2</sup>/day
- PM10 24 Hour Mean concentration limit = 50 µg/m<sup>3</sup> not to be exceeded more than 35 times a calendar year
- PM10 Annual Mean concentration limit = 40 µg/m<sup>3</sup>
- PM2.5 Annual Mean concentration limit = 25 µg/m<sup>3</sup>

### 10.3 Existing Environment

The use of background pollutant concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants in the vicinity of the study site include traffic, domestic and industrial emissions.

No baseline air quality survey was undertaken. Reference has been made to various sources to quantify the existing air quality in proximity to the proposed site, including EPA data for Cavan.

#### 10.3.1 Air Quality Data

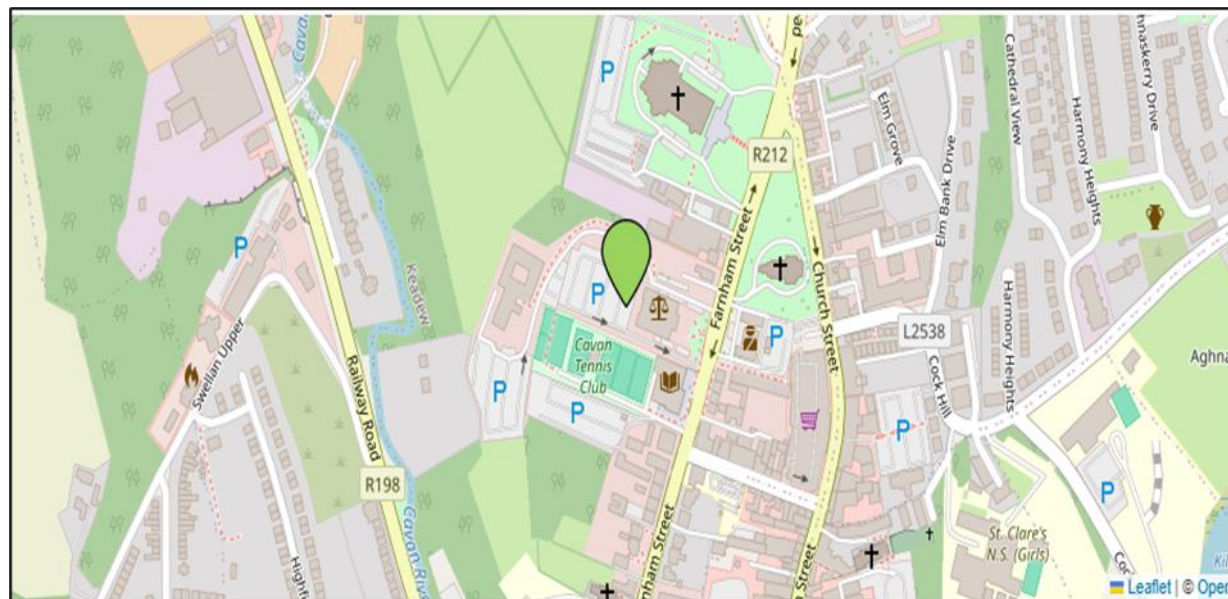
The EPA has divided the country into zones for the assessment and management of air quality. The zones adopted in Ireland are Zone A, the Dublin conurbation; Zone B, the Cork conurbation; Zone C, comprising 21 large towns in Ireland with a population >15,000; and Zone D, the remaining area of Ireland. The background air quality in the proposed site area is recognised to be of very good quality and the site is located in the 'Zone D' area, as denoted by the EPA. Concentrations of air quality pollutants in Zone D are very low and well below the relevant air quality limit values.

The Environmental Protection Agency's Air Quality Index for Health (AQIH) provides a scaled number from 1 to 10 that identifies the current air quality currently in a region and whether or not this might affect human health. A reading of 10 means the air quality is very poor and a reading of 1 to 3 inclusive means that the air quality is good. The AQIH indicates that the area surrounding the proposed site is in an area of good air quality (Rural East – 1 Good).

The nearest EPA air quality station in Cavan (Grid Ref 53.9936°N, -7.3628°E ~ 700m north of proposed site, monitors particulate matter (PM10 and PM2.5). The monitoring location is shown in Figure 10.2. The average recorded

concentrations for Particulate Matter (PM10, PM2.5) levels for each month from July – December 2023 are presented in Table 10.3.

**Figure 10.2: EPA Air Quality Station, Cavan Town**



**Table 10.3: The average concentrations for Particulate Matter (PM10, PM2.5) levels for each month July - December 2023.**

Month	PM10 $\mu\text{g}/\text{m}^3$	PM2.5 $\mu\text{g}/\text{m}^3$
July	28.83	26.03
August	14.57	11.35
September	16.74	13.07
October	15.92	11.81
November	10.45	7.58
December	9.49	5.91
Average	14.1	10.8
<b>Annual Mean</b>	<b>40 <math>\mu\text{g}/\text{m}^3</math></b>	<b>20 <math>\mu\text{g}/\text{m}^3</math></b>

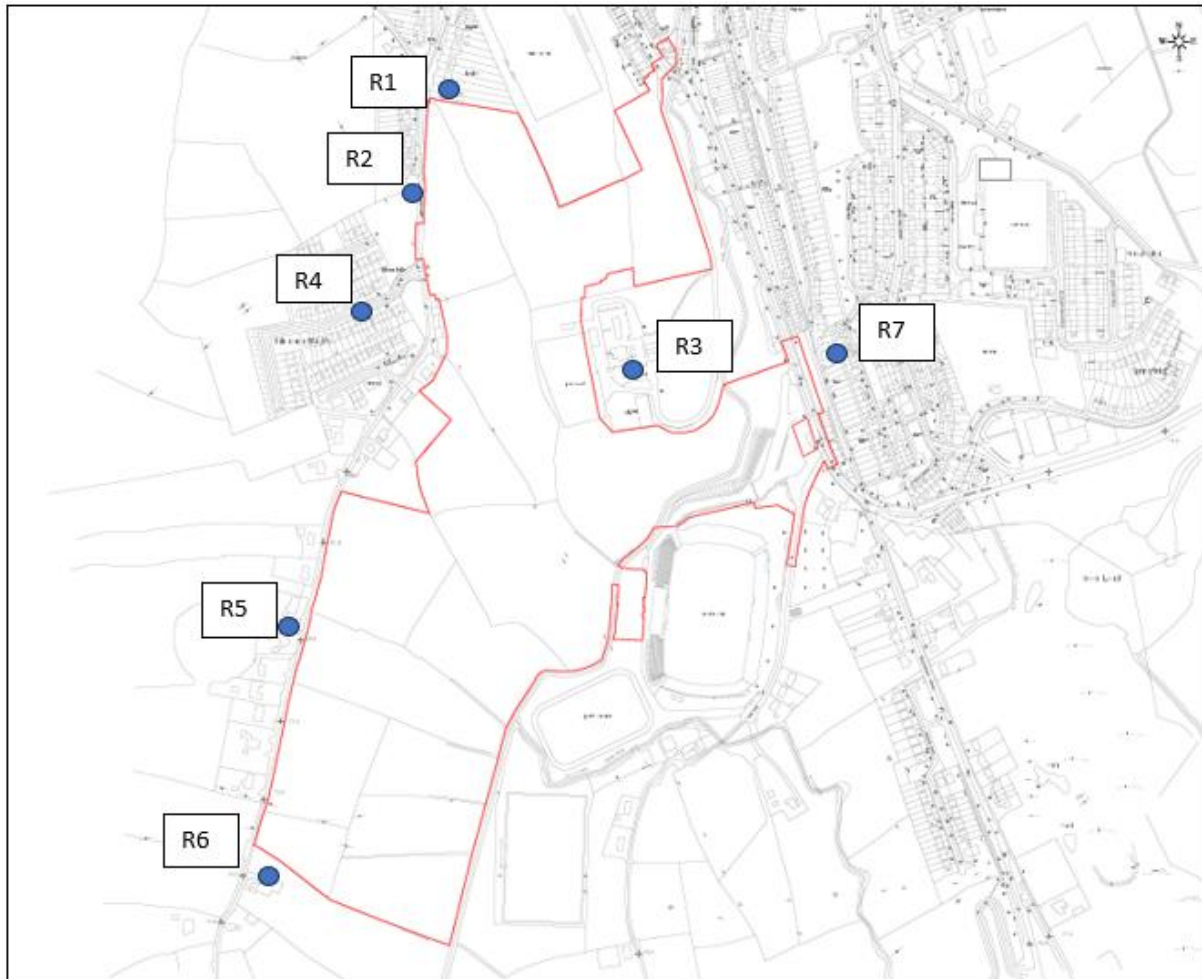
Table 10.3 shows that the limit values for Particulate Matter (PM10) and PM2.5) concentrations have not been breached from July to December 2023.



## 10.4 Potential Impacts (Air Quality Impact Assessment)

The most potentially sensitive receiver locations in proximity to the proposed development have been identified, as shown in Figure 10.3 and summarised in Table 10.4.

**Figure 10.3: Selected receptors in proximity to the Project site boundary**



**Table 10.4: Sensitive Receptor Location assessed in DMRB Screening Model**

Receptor Reference & Location	Distance to Project boundary	Grid Reference
R1 St Phelim's Pl	0-20m west of proposed boundary	241704,304383
R2 21-40 St Phelim's Pl	0-20m west of proposed boundary	241662,304300
R3 Royal School	0-20m North of proposed boundary	241862,304169
R4 Kilnavara Heights	60m west of proposed boundary	241629,304192
R5 Kilnavarragh Ln	20m west of proposed boundary	241506,303712
R6 Kilnavarragh Ln	20m west of site boundary	241503,303477
R7 St Brigids Terrace/Dublin Rd	20m north-west of boundary	242148,304039

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## 10.4.1 Operational Impact Assessment

### Operational Traffic Emissions Assessment

The Design Manual for Roads & Bridges (DMRB) Screening Model, published by the Highways Agency can predict pollutant concentrations at receptor locations near to roads. It can be used to predict annual mean concentrations of nitrogen dioxide (NO<sub>2</sub>) and PM<sub>10</sub>, as well as oxides of nitrogen (NO<sub>x</sub>), carbon monoxide, benzene and 1,3-butadiene. It also predicts the number of exceedances of 50 µg/m<sup>3</sup> as a 24-hour mean PM<sub>10</sub> concentration. The model requires input data on Annual Average Daily Traffic flow (AADT), annual average speeds, the proportion of different vehicle types, the type of road, and the distance from the centre of the road to the receptor location. The DMRB screening model is referred to within the Local Air Quality Management Technical Guidance document TG (16) Chapter 7: Part 3: Estimating Emissions.

The method to convert roadside NO<sub>x</sub> to NO<sub>2</sub> within the DMRB model was based on measurements made between 1999 and 2001. Recent evidence shows that the proportion of primary NO<sub>2</sub> in vehicle exhaust has increased. This means that the relationship between NO<sub>x</sub> and NO<sub>2</sub> at the roadside has changed from that currently used in the DMRB model. A new NO<sub>x</sub> to NO<sub>2</sub> calculator is available from the DEFRA website (version 8.1). The calculator applies to all road types and can also be used to estimate roadside NO<sub>x</sub> from roadside NO<sub>2</sub> measurements. The use of the DMRB model has been adapted to use the new calculator in accordance with the relevant instructions. DMRB model validation work carried out by the Highways Agency has indicated that the model may significantly under-predict concentrations of nitrogen dioxide alongside urban city-centre roads classified as 'street canyons'. In this context, a street canyon may be defined as a relatively narrow street with buildings on both sides, where the height of the buildings is generally greater than the width of the road. It has been decided that on review of the streetscapes in proximity to the proposed development that a street canyon effect is unlikely to occur as there are relatively open areas in close proximity to the site. DEFRA has stated that if the annual mean objectives are not exceeded, it may be confidently assumed that the short-term (1-hour) objectives will also be met. However, if this approach is used, then care must be taken to include relevant locations where the hourly objectives might apply. If the annual mean nitrogen dioxide concentration is greater than 60 µg/m<sup>3</sup>, then there is a risk that the 1-hour objective may also be exceeded.

The guidance document Land-Use Planning & Development Control: Planning For Air Quality (January 2017), from Environmental Protection UK and the Institute of Air Quality Management, outlines the following for consideration of air quality impacts due to generated traffic flows within the land-use planning and development control processes.

**Table 10.5: Extract from EPUK / IEMA Guidance 2017: Indicative criteria for requiring an air quality assessment**

The Project will:	Indicative Criteria to Proceed to an Air Quality Assessment:
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.

Therefore, the actual change in traffic flows (AADT flows per day) has been considered against the IAQM and EPUK criteria.

The predicted future operational AADT traffic flows have been provided by Hoy Dorman. Based on the information provided and reproduced in section 13 of this report, as a result of the proposed development, there will be an increase of some 378 vehicles to be generated on a typical weekday and 225 vehicles on a Saturday to the proposed site. Of the predicted AADT traffic flows 7.4% are estimated to be from HDV's, this would result in an increase of 28 and 26 HDVs to be generated on a typical weekday and Saturday respectively.

Therefore, there will be a change of LDV flows of less than 500 AADT in proximity to the nearest sensitive receiver locations along access roads when the proposed development becomes operational. This relatively small change in traffic flows generated as a result of the development does not require further assessment when reviewed in light of the IAQM and EPUK criteria.

Therefore, the operational AADT traffic flows will not result in a significant impact on local air quality in terms of the Air Quality Standards Regulations (S.I. 180 of 2011) (See Table 1). As outlined previously assessing Significance of EPUK/IAQM guidance document a judgment of significance should be made by a competent professional. There will not be a significant change in local traffic flows directly as a result of the proposed development. The proposed development will result in a negligible impact on the air quality in the vicinity of the proposed development. Local residents will not experience a significant air quality impact as a result of the proposed development. A DMRB Screening Assessment is not required due to the relatively small change in traffic flows generated as a result of the proposed development.

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### Operational Phase Emissions Assessment

The proposal will include the construction of a sports complex building incorporating sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation. 7 no. outdoor sports pitches, covered sports arena with playing pitch, spectator seating and other ancillary accommodation. Ancillary sporting facilities include 8 lane athletics track and cricket practice nets. The heating systems for the proposed sports complex building are to be based on a modern air/water heat pump type system. Therefore, emissions from space heating requirements will result in an insignificant impact on local air quality. At this stage of the design process accurate data cannot be provided in relation to the exact manufacturer and supplier, etc. However, it can be stated that the emissions from the heating requirements of a modern system in a relatively small sports complex building will not result in a significant impact on local air quality.

### **10.4.2 Construction Impact Assessment**

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the sensitivity of the area.

The Institute of Air Quality Management (IAQM) has issued guidelines (IAQM 2014) which also outline the assessment criteria for assessing the impact of dust emissions from construction activities based on both receptor sensitivity and the number of receptors affected. In terms of receptor sensitivity, the study area is characterised as having high, medium and low sensitivity receptors within 350m of the construction activities associated with the Proposed Scheme.

The assessment also identifies how the sensitivity of an area may be determined for ecological impacts taking into account the distance from the source to the ecological receptor and the sensitivity of the ecological receptor.

The major dust generating activities are divided into four types within the IAQM guidance (IAQM 2014) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

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## Construction Dust Assessment

### **Step 1: Screening the Need for a Detailed Assessment**

An assessment will normally be required where there is:

- a 'human receiver' within:
  - 350 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s)
- an 'ecological receiver' within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

### **STEP 2: Assess the Risk of Dust Impacts**

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large (STEP 2A); and
- the sensitivity of the area to dust impacts (STEP 2B), which is defined as low, medium or high sensitivity.

These two factors are combined in STEP 2C to determine the risk of dust impacts with no mitigation applied. The risk category assigned to the site can be different for each of the four potential activities (demolition, earthworks, construction and trackout). More than one of these activities may occur on a site at any one time. Where appropriate, the site can be divided into 'zones' for the dust risk assessment.

### **Step 2A: Define the Potential Dust Emission Magnitude**

Table 10.6 describes the potential dust emission class criteria for each outlined construction activity.

**Table 10.6: Criteria Used in the Determination of Dust Emission Class**

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
<b>Demolition</b>	<ul style="list-style-type: none"> <li>• Total building volume &lt;20,000 m<sup>3</sup></li> <li>• Construction material with low potential for dust release (e.g. metal cladding or timber)</li> <li>• Demolition activities &lt;10 m above ground level</li> <li>• Demolition during wetter months</li> </ul>	<ul style="list-style-type: none"> <li>• Total building volume 20,000 m<sup>3</sup> - 50,000m<sup>3</sup></li> <li>• Potentially dusty construction material.</li> <li>• Demolition activities 10-20 m above ground level</li> </ul>	<ul style="list-style-type: none"> <li>• Total building volume &gt;50,000m<sup>3</sup></li> <li>• Potentially dusty construction material (e.g. concrete)</li> <li>• On-site crushing and screening,</li> <li>• Demolition activities &gt;20 m above ground level</li> </ul>
<b>Earthworks</b>	<ul style="list-style-type: none"> <li>• Total site area &lt;2,500m<sup>2</sup></li> <li>• soil type with large grain size (e.g. sand),</li> <li>• &lt;5 heavy moving earth vehicles active at any one time</li> <li>• formation of bunds &lt;4 m in height</li> <li>• Total material moved &lt;20,000 tonnes</li> </ul>	<ul style="list-style-type: none"> <li>• Total site area 2,500 – 10,000m<sup>2</sup></li> <li>• Moderately dusty soil type (e.g. silt)</li> <li>• 5-10 heavy moving earth moving vehicles active at any one time.</li> <li>• formation of bunds 4m - 8m in height,</li> <li>• Total material moved 20,000 – 100,000 tonnes</li> </ul>	<ul style="list-style-type: none"> <li>• Total site area &gt;10,000m<sup>2</sup></li> <li>• potentially dusty soil type (e.g. clay)</li> <li>• &gt;10 heavy earth moving vehicles active at any one time.</li> <li>• formation of bunds &gt;8m in height</li> <li>• Total material moved &gt;100,000 tonnes</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Total building volume &lt;25,000m<sup>3</sup></li> <li>• Construction material with low potential for dust release</li> </ul>	<ul style="list-style-type: none"> <li>• Total building volume 25,000 – 100,000m<sup>3</sup></li> <li>• Potentially dusty construction material (e.g. concrete)</li> <li>• On-site concrete batching</li> </ul>	<ul style="list-style-type: none"> <li>• Total building volume &gt;100,000m<sup>3</sup></li> <li>• On-site concrete batching</li> <li>• Sandblasting</li> </ul>

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
<b>Trackout</b>	<ul style="list-style-type: none"> <li>• &lt;10 outward HDV trips in any one day</li> <li>• Surface material with low potential for dust release,</li> <li>• Unpaved road length &lt;50m</li> </ul>	<ul style="list-style-type: none"> <li>• 10 - 50 outward HDV trips in any one day</li> <li>• moderately dusty surface material (e.g. high clay content),</li> <li>• Unpaved road length 50-100m</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;50 outward HDV trips in any one day</li> <li>• potentially dusty surface material (e.g. high clay content)</li> <li>• Unpaved road length &gt;100m</li> </ul>

The potential dust emission magnitudes for the proposed works were determined using the criteria detailed in Table 10.6 as follows;

#### **Assessment Procedure:**

##### Demolition:

Demolition covers any activity involved with the removal of an existing structure (or structures). There is very little demolition involved.

- Total building volume <20,000 m<sup>3</sup>.
- Demolition activities <10 m above ground level.
- Construction material with low potential for dust release.
- Therefore, the dust emission magnitude for demolition was defined as **Small**.

##### Earthworks:

Earthworks covers the processes of soil-stripping, ground-levelling, excavation and landscaping. It is proposed to reuse earth material for landform rather than removal off site in order to reduce carbon emissions and landfill.

- The total site area of potential earthworks is 27.5 hectares – 275000m<sup>2</sup>.
- Potentially dusty soil type (e.g. clay).
- 5-10 heavy moving earth moving vehicles active at any one time.
- Total material moved c. 35,000 tonnes
- Therefore, the dust emission magnitude for earthworks was defined as **Large**.

##### Construction:

Construction covers any activity involved with the provision of a new structure (or structures), its modification or refurbishment.

The proposal will include the construction of a sports complex building incorporating sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation. 7 no. outdoor sports

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pitches, covered sports arena with playing pitch, spectator seating and other ancillary accommodation. Ancillary sporting facilities include 8 lane athletics track and cricket practice nets. The proposed bridge is a single span integral reinforced concrete bridge, supported on piled foundations.

- Total building volume 25,000 – 100,000m<sup>3</sup>
- Potentially dusty construction material (e.g. concrete)
- On-site concrete batching
- Therefore, the dust emission magnitude for earthworks was defined as **Medium**.

#### Trackout:

Trackout covers the transport of dust and dirt from the construction site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

- ~34 inward HDV trips in any one day
- Unpaved road length > 100m.
- Therefore, the dust emission magnitude for trackout was defined as **Large**.

#### Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- the specific sensitivities of receivers in the area;
- the proximity and number of those receivers;
- in the case of PM<sub>10</sub>, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

The criteria for determining the sensitivity of receivers is detailed in Table 10-7 for dust soiling effects and health effects of PM<sub>10</sub>.



**Table 10-7: Criteria for Determining Sensitivity of Receivers**

Sensitivity of Receiver	Criteria for Determining Sensitivity	
	Dust Soiling Effects	Health Effects of PM <sub>10</sub>
<b>High</b>	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
<b>Medium</b>	Parks, places of work	Office and shop workers not occupationally exposed to PM <sub>10</sub>
<b>Low</b>	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

The criteria detailed in Tables 10.8 and 10.9 were used to determine the sensitivity of the area to dust soiling effects and human health impacts.

**Table 10.8: Sensitivity of the Area to Dust Soiling Effects on People and Property**

Receiver Sensitivity	Number of Receivers	Distance from Source (m)			
		<20m	<50m	<100m	<350m
<b>High</b>	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
<b>Medium</b>	>1	Medium	Low	Low	Low
<b>Low</b>	>1	Low	Low	Low	Low

**Table 10.9: Sensitivity of the Area to Human Health Impacts**

Receiver Sensitivity	Annual Mean PM10 Conc	Number of Receivers	Distance from Source (m)				
			<20m	<50m	<100m	<200m	<350m
High	>32 µg/m <sup>3</sup>	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m <sup>3</sup>	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m <sup>3</sup>	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m <sup>3</sup>	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m <sup>3</sup>	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m <sup>3</sup>	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
<24 µg/m <sup>3</sup>	>10	Low	Low	Low	Low	Low	
	1-10	Low	Low	Low	Low	Low	
Low	-	≥1	Low	Low	Low	Low	Low

**Table 10.10: Sensitivity of the Area to Ecological Impacts**

Receiver Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

**Sensitivity of Receivers**

Table 10.11 outlines the range of numbers of properties within specific distance bands from the proposed construction activities to determine the receptor sensitivity of the area to Dust Soiling Effects on People and Property.

**Table 10.11: Cumulative number of sensitive receivers within 20m, 50m, 100m, 200m and 350m of the site**

Parameter	Number of Receivers within Distance from Site (m)			
	<20m	<50m	<100m	<350m
No. of receivers in proximity to Site -	10-100	10-100	>100	>100
Receiver Sensitivity	High	Medium	Medium	Low

#### Sensitivity of People to Dust Soiling

- Demolition, Earthworks and Construction: There are 36 sensitive residential properties located approximately 20m of proposed site boundary. There are between 10-100 residential properties within 50m of the site and the highest level of >100 has been selected for residential properties within 100m and >350m of the site as a worst-case scenario. Therefore, the sensitivity of the area is **High**.
- Trackout: As general guidance, without site-specific mitigation, trackout may occur from roads up to 500 m from large sites to 500 m from large sites (as determined in Step 2A). As shown in Table 10.11, the sensitivity of the area is **High**; in terms of potential trackout dust impacts.

#### Sensitivity of the Area to Human Health Impacts

As outlined above, the background air quality in the proposed site area is recognised to be of very good quality. The site is located in the 'Zone D' (Good air quality) area, as denoted by the EPA. The IAQM guidelines outline the assessment criteria for assessing the impact of PM10 emissions from construction activities based on current annual mean PM10 concentration, receptor sensitivity and the number of receptors affected. The current PM10 concentration in Zone D locations as reported by the EPA is approximately 14µg/m<sup>3</sup>.

