

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR A PROPOSED COMMERCIAL DEVELOPMENT

“ART DATACENTRE ENNIS CAMPUS”

ART DATA
CENTRES

Report Prepared For

ART Data Centres Limited

Report Prepared By


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Our Reference

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1.0 INTRODUCTION

This Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting (AWN) on behalf of ART Datacentres Limited. The proposed development comprises, in summary, six data storage facilities, an energy centre an Above Ground Installation (AGI) building, a vertical farm, a substation compound and associated ancillary development on a greenfield site (previously used for agriculture) in the townlands of Tooreen and Cahernalough, Co Clare.

The CEMP provides a framework from which a more detailed CEMP will be developed by the contractor to implement mitigation measures which are described below and which are designed to avoid, minimise or mitigate adverse construction effects on the environment prior to commencement on site.

This CEMP has been prepared to account for activities at the site during the demolition, excavation, construction and landscaping phases of the project.

The main issues that have been considered within this document are as follows:

- Description of works;
- Construction programme and phasing;
- Site logistics;
- Workforce;
- Public relations and community liaison;
- Pollution Prevention;
- Construction traffic and access; and
- Safety, health and environmental management.

Preparation of the updated CEMP should comply with the mitigation measures presented by submitted expert reports, relevant legislation, guidelines, along with best practice. Additional mitigation measures may be added following consultation with relevant consultees in preparation of specific method statements prior to commencement of works. The CEMP should be viewed as a live document that will be updated as the development progresses and circumstances change.

2.0 DESCRIPTION OF THE PROJECT

The proposed development site is c. 55 hectares (ha) and is located to the east of Ennis in the townland of Tooreen and Cahernalough, Co Clare. The lands are bordered to the south by the R352 (Tulla Road) and to the west by the M18. The lands are traversed by a gas pipeline, overhead powerlines connecting to the existing Ennis 110kv Substation that adjoins the western boundary.

The following drawings present the project boundary for the EIA assessment and the redline boundaries for the data storage and energy centre facility application and the SID application



Figure 1.1 The project boundary



Figure 1.2 The redline boundary for the data storage and energy centre facility application



Figure 1.3 The redline boundary for the SID application

The site is predominantly in agricultural use and comprises a series of irregularly shaped fields divided by hedgerows and ditches typical of its agricultural setting. The site contains 1 no. dwelling and 8 no. farm outbuildings in varying states of disrepair. A number of these will be retained and some demolished as part of the proposed site redevelopment.

The proposed development will generally comprise:

Demolition of some of the existing residential dwellings (1 no.) and agricultural outbuildings (8 no.). All buildings to be demolished can be found in the building demolition report prepared by Fergal Coughlan Chartered Engineer in Appendix A of this report.

Construction of a mixed-use development featuring:

- 1) 6 data centres (DC) buildings,
- 2) A gas-powered energy centre and Above Ground Installation (AGI),
- 3) A new 110kV substation, two drop down masts and underground grid connection.
- 4) Fiber connection,
- 5) Connection and upgrade of foul sewer and mains supply extending along the existing R352.
- 6) Undergrounding of two of the existing overhead 110kv circuits
- 7) Associated Infrastructure, roads, attenuation pond landscaping etc.

Figure 2.1 presents the site layout for the proposed masterplan. The proposed development occupies c. 45% of the total development site; the site layout reserves c. 10 ha of lands as ecological buffer zones. The indicated buffer zones on Figure 7.3 were delineated by Clare County Development Plan 2017 – 2023 (Variation No. 1) to

protect ecology and are protected during construction and operation of the proposed development. Ecological surveys have been completed by Scott Cawley as part of the EIAR and mitigation measures prepared for management and protection of these and other ecological sensitive areas on the site.

3.0 CONSTRUCTION PROGRAMME AND PHASING

The construction works associated with the development will be undertaken in three phases as indicated in Figure 3.1. There will also be demolition and excavation phases associated with removing existing structures onsite along with the levelling and reprofiling of soil onsite.