As shown in Table 10.12 the sensitivity of the Area to Human Health Impacts is **Low**; in terms of potential demolition, construction, earthworks and trackout dust impacts.

#### Sensitivity of the Area to Ecological Impacts

Dust deposition due to earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. The site is hydrologically linked to Lough Oughter SPA/SAC which could be negatively impacted by silt and pollution run off entering the River Cavan during the construction process therefore the proposed

development can be considered a **High** sensitivity receptor. Therefore, the sensitivity of the Area to Ecological Impacts is **High** in terms of demolition, construction, earthworks and trackout.

The sensitivity of the area to dust soiling, human health impacts and ecological impacts for each activity is summarised in Table 10.12.

**Table 10.12: Outcome of Defining the Sensitivity of the Area**

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological Impacts	High	High	High	High

#### Step 2C: Define the Risk of Impacts

In accordance with the IAQM Guidance, the dust emission magnitude (Step 2A) and sensitivity of the area (Step 2B) have been combined and the risk of impacts from demolition, earthworks, construction and trackout determined (before mitigation is applied). The risk of dust soiling, impact on human health and ecological impact before mitigation, is summarised in Table 10.13.

**Table 10.13: Summary Dust Risk to Define Site-specific Mitigation**

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	High Risk	Medium Risk	High Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	High Risk	Medium Risk	High Risk

Therefore, appropriate construction dust mitigation measures have been outlined for the proposed development site. See Section 10.5 Mitigation Measures.

#### Step 4: Determine Significant Effects

Construction dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Therefore, the potential for fugitive dust emission effects at the nearest sensitive receivers will be controlled to ensure dust impacts are of negligible significance.

The IAQM Guidance recommends that significance is only assigned to the effect after considering the construction activity with mitigation measures in operation. Together with the proposed construction mitigation measures and the existing low background particulate (PM10) concentrations, the construction phase activities on the proposed site will not cause an exceedance of the air quality objectives at receptor locations.

**Table 10-14: Summary of Significance of Impact including Site-specific Mitigation**

Potential Impact	Significance			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	Negligible	Negligible	Negligible
Human Health	Negligible	Negligible	Negligible	Negligible
Ecological	Negligible	Negligible	Negligible	Negligible

Using the IAQM methodology for the assessment of air quality impacts from construction activities has indicated the following level of risk, including the recommended construction phase dust mitigation measures;

- dust soiling impacts => **low risk.**
- impacts on human health => **low risk.**
- Ecological impacts => **low risk.**

Construction Traffic Emissions Assessment

Table 10.15 provides an estimated programme for the construction phases is set out below, green shading indicates construction periods.

**Table 10.15 Construction Phase Programme**

Phase	2025				2026				2027				2028				2029			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1																				
2																				

Table 10.16 sets out the expected construction vehicle traffic generated by construction on an average day. The number of HGV movement has been provided by the Martin Hoy and construction period from the scheme programme. Therefore, there will be 68 and 44 HDV two-way traffic Movements for phase 1 and 2 respectively.

**Table 10.16: Construction Phase Expected Traffic Generation**

Phase	Construction Period		Average HGV's		Average 'Other Vehicles'		Total Construction Traffic Trips		Impact on Dublin Road		
	Months	Weeks	Week	Day	LGV	Staff	One Way	Two Way	Dublin Road AADT (Base)	Base + Construction	Percentage Impact
1	19	76	186	34	20	12	66	132	17,392.40	17,524.04	0.75%
2	28	112	121	22	20	12	54	108	17,392.40	17,500.40	0.62%

When the construction traffic is added to the factored 2027 Dublin Road AADT baseline traffic, the impact for Phases 1 and 2 are 0.75% and 0.62% respectively. These HGV traffic movements will be temporary and cease upon completion of the construction phase. When compared with the EPUK / IEMA Guidance indicative criteria for requiring an air quality assessment, this indicates that these construction HGV movements will not have a significant impact on local air quality. The approximate 19- and 28-month construction duration for both phases will have a short-term and very localised negligible impact on air quality.

## 10.5 Mitigation Measures

### 10.5.1 Operational Phase Mitigation Measures

There is no requirement for mitigation measures relating to the operational phase. There will be no significant air quality impact due to the proposed development with regard to local air quality and relevant Air Quality Limit Value Regulations (Northern Ireland) 2010 and the Air Quality Standards Regulations (S.I. 180 of 2011) (See Tables 1 & 2).

### 10.5.2 Construction Phase Mitigation Measures

In accordance with the IAQM Guidance, for proposed mitigation measures, the highest risk category should be applied. Therefore, the mitigation measures applicable to a **High-Risk site** should be applied. These are outlined as follows:

#### General Measures

##### *Communications*

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

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### *Dust Management*

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.

### *Site Management*

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

### *Monitoring*

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

### *Preparing and maintaining the site*

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

- 
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
  - Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
  - Avoid site runoff of water or mud.
  - Keep site fencing, barriers and scaffolding clean using wet methods.
  - Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
  - Cover, seed or fence stockpiles to prevent wind whipping.

#### *Operating vehicle/machinery and sustainable travel*

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

#### *Operations*

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

#### *Waste Management*

- Avoid bonfires and burning of waste materials.



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The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

#### **Measures specific to demolition**

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

#### **Measures specific to construction**

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

#### **Measures specific to trackout**

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a self-contained wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

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

## 10.6 In-Combination/Cumulative Effects

No other project with a potential for significant local or national air quality or climate impact has been recently undertaken or is proposed in the Cavan area. The traffic assessment and predictions include for existing and proposed traffic flows. Therefore, the cumulative effects with existing traffic flows in the area have been assessed. Please see Chapter 17 of this document for full details.

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## 11.0 NOISE AND VIBRATION

### 11.1 Introduction

MCL Consulting have been appointed to carry out a noise and vibration impact assessment for the proposed sport regional campus in County Cavan. The proposal is for the construction of a regional sports campus including an athletics track, stand and soccer pitch infield, hockey pitch, covered arena, multisport pitch and stand, GAA pitch and stand and GAA training pitches. The sound levels of the local area consist of local road traffic. The proposal has the potential to increase noise levels due to construction works phases and also has the potential to introduce operational noise due to the sports pitches and spectators using the facilities and these scenarios are therefore also assessed.

The assessment considers the predicted noise levels at the nearest noise-sensitive receptors (NSRs) from typical sport pitches and spectator noise levels following best practice and current guidance. The predicted noise levels are compared to the existing baseline measured sound levels at the NSRs, and guidance from Sport England, World Health Organisation (WHO) and British Standard BS 8233 for suitable outdoor and internal noise levels. The likelihood of adverse impact at the NSRs are assessed based on the proposed industrial and commercial noise introduced by the proposal. An assessment is carried out for noise and vibration impacts during the construction phase and control and mitigation measures are provided following BS 5228:2014.

The site location is shown in Figure 11.1.

**Figure 11.1: Site location in relation to the local area**



### **11.1.1 Scope of Works**

The scope of works for the Noise and Vibration impact Assessment is as follows:

- Baseline noise monitoring to determine the typical ambient, maximum and background sound levels for existing noise sources at the NSRs adjacent to the proposal
- Predict noise levels at the NSRs due to the sports pitches and spectator noise levels using 3D noise modelling software
- Compare the predicted noise levels to the baseline noise levels in WHO/BS 8233 guidance
- Predict the noise and vibration impacts due to noise and vibration due to constructions
- Carry out a BS 4142:2014 assessment for any industrial and/or commercial plant introduced by the proposal

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- Predict the residual impact after mitigation measures are in place and present final design

## 11.2 Background

The proposed sports regional campus is to be located in existing grasslands of County Cavan directly to the location West of Breffni Park. The new sports pitches will be used all year round during the daytime hours 0700 to 2300. The proposed sports pitches are at locations in close proximity to NSRs bordering the proposal to the North, West and South of the site.

## 11.3 Planning Policy Standards and Guidance

### 11.3.1 National Planning Frameworks – Project Ireland 2040

The document was developed to provide a high level strategic plan and development for the country in the foreseeable future. It aims to enhance the experience of people living and working in and around urban places in Ireland and aims to offer a quality of life that is more ‘liveable’ for the years ahead. The plan provides environmental and sustainability goals with an overarching aim of ‘Creating a Clean Environment for a Healthy Society’ which can be addressed by:

- Noise Management – Incorporating consistent measures to avoid, mitigate and minimise or promote the pro-active management of noise

National Policy Objective 65 states:

*‘Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the environmental Noise Regulations through national planning guidance and Noise Action Plans’*

Noise quality is addressed to support the National Policy Objective 65 through the following:

- Noise Management and Action Planning – Measure to avoid, mitigate, and minimise or promote the pro-active management of noise, where it is likely to have significant adverse impacts on health and quality of life, through strategic noise mapping, noise action plans and suitable planning conditions.

- 
- Noise, Amenity and Privacy – This includes but is not limited to, good acoustic design in new developments, in particular residential development, through a variety of measures such as setbacks and separation between noise sources and receptors, good acoustic design of buildings, building orientation, layout, building materials and noise barriers and buffer zones between various uses and thoroughfares.
  - Quiet Areas – The further enjoyment of natural resources, such as our green spaces and sea frontage, through the preservation of low sound levels or a reduction in undesirably high sound levels, is particularly important for providing respite from high levels of urban noise. As part of noise action plans, an extra value placed on these areas, in terms of environmental quality and the consequential positive impact on quality of life and health, due to low sound levels and the absence of noise, can assist in achieving this.

### 11.3.2 Cavan County Council Noise Action Plan (2019)

The Noise Action Plan has been prepared as required by the European Communities Environmental Noise Regulations 2018 to assess and manage environmental noise with the aim to strategically manage environmental noise in the long term.

The plan primarily addresses noise due to major roads in County Cavan and assesses noise exposure in priority areas. The County Cavan Noise Action Plan Policy Statements is as follows:

*‘Cavan County Council will seek to address environmental noise from major roads in the county and will endeavour to maintain a satisfactory noise environment where it currently exists. Cavan County Council will have regard to noise in the planning process to ensure that future developments include provision to protect the population from the effects of environmental noise, in the interests of residential amenity and public health’*

The Action Plan references the National Planning Framework to support the National Policy Objective 65.

The document identifies the location of noise sensitive groups as any dwelling, house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

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### 11.3.3 World Health Organisation (WHO) Guidelines for Environmental Noise

The World Health Organisation (WHO) 'Guidelines for Community Noise' was published in 1999 and gives the following description for community noise:

"Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques etc); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs."

For noise levels internally and externally to dwellings it states:

"To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq. The maximum sound pressure level should be measured with the sound pressure meter set at 'fast'."

Based on a 15 dB sound reduction of a partially open window, the noise level outside a residential property during the daytime about 1 metre from façades of living spaces should not exceed 50 dB LAeq.

The WHO document also provides guidance for outdoor living areas. It states that to avoid 'moderate annoyance' during the daytime and evening the noise level should not exceed 50 dB LAeq,T.

WHO guidelines for residential development are typically calculated over a 16 hour daytime period. In some cases, a 16 hour assessment period may not truly reflect the noise impact as it takes into account times which may be outside of operating hours. It is therefore suggested that an appropriate assessment time period is for one hour, LAeq,1hour.

The WHO criteria was reviewed in a report by the National Physics Laboratory which states:

"Exceedance of the WHO guideline values does not necessarily imply significant noise impact and indeed, it may be that significant impacts do not occur until much higher levels of noise exposure are reached."

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Therefore it is not necessarily the case that where these levels are exceeded, the noise will adversely affect nearby residential properties.

#### **11.3.4 Sport England – Design Guidance Note – Artificial Grass Pitch (AGP) Acoustics – Planning Implications (2015)**

In 2015, guidance on the acoustics of AGPs was introduced by Sport England to encourage good design for sports facilities and introduce awareness right at the initial through to the final stages of the design process.

The guidance highlights the importance of considering the noise impact on the nearby neighbours to the proposal and that this is considered at an early stage in the planning and design of the AGP. The guidance states that when considering the development of an AGP, the issues of noise should be addressed by following the criteria set out in both The National Planning Policy Framework and Local Planning Authority planning policies.

There are no specific noise criteria for an AGP and therefore the guidance sets out criteria which is the most relevant for the noise assessment of AGP noise levels. The relevant noise guidance for an AGP is the World Health Organisation ‘Guidelines for Community Noise.

The guidance provides not only a comparison to the WHO acceptable noise levels but also considers an alternative assessment methodology for the comparison of AGP noise against the existing noise climate where a ‘slight’ impact is considered for an increase less than 3 decibels. This is the minimum level that can normally be perceived and therefore it is proposed that noise from the AGP would not exceed the existing noise climate for this ‘slight’ change in noise level.

Typical noise levels from AGPs are given which have been measured at 10 metres behind the mid-way point along goal and sidelines for AGP sessions. Noise levels were found to be the highest behind the sideline halfway line. The most significant noise source from typical AGP sports sessions was found to be due to the voice. A typical free-field noise level from an AGP at 10 metres from the sideline halfway marking is 58 dB(A)  $L_{Aeq,1hour}$ .

The guidance provides mitigation measures to reduce the impact sound levels from balls hitting the fencing, and the use of screening to reduce the noise levels at nearby residential dwellings.



The guidance states that where suitable noise mitigation measures are in place, it is considered that acceptable noise levels can be achieved for the majority of AGP sites and are likely to operate without adversely affecting neighbouring residential properties.

**11.3.5 British Standard BS 8233:2014 – Guidance on sound insulation and noise reduction in buildings**

The British Standard BS 8233:2014 ‘Guidance on sound insulation and noise reduction in buildings’ is used along with the World Health Organisation (WHO, 1999) ‘Guidelines for community noise’ to assess the noise levels experienced both internally (living rooms, bedrooms etc) and externally (residential amenity areas). The widely used acceptable noise levels are given in Table 11.1 below.

**Table 11.1: Guideline noise levels**

Location	Daytime	Night-time
Outdoor	50 dB L <sub>Aeq,16hour</sub>	45 dB L <sub>Aeq,8hour</sub>
	55 dB L <sub>Aeq,16hour</sub>	60 dB L <sub>AFmax</sub>
Indoor	35 L <sub>Aeq,16hour</sub>	30 dB L <sub>Aeq,8hour</sub>
		45 dB L <sub>AFmax</sub>

Noise Rating (NR) curves are widely used for assessing the impact of low frequency sounds to provide a target level. This approach provides an absolute sound limit level for each frequency band, whereas using an A-weighted level, the allowable low frequency components depend on sound levels in other bands.

It is shown that the relationship between NR curves and dBA values is approximately  $NR \approx dBA - 6$ . Using the internal guideline values for dwellings in Table 11.1, suitable target levels can be derived.

For daytime resting in bedrooms, it is generally acceptable to design a target level of NR20/NR25 which is likely to meet an internal level of 35 dBA. For the night-time, it is more appropriate to achieve NR15/NR20 which is likely to meet an internal level of 30 dBA.

BS 8233 states that in some design cases, an allowance of up to 5 dB can be added to the internal noise levels for dwellings where external noise levels are higher in urban/inner city living areas.

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The upper guideline value would be acceptable in noisier environments, and it is recognised that the guideline values are not always achievable in all circumstances in higher noise areas such as city centres or urban areas that are located close to strategic transport networks. In any case, it is recommended that efforts are made to achieve the lowest practicable levels in external amenity spaces.

Assessments using the  $L_{AFmax}$  levels are mostly applicable when assessing the internal noise levels due to transportation sources. Research on sleep disturbance due to noise is shown based on maximum noise levels from transportation sources such as aircraft, rail, and road noise events.

### **11.3.6 International Standard ISO 9613-2:1996 – Attenuation of sound during propagation outdoors**

The International Standard ISO 9613-2:1996 ‘Attenuation of sound during propagation outdoors’ is used to calculate the attenuation of sound due to different physical effects encountered over the travelled path from the source to the receiver such as ground effects, screening, meteorology, and air absorption.

### **11.3.7 British Standard BS 4142:2014 – Methods for rating and assessing industrial and commercial sound**

The British Standard BS 4142:2014 provides guidance on assessing the impact of noise on sensitive receptors. It describes methods for rating and assessing sound of an industrial and commercial nature and provides steps for determining noise levels at outdoor locations such as from proposed or current sound sources.

A rating level is compared to the measured background level at the assessment location where typically the greater the difference between the two, the greater the magnitude of the impact, depending on the context. The lower the rating level compared to the background level the less likely the specific sound source will have an adverse or significant adverse impact:

- a difference between the rating level and the background sound level of +5 dB indicates likelihood of adverse impact, and
- a difference between the rating level and the background sound level of +10 dB indicates a significant adverse impact depending on the context.

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The rating level is determined using acoustic feature corrections which could increase the significance of impact at the assessment location. Objective methods are outlined in detail in the standard. For this brief summary, subjectively, the methods include:

*Tonality* - A correction of +0 to +6 dB is given for tonality where +2 dB is given for tones which are just perceptible, +4 dB which is clearly perceptible and +6 dB which is highly perceptible at the NSR

*Impulsivity* - A correction of up to +9 dB can be given to a sound which is highly impulsive, considering the rapidity of the change in sound level and the overall change in sound level. A penalty of +3 dB is given for impulsivity which is just perceptible, +6 dB which is clearly perceptible and +9 dB where the sound is highly perceptible at the NSR.

*Intermittency* - Where identifiable on/off conditions are noted, a penalty of +3 dB can be applied if the intermittency is readily distinctive against the residual acoustic environment.

Other sound characteristics - Where the specific sound features characteristics that are neither tonal nor impulsive but are considered readily distinctive against the residual acoustic environment, a penalty of +3 dB can be applied.

### **11.3.8 British Standard BS 5228:2009 – Code of practice for noise and vibration control on construction and open sites**

The British Standard BS 5228:2009+A1:2014 provides a code of practice for noise and vibration control on construction and open sites. The standard is separated into two parts to consider noise and vibration separately.

Procedures are recommended for noise and vibration control to assist architects, contractors and site operatives, designers, developers, engineers, local authority environmental health officers and planners.

Guidance is given concerning methods for predicting and measuring noise and assessing its impact on those exposed to it. Considerations are given which are likely to affect the acceptability of noise arising from construction and open sites.

In the past, fixed noise limits have been used to determine when construction noise could be significant. These limits outside the nearest window of the occupied room closest to the site boundary between 0700 and 1900 are given as:

- 70 dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise;
- 75 dB(A) in urban areas near main roads in heavy industrial areas.

For the hours 1900 to 2200, the allowable noise level from building sites will be less such as a reduction of 10 dB(A).

The above principle has since been expanded to determine the potential significance based upon the change in the ambient noise level with the construction noise using the ABC method. This gives a threshold of potential significant effect at dwellings when the site noise level, rounded to the nearest dB exceeds the listed value. The example threshold of potential significant effect at dwellings is given by:

**Table 11.2: Example threshold of potential significant effect at dwellings**

Assessment category and threshold value period	Threshold value, in decibels (dB) $L_{Aeq,T}$		
	Category A	Category B	Category C
Night-time (2300 – 0700)	45	50	50
Evenings and weekends	55	60	65
Daytime (0700 – 1900) and Saturdays (0700 – 1300)	65	70	75

Another method can be used where noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB  $L_{Aeq,T}$  from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.

Where construction works involve long-term substantial earth moving, the Technical Guidance in the National Planning Policy Framework states:

“Subject to a maximum of 55 dB(A) LAeq,1hour (free field), mineral planning authorities should aim to establish a noise limit at the noise-sensitive property that does not exceed the background level by more than 10 dB(A). It is recognised however that in many circumstances it will be difficult to not exceed the background level by more than 10 dB(A) without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near to that level as practicable during normal working hours (0700 – 1900) and should not exceed 55 dB(A) LAeq,1hour (free field). Evening (1900 – 2200) limits should not exceed background level by more than 10 dB(A) and night-time limits should not exceed 42 dB(A), LAeq,1hour at noise-sensitive dwellings.”

It is suggested that the limit of 55 dB LAeq,1hour is adopted for daytime construction noise for these types of activities but only where the works are likely to occur for a period in excess of six months.

BS5228-2:2009+A1:2014 summarises the limits for transient vibration, above which cosmetic damage could occur. Vibration impact is most likely to occur during the construction phase for the proposed development. The vibration thresholds are presented in the Table 11.3 below for the type of building and associated frequency range.

**Table 11.3: Transient vibration guide values for cosmetic damage**

Types of building	Peak components particle in	
Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	50 mm/s at 4 Hz and above
Unreinforced or light framed structures Residential or light commercial buildings	15 mm/s at 4 Hz and increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

## 11.4 Baseline Noise Monitoring

Noise monitoring has been carried out to determine the typical ambient, background and maximum sound levels at the proposed residential development site using both attended and unattended surveys.

The noise and weather monitoring equipment used throughout is given in Table 11.4. The sound level meters were calibrated before and after each measurement and no observed drift was present. Current and traceable calibration certificates are available on request.

**Table 11.4: Equipment used throughout the surveys**

Item	Model	Serial No.
Calibrator	CR515	64596
Microphone	MK224	213330D
Sound Level Meter	CR171B	G061955
Weather Station	Vantage VUE	-
Calibrator	CAL200	19045
Microphone	MC230A	A21026
Sound Level Meter	XL2-TA	A2A

Attended measurements have been completed on 24th January 2024 to determine the local soundscape during the daytime hours. At the time of measurement, weather conditions were dry, with light wind below 5 m/s and clear sky. The results are provided in Table 11.5. The noise monitoring locations are shown in Figure 11.2.

Figure 11.2: Baseline noise monitoring locations





**Table 11.5: Measured 15 minute sound pressure levels on 24th January 2024**

Location	Start Time	Sound Pressure Level (dB re 20 microPa)		
		LAeq,T	LAFmax	LAF90
NML4	1136	52	73	40
	1259	45	69	37
NML5	1212	58	76	50
	1324	58	74	50
NML6	1235	58	85	51
	1350	57	68	52
NML1	1225	54	78	44
	1305	53	66	41
NML3	1248	62	93	46
	1332	52	68	51

**Table 11.6: Unattended baseline noise monitoring completed in January 2024**

Type	Start	Duration	LAFmax (dB)	LA eq (dB)	LAFmax
					90.0% (dB)
Day (7)		2:12:40:00	78.2	48.7	42.4
Day	2024-01-24 14:09:32	8:00:00	70.8	45.8	
Day	2024-01-25 07:00:00	16:00:00	75.2	49.6	
Day	2024-01-26 07:00:00	16:00:00	73.1	46.4	
Day	2024-01-27 07:00:00	16:00:00	78.2	47.7	
Day	2024-01-28 07:00:00	4:40:00	75.2	53.8	
Night (6)		1:8:00:00	74.9	47.9	34.5
Night	2024-01-24 23:00:00	8:00:00	68.3	51.4	
Night	2024-01-25 23:00:00	8:00:00	74.2	42.1	
Night	2024-01-26 23:00:00	8:00:00	60.5	39.2	
Night	2024-01-27 23:00:00	8:00:00	74.9	49.3	
Evening (6)		16:00:00	74.7	46.7	40.9
Evening	2024-01-24 19:00:00	4:00:00	65.9	45.1	
Evening	2024-01-25 19:00:00	4:00:00	74.7	47.3	
Evening	2024-01-26 19:00:00	4:00:00	71.3	44.6	
Evening	2024-01-27 19:00:00	4:00:00	65.0	48.7	



**Table 11.7: Unattended baseline noise monitoring completed in February 2024**

Day (5)		2:14:23:53	76.1	47.6	38.2
Day	2024-02-16 13:09:16	9:20:00	73.4	46.3	
Day	2024-02-17 07:00:00	16:00:00	73.9	48.1	
Day	2024-02-18 07:00:00	16:00:00	74.7	47.4	
Day	2024-02-19 07:00:00	16:00:00	76.1	47.0	
Day	2024-02-20 07:00:00	5:03:53	74.3	49.3	
Night (4)		1:8:00:00	63.3	39.1	27.3
Night	2024-02-16 23:00:00	8:00:00	62.8	37.5	
Night	2024-02-17 23:00:00	8:00:00	63.3	35.5	
Night	2024-02-18 23:00:00	8:00:00	63.3	37.9	
Night	2024-02-19 23:00:00	8:00:00	62.8	42.3	
Evening (4)		16:00:00	73.4	44.0	34.5
Evening	2024-02-16 19:00:00	4:00:00	73.4	46.5	
Evening	2024-02-17 19:00:00	4:00:00	63.5	41.3	
Evening	2024-02-18 19:00:00	4:00:00	62.3	43.0	
Evening	2024-02-19 19:00:00	4:00:00	71.7	43.7	

## 11.5 Noise Impact Assessment

The noise impact assessment considers the potential noise levels at the nearest noise sensitive receptors for proposed development of sports pitches and construction works for the daytime hours 0700 to 2300 only.

The noise levels are assessed in terms the current guidance for the operational phase of the sports pitches and using the likely significance of construction noise based on the measured baseline sound levels and the guidance for the significance of noise effects of permanent residential buildings.

### 11.5.1 Receptors

The noise impact is assessed for the nearest dwellings to the proposed development site and construction works and the locations are provided in Table 11.8.

**Table 11.8: Noise sensitive receptors**

NSRs	Noise Model ID	Co ordinates XY (m)
21-40 St Phelim's Pl	16 to 21	241662,304300
St Phelim's Pl	22	241704,304383
Royal School	23	241862,304169
Kilnavara Heights	11 to 15	241629,304192
Kilnavarragh Ln	1 to 9	241506,303712
Kilnavarragh Ln	10	241503,303477
St Brigids Terrace/Dublin Rd	Building Evaluation	242148,304039

### 11.5.2 Assessment Criteria

There are currently no specific criteria for assessing noise levels from AGPs. The most significant noise source from typical AGP sports sessions is voice. Considering this, the following assessment criteria is given in Table 11.9 which the assessment shall be carried out to.

**Table 11.9: Guideline for assessment of outdoor noise levels.**

Guidance	Parameter	Criteria	Comment
WHO	L <sub>Aeq,16hour</sub>	≤ 55 dB	To protect people from serious annoyance
	L <sub>Aeq,16hour</sub>	≤ 50 dB	To protect people from moderate annoyance
Sports England	L <sub>Aeq,1hour</sub>	≤ 50 dB	To achieve 35 dB indoor level assuming 15 dB reduction from opening windows
BS 8233	L <sub>Aeq,16hour</sub>	≤ 55 dB	Considered acceptable
	L <sub>Aeq,16hour</sub>	≤ 50 dB	Desirable

### 11.5.3 Noise Modelling Parameters

A noise model has been produced using CadnaA software which follows the international standard ISO 9613-2 for calculating the propagation of sound outdoors. The model accounts for parameters such as meteorological conditions, geometrical divergence with distance, ground effects, air absorption and attenuation due to screening. The noise modelling parameters are summarised in Table 11.10.

**Table 11.10: Noise model parameters.**

Parameter	Details
Standards/Guidelines	ISO 9613-2
Digital Terrain Model	2m OSI Height Data Extract
Ground Absorption	G = 0.5 for mixed ground
Grid Height	1.5m
Source Sound Levels	AGP and Crowds Guidance
Source Location	Architects drawings

The sports pitch noise levels are based on the published data found in AGP guidance Sport England. Based on the current and best practice guidance, the noise model assumes the following inputs:

- A typical free-field noise level from an AGP (at 10m from the sideline halfway marking) is 58 dB  $L_{Aeq,1hour}$

Spectator noise level for the pitches are based on calculations for crowd noise sound power levels given in the Prediction of Noise from Small to Medium Sized Crowds (Hayne, Taylor et al Proceedings of Acoustics 2011) and is calculate using the following equation:

$$L_{WAeq} = 15\log N + 64 \text{ dB(A)} \quad (1)$$

Where N is the number of people in the crowd. The crowd sizes have been based on information provided by McAdam Design for each sports pitch and have been modelled based on a day to day occupancy. The following crowd sizes have been modelled:

- Athletics track, stand and soccer pitch infield day to day 20 spectators,
- Hockey pitch day to day 15 spectators,
- Covered arena day to day 25 spectators,
- Multisport pitch and stand day to day 15 spectators,
- GAA pitch and stand day to day 12 spectators,
- 3x GAA training pitches day to day 10 spectators per pitch

#### 11.5.4 Noise Modelling Results

The predicted noise levels due to sport pitches and spectator noise are shown in Table 11.11 and Table 11.12. The residual noise levels are shown for proposed mitigation measures using a noise barrier and are summarised in Table 11.13.

The noise model maps are provided in Appendix 11.2 which correspond to the predicted noise levels at each noise sensitive receptor shown in the tables below.

**Table 11.11: Predicted noise levels at the noise sensitive receptors from sport pitch activity noise**

NSR	Linear octave band centre frequency (Hz)							Total dB(A)
	63	125	250	500	1000	2000	4000	
NSR18	43	41	37	38	41	41	40	47
NSR16	45	43	38	41	45	44	42	50
NSR6	46	44	42	43	45	45	42	51
NSR7	46	45	43	44	47	46	44	52
NSR8	45	44	43	45	47	46	44	52
NSR9	46	46	45	46	48	48	46	53
NSR4	42	42	42	42	42	42	39	48
NSR3	41	41	43	43	42	41	38	47
NSR2	42	41	41	41	42	40	36	46
NSR1	41	41	41	40	40	39	34	45
NSR12	36	37	36	36	34	32	24	39
NSR14	36	36	35	35	35	33	29	40
NSR15	34	34	33	33	33	32	27	38
NSR5	42	42	42	43	44	44	40	49
NSR10	47	44	42	44	46	46	44	52
NSR11	37	36	36	36	35	32	25	39
NSR13	35	34	34	34	34	32	27	39
NSR17	41	41	37	40	42	43	40	48
NSR19	38	38	36	38	41	40	38	46
NSR20	36	36	35	36	39	38	35	43
NSR21	41	39	36	37	40	39	36	45
NSR22	42	40	36	38	41	40	38	46
NSR23	41	43	42	43	45	45	44	51

Table 11.11 shows the 50 dB(A) level is exceeded at noise sensitive receptors to the south west of the proposed development site by up to 3 dB(A) for the operational phase due to the sports pitch activity. It is understood NSR23, the Royal School, is deemed a benefactor of the proposed development site and will have access to the sports pitch to the north during school hours.

**Table 11.12: Predicted noise levels at the noise sensitive receptors from sport pitch and spectator activity noise**

NSR	Linear octave band centre frequency (Hz)							Total dB(A)
	63	125	250	500	1000	2000	4000	
NSR18	43	41	37	38	41	41	40	47
NSR16	45	43	38	41	45	45	42	50
NSR6	46	44	42	43	45	45	42	51
NSR7	46	45	43	44	47	46	44	52
NSR8	45	44	43	45	47	46	44	52
NSR9	46	46	45	46	48	48	46	53
NSR4	42	43	42	42	42	42	39	48
NSR3	41	41	43	43	42	41	38	47
NSR2	42	41	41	41	42	41	36	46
NSR1	41	41	41	40	40	39	34	45
NSR12	36	37	36	36	34	32	24	39
NSR14	36	36	35	35	35	33	29	40
NSR15	34	34	33	33	33	32	27	38
NSR5	42	42	42	43	44	44	40	49
NSR10	47	44	42	44	46	46	44	52
NSR11	37	36	37	36	35	32	25	39
NSR13	35	34	34	34	34	32	27	39
NSR17	41	41	37	40	42	43	40	48
NSR19	38	38	36	38	41	40	38	46
NSR20	37	36	35	37	39	38	35	44
NSR21	41	39	36	37	40	39	36	45
NSR22	42	40	36	38	41	40	38	46
NSR23	42	43	42	43	45	45	44	51

Table 11.12 shows the predicted noise levels for both the operating sports pitches with spectator noise levels remain unchanged at the noise sensitive receptors when compared to the predicted noise levels in Table 11.11.

**Table 11.13: Predicted noise levels at the noise sensitive receptors from sport pitch and spectator activity noise including a noise barrier**

NSR	Linear octave band centre frequency (Hz)							Total dB(A)
	63	125	250	500	1000	2000	4000	
NSR18	43	41	37	38	41	41	40	47
NSR16	45	43	38	41	45	45	42	50
NSR6	43	42	42	42	41	40	36	46
NSR7	44	43	43	42	42	41	38	47
NSR8	43	43	43	43	42	41	38	47
NSR9	44	43	44	44	44	42	39	49
NSR4	42	42	42	41	40	38	32	44
NSR3	41	41	42	41	40	38	32	44
NSR2	40	40	40	40	39	37	32	44
NSR1	40	40	40	39	38	36	30	42
NSR12	36	37	36	36	34	32	24	39
NSR14	36	36	35	35	35	33	29	40
NSR15	34	34	33	33	33	32	27	38
NSR5	42	42	41	41	41	39	35	45
NSR10	41	41	42	42	42	41	38	47
NSR11	37	36	37	36	35	32	25	39
NSR13	35	34	34	34	34	32	27	39
NSR17	41	41	37	40	42	43	40	48
NSR19	38	38	36	38	41	40	38	46
NSR20	37	36	35	37	39	38	35	44
NSR21	41	39	36	37	40	39	36	45
NSR22	42	40	36	38	41	40	38	46
NSR23	42	43	42	43	45	45	44	51

The predicted noise levels for the cumulative sports pitches with spectator noise for a 2m high noise barrier along the south / south west of the proposed development site show the guideline noise level of 50 dB(A)  $L_{Aeq,1hour}$  for amenity spaces is not exceeded. The noise map results are shown in Appendix 11.2.

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### 11.5.5 Road Traffic Assessment

The proposed development vehicle 'in/out' movements provided by the traffic consultant show that the highest peak times are predicted to be:

- Thursday 1915 where 63 movements out and 29 movements in to the proposed development, and
- Saturday 1300 where 60 movements out and 14 movements in to the proposed development.

The noise levels due to the number of passing vehicles per hour for a given speed have been modelled to determine the likely noise levels due to the proposed development vehicle movements at peak times. The noise map results are presented in Appendix 11.2.

For a vehicle sound power level of 96 dB(A) and travelling at 32 km/h, the predicted noise levels for the highest peak scenario for proposed traffic flows into and out of the proposed development are shown to be below  $L_{Aeq,1hour}$  50 dB(A) at the nearest noise-sensitive receptor to the development site. The introduction of vehicle movements in and out of the proposal is shown to not be significant in terms of noise impact at the nearest noise sensitive receptors.

### 11.5.6 Cumulative Impact Assessment

The predicted cumulative noise levels at the noise sensitive receptors due to the proposed development site operational phase is shown in Table 11.14.

The predicted cumulative noise levels do not exceed the guideline level of 50 dB(A) at the nearest noise sensitive receptors.

**Table 11.14. Predicted cumulative noise levels due to the proposed development site**

NSR	Linear octave band centre frequency (Hz)							Total dB(A)
	63	125	250	500	1000	2000	4000	
NSR18	43	41	37	39	41	41	40	47
NSR16	45	43	38	41	45	45	42	50
NSR6	43	42	42	42	41	40	36	46
NSR7	44	43	43	42	42	41	38	47
NSR8	43	43	43	43	42	41	38	47
NSR9	44	43	44	44	44	42	39	49
NSR4	42	42	42	41	40	38	32	44
NSR3	41	41	42	41	40	38	32	44
NSR2	40	40	40	40	39	37	32	44
NSR1	40	40	40	39	38	36	30	42
NSR12	37	37	36	36	35	32	24	39
NSR14	36	36	35	35	35	33	29	40
NSR15	34	34	33	33	33	32	27	38
NSR5	42	42	41	41	41	39	35	45
NSR10	41	41	42	42	42	41	38	47
NSR11	37	36	37	36	35	32	25	39
NSR13	35	34	34	34	34	33	27	39
NSR17	41	41	37	40	42	43	40	48
NSR19	38	38	36	38	41	40	38	46
NSR20	37	36	35	37	39	38	35	44
NSR21	41	39	36	37	40	39	36	45
NSR22	42	40	36	38	41	40	38	46
NSR23**	42	43	42	44	45	45	44	51
BE*	-	-	-	-	-	-	-	49

\*denotes highest noise level from building evaluation due to road traffic noise sensitive receptors as shown in noise model map 3A in Appendix 11.2

\*\*considered a benefactor of the site with use of the sports pitch to the north and therefore is not considered noise sensitive

The predicted cumulative noise levels are compared to the baseline measured sound levels at the noise sensitive receptors where the daytime  $L_{Aeq,16hour}$  and evening  $L_{Aeq,4hour}$  for the baseline monitoring completed in January 2024 is 49 dB(A) and 47 dB(A) respectively, and 48 dB(A) and 44 dB(A)



respectively for February 2024 noise monitoring location. For the purposes of the nearest noise sensitive receptors to the baseline measurement locations, NSRs 1 to 10 are considered representative of the baseline monitoring completed at the January 2024 monitoring location, and NSRs 11 to 23 at the February 2024 monitoring location.

**Table 11.15: Comparison of predicted noise levels in Table 11.4 to baseline monitoring levels in Table 11.6 and Table 11.7**

NSR	Daytime L <sub>Aeq,16hr</sub> dB(A)	Change in noise level dB(A)	Evening L <sub>Aeq,4hour</sub> dB(A)	Change in noise level dB(A)
NSR18	48	0	44	3
NSR16	48	2	44	6
NSR6	49	0	47	0
NSR7	49	0	47	0
NSR8	49	0	47	0
NSR9	49	0	47	2
NSR4	49	0	47	0
NSR3	49	0	47	0
NSR2	49	0	47	0
NSR1	49	0	47	0
NSR12	48	0	44	0
NSR14	48	0	44	0
NSR15	48	0	44	0
NSR5	49	0	47	0
NSR10	49	0	47	0
NSR11	48	0	44	0
NSR13	48	0	44	0
NSR17	48	0	44	4
NSR19	48	0	44	2
NSR20	48	0	44	0
NSR21	48	0	44	1
NSR22	48	0	44	2
NSR23*	48	3	44	7

\*school is not considered noise sensitive receptor due to use of sports facilities

The highest change in noise level for the daytime period is shown to be at NSR16 with an increase of +2 dB(A) when compared to the measured baseline ambient sound pressure level.

The highest change in noise level for the evening time period is shown to be at NSR16 with an increase of +6 dB(A) when compared to the measured baseline ambient sound pressure level.

The predicted noise levels presented are worst case and the cumulative noise levels do not exceed 50 dB(A) at the NSRs external amenity.

The noise introduced by the proposed development sports pitches is likely to be at or below the lowest observed adverse effect level at the noise sensitive receptors and is not considered to introduce a significant observed adverse effect.

### 11.5.7 Plant Noise Assessment

External plant has been provided which is located at roof level of building 1 shown on drawing 9955\_JCP\_ZZ\_00\_DR\_M\_5001-P03. The sound pressure levels for the plant units are provided in the summary **Error! Reference source not found.** below and sound power levels used in the noise model.

**Table 11.16: Proposed items of plant**

ID	Plant item	Provided Sound Pressure level L <sub>p</sub> dB(A)	Modelled Sound Power Level L <sub>w</sub> dB(A)
1	4x heat pumps	56 dB(A) @ 3m	74
2	4x heat pumps	70 dB(A) @ 3m	88
3	3x heat pumps	56 dB(A) @ 3m	74
4	2x AC split units	54 dB(A) @ 3m	72
5	AHU	36 dB(A) @ 3m	54
6	3x heat pumps	70 dB(A) @ 1m	78
7	AHU	36 dB(A) @ 3m	54
8	VRF	58 dB(A) @ 3m	76
9	AHU	36 dB(A) @ 3m	54
10	AHU	50 dB(A) @ 3m	68
11	AHU	50 dB(A) @ 3m	68
12	AHU	50 dB(A) @ 3m	68

ID	Plant item	Provided Sound Pressure level L <sub>p</sub> dB(A)	Modelled Sound Power Level L <sub>w</sub> dB(A)
13	AHU	50 dB(A) @ 3m	68
14	AHU	50 dB(A) @ 3m	68
15	AHU	50 dB(A) @ 3m	68
16	AHU	50 dB(A) @ 3m	68
17	AHU	50 dB(A) @ 3m	68
18	AHU	50 dB(A) @ 3m	68
19	AHU	50 dB(A) @ 3m	68
20	AHU	50 dB(A) @ 3m	68
21	AHU	36 dB(A) @ 3m	54
22	VRF	58 dB(A) @ 3m	76
23	AC split	54 dB(A) @ 3m	72

Predicted noise levels due to the plant at rooftop level have been provided which show the potential noise levels at the noise sensitive receptors. The results are shown in Table 11.17 along with the BS 4142 rating level after applying an acoustic feature correction of +3 dB due to introducing new plant.

**Table 11.17: BS 4142 assessment for the proposed items of plant**

Receptor	Predicted plant noise level L <sub>s</sub> dB(A)	Acoustic feature correction dB	Rating Level L <sub>r</sub> dB(A)
NSR18	26	3	29
NSR16	25	3	28
NSR6	28	3	31
NSR7	27	3	30
NSR8	27	3	30
NSR9	26	3	29
NSR4	31	3	34
NSR3	28	3	31
NSR2	28	3	31
NSR1	31	3	34
NSR12	30	3	33
NSR14	28	3	31
NSR15	26	3	29
NSR5	29	3	32

Receptor	Predicted plant noise level L <sub>s</sub> dB(A)	Acoustic feature correction dB	Rating Level L <sub>r</sub> dB(A)
NSR10	27	3	30
NSR11	31	3	34
NSR13	29	3	32
NSR17	25	3	28
NSR19	24	3	27
NSR20	23	3	26
NSR21	23	3	26
NSR22	20	3	23
NSR23	27	3	30

The highest predicted rating level at the noise sensitive receptors is 34 dB(A) due to the cumulative impact of the proposed rooftop plant for the proposal. The most commonly occurring background sound level determined from the baseline noise monitoring results is 44 dB(A) for the daytime.

The predicted plant noise levels are below the measured background sound level at the noise sensitive receptors and therefore results in no impact for the proposed plant noise.

#### 11.5.8 Assessment of the Significance of Noise and Vibration Levels

The LOAELs and SOAELs for construction noise and vibration are taken from those presented in BS 5228-1/2:2009 and BS 6472-1:2008. The significance of noise effects are shown in Table 11.18:1 below. The contactor carrying out the construction works for this proposal is to ensure that the noise and vibration levels set out in Table 11.18, Table 11.19 and Table **Table 11.11.20** are met and that the levels are below the SOAEL.

**Table 11.18:1 Significance of noise effects for the outside façade of permanent residential buildings**

Day	Time Period	Averaging Time, T	Lowest Observed Adverse Effect Level, $L_{Aeq,T}$ dB	Significant Observed Adverse Effect Level, $L_{Aeq,T}$ dB
Monday to Friday	0700 - 0800	1h	60	70
	0800 - 1800	10h	65	75
Friday	1800 - 1900	1h	60	70
	1900 - 2200	3h	55	65
	2200 - 0700	1h	45	55
	0700 - 0800	1h	60	70
Saturday	0800 - 1300	5h	65	75
	1300 - 1400	1h	60	70
	1400 - 2200	3h	55	65
	2200 - 0700	1h	45	55
	0700 - 2100	1h	55	65
Sunday and Public Holidays	2100 - 0700	1h	45	55

**Table 11.19: Guidance on effect of vibration levels in terms of peak particle velocity (PPV).**

Vibration level <sup>16</sup>	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

<sup>16</sup> Table 1 gives guidance on the effects of vibration levels within a building and are therefore internal levels. The magnitude of values apply to a position representative to the point of entry of the person. These values are an initial indication of potential affects, and assessment with BS 6471-1 or -2 might be appropriate where varying exposure is likely to give rise to adverse comment.

**Table 11.20: Guidance on effects of vibration levels in terms of vibration dose value (VDV)**

Place and time	Low probability of adverse comment <sup>17</sup>	Adverse comment possible	Adverse comment probable <sup>18</sup>
Residential buildings 16 h day	0.2 to 0.4 ms <sup>-1.75</sup>	0.4 to 0.8 ms <sup>-1.75</sup>	0.8 to 1.6 ms <sup>-1.75</sup>
Residential buildings 8 h night	0.1 to 0.2 ms <sup>-1.75</sup>	0.2 to 0.4 ms <sup>-1.75</sup>	0.4 to 0.8 ms <sup>-1.75</sup>

### 11.5.9 Construction Works Noise Levels

Detailed construction work phases and plant items have not been provided to date and therefore assumptions for essential site preparation works and noise levels have been assumed for the purpose of the assessment.

The proposed construction site working hours are:

- 0730 to 1800 Monday to Friday
- 0800 to 1300 Saturday
- Closed on Sundays and Bank Holidays

BS 5228-1:2009 gives typical plant item noise levels which have been measured at a distance of 10m. Predicted noise levels are provided based on best available data at the time of the assessment. The type of construction activities are summarised in Table 11. below.

**Table 11.21: BS 5228-1:2009 Sound level data for on site preparation**

Equipment / Activity	A-weighted sound pressure level, L <sub>Aeq,T</sub> dB(A) at 10m
Clearing site – 20 tonne dozer 142 kW (ref no. C2 1)	75
Clearing site – 71 tonne tracked excavator 301 kW (ref no. C2 2)	77
Ground excavation / earth works – 226 tonne tracked excavator 226 kW (ref no. C2 14)	79
Loading lorries – Wheeled loader 193 kW (ref no. C2 27)	80
Distribution of materials – 187 tonne articulated dump truck 306 kW (ref no. C2 33)	81

<sup>17</sup> Below these ranges adverse comment is not expected.

<sup>18</sup> Above these ranges adverse comment is very likely.

Rolling and compaction – 18 tonne roller 145 kW (ref no. C2 38)	73
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Table 11.22 below shows the predicted sound levels for every doubling of distance from the source measured at 10m. For distances below 80m from the source, the predictions show levels exceeding Category A (threshold value 65 dB(A) for daytime).

**Table 11.22: Predictions at distances from source using BS 5228-1:2009 Sound level data**

Equipment/Activity	Predicted A weighted sound pressure level, $L_{Aeq,T}$ dB(A) at distance, m					
	10	20	40	80	160	320
Clearing site – 20 tonne dozer 142 kW (ref no. C2 1)	75	69	63	57	51	45
Clearing site – 71 tonne tracked excavator 301 kW (ref no. C2 2)	77	71	65	59	53	47
Ground excavation / earth works – 226 tonne tracked excavator 226 kW (ref no. C2 14)	79	73	67	61	55	49
Loading lorries – Wheeled loader 193 kW (ref no. C2 27)	80	74	68	62	56	50
Distribution of materials – 187 tonne articulated dump truck 306 kW (ref no. C2 33)	81	75	69	63	57	51
Rolling and compaction – 18 tonne roller 145 kW (ref no. C2 38)	73	67	61	55	49	43

The approximate distances of the NSRs to the proposed construction work locations are given in Table 11. below. For the distance, predictions are provided in **Error! Reference source not found.** for the sound pressure level at the NSR for each type of equipment and activity during construction works.

**Table 11.23: Approximate distance of the NSRs to the proposed construction works locations**

NSR	Approximate Distance to Construction Activity, m
21-40 St Phelim's Pl	20
St Phelim's Pl	20
Royal School	20
Kilnavara Heights	60
Kilnavarragh Ln	20
Kilnavarragh Ln	20

The noise sensitive receptors identified which could result in potential higher noise levels and therefore more likely of a noise impact are those that are closer to the constructions works and identified as:

- 21-40 St Phelim's Pl
- St Phelim's Pl
- Royal School
- Kilnavara Heights
- Kilnavarragh Ln
- Kilnavarragh Ln

**Table 11.24: Predicted sound level at the NSR locations due to construction activities**

NSR	Predicted sound level $L_{Aeq,T}$ dB(A) at NSR for each equipment and activity					
	Clearing site (1)	Clearing site (2)	Ground excavation	Loading lorries	Distributing materials	Rolling and compacting
21-40 St Phelim's Pl	69	71	73	74	75	67
St Phelim's Pl	69	71	73	74	75	67
Royal School	69	71	73	74	75	67
Kilnavara Heights	59	61	63	64	65	57
Kilnavarragh Ln	69	71	73	74	75	67
Kilnavarragh Ln	69	71	73	74	75	67

Based on BS5228-1:2009 threshold values given in Table 11.2, Category A is suggested for the threshold values for the closest receptors based on the measured noise levels from the baseline noise survey. Predicted sound levels from typical construction activities are shown to exceed the threshold value of 65 dB(A) at the noise sensitive receptors based on the approximate distance of the NSRs to the



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proposed construction areas. Given the proximity of the noise sensitive receptors, the predicted noise levels would indicate a significant adverse impact due to the construction works.