A 10-year permission is sought due to the nature of this specific development and to match market demand over that period. The proposed development will respond to current and future use demands in the area. The logistics of the site and use of the buildings mean that their delivery must be programmed on a phased basis over the duration of a 10-year planning permission. The site will host six data storage facilities with associated energy supply facilities and the commercial reality is that the overall orderly development of the site will take longer than 5 years. Subject to planning approval, construction works are due to commence in June 2023. Three phases of construction are proposed with construction works completing by July 2029. Landscaping is proposed to commence in Oct 2022.

The anticipated phased development is set indicatively in Figure 3.1 and Table 3.1 below. Figure 3.2 below presents the access phasing during construction.

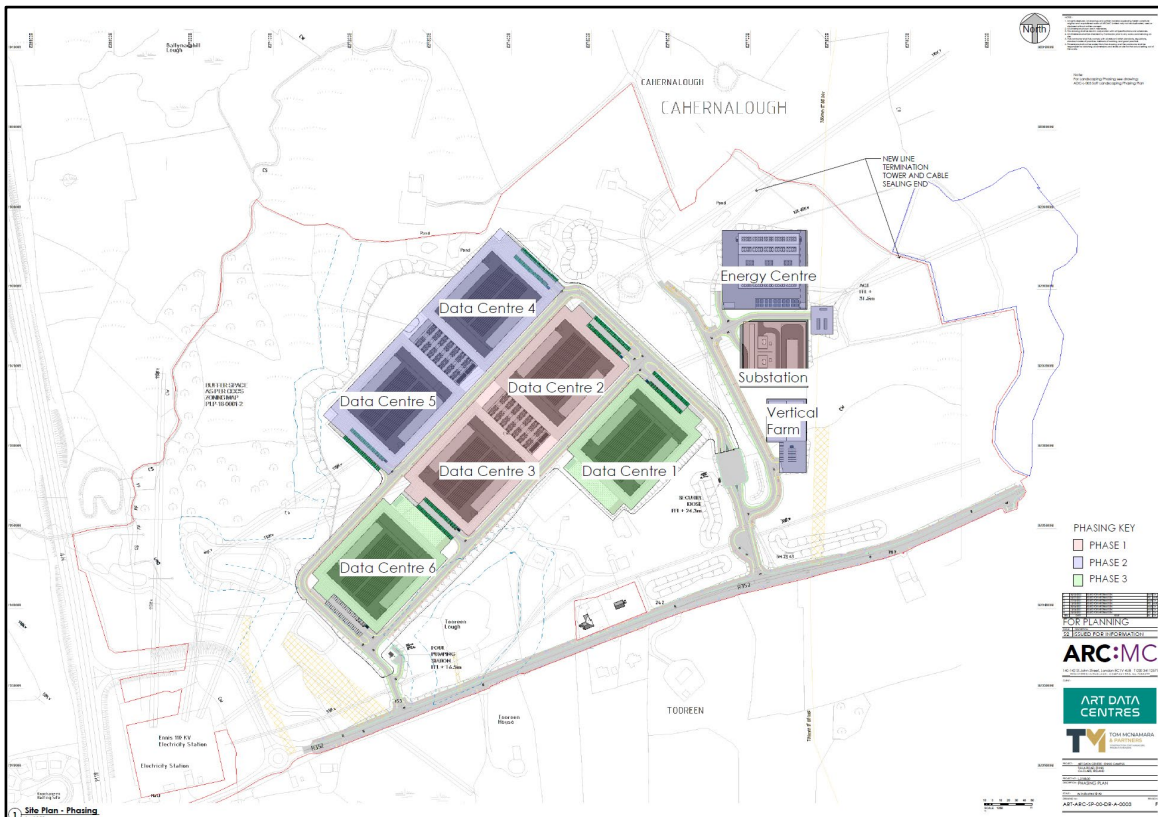


Figure 3.1 Site construction phasing strategy

Table 3.1 Phasing of the Proposed Development

Phase	Building Name	Construction Start	Duration (months)	Construction End
1	Primary Infrastructure Substation Datacentre 2 & 3.	June 2023	27	September 2025
2	Energy Centre Vertical Farm Datacentre 4 & 5.	September 2025	25	October 2027
3	Energy Centre (Engines 7-18) Datacentre 1 & 6.	June 2027	25	July 2029