## **11.6 Mitigation AND CONTROL Measures**

### **11.6.1 Operational Mitigation Measures**

Once the construction works are complete, based on the predicted noise levels, the operational condition shall have a 2m noise barrier located along the south / south east boundary which shall attenuate the operational noise levels by at least 5 dB. The noise barrier is to be continuous in length with no gaps or holes and a minimum surface density of at least 10 kg/m<sup>2</sup>. The location of the noise barrier is shown in the noise model result in Appendix 11.2.

### **11.6.2 Construction Mitigation Measures**

A mitigation measure in the form of a 2m noise barrier is proposed around the perimeter of the site works adjacent to the noise sensitive receptors to break the line of sight between the construction works noise sources and the noise sensitive receptors. A noise barrier which covers line of sight is shown to attenuate noise levels by at least 5 dB. The noise barrier is to be continuous in length with no gaps or holes and a minimum surface density of at least 10 kg/m<sup>2</sup>.

At this stage it is not confirmed, however the contractor may use construction boarding for the works which would likely provide the attenuation shown for the scenario with mitigation.

Further measures to reduce noise levels which follow best practice guidance are:

- 1) Plan the hours of work to consider the effects of noise and vibration on noise-sensitive receptors, taking into account the existing ambient levels, the duration of works and consequences of pro-longed periods of work,
- 2) Quiet working methods should be chosen by identifying use of the most suitable plant and reasonable hours of operation for noisier operations. Large haulage vehicles should be constricted to arrive and leave the site between 0700 and 1900 during the week days, and 0700 to 1200 on Saturdays,
- 3) Noise is to be considered at source in the first instance. Noise control measures after the source are to be considered once the source is minimised as far as practically possible,
- 4) Regular monitoring of noise and vibration levels should be in place, to check compliance with the limits agreed at the noise-sensitive receptors, and keep in good relation with the community,
- 5) Appropriate signage should be displayed if high levels of noise is expected and where necessary, ear protectors should be provided.

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General site activities such as vehicle movements and excavations typically have low vibration levels. Low vibration methods should be used such as CFA piling techniques where vibration levels are minimal.

### 11.6.3 Neighborhood Notification

It is shown as best practice to keep in good relation with the community as construction works are being planned and also during the different phases of works. This can be achieved by letter drops to the surrounding neighbours that are potentially impacted due to noise and vibration which provides them with a scope of the works, timeline, and ways in which to get in contact to raise any concerns or complaints with the site manager. This method ensures that any neighbours concerns can be managed effectively and matters resolved quickly as necessary.

Although the predicted noise and vibration levels with mitigation are expected to be below SOAEL, it is proposed monitoring shall be used to determine if the thresholds are being exceeded and identify further measures to be implemented which reduce the noise and vibration levels to as low as reasonably practicable. Monitoring is recommended as a control measure if a complaint arises due to the on-going construction activities.

Contractors should be familiarised with the details provided in this report to highlight the locations of the noise sensitive receptors, how to implement the mitigation measures outlined and to be aware of best practice on site.

The contractor shall take a proactive approach to engage with the community to notify the nearest dwellings the schedule of works and measures in place to protect amenity from noise and vibration. Complaints are to be handled using a dedicated helpline where the contractor can respond to queries and/or complaints to the appointed person. If a complaint were to arise, the contractor shall act immediately to investigate:

- Date and time of the alleged complaint,
- Subjective description of the source of noise/vibration,
- Impact the noise/vibration source had on the complainant.

Following this information, the contractor shall then implement BPM to ensure the noise and vibration levels are sufficiently reduced to as low as reasonably practicable and notify the complainant of the

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measures taken. This may involve carrying out noise and vibration monitoring as indicated above using a suitably qualified person.

The contractor shall brief all operatives on the matters raised in this report within the site induction and daily 'tool box' talks delivered to staff on the importance of following best practice as outlined in BS 5228-1/2 to minimise noise and vibration levels whilst carrying out works.

MCL Consulting have carried out a noise impact assessment for the proposed regional sports campus in County Cavan, Ireland.

Noise modelling has been completed to determine the potential future noise impacts of the proposal at the nearest noise sensitive receptors.

The predicted noise levels without mitigation measures exceeded the guideline level of 50 dB(A) in the amenity spaces of noise-sensitive receptors.

Plant noise has been assessed according to BS 4142 for the proposed rooftop plant for the proposal. The predicted noise levels and rating level are below the measured background sound level for the noise sensitive receptors and therefore results in no impact.

Mitigation in the form of a noise barrier around the southern perimeter of the site showed that noise levels were reduced to achieve the 50 dB(A) guideline noise level in amenity spaces.

The cumulative noise impact of the proposed sports campus was modelled and predicted to not exceed a noise level of 50 dB(A) and is in line with the guideline level not to be exceeded for sports activities and the WHO guidance for external amenity.

The noise modelling predictions aim to provide a worst case in terms of future operational noise levels and are considered acceptable for the proposed development.

## REFERENCES

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- [1] British Standard BS 4142:2014, Methods for rating and assessing industrial and commercial sound (2019)
  - [2] British Standard BS 8233:2014, Guidance on sound insulation and noise reduction for buildings (2014)
  - [3] International Standard ISO 9613-2:1996 – Acoustics – Attenuation of sound during propagation outdoors. Part 2: General Method of Calculation
  - [4] BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures
  - [5] BS 5228-1/2:2009 Control of noise and vibration on construction and open sites
  - [6] BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings Part 1: Vibration sources other than blasting
  - [7] Sport England Design Guidance Note – Artificial Grass Pitch (AGP) Acoustics – Planning Implications – New Guidance (2015)
  - [8] World Health Organisation (WHO) Guidelines for Community Noise (1999)

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## 12.0 MATERIAL ASSESTS

### 12.1 Introduction

This Chapter describes material assets that are potentially impacted by the proposed development. The purpose of this assessment is to identify relevant material assets that are within the vicinity of the proposed development site or will be utilised by the development, to determine the impact, if any, on these resources, and propose mitigation where necessary to ensure that they are used in a sustainable manner.

Elements of the proposed development are discussed where relevant under appropriate sections of this chapter.

### 12.2 Scope of Assessment

Material assets are defined in the EPA Draft Advice Notes for Preparing Environmental Impact Statements (2015) as:

*“Resources that are valued and that are intrinsic to specific places [...] They may be either of human or natural origin. The assessment shall be concerned primarily with ensuring equitable and sustainable use of resources”.*

The characteristics of the potential impacts consider the following factors:

- Impacts on Population and Human Health
- Impacts on Biodiversity
- Impacts on Soils and Water
- Impacts on Air and Climate
- Impacts on Noise and Vibration
- Impacts on Cultural Heritage
- Impacts on Landscape and Visual Impact

These potential impacts are assessed within the designated Chapters of this Environmental Impact Environmental Statement, referenced here:

**Table 12.1: Potential Impact and Related Chapters**

ES Chapter	Assessment
Volume 2, Chapter 7, Population and Human Health	Air Quality Noise exposure Transport Lands, Soils and Waters Income and Employment Generation
Volume 2, Chapter 8, Biodiversity	Protected and Designated Sites, Habitats, Species
Volume 2, Chapter 9, Lands, Soils and Water	Geological and Geological Heritage Water Resources
Volume 2, Chapter 10, Air and Climate	Air Quality Atmospheric Dispersion
Volume 2, Chapter 11.0, Noise and Vibration	Noise and Vibration
Volume 2, Chapter 14, Cultural Heritage	Architectural Heritage Assets Intangible Cultural Heritage Assets
Volume 2, Chapter 15 Archaeology	Archaeological Assets
Volume 2, Chapter 16, Landscape and Visual Impact	Landscape Resource Perception of the Landscape Visual Amenity

No further assessment of the above impacts is included in this Chapter.

### 12.3 Roads & Traffic and Built Services

In consideration of material assets, the 2017 European Commission Guidance includes:

*'buildings, other structures, mineral resources, water resources.'*

The definition of 'Material Assets' in the EPA Revised Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (August 2017), lists Built Services, Roads and Traffic, and Waste Management as material assets and recommends the following topic areas to be assessed for Roads and Traffic and Built Services:

**Table 12.2: Material Assets and Considerations**

Material Asset	Considerations
Roads and Traffic	Construction Phase
	Operational Phase
Built Services	Electricity
	Telecommunications
	Water Supply Infrastructure
	Sewerage

The remainder of this chapter focuses on the assessment of the impacts on Built Services only. The assessment of Roads and Traffic is provided in Chapter 13. As there is no interface with rail or aviation infrastructure, no impacts on rail and aviation were anticipated.

## 12.4 Major Accidents and Disasters

Expected effects arising from the vulnerability of the Proposed development to risks of major accidents and/or disasters that are relevant to the Proposed development have been assessed in Chapter 17 of this EIAR.

## 12.5 Methodology

The methodology used for this study included consultation and desk-based research of published information on the relevant potentially impacted material assets.

The assessment was carried out in accordance with the requirements of the following relevant legislation:

- The Planning and Development Regulations 2001-2021, Schedule 6(2)(d);
- EU Directive 2011/92/EU on the assessment of the effects of certain public and private proposed developments on the environment (2011 EIA Directive).
- EU EIA Directive 2014/52/EU on the assessment of the effects of certain public and private proposed developments on the environment (2014 EIA Directive)

The following EPA Guidance was also consulted in order to complete the assessment:

- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002).

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- Advice Notes on Current Practices in the Preparation of Environmental Impact Statements (EPA 2003);
  - Revised Draft Advice Notes for Preparing Environmental Impacts Statements (EPA, September 2015);
  - Revised Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, August 2017);
  - European Commission Guidance on the Preparation of the Environmental Impact Assessment Report (2017).

The assessment criteria are based on the EPA Glossary of Impacts, included in the aforementioned 2017 EPA Draft Guidelines.

### **12.5.1 Statement on Limitations and Difficulties Encountered**

No limitations or difficulties were encountered during the assessment of the impacts on the material assets within the scope of this assessment.

## **12.6 Built Services**

### **12.6.1 Receiving Environment**

#### **Foul and Surface Water**

##### Existing Foul and Surface Water

The site is currently entirely greenfield and therefore does not have any foul water provisions. Foul gravity sewer mains currently run throughout Kilnavara Heights and along Kilnavarragh Lane to the west of the site and along College Street to the north east of the site. A combined gravity sewer main runs along the Dublin Road to the east of the site. College Street WWPS is located to the north east of the site.

Existing surface water drainage for site is detailed in Chapter 9 of this EIA Report, “Lands, Soils and Water”.

##### Proposed Foul and Surface Water

Wastewater infrastructure will be provided to the Sports Building and Sports Arena buildings to collect and transfer foul wastewater to the College Street WWPS. The toilet block associated with the GAA



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playing fields will be conveyed via gravity sewer discharging to a pumping station within Breffni Park grounds. Capacity within this pumping station is available for the connection of these flows.

All above ground drainage shall be designed and installed in compliance with BSEN 12056: 2010 and shall be suitably vented at roof level away from ventilation in-takes and natural ventilation openings. Drainage shall be complete with suitable gradients, supporting fixings and access points for maintenance in the event of blockages.

## **Water Supply**

### Existing Water Supply

The site is currently entirely greenfield and therefore does not have any existing water provisions. The site benefits from a 180mm HPPE Irish Water distribution main which runs along Kilnavarragh Lane.

### Proposed Water Supply

The domestic services shall be designed to comply with L8 legionella requirements, water regulations, building regulations and industry codes of practice whilst minimising the water usage from utility sources. The site shall be provided with 2 water supplies.

- There shall be a new fire main taken from Kilnavarragh Road. This shall generally be radial in nature but it shall feed a ring main formed around the proposed new building. The full ring shall be formed in the first phase of the scheme. This shall also serve internal fire fighting hoses. The mains from Kilnavarragh Road operates at a naturally higher pressure than the mains fed from the Dublin Road so is therefore more suited to meet any fire fighting need.
- A new domestic connection shall be formed from the mains in the Dublin Road. This mains shall serve all domestic usages within both phase 1 and phase 2 of the building. The route of the mains is convoluted and has several changes in elevation therefore the incoming mains shall be complete with suitably located sluice and venting points.

The incoming domestic supply shall be complete with boundary leak detection monitoring via the building management system. This shall take the form of low flow monitoring on both the boundary meter and the building meter. This shall identify any discrepancy in flow volume between each meter.

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## **Natural Gas Supply**

### Existing Natural Gas Supply

There is currently no natural gas supply within the receiving environment.

### Proposed Natural Gas Supply

There is no proposed natural gas supply within the receiving environment.

## **Electrical Supply**

### Existing Electrical Supply

The site is currently entirely greenfield and therefore does not have any existing electrical connections. There are a number of overhead cables which traverse the site. A MV three phase overhead line runs in a north-south direction through the site, to the west of the Royal School, before crossing the Cavan River and being converted to an underground line within the grounds of Breffni Park. Two other MV lines run north-south and east-west within the southern section of the site with a HV overhead line also running in an east-west direction in the southernmost portion of the site.

### Proposed Electrical Supply

A new ground mounted sub station is proposed to be established on the site to the rear of the new Pavilion. The substation shall provide power to the whole site. This shall be distributed and metered from a central switchroom adjacent to the sub station. Cabling to all parts of the site shall be carried out using underground cabling drawn into PVC ducts or run within soft ground.

## **Waste**

### Existing Waste Management

The site is currently entirely greenfield and therefore does not have any waste management requirements or provisions.

### Proposed Waste Management

The waste management strategy is based on a dedicated bin/waste storage area provided within a concrete compound area to the west of the Sports Building. Waste will be deposited into segregated recyclable and general waste bins in this area which will be managed by Cavan County Council including arrangement for collection by a regulated waste service collector on a weekly or more frequent basis.

## **Access**

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### Existing Access

As the majority of the site currently consists of agricultural lands, there is limited vehicular and pedestrian access. The lands immediately to the north and south of the Royal School, and to the east of the watercourse which runs through the centre of the site, can be accessed via the Royal School access road, from Dublin Road. The remainder of the lands are currently accessible via the entrance to Breffni Park car park and hence across a small bridge across the Cavan River.

### Proposed Access

Breffni Park currently has an emergency access point located to its north and east of the Royal School off the Dublin Road. It is proposed to convert this to become the main pedestrian and vehicular access point for the proposed development. A newly proposed bridge will provide access across the Cavan River to the main site car park and the remainder of the proposed development's various facilities.

A number of pedestrian access points are also proposed around the periphery of the site in order to improve overall accessibility and connectivity between the site, Cavan town centre and the remainder of the town.

For details, refer to Chapter 2 of this EIA Report, "Proposed Development".

## **12.6.2 Assessment of Significant Effects**

### **Do Nothing Impact**

In order to provide a qualitative and equitable assessment of the proposed development, the likely impacts upon the receiving environment were considered in the scenario, should no development be proposed.

If the proposed development does not proceed there would be no additional demand of loading on built services.

### **Predicted Construction Phase**

#### Utilities

The proposal will provide new connections to the existing wastewater, water and electrical supply networks (utilities).

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Temporary wastewater and electrical supply for utilization during construction works will be provided by the Contractor(s). Connection to the local water supply may be permissible on agreement with Irish Water.

The existing overhead ESB cables traversing the site will be diverted underground. Construction works associated with the diversion of the overhead cables and electrical substation are subject to detailed design and ESB requirements. Work to remove the existing overhead lines shall be carried out in the first phases of construction within the project.

The potential impact from the construction phase of the proposed development on the local utility networks is likely to be short term on low.

### Waste

The proposed development will require a large amount of cut and fill, with the majority of the excavated material to be retained on site for re-grading works. As such there will be limited off site removal of waste material from construction activities. Furthermore, no demolition is required during the construction phase, further limiting any waste materials.

Construction related waste will also be created on the proposed development site. This has the potential to impact on the local municipal waste disposal network.

The potential from the construction phase on municipal waste disposal is likely to be short-term and moderate and will be required to be undertaken in accordance with best practice.

## **Predicted Operational Phase**

### Utilities

The development will be connected to mains utilities including water, wastewater and electric networks, subject to detailed design considerations and consents. The impact of the operational phase of the proposed development is likely to slightly increase the demand on the existing supply; water supply and electrical supply will be metered whilst only foul wastewater will be discharge to the local wastewater network.

Proposed surface water drainage for the proposed development is detailed in Chapter 9 of this EIA Report, "Lands, Soils and Water".

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The potential impact from the Operational Phase on the wastewater and water supply network is likely to be long term and low.

The potential impact from the Operational Phase on the electrical supply, including diversion of overhead cables is expected to be long term and of benefit the aesthetic of the site.

### Waste

The impact on the operational phase of the proposed development on municipal waste disposal is likely to be a marginal increase in demand. The potential impact from the operational phase on municipal waste disposal is likely to be long term and minor.

### **Predicted Cumulative Impact**

The cumulative effects of the proposed development on foul and surface water disposal, water supply, electrical supply and municipal waste will be considered by the relevant utility providers and are anticipated not to be significant.

### **12.6.3 Mitigation Measures**

Remedial, mitigation and avoidance measures describe any corrective measures that are either practicable or reasonable. This includes avoidance, reduction and remedy measures to reduce or eliminate any significant adverse impacts identified, in accordance with the following guidelines:

- Draft Guidelines on the Information to be contained in Environmental Impact Statements (EPA, September 2015);
- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, August 2017);
- Draft Advice Notes on Preparing Environmental Impact Statements” (EPA, September 2015);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018);
- Environmental Impact Assessment of Proposed developments: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment, (European Commission, 2013); and
- Receptor specific guidance documents (e.g. Ecological Impact Assessment (EclA) guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM).

### **Design Phase**

The building services shall be designed to operate in line with The Climate Action Plan 2021 by encompassing a Nearly Zero Emissions Building Strategy (NZEB) leading to alignment with the Zero Emissions Building target 2030 set by the EU. This shall be achieved through careful planning and informative design using early thermal modelling, detailed design, close monitoring and targeting of efficiency opportunities both through construction and through the life of the building.

- The proposed development requires the provision of complete new mechanical and electrical services installations. The building services systems will be designed in accordance with the following guidelines, this list is not exhaustive.
- Building Regulations Technical Guidance Documents
- All relevant Irish and European Standards
- Local standards and Codes of practice
- Chartered Institute of Building Services Engineers (CIBSE) Guides & Technical Memoranda.
- Energy & Infrastructure Supply Authority Regulations.
- Local & Statutory Requirements
- External Design Temperature Assumptions:  
Summer: 28°C db / 20°C wb. Winter: -4°C db / 100% Saturation

The proposed building shall be fully dynamically modelled with considerations to building orientation, occupancy levels, seasonal changes and installed system efficiencies and controls. This shall inform the final design to optimize the building providing comfort for both efficiency in construction and efficiency through the life cycle of the building. Early modelling has been carried out and have demonstrated that upon completion, the main building shall achieve the following:

<b>CO<sub>2</sub> Emissions</b>	<b>kgCO<sub>2</sub>/m<sup>2</sup>.annum</b>
Calculated CO <sub>2</sub> emission rate from Reference building	<b>94.3</b>
Calculated CO <sub>2</sub> emission rate from Actual building	<b>43.2</b>
Carbon Performance Coefficient (CPC)	<b>0.46</b>
Max Permitted Carbon Performance Coefficient (MPCPC)	<b>1.15</b>

<b>Primary Energy</b>	<b>kWh/m<sup>2</sup>.annum</b>
Calculated primary energy consumption rate from Reference building	<b>495.4</b>
Calculated primary energy consumption rate from Actual building	<b>337.5</b>
Energy Performance Coefficient (EPC)	<b>0.68</b>
Max Permitted Energy Performance Coefficient (MPEPC)	<b>1.00</b>

<b>Renewable Energy Ratio</b>	
Renewable Energy Ratio (RER)	<b>0.43</b>
Minimum Renewable Energy Ratio	<b>0.10</b>

<b>Primary Energy Contributions to RER</b>	<b>kWh/annum</b>
Heat pumps for space and water heating	<b>1504190.00</b>
Total for renewables & non-renewables	<b>3536770.50</b>

The materialistic construction elements of the building services shall be selected based upon the sustainability and longevity to limit the landfill wastage at the end of the buildings useful life. This will include the limitation of single use plastics within the body of selected products. Systems shall be designed to monitor for leaks and losses of efficiency with full details provided with the health and safety file and through careful client instruction and demonstration.

### **Construction Phase**

The following mitigation measures are proposed for the construction phase of the proposed development with reference to Built Services:

- A construction, including traffic, management plan should be implemented during the construction phase to protect local amenities and the integrity and operation of the local road network.
- Provision of utilities should be carried out in accordance with the recommendations of the relevant statutory bodies.
- Water Metering and sub-metering shall be included throughout the site and buildings including each unit to record consumption and mitigate against leaks through isolation during periods of no use. There shall also be boundary metering to detect any potential below ground leaks of the incoming infrastructure.

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## **Operational Phase**

No mitigation measures are considered necessary during the operational phase.

### **12.6.4 Conclusion**

A qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied were assessed. In addition to mitigation measures outlined in this Chapter, mitigation measures have also been considered throughout this EIA Report.

## **Construction Phase**

If unregulated, predicted impacts associated with the construction phase of the proposed development on Built Services would be expected to include potential disruption to local natural and human material assets resulting in both short-term and long-term impacts. The implementation of the mitigation measures set out in this Chapter and the subsequent Chapters of the EIA Report would ensure that there is unlikely to be any significant residual impact during the construction phase. Therefore, impacts are likely to be temporary and neutral.

## **Operational Phase**

The proposed development is unlikely to have any significant impact on the local water, electricity or waste management networks and the overall impact with respect to these utilities can be described as long-term and neutral.

The predicted wastewater generation of the proposed development will be adequately accommodated in the local foul sewer network. Residual predicted impacts on this infrastructure are likely to be long-term and neutral.

The surface water drainage strategy for the proposed development has been designed to comply with the requirements of the 'Cavan County Development Plan 2022-2028' to promote and encourage the use of Sustainable Drainage Systems (SuDS) throughout and is therefore unlikely to have any residual impacts in terms of the impact on surface water drainage. Refer to Chapter 9, "Lands and Soils" for details.



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## 13.0 TRAFFIC

### 13.1 Introduction

Hoy Dorman (HD) have been commissioned by McAdam Design to prepare a Traffic Statement (TS) for the proposed Cavan Regional Sports Campus, this should be read in conjunction with this chapter of the Environmental Impact Assessment Report (EIAR).

### 13.2 Methodology

The Traffic Statement methodology relies on the following principles.

- Expected use of the proposed sports campus – The PEACE Link in Clones, Co Monaghan is a similar facility which has been surveyed on both weekdays and weekends to ascertain likely generated use to the proposed development.
- Baseline traffic surveys - Baseline traffic surveying desktop study with existing traffic data available combined with additional traffic surveys specific to the proposed development.

In establishing the impact proposed development traffic will have on the existing baseline traffic the following method has been adopted.

- Existing Road Network - Comparing the baseline traffic presented to the additional traffic generated during construction and operation for normal use.
- No discount for existing trips associated with the Royal School and Park Lane to ensure robust assessment.

#### 13.2.1 Traffic and Pedestrian Generation

Pedestrian, cycling and vehicular trips have been derived by means of surveying and profiling the PEACE Link sports facility in Clones. However, as the PEACE Link is slightly smaller than the proposed development a factor of 1.5 for vehicle trips has been applied to ensure a robust assessment. Pedestrian movements were multiplied by 2 due to the proposal being closer to areas of population than the PEACE Link therefore more likely to generate pedestrian trips.

A Thursday and a Saturday were surveyed and have been profiled due to the nature of the development having different demands depending on a weekday or weekend.

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### **13.2.2 Peak Hours & Parking Profile**

Peak hours for the surrounding road network were 08:15 - 09:15 and 17:00 – 18:00. However, the peak hours for the proposed development as a sports grounds are outside the road network peak hours. Profiling of the PEACE Link sports facility indicates peak hours of 19:30 – 20:30 midweek and 12:30 – 13:30 on a weekend. This is in keeping with a sports complex of this nature.

A projection of the number of vehicles and the estimated profile for a typical day have been assessed within this study. It is proposed to provide 160 spaces for the proposed development.

The modelling results indicate the junction has sufficient residual capacity to accommodate the proposed development + Royal School + Park Lane (Breffni Park) traffic.

### **13.2.3 Car Sharing and Direction of Vehicle Approach.**

Observations from The PEACE Link survey would suggest 2 persons per vehicle, however the use of 1.3 persons per vehicle is considered more onerous and therefore has been assumed for the purpose of this assessment.

Direction of travel has been determined from a gravity model which indicated a 70% / 30% split with the majority of traffic travelling from the north. No discounts for existing or pass by traffic has been applied as a form of sensitivity.

### **13.2.4 Area of Influence (Road Network)**

The main junctions within the area of influence have been described in Chapter 4 of the TS. Given the peak hour for the proposed sportsground development fall outside the road network peak hour the area of influence is primarily on the Dublin Road.

### **13.2.5 Park Lane (Which Includes GAA Breffni Park Traffic)**

It is proposed to stop up Park Lane at its junction with Dublin Road, to then merge Park Lane with the proposed new access into the proposed development. Park Lane traffic has been included within the new access traffic but is not new to the existing road network.

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This has significant benefits for Park Lane in terms of safety improvements regarding sightlines, approach gradients to the Dublin Road etc. It is proposed to maintain a footway from the existing Park Lane to facilitate Breffni Park.

### **13.2.6 The Royal School**

As part of this application the adjacent Royal School will utilise the proposed development carpark during the schools AM and PM peak hours for private vehicles and buses to drop off / collect students, this will remove the need for these vehicles to stop on the Dublin Road and therefore assist with the flow of traffic within the local area. The Royal School traffic has been included within the new access traffic but is not new to the existing road network.

### **13.2.7 GAA Breffni Park**

The proposed scheme will provide Breffni Park with 3 additional pitches and associated parking. This is considered betterment of the facilities; the pitches will facilitate ladies GAA and removing the use of Breffni Park itself as a training pitch. There is not expected to be any additional traffic associated with the proposed pitches, rather betterment of facilities.

### **13.2.8 Construction Phase**

The construction phase of the proposed development has been assessed within this study and is expected to have a low impact on the surrounding road network during the two phased of construction.

## **13.3 Existing Environment**

The town's traffic dynamics have been significantly influenced by its strategic location on major routes like the N3 and N55, as well as by local factors such as population and commercial growth. Key points to inform the existing conditions include:

1. **Strategic Location:** Cavan Town is on the N3 route linking Dublin to Enniskillen, and the N55 linking Athlone to Cavan. This makes it a critical junction for regional traffic.
2. **Growth in Traffic Volumes:** Over the past two decades, there's been a notable increase in both through traffic (on the N3 and N55) and internal traffic due to rising population and economic activities.

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3. N3 and N55 Bypasses: The construction of these bypasses in 1999 has helped alleviate some traffic pressure from the town's streets, though managing the benefits of these routes remains crucial.
  4. High-Traffic Routes and Junctions: The Dublin Road (Old N3) remains a highly trafficked route, especially during peak hours. The intersection of Dublin Road and Ballinagh Road, a priority junction, has historically seen significant congestion, although the N55 bypass has reduced traffic on the Ballinagh Road.
  5. Other Major Roads and Junctions: Swellan Road and Railway Road are key radial routes to the west, with a critical roundabout junction at Railway Road, College Road, and Farnham Street. Cathedral Road and Cootehill Road in the north are less congested distributor routes.
  6. Town Centre Traffic Management: The town centre, built around Main Street and Farnham Street, operates a one-way system due to high traffic volumes and narrow streets. This system primarily involves Church Street/Main Street being one-way southward leading to Connolly Street, with most linking streets being one-way and others carrying two-way traffic.
  7. Dublin Road at the location of the proposed access is the main local environment.

## 13.4 Potential Impacts

Potential impacts include increased traffic on the Dublin Road and surrounding road network. Other potential temporary impacts may occur during construction phases. The potential impacts have been considered within the Traffic Statement (Appendix 13.1 of Volume 3).

## 13.5 Mitigation Measures

The mitigation strategies outlined in the TS aim to address traffic congestion, improve safety, and enhance pedestrian access. Key measures include the introduction of a right turn lane, enhancements to Park Lane's sightlines and approach, rerouting of school buses, implementation of dual egress lanes, and provision of pedestrian accesses.

### **Right Turn Lane**

To alleviate congestion at the proposed entrance on the Dublin Road, the implementation of a dedicated right turn lane is proposed.

### **Park Lane Improvements**

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The proposed arrangement at Park Lane will improve the existing sightlines and steep approach. These adjustments to road geometry will improve visibility and reduce the likelihood of accidents at this junction.

### **School Bus Re-routing**

To mitigate the impact of school buses and private vehicles associated with the Royal School on traffic congestion along the Dublin Road, re-routing the aforementioned vehicles into the proposed upper carpark will divert them away from the busiest sections of the Dublin Road corridor, thereby reducing delays and improving overall traffic flow.

### **Dual Egress Lanes**

The introduction of dual egress lanes at the exit of the proposed development onto the Dublin Road will enhance capacity and facilitate smoother traffic dispersal. By providing two lanes for exiting vehicles, congestion during the sites peak hours will be reduced, and queuing delays minimized, thereby improving journey times for motorists.

### **Pedestrian Accesses**

Improving pedestrian accesses around the proposed site is crucial for enhancing safety and promoting active transportation. Measures such as the installation of pedestrian crossings, tactile paving, and dedicated internal pedestrian pathways will be implemented to facilitate safe and convenient movement for pedestrians, including those with mobility impairments.

### **Construction Mitigation**

Working hours will be limited to avoid unsociable hours. Construction works shall be restricted to between 08:00hrs and 18:00hrs on weekdays and between 08:00hrs and 13:00hrs on Saturdays. There will be no works carried out on Sundays or Bank Holidays.

### **Sensitivity Testing**

Sensitivity testing of traffic modelling was accounted for by doubling the development flows traffic and adding this to the factored 2047 flows. The results show there is still capacity at the Dublin Road / development Road junction.

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## **13.6 Residual Impacts**

There will be no remaining residual impacts from the proposed scheme in relation to traffic when the scheme is embedded into the community for use.

## **13.7 Conclusions**

In conclusion the proposed development peak hours of traffic operation fall outside the existing peak hours of existing traffic network, therefore in traffic terms the impact is minimal with significant benefit to sustainable transport and footpath links throughout Cavan. The provision of a right turn lane will assist in benefiting vehicles turning right into the proposed development whilst facilitating through traffic.

In addition to the health benefits of the scheme, the scheme also brings significant benefits relating to Park Lane realignment; Breffni Park new parking and pitches; the Royal School new drop off for parents and buses; and removing that traffic from the existing school site.

### **13.7.1 Impact of the Proposed Development**

Given the result of this study it is considered the traffic impact of the proposed is negligible to slight on the receiving environment, particularly during the construction phase.

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## 14.0 CULTURAL HERITAGE

This Chapter of the EIAR has been written to address Architectural & Cultural Heritage for the proposed Cavan Regional Sports Campus, located to the South of the town, for Cavan County Council. More detail can be found in the Architectural Heritage Impact Assessment (AHIA) which is included as an appendix to the EIAR – (Appendix 14.1)

The initial findings of the heritage analysis were prepared in parallel with completing the design work, in order that the findings could inform the design and be factored into the decisions made to ensure that the heritage is protected by considering potential impacts and mitigating them where possible.

Consarc Conservation, an RIAI Grade 1 Conservation Architectural Practice, has been appointed as Heritage Consultant on the team to assess the heritage and has completed this chapter and the associated AHIA technical report.

The site visit was carried out by Graeme Moore - RIBA Accredited Specialist Conservation Architect (RIBA SCA) on Friday 8th December 2023. This site inspection assessed the Heritage of the immediate surroundings of the proposal, Protected Structures and important views for the purposes of this report. This chapter summarises the AHIA and has been prepared to:

- Outline the context of the area, its heritage and contribution
- Comment on Protected Structures
- Comment on the Architectural Conservation Areas (ACA)
- Comment on proposals related to relevant Cavan County Council Policy for Cultural Heritage

### 14.1 Methodology

The AHIA has been carried out by a process of:

- Study of background Information and research
- Communications with Design Team and Lead – McAdam Design
- Site visit and survey to consider the existing Protected Structures and Heritage within the context and consideration of any likely impacts by the proposed scheme
- Consideration of the context of any proximal Architectural Conservation Areas (ACA)

- Consideration of the Conservation principles and policies contained within the Cavan County Development Plan 2022-2028 – ‘Built & Cultural Heritage’ Chapter as published by Cavan County Council. For full details see the AHIA in appendices
- Assessment of design proposals
- Culminating in the AHIA Report and this EIA Chapter to include:
  - Identification of key heritage assets. Particularly Protected Structures
  - Comment on the proposals and views with the potential to be affected
  - How any potential negative effects have been eliminated or mitigated
  - How the final proposals align to Cavan County Council Heritage Policy

## 14.2 Existing Environment

### 14.2.1 General Environment & Heritage Context

The Subject site is indicated as a pink hatch on the Aerial view below. The land is generally already in use as pitches, and small associated structures, or greenspace. Land is generally lower lying than the elevated site of the Royal School, which along with its landscaped setting as curtilage, is outside the proposed development area.

**Figure 14.1: Aerial view of proposed development**



Key:  
1. Proposed Site  
2. Royal School  
3. Breffni Stadium



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The existing land use is indicated in the Cavan County Development Plan as:

- Sport & Recreation
- Public & Community

The Subject site does not fall within either of the town centre Architectural Conservation Areas. (see AHIA in appendix 14.1 for map including ACAs).

### **14.2.2 Outline Description**

The proposals will provide a Regional Sports Campus for County Cavan consisting of sports pitches and buildings as per the application submission information.

### **14.2.3 Protected Structures in Proximity to the Proposed Development**

The following structures have been assessed as being close to the proposed development and therefore with the potential to be affected by the works.

The Record of Protected Structures is included in the Protected Structures Appendix 19 of the Cavan County Council Development Plan 2022-2028. Further information in the AHIA. The following information has been sourced from: <https://www.buildingsofireland.ie>

**Cavan School, Dublin Road**



Reg No: **40000449** Rating: **Regional**

Categories of Special Interest: **Architectural, Social**

Original Use: **School**

**Description:** Detached three-bay two-storey school with gabled central breakfront, built c.1860, later in use as offices, now disused. Single-storey extension to north.

**St. Clare's Cottage, Dublin Road**



Reg No: **40000448** Rating: **Regional**

Categories of Special Interest: **Architectural**

Original Use: **House**

**Description:** Detached three-bay two-storey house, built c.1860, with two-storey single bay return to rear and flat-roofed porch to front c.1930

**Royal School, Cavan**



Reg No: **40001142** Rating: **National**

Categories of Special Interest: **Architectural, Historical, Social**

Original Use: **School**

**Description:** Detached neo-classical E-plan five-bay three-storey over basement school, built 1819, comprising gable-ended entrance block linked to parallel three-storey block of equal volume.

## Royal School Outbuildings



Reg No: **40001143** Rating: **National**

Categories of Special Interest: **Architectural, Social**

Original Use: **Outbuilding**

**Description:** Multiple-bay two-storey former outbuildings in three ranges, built 1819, comprising six-bay south elevation adjoining west of school front elevation with advanced pedimented end bay, nine-bay western elevation and four-bay northern range.

### 14.2.4 Protected Structures Policy

The general and Specific Protected Structure Policies are contained within the Cavan County Council Development Plan 2022-2028 and **outlined in the Architectural Heritage Impact Assessment at Appendix 14.1.**

### 14.2.5 Architectural Conservation Areas & Policy

The Subject site does not fall within either of the town centre Architectural Conservation Areas. (see AHIA in appendix 14.1 for map including ACAs).

## 14.3 Potential Impacts

### 14.3.1 Adjacent Works

**NB: The works are primarily concerned with the setting and curtilage of the Protected Structures.**

#### Works do not include:

- Proposals to improve, alter, extend or change use of Protected Structures
- Reintroduction of traditional features to Protected Structures
- Demolition and inappropriate alteration of Protected Structures
- Rehabilitation, renovation or re-use of existing Protected Structures
- Integration of climate adaptation measures, upgrade of energy efficiency or climate resilience measures to a Protected Structure.

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**NB: The Conservation Architects comments on the relevant policies are provided in Section 4.0 of the AHIA in Appendix 14.1.**

**14.3.2 Views**

Approaches to and views out from the proposed works are important to be considered as part of this assessment to ensure that there is no detrimental impact to any existing heritage features within the townscape or into the distance.

The views are considered in detail in Section 3.0 of the AHIA at Appendix 14.1 with an outline of potential effects on Protected Structures summarised below:

**VIEWS ON APPROACH FROM SOUTH** - Approaching the town from the South on the Ballinagh Road, the site is approached turning to the left onto the Dublin Road, towards the town centre. St. Clare’s Cottage and The Cavan School are both Protected Structures on the Left-hand side of the road.



Cavan School to LHS



Clare’s Cottage to LHS

No view of subject site

**AHIA Conclusion – Protected Structures** Cavan School to LHS and Clare’s Cottage are unaffected by the proposed works as they are too distant with proposals screened from view by existing buildings and mature trees.



Typical glimpse of Royal School between buildings which already impact on this view.

**Due to the elevated site of the school buildings, the sports pitches and buildings behind will not be visible from viewpoints along the Dublin Road.**

**Proposals will therefore not compromise the Protected Structures to a greater degree than the current situation of existing buildings.**

**VIEWS OF ROYAL SCHOOL FROM SOUTH ACROSS EXISTING PITCHES** - Any views of the Royal School are already framed and concealed by a clutter of ad hoc structures associated with the existing pitches and these prevent clear views of the Protected Structure.



View of Royal School across pitches compromised in existing situation by sports structures, nets, lighting etc.

**The proposed works will rationalise the structures and give a feeling of more open space to enhance existing views.**



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**APPROACH TO ROYAL SCHOOL** – Driveway approaching from North - The vehicular approach to the Royal School is from the north, close to the town heading South before the driveway curves West to approach the building towards the south facing front façade.



Gated entrance to Royal School



Tree lined driveway heading South

**The driveway approach to the school is an important aspect of the setting of the building and this will be unaffected by the proposals.**

**The proposed pitches (SW) cannot be viewed as they are too distant and screened off by trees.**

**The curtilage of the School will be retained along with additional natural landscaping beyond its boundaries to the South.**

**The access to the proposed sports campus is from elsewhere (as application drawings) and this will therefore have no impact on the Protected Structure of the School.**

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**SETTING OF THE SCHOOL** - As the driveway curves around, the formal front of the Georgian School comes into view with the outbuildings to the West (LHS when viewed from front).



School to RHS (East) and Outbuildings to LHS (West) – Both Protected Structures with separate designations

**The AHIA concludes that as the School will maintain its landscaped setting to historic boundaries, these views of the school in close proximity will be unaffected by the proposed works.**



View across all weather pitches to the east towards the school behind outbuildings

**Any views towards the School to the South and the West are dominated by hard surfacing of the existing 'all weather' pitches as the proposed location of the sports buildings.**

**The impact of these buildings on the Protected Structures is mitigated by the natural topography with these set at a lower height than the School and Outbuildings, between rising land to both sides, thereby maintaining the School's dominance within an already compromised landscape.**

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**VIEWS OUT FROM THE SCHOOL** - Views to the South into the landscape are already compromised by existing Breffni Stadium on the horizon, however the school has a landscaped buffer all around which will be protected.



Views to south on driveway with landscape



'All weather' pitch to west - sports buildings

**Views out are already impacted by existing sports structures with no further harm caused by the proposals which will improve and rationalise the existing situation.**

**The curtilage of the school will be maintained within its landscaped setting to historic boundaries and this provides a 'buffer' between the Protected Structures and the proposals.**

**Any views out from the School to the South and the West are dominated by hard surfacing of the existing 'all weather' pitches. After careful consideration of alternative locations for the buildings, this is the proposed location of the sports buildings, with impact mitigated by the selection of this location at lower level.**



View of the town to the East. The driveway to the school and the Dublin Road sit between the elevated topography of the school and the buildings visible to the East.



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**Views out from the School to the East are unaffected by the proposals which will be located to the South & West. The historic driveway approach to the school remains unaffected along with the landscaped setting to the East.**

#### **14.4 Mitigation Measures**

The potential impact of the proposals has been mitigated by the early engagement of the Conservation Architect.

Initial findings of the heritage analysis were prepared in parallel with completing the design work, in order that the findings could inform the design and be factored into the decisions made to ensure that the heritage is protected.

The impact of the proposals has been carefully considered by:

- Identification of Protected Structures.
- Considered response to Protected Structure Policy.
- Site visit to see first-hand important views and potential impacts.
- Consideration of alternative options by the Lead Architects and the Design Team to mitigate potential impacts of proposals.
- Enhanced designed landscaping to boundaries beyond the curtilage of the Royal School by appointed Landscape Architect.

#### **14.5 Conclusions/Residual Impacts**

The Lead Architects, Planning Consultant and Client have shown due diligence to consider the Cultural Heritage as part of the design process by appointing a Conservation Architect along with other appropriate professionals.

Individual Protected Structures and views which may have vulnerabilities have been identified in the analysis section of this report.

This report has been completed in parallel with the design process to assist in informing the design work for the sports buildings, pitches and associated public realm spaces.

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The process has analysed the proposals to ensure that the Protected Structures are not adversely affected by the proposed works, taking account of heritage Policy as set out in the AHIA in Appendix 14.1.

As the works are focussed on site works adjacent to the buildings, rather than to the buildings themselves, it is anticipated that the impacts on the Protected Structures will not be significant and that the scheme as a whole will be hugely positive upon completion for the community.

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## 15.0 ARCHAEOLOGY

### 15.1 Introduction

#### 15.1.1 Background

Cavan County Council intends to develop a regionally significant sports campus on lands situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School, Cavan (figures 15.1 and 15.2).

The proposed development will consist of the following:

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

#### 15.1.2 Development Site

The Site relates to circa 28ha. of lands situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School, Cavan. The majority of the Site comprises agricultural land surrounding Royal College Cavan, with the exception of a gravel hockey pitch associated with the College and an artificial 3G pitch associated with Cavan GAA. The Cavan River flows along the eastern boundary of the site, flowing in a southerly direction. A small tributary of the Cavan River, draining southwards from Swellan Lough, flows from north to south through the centre of the site, effectively dividing the site into a western portion and an eastern portion.

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## 15.2 Methodology

### 15.2.1 Report Methodology

This archaeological impact assessment was conducted in three stages. Firstly a detailed desktop survey was undertaken to identify all known archaeological sites, designated architectural heritage structures and other undesignated cultural heritage assets within the study area.

The principal sources reviewed for this assessment of the known archaeological resource are the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP). Archaeological monuments included in the statutory RMP are legally protected and are generally referred to as 'Recorded Monuments'.

In addition, the following sources were consulted as part of the desktop study:

- *Cartographic Sources* - The cartographic sources examined for the study area included the first edition of the 6-inch Ordnance Survey (OS) maps (surveyed and published in the 1830s-40s), the 25-inch OS maps (surveyed and published 1887-1913) and the Cassini OS maps (surveyed and published c.1940).
- *Development Plans* - The local authority development plans relevant to the study area were consulted as part of this assessment. These plans outline the local authorities' policies for the conservation of the archaeological and architectural heritage resource and include the Record of Protected Structures (RPS) and any designated Architectural Conservation Areas (ACAs). The relevant development plan for the study area is the *County Cavan Development Plan 2022-2028 incorporating the Local Area Plan for Cavan Town, 2022-2028*.
- *Database of Irish Excavation Reports* - The Database of Irish Excavation Reports contains summary accounts of archaeological excavations carried out in Ireland from 1970 to present.
- *Placenames Database of Ireland* - The Placenames Branch (Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media) provides a comprehensive management system for data, archival records and place name research conducted by the State.
- *National Inventory of Architectural Heritage* - The function of the National Inventory of Architectural Heritage ('NIAH') is to record built heritage structures within the Republic of

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Ireland and to advise local authorities in relation to structures of interest within their areas. The NIAH commissions surveys of sites of architectural significance to assist in evaluating structures to be included in the RPS. Listing on the NIAH does not necessarily carry any statutory protection but does highlight the culturally significant aspects of the structure which ought to be conserved.

Secondly a detailed walkover survey of the proposed route of the greenway was conducted by a fully qualified archaeologist. Finally, the information provided by both the site inspection and the desk top survey was assessed in relation to the potential impact of the proposed development on archaeology and the opportunities it may present. Having assessed the potential impact upon archaeology, a mitigation strategy has been established.

### **15.2.2 Policy and Guidance**

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the European Convention on the Protection of the Archaeological Heritage (Valletta Convention), ratified by Ireland in 1997.

The National Monuments Act 1930 to 2014 and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as ‘a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto’ (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in

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ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for Housing, Local Government and Heritage) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994.

All recorded monuments on the proposed development site are represented on the accompanying maps. Section 12(3) of the 1994 Act provides that ‘where the owner or occupier (other than the Minister for Housing, Local Government and Heritage) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Housing, Local Government and Heritage to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving of notice’.

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Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989*, Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

The *County Cavan Development Plan 2022-2028* contains policies and objectives relating to archaeological heritage. Those relevant to this assessment include:

- **AH 1:** Protect and safeguard the county's archaeological resource and ensure the sympathetic enhancement of archaeological heritage. Applications will be referred to the Department of Housing, Local Government and Heritage by the Planning Authority in its capacity of being charged with the implementation of the National Monuments Acts.
- **AH 2:** Protect and enhance archaeological sites and monuments, their settings and zones of archaeological potential that are listed in the Record of Monuments and Places, in the ownership/ guardianship of the State, or that are the subject of Preservation Orders or have been registered in the Register of Historic Monuments. Ensure the protection of sites which have been identified subsequent to the publication of the Record of Monuments and Places.
- **AH 3:** Development adjacent to or near an archaeological site or monument should not interfere with the character of the site, or its setting. Proposed developments should be sited to ensure minimal impact on the site or monument. Development which has a negative impact on a site or monument will not be permitted.
- **AH 4:** Seek to promote best practice for archaeological excavation ensuring that they are undertaken according to best practice as outlined by the National Monuments Service,

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Department of Housing, Local Government and Heritage, The National Museum and the Institute of Archaeologists of Ireland.

- **AH 9:** Facilitate appropriate guidance in relation to the protection of the archaeological heritage and implications of a proposed development.
- **AH 11:** Secure the preservation of sites and features of historical and archaeological interest. The preservation in-situ of archaeological monuments and sites as a preferred option.
- **AH 12:** Where archaeological sites or monuments have to be removed as a result of development, it is essential that they be preserved by record, through archaeological excavation and recording, which is to be undertaken by a suitably qualified professional archaeologist.