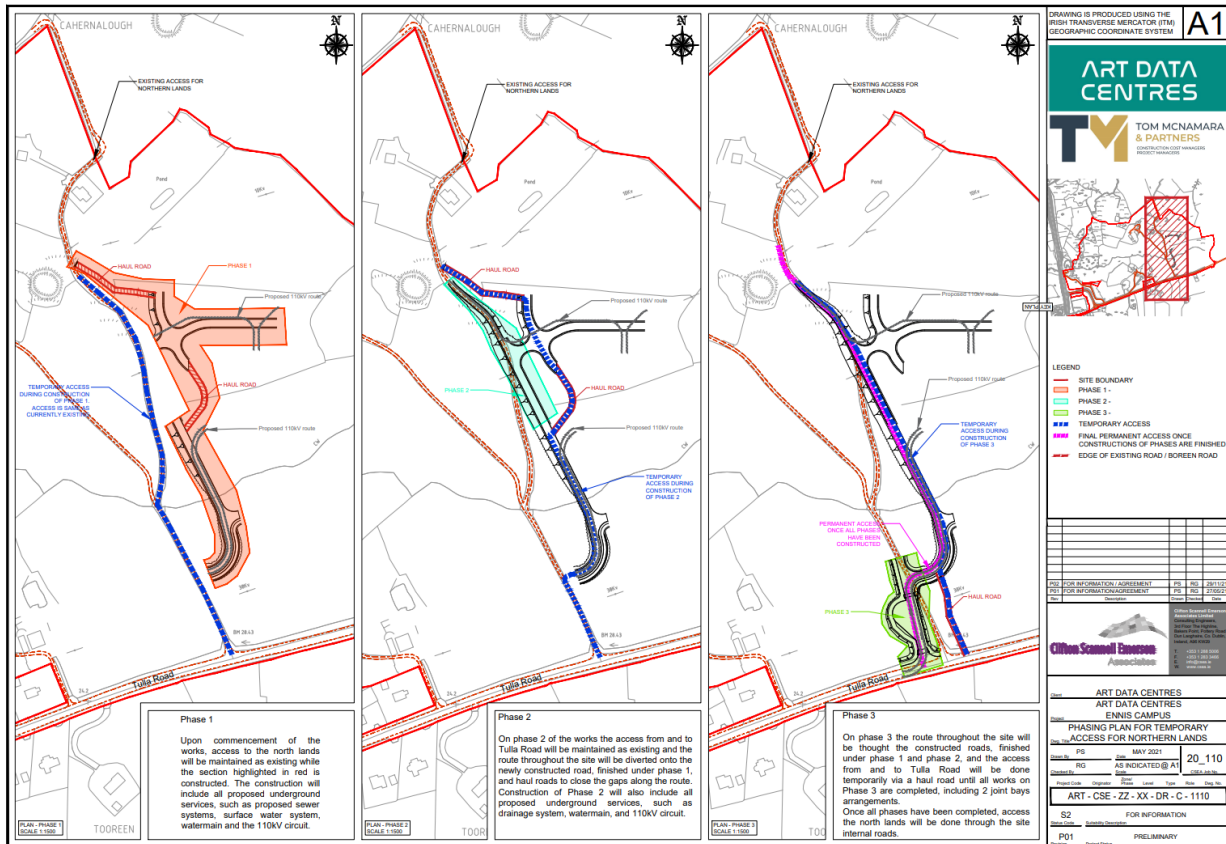


Figure 3.2 Site Access Phasing Strategy

3.1 Demolition Phase

The site contains multiple existing dwellings and farm outbuildings. A number of these will be retained and some demolished as part of initial enabling works before the excavation and construction phase of the proposed development.