The *County Cavan Development Plan 2022-2028* also contains several policies and objectives relating to architectural heritage, of relevance to this study including:

- **RPS 1:** Protect, conserve and manage the built heritage of County Cavan and to encourage sensitive and sustainable development to ensure its preservation for future generations.
- **RPS 5:** Ensure all development works on or at the sites of Protected Structures, including site works necessary are carried out using best heritage practice for the protection and preservation of those aspects or features of the structures /site that render it worthy of protection. The form and structural integrity of Protected Structures should be retained as part of any redevelopment proposal and the relationship between the Protected Structure and any complex of adjoining buildings, designed landscape features, or designed views and vistas from to the structure should be considered.
- **RPS 7:** Applications for works to Protected Structures will be assessed in accordance with the Architectural Heritage Protection Guidelines 2011. Works should ensure that the special character and integrity of the Protected Structure is preserved.
- **RPS 10:** Proposals for large scale developments and infrastructure projects should consider the impacts on the architectural heritage and seek to avoid them. The extent, route, services



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and signage for such projects should be sited at a distance from Protected Structures, outside the boundaries of designed historic landscapes, and not interrupt specifically designed vistas. Where this is not possible the visual impact must be minimised through appropriate mitigation measures such as high quality design and/or use of screen planting

In addition, this report was produced with reference to the following policy and guidance documents:

- Department of Arts, Heritage and the Gaeltacht, 1999a, Frameworks and Principles for the Protection of the Archaeological Heritage
- Department of Arts, Heritage and the Gaeltacht, 2004 (revised 2011), Architectural Heritage Guidelines

### 15.3 Archaeological and Historical Baseline

The desk top survey of the archaeological baseline looked at two main components of the development scheme:

- Cultural heritage assets within the development area
- Cultural heritage assets within the wider environment, extending out to a 1km buffer zone for archaeological sites and 400m for built heritage.

#### 15.3.1 Cultural heritage assets within the development area

##### Desktop Study

The desk top study identified no known archaeological sites within the proposed application site (figure 15.3). In addition, it identified no sites of architectural importance recorded in the RPS/NIAH records within the proposed application site (figure 15.4).

An inspection of the early edition OS and Cassini maps was conducted. The 6" historic map (1837-1847) shows the application site to have consisted of agricultural land which is largely free from development (figure 15.6). Individual properties are shown along the western boundary of the site, fronting onto Kilnavarragh Lane. The site also includes some of the original grounds associated with the Royal College. The historic 25" map (late 19th/early 20th century) shows a similar picture but most of the properties fronting onto Kilnavarragh Lane are no longer in existence (figure 15.7). This is consistent with the information shown on the Cassini 6" map (1940s) (figure 15.8).

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### 15.3.2 Site Inspection

An inspection of the application site was conducted on 9<sup>th</sup> January 2024. The site is located on an east facing strip of land located between the existing sports facilities and Royal College grounds to the east and Kilnavarragh Lane to the west. It consists of agricultural land divided into numerous fields and which at the time of the inspection was under pasture (plate 15.1). The majority of site slopes down steeply to the east from its western boundary towards the Cavan River. As the land approaches the river it levels out onto flood plain. The northern half of the site is bisected by a small stream feeding into the Cavan River. The land to the east of this is part the grounds of the Royal College which sits on a slightly elevated position (plate 15.2). An area of land to the immediate west the Cavan River and adjacent to the existing sports facilities has been hard surfaced to create additional car parking (plate 15.3). A new pitch has been set out to the south of this (plate 15.4). No surface expression of archaeological features was identified during the course of the site inspection.

**Plate 15.1: looking southeast across the application site**





**Plate 15.2: looking north towards the Royal College**



**Plate 15.3: looking north across the new car parking**



**Plate 15.4: looking southwest across the new pitch**



### 15.3.3 Archaeological sites within the wider search area

A total of 18 archaeological sites recorded in the RMP were identified within the wider search area for the application site (Figure 15.3).

SMR No.	Townland	Type
CV020:54	Killynebbber	Ringfort/Rath
CV020:55	Abbey Land	Historic Town
CV020:55002	Abbey Land	Franciscan Friary
CV020:55003	Town Parks	Market Cross
CV020:55004	Town Parks	Castle
CV020:55007	Abbey Land	School
CV020:55008	Abbey Land	Bridge
CV020:55009		Redundant Record
CV020:87	Tullymongan Lower	Ring ditch
CV020:88	Tullymongan Lower	Burnt Mound
CV020:90	Town Parks	Ringfort/Rath
CV020:91	Tullymongan Upper	Battlefield

CV025:32	Creighan	Ringfort/Rath
CV025:33	Tirquin	Crannog
CV025:74	Kilnavara	Hilltop enclosure
CV025:75	Kilnavara	Ringfort/Rath
CV025:106	Rosscolgan	Ringfort/Rath
CV025:110	Swellan Lower	Moated site

Full details of these monuments are contained within Appendix 15.1. None of these monuments will be physically impacted by the proposed development.

#### 15.3.4 National Inventory of Architectural Heritage and Records of Protected Structures within the wider search area

The desk top survey identified 16 NIAH properties within in the wider search area all of which are recorded in the Cavan County Council Record of Protected Structures (Figure 15.4).

NIAH Ref.	RPS REF	Type
40000168	CV0462	Cavan No1 National School
40000195	CV0813	House
40000196	CV0814	House
40000208	CV0815	House
40000209	CV0816	House
40000236	CV0817	Shop
40000331	CV0001	Abbey Graveyard
40000335	CV0463	Bank of Ireland
40000341	CV0002	House
40000371	CV0003	Abbey Bell Tower
40000448	CV0615	St Clare's Cottage
40000449	CV0616	Cavan school
40001068	CV0610	Lifeforce Mill (wind)
40001069	CV0611	Lifeforce Mill (water)
40001142	CV0612	Royal School Cavan
40001143	CV0613	Royal School Cavan- outbuilding



Full details of these structures are contained within Appendix 15.2. None of these structures will be physically impacted by the proposed development.

### 15.3.5 Excavations Database

The excavations database identified 27 archaeological excavations within the wider search area for the application site (figure 15.5).

Licence No.	Summary
01E0019	Burial
01E0577	No archaeological significance
01E0843	No archaeological significance
01E0896	Historic town
02E0057	No archaeological significance
03E0116	No archaeological significance
03E0221	No archaeological significance
03E0993	No archaeological significance
03E1470	No archaeological significance
03E1800	House - 18th/19th century
04E0541	No archaeological significance
04E0677	No archaeological significance
04E1361	No archaeological significance
05E0241	No archaeological significance
05E0737	No archaeological significance
05E0760	No archaeological significance
05E1143	No archaeological significance
06E0067	No archaeological significance
06E0501	No archaeological significance
06E1014	No archaeological significance
07E0101	No archaeological significance
08E0992	Post medieval ditches
10E0433	Burt mounds
11E1103	No archaeological significance
11E0024	No archaeological significance

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11E0027	No archaeological significance
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Full details of these archaeological investigations are contained within Appendix 15.3.

## 15.4 Archaeological Assessment of Impact

### 15.4.1 Construction Phase

The desk top survey has indicated that there are no known archaeological sites within the red line boundary for the application site. A review of the early edition OS maps indicated the presence of a number of dwellings fronting onto Kilnavarragh Lane. These properties date to at least the early 19th century and may be possibly earlier. They are no longer in existence by the mid 19th century, however subsurface elements of them may survive within the site today. Should such deposits exist, they may be directly impacted upon by the proposed construction programme.

Looking beyond the application site, the wider search area identified 18 known archaeological sites. These included seven sites of early medieval date. While none of these sites will be directly affected by the proposed development they do point to a level of human activity in this area from these times and the application site may be located within a wider early medieval landscape.

The application site is approximately 18.5ha of mostly previously undeveloped land. Such sites are rarely archaeologically sterile and it is possible that previously unknown, sub-surface archaeological deposits could be identified here. Should such deposits exist then they may be impacted upon by the proposed construction programme.

### 15.4.2 Operational Phase: Impact upon the setting of monuments and buildings

The desk top survey identified 18 known archaeological monuments within the wider search area for the application site. For the most part, these monuments are located at sufficient distance from the application site and/or are located within the existing urban environment of Cavan that there will be no impact on their settings. The closest monument to the application site is CV 025:074, a hilltop enclosure located to the immediate west of Kilnavarragh Lane. This monument is located approximately 100m from the western boundary of the application site. There will be no impact on the setting of this monument. It is screened from the application site by housing fronting onto Kilnavarragh lane. This combined with the local topography prevents any direct inter-visibility with the monument.

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The desk top survey identified 16 buildings recorded in both the County Cavan Record of Protected Structures and the National Inventory of Architectural Heritage. The majority of these properties are located at sufficient distance and are within the urban fabric of Cavan that there will be no impact upon their setting. Four buildings are located in closer proximity to the application site. Both properties NIAH 40000448 and 40000449 are located adjacent to each other on the Dublin Road. These properties are screened from much of the application site by the existing sports stadium and there will be no impact on their setting.

Properties NIAH 40001142 and 40001143 are the Royal School Cavan and an associated outbuilding (plate 5). The Cavan Royal School was founded in 1608 as one of five Royal Schools established by King James I. The present purpose-built neo-Classical school was designed by Francis Johnston. The properties are located along the eastern boundary of the application and have been subject to extensive alterations and additions which have impacted upon their historical appearance. The school is accessed via a private lane extending south from Dublin Road and is separated from the centre of Cavan town by the Terry Coyle sports facility. It sits on a slightly elevated position overlooking the flood plain of the Cavan River to the south. The existing Breffni Park sports stadium and associated training pitches and car parking are contained within the views south.

**Plate 15.5: Looking northeast towards the Royal School**



The introduction of the application site into the local environment will change the baseline conditions of the setting of the buildings. This will remove an element of the rural nature of the setting but will not significantly impact upon the setting of the buildings. The majority of the new development will



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consist of sports pitches and associated landscaping creating a public space environment adjacent to the school buildings. Buildings associated with the development will be low lying and as such will not dominate the school site which retains its prominent elevated position. The introduction of the sports complex will see an increase in public access to the area providing opportunities for greater public appreciation of a private historic building complex.

## 15.5 Mitigation

The application site is approximately 18.5ha of mostly previously undeveloped land. Such sites are rarely archaeologically sterile and it is possible that previously unknown, sub-surface archaeological deposits could be identified here.

For those areas where ground reduction works/ topsoil stripping will be conducted, further archaeological input will be required. Given the scale of the site, it is recommended that a geophysical survey of the development area be conducted. This will provide a non-invasive assessment of the potential for underlying archaeological deposits to be contained within the site. Following completion of the geophysical survey, pre-construction test trenching should be conducted to assess the identified geophysical anomalies for their archaeological potential. This testing should be conducted as far in advance of construction commencing as possible.

The geophysical survey and archaeological test excavation must be conducted under an excavation licence from National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage. Archaeological excavation licencing requires the preparation and submission of an archaeological method statement and licence application to NMS. This process takes approximately 3 weeks and the licence must be in place prior to the works. The licence conditions require preparation and submission to NMS of a detailed report on the test excavation results and NMS approval will be required for any further mitigation proposed. The archaeological testing should be conducted as early as possible to inform any subsequent additional mitigation which may be required.

If archaeology material is uncovered mitigation options can include preservation in situ by avoidance or by design, or preservation by record i.e. archaeological excavation. Mitigation proposals require agreement of NMS.

Provision must be made for cordoning off the area and time allowed for the appropriate mitigation option and permissions, as outlined above, to be decided and implemented. There are cost

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implications as the developer will fund the works. There are programming implications as a further excavation licence is required in addition to the time required to carry out any archaeological excavation.

## 15.6 Conclusions and Residual Impacts

The desk top survey has indicated that there are no known archaeological sites within the red line boundary for the application site. Looking beyond the application site, the wider search area identified 18 known archaeological sites. These included seven sites of early medieval date. While none of these sites will be directly affected by the proposed development they do point to a level of human activity in this area from these times and the application site may be located within a wider early medieval landscape.

The application site is approximately 18.5ha of mostly previously undeveloped land. Such sites are rarely archaeologically sterile and it is possible that previously unknown, sub-surface archaeological deposits could be identified here. Should such deposits exist then they may be impacted upon by the proposed construction programme. The extent of any such impact can be reduced through the implementation of a pre-construction mitigation strategy. This should include:

- Geophysical survey of the development area to identify potential sub-surface archaeological deposits.
- Archaeological test trenching of identified geophysical anomalies.
- Preservation in-situ or by record of the identified archaeological deposits
- Production of a final excavation report and deposition of site archive with National Museum Ireland.

Following the implementation of this mitigation, the proposed development will have no residual impact upon archaeological features within the site.

## 15.7 Bibliography

Department of Arts, Heritage and the Gaeltacht, 1999a, Frameworks and Principles for the Protection of the Archaeological Heritage

Department of Arts, Heritage and the Gaeltacht, 2004 (revised 2011), Architectural Heritage Guidelines  
Cavan County Council, 2022, County Cavan Development Plan 2022-2028

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### **Electronic Sources**

[www.excavations.ie](http://www.excavations.ie) – Summary of archaeological excavation from 1970-2022.

[www.archaeology.ie](http://www.archaeology.ie) – DoHLGH website listing all SMR/RMP sites.

[www.logainm.ie](http://www.logainm.ie) - The Placenames Database of Ireland.

[www.osiemaps.ie](http://www.osiemaps.ie) – Ordnance Survey aerial photographs dating to 1995, 2000, and 2005 and 6-inch/25-inch OS maps.

[www.heritagemaps.ie](http://www.heritagemaps.ie) – The Heritage Council web-based spatial data viewer which focuses on the built, cultural and natural heritage.

[www.googleearth.com](http://www.googleearth.com) – Satellite imagery of the proposed development area.

[www.bingmaps.com](http://www.bingmaps.com) – Satellite imagery of the proposed development area.

Figure 15.1: Location of the application site





Figure 15.2: Layout of the application site





Figure 15.3: Known RMP sites within 1km of the application site



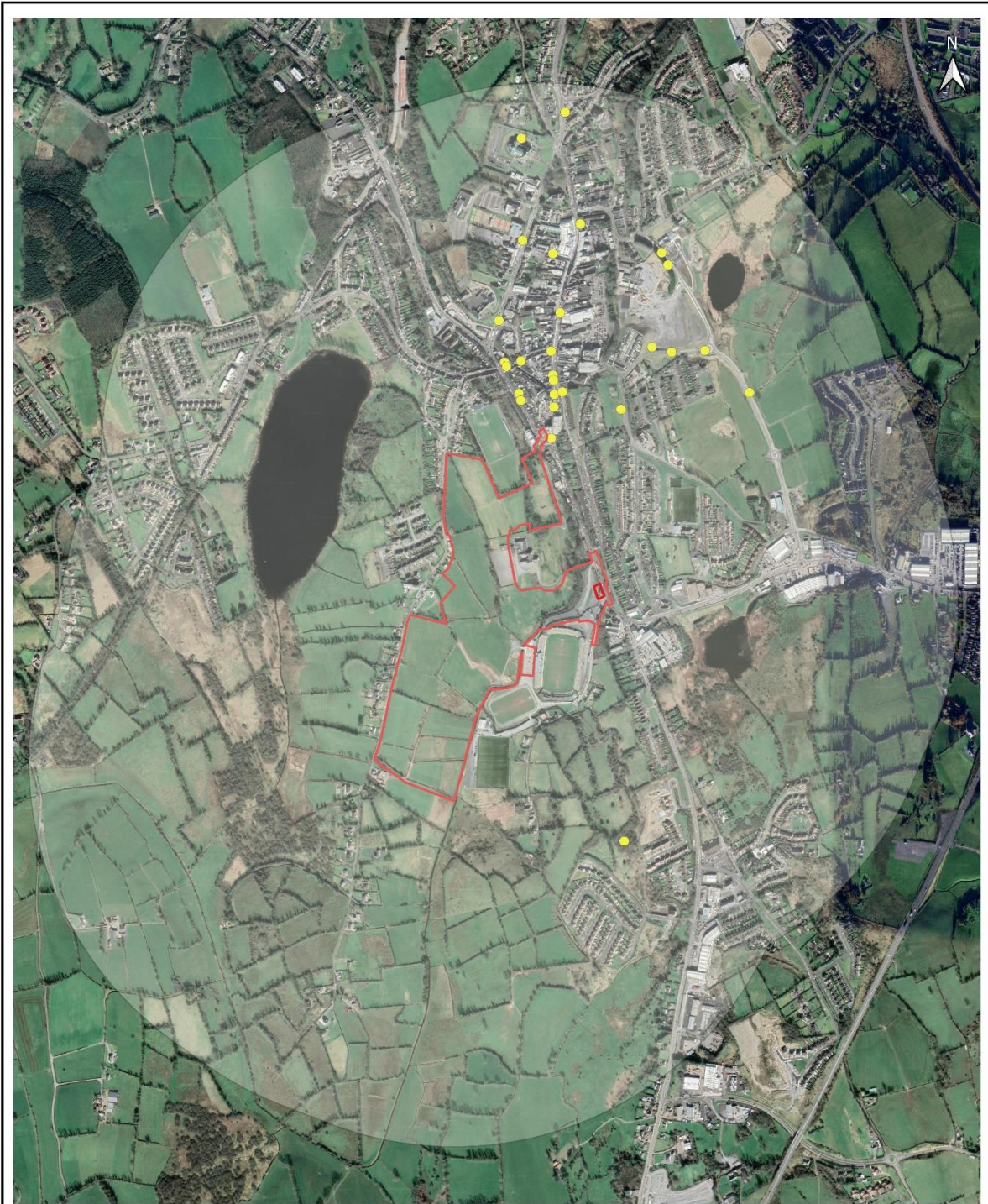


Figure 15.4: Known NIAH/RPS sites within 400m of the application site





Figure 15.5: Known excavations within 1km of the application site



0 400 800 m

Project:  
Cavan Regional Sports Campus

Drawing title:  
Known excavation sites within 1km of the application site

  
archaeological services  
tel: 028 90202001  
e: info@gahanandlong.co.uk



Figure 15.6: Historic 6" map showing the approximate location of the application site

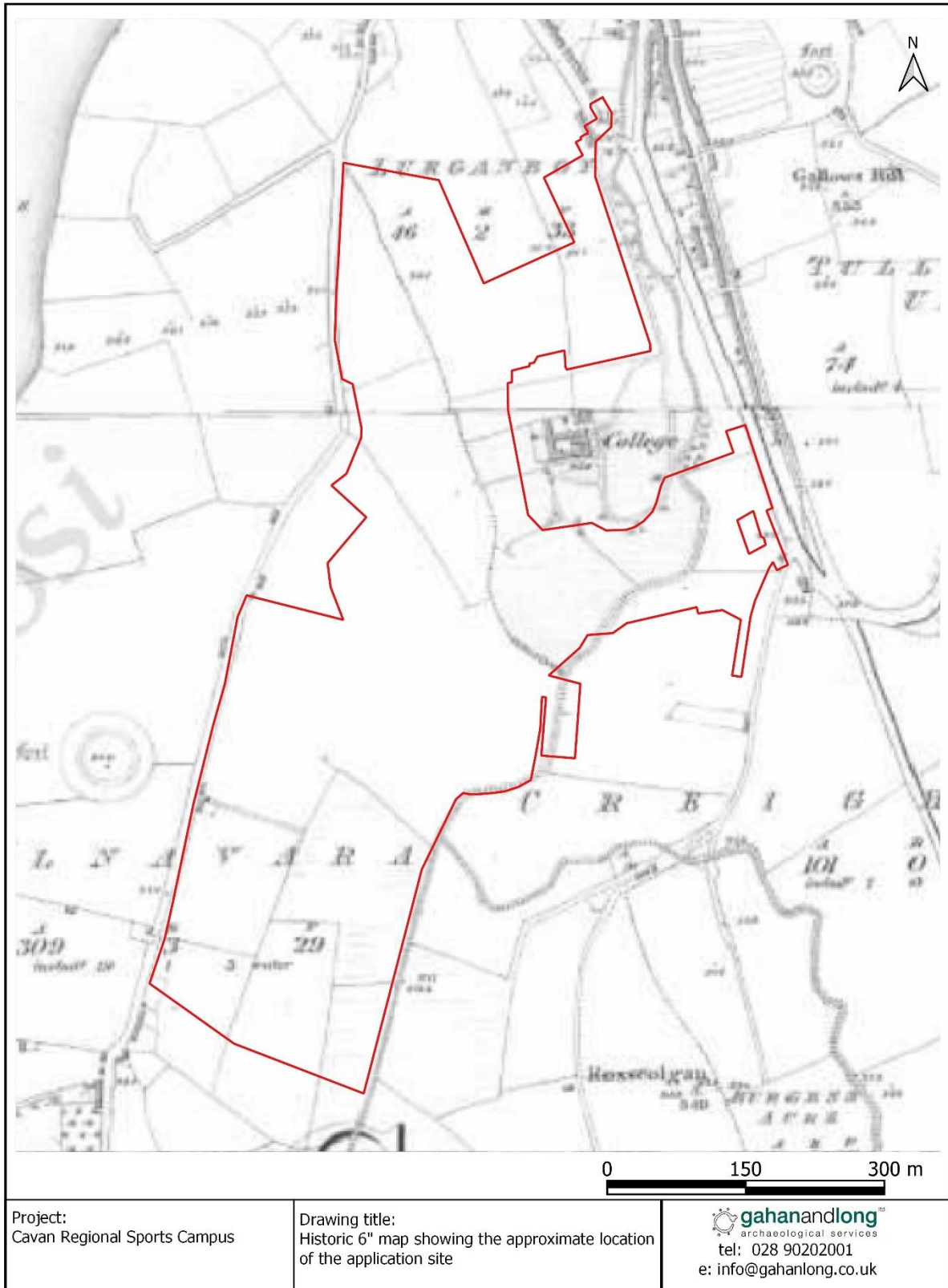


Figure 15.7: Historic 25" map showing the approximate location of the application site

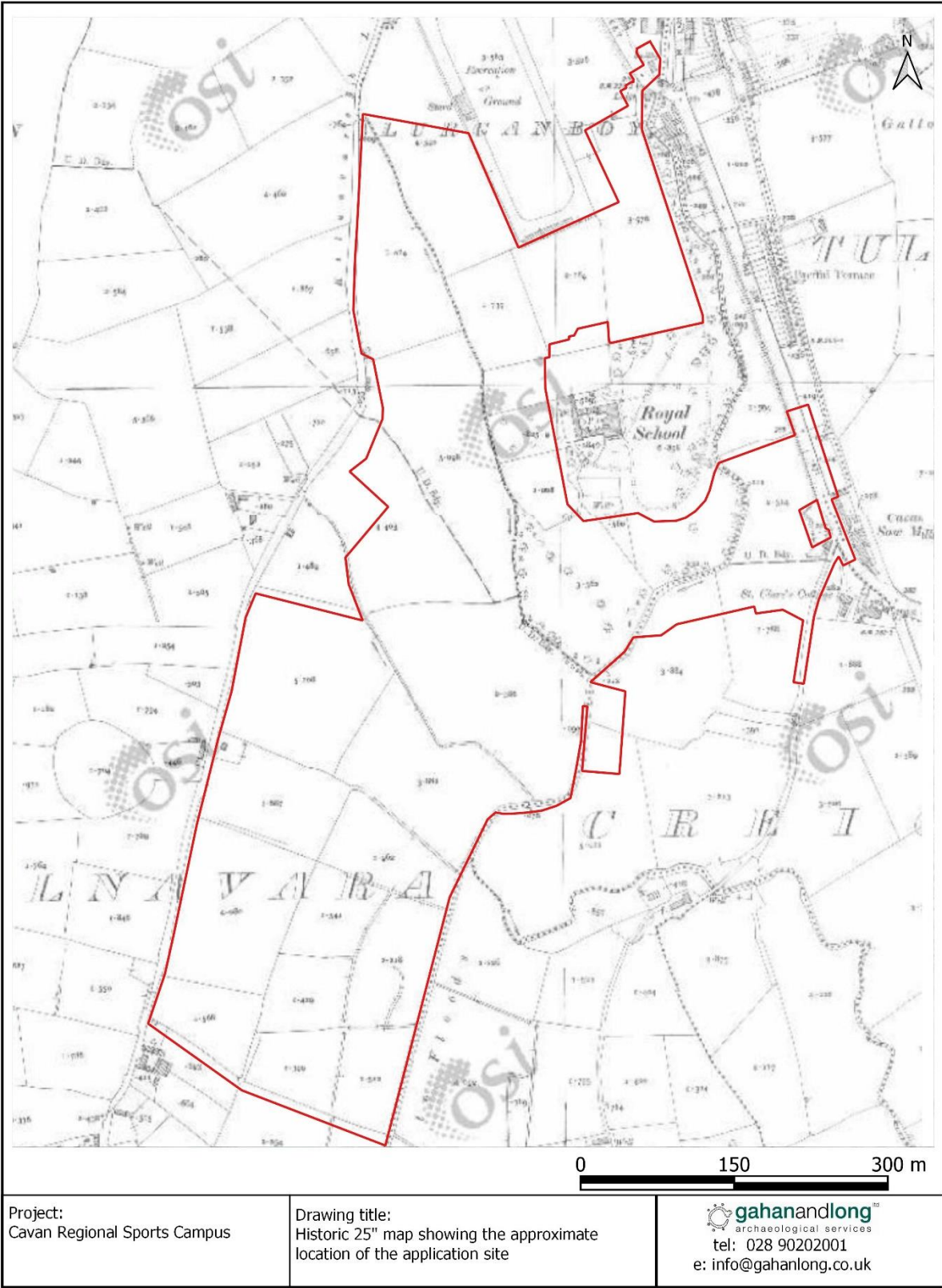
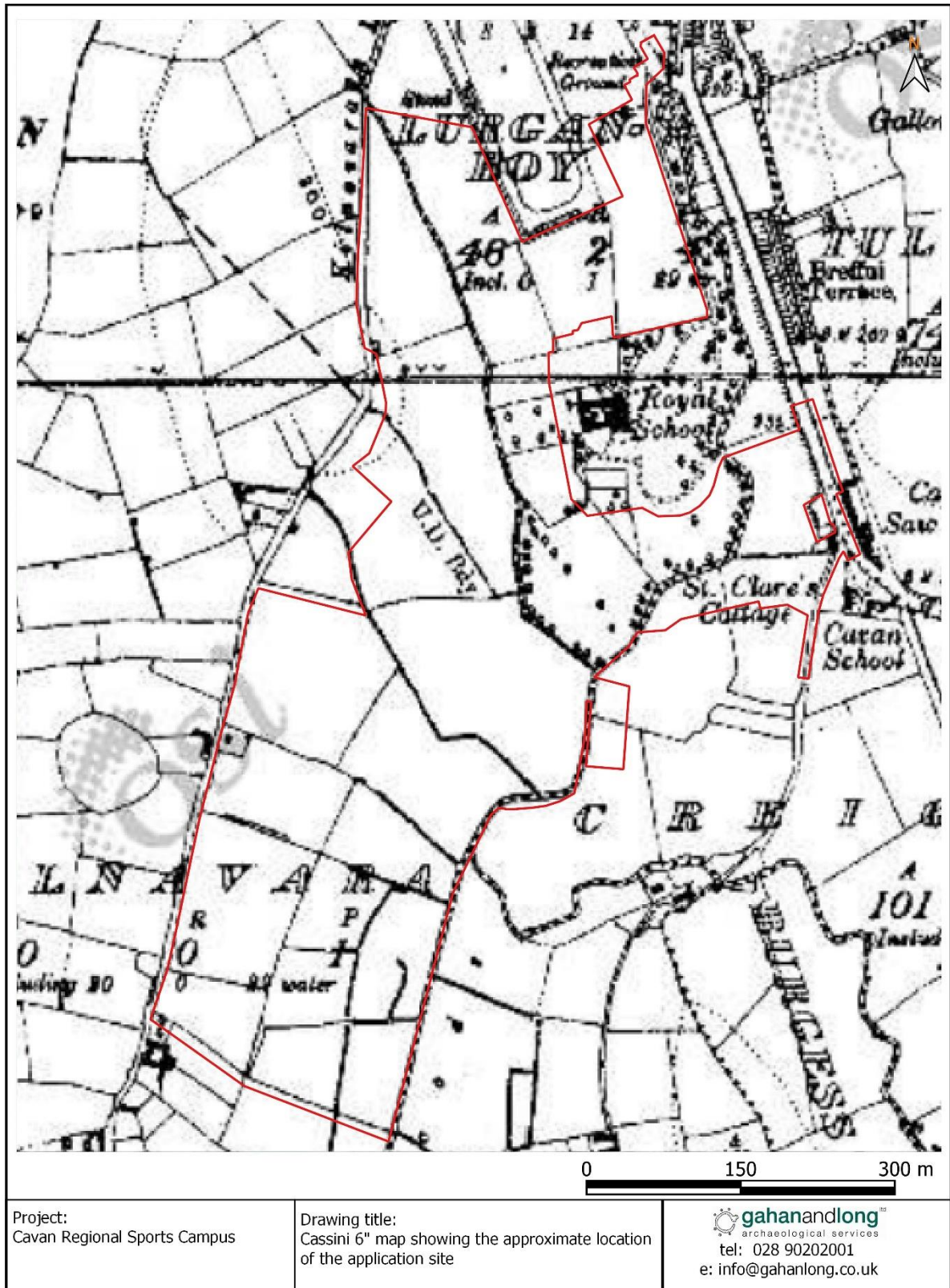


Figure 15.8: Cassini 6" map showing the approximate location of the application site





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## 16.0 LANDSCAPE AND VISUAL IMPACT

### 16.1 Introduction

#### 16.1.1 Landscape Consultants

This chapter of the Environmental Statement assesses the Landscape and Visual Impact of the proposed development and has been prepared by Bill McIlwaine CMLI (Chartered Landscape Architect) of McIlwaine Landscape Architects on behalf of Cavan County Council.

#### 16.1.2 Location and Size of Development

The site, of some 28 hectares in area, is located on lands southwest of Cavan town centre. It lies between Kilnavarragh Lane and the Dublin Road, mainly on the western bank of the Cavan River, adjacent to the extensive GAA facilities at Breffni Park and the historic listed buildings of the Royal School.

#### 16.1.3 Site location/context plan

Appendix 16.4 indicates the site in its local setting.

#### 16.1.4 Description of proposal

The proposed development is described in detail in Chapter 2, but will include the following:

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls,

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fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.

#### **16.1.5 Purpose of the study**

The aim of this assessment is to describe, classify and evaluate the receiving environment, in order to be able to make an assessment of the likely landscape and visual impacts that the proposed development will cause, thereby providing guidance for landscape design and appropriate mitigation measures to be incorporated in the proposals for the site. The existing landscape character and visual conditions have been separately surveyed and assessed. The landscape assessment identifies constituent features and elements which characterise this particular landscape. The visual assessment establishes the area in which the development may be visible, the different groups of people who may experience views of the development and the nature of views and visual amenity.

### **16.2 Methodology**

The methodology employed for this assessment follows the recommendations and guidance set out in the “Guidelines for Landscape and Visual Impact Assessment” third edition (2013) as published by the Landscape Institute and the Institute of Environmental Management and Assessment.

The study area and its context have been investigated by a combination of fieldwork and studies of both available maps of the area and relevant documents published by Cavan County Council.

The study area was visited on a number of occasions during November and December 2023, and January 2024 when its physical characteristics were noted and its visibility from vantage points in the surrounding area was studied. (See Appendix 4).

The photographs attached, VP1 to VP12 in Appendix 16.5, illustrate this and key features of the environment are noted.

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## 16.3 Baseline Conditions: Landscape Planning Context.

### 16.3.1 Local Context

This section refers to The Cavan County Development Plan 2022 – 2028 Incorporating the Cavan Town Local Area Plan 2022 – 2028.

Under paragraph 4.13.1 Introduction is noted: -

*“Article 1 (a) of the European Landscape Convention provides a definition of landscape as follows; ‘Landscape means an area as perceived by people whose character is the result of the action and interaction of natural/or human factors’ Cavan has a diverse landscape characterised by highlands in the east of the County, Culcagh-Anierin uplands in the northwest of the County and drumlin and lakelands throughout.”*

Under paragraph 4.13.2 Landscape Character Areas is noted: -

*“the purpose of landscape character assessment is to provide the foundation for policy formulation and decision making for landscape management. County Cavan preliminary Landscape Character Assessment has identified the following five landscape character areas:*

- *Cuilcagh-Anierin Uplands of West Cavan*
- *The Lakelands*
- *Lake Catchments of South Cavan*
- *Drumlin Belt and Uplands of East Cavan; and*
- *Highlands of East Cavan*

*Cavan Town and Environs is designated within the Lakelands Landscape Character Area” described elsewhere as: -*

*“The “lakelands” are an extensive area of inland lakes within the Erne drainage system. This area lies west of Cavan and includes Belturbet, Butlersbridge, Killeshandra, Arva, Lough Gowna and Ballinagh. Much of this area lies within Natural Heritage Areas and the European Designations of Special Area of Conservation and Special Protection Areas.”*

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In addition several “*High Landscape Areas*” are identified, none of which are impacted on by the current proposals.

Under paragraph 4.13.3 *Scenic Viewing Points and Scenic Routes* is noted: -

*There are 17 Scenic Viewing Points and three Scenic Routes designated within County Cavan that offer attractive cross-sectional views and overall impressions of different landscapes in the County. These protected views and routes are considered when assessing planning applications*

None of these scenic viewing points and routes are impacted on by the current proposals.

Under paragraph 4.13.4 *County Heritage Sites* is noted: -

*There are 25 designated county heritage sites in Cavan..... These sites are of important value to the built heritage of the landscape of Cavan.*

None of these sites are impacted on by the current proposals.

Under paragraph 4.13.5 *Other Landscape Designations* is noted: -

*Other Landscape designations within County Cavan..... include six Riverside Amenity Areas and 17 Lakeside Amenity Areas. In addition there are also 4 Forest Parks and Other Parks, nine Major Lakes and Lake Environs and 18 Walking Routes designated within County Cavan.*

None of these assets are impacted on by the current proposals.

Under Section 9 Mitigation Measures, Landscape character natural heritage climate change development objectives LCC O2 is noted: -

*“Encourage the potential community woodlands areas in urban/urban fringe areas and the development of community woodlands through rural Cavan.”*

Under Section 9 Mitigation Measures, Landscape character natural heritage climate change development objectives LCC 11 is noted: -



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*“Develop a strategy to support an active native tree planting programme in the context of climate adaption”.*

## **16.4 Baseline Conditions: Local Landscape Character**

### **16.4.1 Local Landscape Context**

The development site lies to the southwest of Cavan town centre between Kilnavarragh Lane to the west and the Dublin Road to the east. It is mainly on the western bank of the Cavan River, adjacent to the extensive GAA facilities at Breffni Park and the historic listed buildings of the Royal School.

Surrounding land uses include, to the north, Terry Coyle Park, the home ground of Cavan Gaels Gaelic Football Club, beyond which is the increasingly dense urban fabric of the town; to the east are the grounds and listed buildings of the Royal School beyond which is the Cavan River and Dublin Road; to the west there is a ribbon of residential development in an elevated location along Kilnavarragh Lane and to the south is agricultural land, mainly used for grazing.

Other nearby land uses/points of interest include Farnham Estate Spa & Golf Course and County Cavan Golf Club some 2.5 kilometres northwest of the site, Swellan Lough 0.60 kms to the west and just behind the houses fronting Kilnavarragh Lane is a recorded monument Ref CV025-074, a large, almost circular hedged, raised and grass-covered area, somewhat at odds with the surrounding generally roughly rectangular field pattern (see Viewpoint VP6 in Appendix 16.5).

The field pattern of the locality is variable in scale – an analysis suggests that, historically, a small-scale field pattern was the norm, however in places, there is evidence of past hedgerow removal to increase field size. Stands of woodland and the presence of hedgerow trees in groups or scattered individuals all combine, in some areas, to lend the landscape a relatively wooded appearance. In some places the farmland has a somewhat untidy character with areas enclosed by gappy hedges and bramble scrub.

### **16.4.2 Site Description & Character**

**General:** The site is roughly rectangular, of overall length some 980 metres and with an average width of 350 metres. The total “red line” boundary encompasses a total area of 28 hectares.

**Topography:** The site topography is variable, ranging from relatively flat on the floodplain of the Cavan River at elevations of 62.00 to 63.00m AOD to steeply sloping, from the western boundary, generally west to east. At the northwestern corner of the site the highest elevation is 78.50m AOD falling to

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75.50m AOD in the northeastern corner. At the southeastern corner, on the riverbank, the lowest elevation is 62.00m AOD rising to 72.00m AOD in the southwestern corner.

Soils: (See Chapter 9 Land, Soils & Waters).

Existing vegetation: The sites existing vegetation consists mainly of left over rough grassed areas of agricultural grazing land with remnant boundary hedges and a number of mature trees. A more detailed assessment of the site's vegetation is contained in the Chapter on Ecology and in the Arboriculturist's Tree Survey Report.

Hydrology: Apart from the aforementioned Cavan River and drainage ditches there are no other significant surface water drainage features within the site (see separate Chapter 9 Land, Soils & Waters).

Access & circulation: The site is currently accessed from the Dublin Road through the Breffni GAA complex or from gateways onto Kilnavarragh Lane.

Site Character: Despite consisting almost entirely of agricultural land, the ribbon development along Kilnavarragh Lane, the large scale development of stadium and playing fields on the east bank of the river and even the presence of the historic Royal School complex all combine to lend the site a suburban or "urban fringe" character.

## 16.5 The Proposed Development

Phase 1 Development Proposals will consist of the following facilities:

- Sports Arena - fabric covered tensile structure to accommodate internal 110m x 70m 4G pitch with mezzanine level spectator seating along one side, and ancillary accommodation including
- reception, changing, club facilities with a Gross Internal Area (GIA) of 1,200sqm.
- 2no. GAA external floodlit sand mattress grass pitches with ball stop fencing at both ends pitch dimensions – 143m x 86m plus 5m wide run-off width to all sides.
- External floodlit 2G synthetic hockey pitch with 2.4m high open mesh perimeter fencing, 1.1m high spectator fencing to all sides, and 2 x pitch side team shelters, pitch dimension – 91.4m x 55m plus 5m wide run-off width to all sides.
- New access junction to the Dublin Road and bridge over the Cavan River
- Sports Campus roads, pavements, car parking and landscaping

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Future Phases will make up the Full Site Development and will consist of the following additional facilities:

- 2/3no. GAA external floodlit sand mattress grass pitches with ball stop fencing at both ends pitch dimensions – 143m x 86m plus 5m wide run-off width to all sides.
- GAA spectator stands, Centre of excellence and miscellaneous support buildings and amenities.
- Sports Building – 2 storeys physically linked to the Sports Arena with a GIA of 4,800sqm incorporating:
  - 8 court sports hall with spectator seating
  - Changing Rooms
  - Fitness studios
  - Reception, café, social spaces
  - Storage and ancillary accommodation
- External floodlit 4G multisport pitch with 2.4m high open mesh perimeter fencing, 1.1m high spectator fencing to one side, ball stop fencing at both ends 2 x pitch side team shelters, and
- covered spectator stand accommodating 100 people, pitch dimension – 130 x 80m plus 5m wide run-off width to all sides.
- 8 Lane external floodlit athletics track with grass soccer pitch to infield including a covered 450 capacity spectator stand with changing and ancillary accommodation under

These additional facilities will be delivered in various phases as funding becomes available.

## **16.6 Evaluation and Impact Assessment**

### **16.6.1 Introduction**

The evaluation and impact assessment involves consideration of: -

The quality and sensitivity of the landscape resource (receptors) and magnitude of effect as a result of the proposed development.

The magnitude of visual change and the sensitivity of the viewers (receptors of visual effects).

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## 16.6.2 Methodology

The following paragraphs and Table 16.1 outline the methodology applied. Utilising this approach, the individual viewpoints are analysed within the schedules relating to each of the viewpoint photographs, in terms of landscape quality/sensitivity and character, typical receptors, nature of change to landscape character and visual amenity, and magnitude and significance of change. (See Table 16.2 in Appendix 16.6).

An extensive search of the Zone of Theoretical Visibility (ZTV) was undertaken, and key features of the environment were identified. The following selected viewpoints are representative of views available from within the ZTV and these form the basis of the visual assessment (See Appendix 16.2).

- VP1 - View from Park View.
- VP2 - View from Park View.
- VP3 - View from Dublin Road.
- VP4 - View from amenity area at Lakeview.
- VP5 - View from Dublin Road at entrance to Royal School.
- VP6 - View from edge of recorded monument off Kilnavarragh Lane.
- VP7 - View from Kilnavarragh Lane.
- VP8 - View from Kilnavarragh Lane.
- VP9 - View from Kilnavarragh Lane.
- VP10 - View from Kilnavarragh Lane.
- VP11 - View from Kilnavarragh Lane.
- VP12 - View from Kilnavarragh Lane.

For ease of identifying the location of the site within the landscape the main building of the Royal School provides a convenient marker and it is indicated on the viewpoint photographs.

It is notable (as demonstrated by VP3 & VP7) that there are not long and medium distance views into the site from public roads to the east, south and southeast because of the site's low elevation and secluded riverside setting, the lack of elevated vantage points, and the screening effects of intervening topography and vegetation.

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Similarly, it is difficult to find long and medium distance views into the site from the northwest and north because of the lack of elevated vantages points and intervening topography, built form and vegetation.

Elevated Viewpoints VP1, VP2 and VP4 represent short views into the northern portion of the site from a quiet residential street and a nearby hilltop amenity area respectively. Viewpoint VP5 at the Royal School entrance has no view into the site due to steep intervening topography. Viewpoint VP6 is from the edge of the recorded monument Ref CV025-074, noted above.

From the west – Kilnavarragh Lane runs north to south close to the summit of a ridge which effectively screens the site from further afield. Viewpoints VP8 to VP12 indicate the visibility of the site from short views in from the lane itself, immediately adjacent to the site boundary.

**16.6.3 Landscape Quality and Sensitivity (of the Landscape resource)**

With regard to the relative value and sensitivity of the Landscape Resource, the following definitions have been formulated: -

High                Those Landscapes which exhibit a strong positive character and a ‘sense of place’ or have many notable features, e.g. their scenic, historical, cultural or ecological interest. They may be worthy of conservation and sensitive to even small changes.

Medium            Those Landscapes which exhibit a positive character, but where individual elements have suffered degradation. They may be tolerant of some change.

Low                 Those Landscapes which exhibit a negative character, requiring regeneration or enhancement, potentially tolerant of significant change.

In respect of this site, because of the presence of visual detractors such as the visible built form of the town core and along local roads, the large stadium complex, floodlight masts, ball stop fences, electricity/telecom poles and lines, we consider that the site and its setting would fall into the “Low/Medium” quality category (i.e. potentially tolerant of significant /some change).

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### 16.6.4 Magnitude of effect (on the Landscape resource)

With regard to Magnitude of effect on the Landscape resource, the following definitions have been formulated: -

<u>High adverse</u>	Loss of/or major changes to landscape characteristics.
<u>Medium adverse</u>	Partial loss of/or changes to landscape characteristics.
<u>Low adverse</u>	Slight loss of/or changes to landscape characteristics.
<u>No change</u>	Imperceptible loss of/or changes to landscape characteristics, which would have an insignificant effect on character
<u>Low beneficial</u>	Minor improvement of/or changes to landscape characteristics, raising the quality over a limited area.
<u>Medium beneficial</u>	Substantial improvement of/or changes to landscape characteristics, raising the quality over a wide area.
<u>High beneficial</u>	Major improvement of/or changes to landscape characteristics, through the creation of new landscape structure and the removal of incongruous features.

### 16.6.5 Significance of effect (on the Landscape resource)

Significance of effect is determined by correlating magnitude of effect with landscape quality and sensitivity (See Table 16.1).

A combination of subjective and objective judgements is used to determine the overall significance. This is graded Substantial, Major, Moderate, Slight or Negligible and the effects are assessed as adverse or beneficial. Where none of these apply the rating is No Change.

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### 16.6.6 Magnitude of effect (on visual receptors)

With regard to magnitude of effect on visual receptors the following definitions have been formulated:

High adverse                      Loss of/or major changes to the view, with little scope for mitigation.

Medium adverse                      Partial loss of/or changes to the view, with some scope for mitigation.

Low adverse                      Slight loss of/or changes to the view, with scope for mitigation.

No change                      Imperceptible loss of/or changes to the view.

Low beneficial                      Minor improvement of/or changes to the view.

Medium beneficial                      Substantial improvement of/or changes to the view.

High beneficial                      Major improvement of/or changes to the view.

### 16.6.7 Significance of effect (on visual receptors)

To assess significance of effect, magnitude is correlated with receptor sensitivity

(See Table 16.1). Again using a combination of subjective and objective judgements, this is graded Substantial, Major, Moderate, Slight or Negligible and the effects are assessed as adverse or beneficial. Where none of these apply the rating is No Change.

Sensitivity groups have been defined as follows: -

High Sensitivity - Occupiers of residential properties less than 500 metres from the site whose views are affected by the development. Users of outdoor recreational facilities including public rights of way, within 500 metres of the development, whose attention or interest may be focused on the landscape.

Medium Sensitivity - People who live within neighbouring areas between 500 metres and 2 km of the development. People engaged in outdoor sport or recreation other than appreciation of the landscape. Motorists and tourists.

Low Sensitivity - People who live outside the area. Receptors further than 2 km from the development. People who travel past infrequently. Workers in farming and local industries. Rail travellers.



**Table 16.1: Significance of Effects**

		Sensitivity of Receptor		
		High	Medium	Low
Magnitude of Effect	High adverse	Substantial adverse	Major adverse	Moderate adverse
	Medium adverse	Major adverse	Moderate adverse	Slight adverse
	Low adverse	Moderate adverse	Slight adverse	Negligible adverse
	No change	No change	No change	No change
	Low beneficial	Moderate beneficial	Slight beneficial	Negligible beneficial
	Medium beneficial	Major beneficial	Moderate beneficial	Slight beneficial
	High beneficial	Substantial beneficial	Major beneficial	Moderate beneficial

## 16.7 Mitigation

### 16.7.1 Building Fabric

It is the opinion of this consultant that the proposal will have a predominantly positive effect on the character of the site, as it will form a new architectural feature in the townscape of Cavan, utilising modern building materials in a contemporary fashion to contrast with and complement those in the retained historic buildings of the Royal School. It will serve to reinvigorate this part of the town both physically and in terms of function.

From a visual perspective, it is suggested that this is a development which will rely partially on its architectural merit, simplicity of form and high-quality finishes for any “mitigation” against its size, prominence and stature.

### 16.7.2 Earth modelling

The main structures of the development have been sunken into the site topography ensuring that visible structures “hug” the ground and are therefore less intrusive. Regrading to accommodate pitches has necessitated, in places, the use of retaining walls.

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### 16.7.3 Existing vegetation

Existing trees and peripheral boundary hedges are to be retained where indicated on Site Layout & Landscape Plan Drawing No CSC-MLA-XX-00-DR-L-2001 (See Appendix 16.1) and will be protected during construction and managed in accordance with current best arboricultural practices at the time of the execution of the works (in keeping with the recommendations of BS 5837 2012) and as recommended in the Arboriculturist's tree survey report.

### 16.7.4 Planting

Extensive specimen tree planting is proposed, at extra heavy standard size (typically 4.5 to 6.0 m high at time of planting) for immediate structural and screening effect. Tree species chosen are mainly indigenous or "naturalised" species (such as oak, alder and willow).

Hedge planting is proposed, at various locations of easily maintained evergreen and deciduous species for visual containment and biodiversity interest.

Stands of woodland are proposed in locations throughout the site,

These landscape proposals will "knit" the new development visually into the local landscape and complement the stands of woodland and trees on nearby adjacent land.

These proposals are in keeping with the recommendations of the Cavan County Development Plan outlined in Section 16.3.1.

### 16.7.5 Ecology

Existing habitats within the site have been surveyed and reported on (see separate Chapter 8 on Ecology by MCL Consulting). The extensive tree and hedge planting and different grass seeding regimes proposed as part of the development works will significantly improve both the species and age diversity of these habitats. The recommendations within Chapter 8 on Ecology have been fully implemented within the landscape proposals.

## 16.8 Statement of Significance of Effect/Conclusions

The site can accommodate the development without, in the longer term, a major change in the landscape character of the surrounding area. This is due to the secluded riverside setting, the development of the main buildings sunken into the site topography, the retention of existing

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vegetation where practicable, and the generous planting proposed to help integrate the new development.

We conclude that this will have no appreciable impact on the inherent qualities of the landscape/townscape setting of Cavan town rather that it will rationalize land use in creating a new sports campus with the character of a town park and introducing a more urban context to the Royal School listed buildings.

We conclude that the development will have no appreciable impact on the setting of the recorded monument Ref CV025-074.

The direct landscape loss of agricultural land in developing the facility will be compensated for by capitalising on other landscape resources such as increased specimen tree, woodland and hedge planting, significantly improving and extending these habitats.

The northern section of the development is partially open to short views in from minor roads to the northeasteast, south and southwest, at distances ranging from 124 to 241 metres from the site. Parts of the development would initially be visible reducing in time as mitigation planting becomes established. In addition this planting will have a positive effect in extending and enhancing the specimen tree and woodland cover in the locality. (see viewpoints VP4 to VP8).

The site is open to short views from viewpoints in close proximity to the site along Kilnavarragh Lane. Some of these views are glimpse views, filtered by the presence of existing topography and vegetation. For many of these locations the timber acoustic barrier will constitute a visual intrusion, (though it will immediately screen the development from most road users) reducing in time as the existing hedgerow increases in height (i.e. managed with less severe trimming) or as new mitigation planting becomes established.

Long and short views from all other directions are screened by the local topography, built form and vegetation, or are from such distant vantage points as to be insignificant.

In conclusion it is considered that there are no significant adverse long-term landscape and visual effects arising with respect to public or private amenity.

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## 17.0 CUMULATIVE IMPACTS, INTERACTIONS & MAJOR ACCIDENTS AND DISASTERS

### 17.1 Introduction

This chapter considers the potential for cumulative impacts arising from the proposed development in association with other development, as well as the interaction between potential impacts on different environmental receptors arising from the proposed development. This chapter also assesses the impacts effects arising from the vulnerability of the proposed development to risks of major accidents and/or disasters that are relevant to the proposed development.

#### 17.1.1 Legislative Requirements

Pursuant to Article 3 of the 2014 EIA Directive *“the environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a proposed development on the following factors:*

- a) *population and human health;*
- b) *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- c) *land, soil, water, air and climate;*
- d) *material assets, cultural heritage and the landscape;*
- e) ***the interaction between the factors referred to in points (a) to (d)***  
*[emphasis added]*

Furthermore, the information to be included in an EIAR must provide *“a description of the likely significant effects”, which description should cover the “direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the proposed development”. [emphasis added].*

### 17.2 Cumulative Impacts

#### 17.2.1 Planning History

A full review of the Cavan planning register and ABP planning register was conducted to establish all existing and approved proposed developments that are to be considered cumulatively with the proposed development.

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Proposed developments to be included within the cumulative assessment were selected based on the following scoping criteria:

- Nature of the proposed development – large scale proposals were considered due to their impacts in terms of visual amenity, noise or traffic impact. In addition, other developments with significant impacts in their own right were considered;
- Distance – developments further from the Proposed Development were scoped out because of distance and the diminishing potential for significant cumulative effects; and,
- Significance – developments which are of a larger scale were considered because of the potential for cumulative effects during the construction or operational phases. Smaller applications or those that were considered to be inconsequential amendments to previous approvals were not considered.

There are currently no live planning applications within the site and only a small number of live applications within the immediate vicinity of the site. These applications are for minor residential works which are unlikely to give rise to any cumulative impacts.

Table 17.1 below therefore lists the approved planning history of the site and the immediate surrounding area located within the jurisdiction of Donegal County Council considered within this assessment, based on the scoping criteria above.

**Table 17.1: Planning History of Immediate Area**

Planning Reference	Description of development/ development type	Decision	Date
17507	to develop 2 no. training pitches, floodlights, spectator stand, fencing, form new roadway and access bridge from existing carpark and also alterations to site layout to include widening existing access route and all associated works	Approved	31/07/2018
19293	to erect fully serviced single storey gym and all associated works	Approved	24/10/2019
ABP Ref: PL02.314299 Planning Authority Case Reference: 2228	Construction of 15 dwellings, 10 apartments in 3 blocks and all associated site works	Approved	26/09/2023

to develop 2 no. training pitches, floodlights, spectator stand, fencing, form new roadway and access bridge from existing carpark and also alterations to site layout to include widening existing access route and all associated works (Ref: 17507)

This application was granted approval in July 2018 and from examination of historic aerial imagery, works appear to have commenced at around end of 2018/beginning of 2019 with the construction of the access bridge. By November 2019, ground to the west of the bridge has been cleared and gravelled with a path created leading to a further smaller clearance of land to the south. No further work is carried out for approximately 3 years. By March 2022 a strip of vegetation has been cleared.

At the time of writing, the other practice pitch, floodlights, spectator stand and fencing have not been completed.

The proposed Cavan Regional Sports Complex has taken this development into consideration in its design and has incorporated elements of it. The Regional Sports Complex will in effect replace development 17507 and will therefore absorb its potential impacts, not add to them. As such, there will be no cumulative impacts.

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to erect fully serviced single storey gym and all associated works

This application was granted approval in October 2019 from examination of historic aerial imagery, works appear to have been completed by April 2020. The gym is relatively small in scale measuring 25.5m x 15.5m.

The main potential cumulative impact is that of traffic. The gym is located to the south of the proposal site, with the Cavan River separating the two. The gym uses a separate access to that proposed for the Regional Sports Complex, and given the small scale of the gym, it is unlikely that there will be cumulative traffic impacts.

Construction of 15 dwellings, 10 apartments in 3 blocks and all associated site works

This application was granted approval in September 2023, located approximately 1km to the west of the proposed development site. Construction works do not appear to have commenced at the time of writing.

The proposed development comprises the construction of 25 no. residential units on site with Access to the development is proposed via connection to the existing internal road network within the existing estate.

This approval is located sufficiently far away from the proposed development that there will be no cumulative noise or air quality impacts if the construction of the two projects should occur simultaneously. Traffic associated with the approval will also not be significant enough to cause cumulative traffic impacts with the proposed development.

The proposed Regional Sports Campus can as a significant positive impact on the approval by provided high quality, convenient recreational facilities for the eventual residents of the approved 25 no. residential units.

**Other Known/Potential Development**

Cavan Flood Relief Scheme

Cavan County Council as the Lead Authority, in partnership with The Office of Public Works (OPW) are now advancing with the Cavan Town Flood Relief Scheme.



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The OPW has recommended the development of a Flood Relief Scheme for Cavan Town as a result of the work completed in the North Western-Neagh Bann Flood Risk Assessment and Management (CFRAM) Study.

This Flood Relief Scheme is part of the €1.3bn National Fund announced by the Government for Flood Relief Schemes throughout the country in May 2018.

Cavan County Council have commissioned Ayesa (formerly ByrneLooby), to develop and implement the Flood Relief Scheme for Cavan Town. The objective of the scheme is to alleviate the risk of flooding in the Cavan Town area by providing a scheme that is technically, socially, environmentally and economically acceptable.

McCloy Consulting are aware that a new hydrological and hydraulic analysis is ongoing in the Cavan town region as part of the Cavan Flood Relief Scheme, however that model data is not available at the time of submission. The detailed site-specific model results summarised in the completed Flood Risk Assessment (Appendix 9.5 of Volume 3 of the EIAR) for the proposed development, are intended to supersede existing CFRAM flood maps / data and are considered fit for purpose for this assessment.

### 17.3 Impact Interactions

Table 17.2 shows a matrix of significant interactions likely to occur between potential impacts arising from the Proposed development. The boxes marked with a “√” in Table 17.2 indicate that a potential relationship exists between any two environmental issues associated with the Proposed development. The level of interaction between the various topics will vary greatly; however, the table allows the interactions to be recognised and developed further, where necessary. Summary details on each of the interactions anticipated are provided in Table 17.3.

**Table 17.2: Overview of Potential Interactions**

	Population and Human Health	Biodiversity	Soils and Waters	Air	Noise and Vibration	Material Assets	Traffic	Cultural Heritage	Archaeology	Landscape and Visual
Population and Human Health		✓	✓	✓	✓					✓
Biodiversity	✓		✓		✓					✓
Soils and Waters	✓	✓								
Air	✓						✓			
Noise and Vibration	✓	✓					✓			
Material Assets	✓		✓							
Traffic				✓	✓					
Cultural Heritage										
Archaeology										
Landscape and Visual	✓	✓								

**Table 17.3: Summary of Potential Interactions / Interrelationships**

Subject	Interaction with-	Interactions/Interrelationships
Population and Human Health	Biodiversity	<p>Increased visitors to the site during operation will alter the existing setting of the site and will result in potential impacts on the receiving biodiversity environment. However, the site design has taken this into consideration. A large wildlife habitat creation area is proposed along the western boundary of the site. This area will be fully planted out with native species and will provide a refuge for any existing wildlife on the site. It will not be accessible by users of the site so that there is as little interaction between those making use of the sports campus and the local wildlife as possible.</p> <p>Appropriate mitigation will also be implemented to ensure that the increase in visitor numbers will not result in impacts on biodiversity. For example, implementation of controls to prevent unnecessary lighting thereby reducing light pollution.</p> <p>Impacts on the biodiversity of the site are fully discussed in Chapter 8 Biodiversity of this EIAR.</p>
	Lands, Soils and Waters	<p>With regard to Lands, Soils and Waters, the chapter states that that there is no specific geological significance and therefore no impact likely, there is no gravels present on the site and therefore no potential for any impacts on human health.</p> <p>The chapter does indicate that most of the site is devoid of made ground and ground gas. Areas of made ground are identified around the access road and bridge crossing, however there is no significant cut-fill works planned for the access road area of the site and the potential human health risks from exposure to the made ground are reduced.</p> <p>The re-use of site-derived materials shall be prioritised to minimise the volume of imported materials required. Some</p>

Subject	Interaction with-	Interactions/Interrelationships
		<p>topsoil and clay may need to be imported. These materials have the potential to be contaminated or have levels of naturally occurring components in excess of safe human health limits.</p> <p>Subject to relevant mitigation no residual impacts are expected during the operation phase of the development.</p>
	Air	<p>The impact on air quality during both the construction and operational phase will be minimal, with any residual effects expected to be limited in geography and duration.</p>
	Noise and Vibration	<p>Residual effects on noise and vibration levels during the construction phase are expected to be ongoing throughout this phase, however, are varying levels (as set out in the Noise Chapter), albeit at reduced levels in the short-term. The implementation of noise barriers and other mitigation measures will alleviate some of the impacts on nearby receptors. Residual effects may still be experienced by receptors closest to the construction sites, necessitating ongoing monitoring and proactive management to minimise disturbances and ensure compliance with regulatory standards.</p> <p>The residual impact of noise and vibration levels post-construction is projected to be negligible. The suggested mitigation measures will ensure that the proposal remains below the 50 dB(A) noise threshold, in accordance with the established standard for sports activities and the guidelines set by the WHO for external amenity.</p>
	Landscape and Visual	<p>The landscape and visual chapter concludes that the site is open to short views from viewpoints in close proximity to the site along Kilnavarragh Lane. Some of these views are glimpse views, filtered by the presence of existing topography and vegetation. For many of these locations the timber acoustic</p>

Subject	Interaction with-	Interactions/Interrelationships
		<p>barrier will constitute a visual intrusion, (though it will immediately screen the development from most road users) reducing in time as the existing hedgerow increases in height (i.e. managed with less severe trimming) or as new mitigation planting becomes established.</p> <p>Long and short views from all other directions are screened by the local topography, built form and vegetation, or are from such distant vantage points as to be insignificant.</p> <p>In conclusion it is considered that there are <b>no significant adverse long-term</b> landscape and visual effects arising with respect to public or private amenity.</p>
Biodiversity	Population and Human Health	<p>Increased visitors to the site during operation will alter the existing setting of the site and will result in potential impacts on the receiving biodiversity environment. However, the site design has taken this into consideration. A large wildlife habitat creation area is proposed along the western boundary of the site. This area will be fully planted out with native species and will provide a refuge for any existing wildlife on the site. It will not be accessible by users of the site so that there is as little interaction between those making use of the sports campus and the local wildlife as possible.</p> <p>Appropriate mitigation will also be implemented to ensure that the increase in visitor numbers will not result in impacts on biodiversity. For example, implementation of controls to prevent unnecessary lighting thereby reducing light pollution.</p> <p>Impacts on the biodiversity of the site are fully discussed in Chapter 8 Biodiversity of this EIAR.</p>

Subject	Interaction with-	Interactions/Interrelationships
	Lands, Soils and Waters	<p>The mobilisation and transport of soil via surface water runoff could potentially impact the nearby Cavan River. Soils and water runoff controls during construction are a key consideration relevant to aquatic species and habitats and suitable mitigation controls are detailed in Chapter 9, the implementation of which will ensure that there are no significant effects.</p> <p>Furthermore, proposed site development plans could potentially cause disturbance and the loss of habitat for terrestrial species such as the local badger populations. The extent of proposals removes a range of scrub and grassland foraging resources and also poses the risk of severing habitat connectivity within the site. Furthermore, excavations and earthworks further from the sett (left overnight could injure or trap foraging individuals.</p> <p>A habitat compensation area will mitigate the loss of habitat with the phasing of the development further ensuring any impact to badgers is minimised.</p>
	Noise and Vibration	<p>A Badger sett is located within a central area of the site. It is proposed to relocate this sett to the habitat compensation area, where it will benefit from a 50m buffer between it and any development. This buffer will ensure the sett is not impacted.</p> <p>As part of the general acoustic mitigation for the development, it is envisaged that acoustic fencing will be required on the western side of the proposed pitches. This will be a minimum of 3m in height and is required to be full, closed board fencing. Where this fencing is proposed and considered to form a barrier to dispersal for badger and other mammals there will be a requirement for mammal passes to be installed at the base</p>

Subject	Interaction with-	Interactions/Interrelationships
		<p>of the fence and should have a width of approximately 300m. This will allow ongoing commuting links for onsite badgers, whilst still providing required acoustic mitigation.</p> <p>Piling is required at the bridge landing site, vibrations from which can impact upon nearby habitats and species. Low vibration CFA piling will be utilised at the bridge landing site and CFA or other low vibration piling techniques used for the wider site to minimise impact.</p>
	Landscape and Visual	<p>MCL Consulting Ecologists and McIlwaine Landscape Architects have worked closely throughout the development of the project to ensure that the Landscape Plan provides as much biodiversity enhancement as possible.</p>
Soils and Waters	Population and Human Health	<p>With regard to Lands, Soils and Waters, the chapter states that that there is no specific geological significance and therefore no impact likely, there is no gravels present on the site and therefore no potential for any impacts on human health.</p> <p>The chapter does indicate that most of the site is devoid of made ground and ground gas. Areas of made ground are identified around the access road and bridge crossing, however there is no significant cut-fill works planned for the access road area of the site and the potential human health risks from exposure to the made ground are reduced.</p> <p>The re-use of site-derived materials shall be prioritised to minimise the volume of imported materials required. Some topsoil and clay may need to be imported. These materials have the potential to be contaminated or have levels of naturally occurring components in excess of safe human health limits.</p>



Subject	Interaction with-	Interactions/Interrelationships
		Subject to relevant mitigation no residual impacts are expected during the operation phase of the development.
	Biodiversity	<p>The mobilisation and transport of soil via surface water runoff could potentially impact the nearby Cavan River. Soils and water runoff controls during construction are a key consideration relevant to aquatic species and habitats and suitable mitigation controls are detailed in Chapter 9, the implementation of which will ensure that there are no significant effects.</p> <p>Furthermore, proposed site development plans could potentially cause disturbance and the loss of habitat for terrestrial species such as the local badger populations. The extent of proposals removes a range of scrub and grassland foraging resources and also poses the risk of severing habitat connectivity within the site. Furthermore, excavations and earthworks further from the sett (left overnight could injure or trap foraging individuals.</p> <p>A habitat compensation area will mitigate the loss of habitat with the phasing of the development further ensuring any impact to badgers is minimised.</p>
Air	Population and Human Health	The impact on air quality during both the construction and operational phase will be minimal, with any residual effects expected to be limited in geography and duration.
Noise and Vibration	Population and Human Health	Residual effects on noise and vibration levels during the construction phase are expected to be ongoing throughout this phase, however, are varying levels (as set out in the Noise Chapter), albeit at reduced levels in the short-term. The implementation of noise barriers and other mitigation measures will alleviate some of the impacts on nearby receptors. Residual effects may still be experienced by receptors closest to the construction sites, necessitating

Subject	Interaction with-	Interactions/Interrelationships
		<p>ongoing monitoring and proactive management to minimise disturbances and ensure compliance with regulatory standards.</p> <p>The residual impact of noise and vibration levels post-construction is projected to be negligible. The suggested mitigation measures will ensure that the proposal remains below the 50 dB(A) noise threshold, in accordance with the established standard for sports activities and the guidelines set by the WHO for external amenity.</p>
	Biodiversity	<p>A Badger sett is located within a central area of the site. It is proposed to relocate this sett to the habitat compensation area, where it will benefit from a 50m buffer between it and any development. This buffer will ensure the sett is not impacted.</p> <p>As part of the general acoustic mitigation for the development, it is envisaged that acoustic fencing will be required on the western side of the proposed pitches. This will be a minimum of 3m in height and is required to be full, closed board fencing. Where this fencing is proposed and considered to form a barrier to dispersal for badger and other mammals there will be a requirement for mammal passes to be installed at the base of the fence and should have a width of approximately 300m. This will allow ongoing commuting links for onsite badgers, whilst still providing required acoustic mitigation.</p> <p>Piling is required at the bridge landing site, vibrations from which can impact upon nearby habitats and species. Low vibration CFA piling will be utilised at the bridge landing site and CFA or other low vibration piling techniques used for the wider site to minimise impact.</p>

Subject	Interaction with-	Interactions/Interrelationships
Landscape and Visual Impact	Population and Human Health	<p>The landscape and visual chapter concludes that the site is open to short views from viewpoints in close proximity to the site along Kilnavarragh Lane. Some of these views are glimpse views, filtered by the presence of existing topography and vegetation. For many of these locations the timber acoustic barrier will constitute a visual intrusion, (though it will immediately screen the development from most road users) reducing in time as the existing hedgerow increases in height (i.e. managed with less severe trimming) or as new mitigation planting becomes established.</p> <p>Long and short views from all other directions are screened by the local topography, built form and vegetation, or are from such distant vantage points as to be insignificant.</p> <p>In conclusion it is considered that there are <b>no significant adverse long-term</b> landscape and visual effects arising with respect to public or private amenity.</p>
	Biodiversity	<p>MCL Consulting Ecologists and McIlwaine Landscape Architects have worked closely throughout the development of the project to ensure that the Landscape Plan provides as much biodiversity enhancement as possible.</p>

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## 17.4 Major Accidents and Disasters

This section of the EIAR considers the expected effects arising from the vulnerability of the proposed development to risks of major accidents and/or disasters that are relevant to the proposed development.

Article 3 of the Environmental Impact Assessment (EIA) Directive, as amended by Directive 2014/52/EU, requires that: “The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the proposed development to risks of major accidents and/or disasters that are relevant to the proposed development concerned”.

Furthermore, Annex IV, Section 8 of the Directive states that the EIAR shall contain: “A description of the expected significant adverse effects of the proposed development on the environment deriving from the vulnerability of the proposed development to risks of major accidents and/or disasters which are relevant to the proposed development concerned.”

The Directive also states that where appropriate, “this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.”

This section comprises an assessment of the vulnerability of the proposed development to risks of major accidents and/or disasters which are relevant to the proposed development.

As identified in the EIAR chapters, the proposed development is designed, and will be built and operated, in accordance with best practice. It has been ensured that the proposed development is capable of being constructed safely and without risk to health, can be maintained safely, and complies with all relevant health and safety legislation. An understanding of the potential consequences of major accidents and disasters due to the proposed development was gained through a desktop study, the results of which are summarised in Table 17.5.

**Table 17.4: Assessment of Risks Associated with the Proposed Development**

Major Event	Reason for consideration	Potential Receptors	Mitigation	Residual Significance
Floods	<p>The site is partly affected by the 1% AEP and 0.1% AEP fluvial floodplain of the Cavan River and development is proposed in Flood Zone A and Flood Zone B as defined by the OPW Planning Guidelines.</p> <p>The vulnerability of the proposed development to flooding is covered in the Flood Risk Assessment (Appendix 9.5 of Volume 3).</p>	Road users, property and people in areas of increased flood risk.	<p>The proposed development is flood-resilient and mitigation measures are to be put in place to manage residual risks. The full list of mitigation measures are set out in the Flood Risk Assessment but include measures such as Flood Resilient Construction, Porous Boundary Treatments &amp; Landscaping, Flood Management Plan and a drainage / SuDS plan.</p> <p>The proposed development has been determined to cause no measurable effect to flooding elsewhere for the 1% AEP flood, and a slight effect for the 0.1% AEP flood which does not affect any new or existing vulnerable receptor. No additional mitigation over and above that embedded in the existing layout is required. No other significant flood mechanism exists at the site.</p>	Not Significant
Road Accidents	The risk of spillage from hazardous loads as a result of a road traffic accident.	Roads users, aquatic environment.	The main risk in this case will come during the construction phase, particularly with fuel trucks transporting fuel to construction compounds.	Not Significant

Major Event	Reason for consideration	Potential Receptors	Mitigation	Residual Significance
			<p>The construction routes will be discussed and agreed with respective roads departments and disruption will be mitigated. The construction routes and the phasing of the scheme will be agreed with respective roads departments in order to agree the safest routes and methods of delivery.</p> <p>The Contractor will be required to develop a Construction Travel Plan to ensure operatives vehicles use are kept to a minimum with the use of mini-buses and shared vehicle trips.</p> <p>See Traffic Chapter (Chapter 13) for full traffic and transport mitigation.</p>	
Building Failure or Fire	A Sports Building is to be provided as part of the proposed development.	Building users.	<p>Once the proposed development is operational it is not likely to cause any major accidents or disasters due to its relatively small-scale nature.</p> <p>A Fire Alarm system will be provided to meet requirements of the relevant Building Regulations and</p>	Not Significant

Major Event	Reason for consideration	Potential Receptors	Mitigation	Residual Significance
			<p>shall be configured and programmed using a predefined cause and effect matrix to suit the requirements of the building fire strategy which is still under development.</p> <p>A disabled toilet alarm system will be provided to any disabled WC/Shower accommodation.</p> <p>All structures will be built to the required standards and guidelines. See Chapter 2 for further details.</p>	
<p>Utilities &amp; Containment Failure</p>	<p>The release of foul sewage / fluids / oils to the nearby SACs in the event of infrastructure failure could have significant impacts.</p> <p>Toilets and washing facilities, linked to the mains foul network will be in for the operational phase.</p>	<p>Cavan River</p>	<p>All appropriate monitoring and checking procedures will be in place for construction infrastructure, with an Environmental Clerk of Works on site during the works. An early warning of any major issues will therefore be likely, such that preventative measures can be taken before any such major event can occur.</p> <p>For the operational phase, the site infrastructure will be inspected and kept in good working order by Council staff, with high levels of maintenance to ensure the risk</p>	<p>Not Significant</p>



Major Event	Reason for consideration	Potential Receptors	Mitigation	Residual Significance
			of a major control and utilities infrastructure failure is very unlikely to occur.	

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## 17.5 Conclusions

An assessment of the likely significant cumulative effects of the Proposed development with other developments has been undertaken in EIAR Chapters 7 – 16. During the assessment process, coordination took place between assessment specialists to ensure that interacting impacts arising from the proposed development were identified, assessed and, where appropriate, mitigated. None of the assessments have identified any significant cumulative effect when considered against the developments considered in this chapter.

In addition, while there is potential for the impacts described to interact, it is unlikely, as a result of the mitigation measures proposed, that any of these interactions will result in significant additional impacts that are not already anticipated by each environmental topic.

The proposed development is designed, and will be built and operated, in accordance with best practice. It has been ensured that the proposed development is capable of being constructed safely and without risk to health, can be maintained safely, and complies with all relevant health and safety legislation. There will be no significant residual impacts or cumulative impacts in relation to major accidents or disasters.