The demolition shall be in full compliance with BS 6187 *“Demolition in Buildings”* and all measures necessary will be taken to protect the adjoining buildings from damage and persons from injury. Prior to the demolition works the Construction and Demolition Waste Management Plan (ref CB_21_1245WMR01) submitted with this application and written accordance with the *“Department of the Environment Heritage and Local Government Best Practice Guidelines on the preparation of Waste Management Plans for construction and demolition projects”* will be updated and prepared by the appointed Demolition Contractor.

The demolition will commence with the removal of any hazardous materials by an appropriately qualified contractor for disposal at an appropriate licensed waste collection facility. All non-structural items will then be removed segregated for re-use or re-cycling where possible. The remainder of the building structure will be removed in an approved sequence outlined in a Method Statement prepared by the yet to be selected Demolition Contractor's Structural Engineer.

3.2 *Excavation & Construction Phase*

The project excavations will involve excavations for new foundations, site levelling, basement level and excavations for roads and services. The Construction and Demolition Waste Plan prepared by AWN Consulting, for the development will be updated by the main contractor and will be in compliance with the requirements of the "Best Practice Guidelines for the Preparation of Waste Management for the Construction and Demolition Projects" published by the Department of the Environment Heritage and Local Government will identify and categorise any waste arising from the development.

The plan will also contain the proposals for the minimisation, re-use and re-cycling of site generated waste. As part of this plan separate storage areas will be designated on the site for various types of material in order to maximise the re-use and re-cycling potential. Procedure will also be put in place to ensure that all sub-contractors fulfil the requirements of the Waste Management Plan.

The project involves the construction of six data storage facilities, an energy centre an Above Ground Installation (AGI) building, vertical farm, a substation compound and associated ancillary development.

The scheme is split into 3 no. main phases as shown in Figure 3.1. Any smaller ancillary works will be accommodated within these phases:

The initial works will include:

- Site set up, welfare facilities and compound establishment, decommissioning and movement of site compound and facilities as needed.
- Set up of hoarding around construction compound and the site boundary.
- Erection of safety signage to all areas and implementation of traffic/pedestrian management plan.

3.3 *Landscaping Phasing*

The soft landscaping phasing will follow these phases with some subsets in relation to Phase 1 as set out in Table 3.2 and set out in some more detail in the following paragraphs and contained in the separate landscaping management plan submitted with the application. Figure 3.3 below shows the proposed phasing layout for the development landscaping and can also be found in appendix B of this document.

Table 3.2 *Phasing of the Proposed Landscaping*

Planting Stage	Time of Completion	Notes
Advance Planting	2022-23 Planting Season	This initial phase of landscaping will take place prior to any other works on site. This will ensure that this planting has time to establish ahead of the removal of any existing hedgerows and 3 years to establish before completion of DCs 2 & 3 and the substation.
Phases 1a&1b	2024-25 Planting Season	This phase of landscaping will occur post the cut and fill and infrastructure works, such as roads and will conclude the majority of the structure planting. This landscaping will have 1 year to establish before completion of DCs 2 & 3 and the substation.
Phase 1c	2025-26 Planting Season	This phase of landscaping will occur upon completion of DCs 2 & 3 and the substation and will comprise the majority of the meadow grasslands and remaining hedgerows in proximity to the buildings.
Phase 2	2027-28 Planting Season	This phase of landscaping will occur upon completion of DCs 4 & 5, the Energy Centre and the Vertical Farm. It will consist of the amenity planting relating to these built elements.
Phase 3	2029-30 Planting Season	This phase of landscaping will occur upon completion of the remaining elements of the proposed development, namely DCs 1 & 6. The main body of the structure planting will have had at least 5 years to establish upon completion of the whole development.

A series of advance planting works will occur in the 2022-23 planting season (November-March) before any other works commence on site. This will consist of a number of hedgerows and blocks of woodland planting. The advance nature of this planting is to give some establishment time to this planting prior to the removal of those existing hedgerows that require to be removed to facilitate the development. This is intended to mitigate against the loss of foraging routes for bats.

Phase 1a will occur following the cut and fill groundworks across the site. It will comprise the majority of the remaining woodland planting, including that of the embankments, the reseeding of those field areas that have been disturbed during the ground works and the meadow grass seeding of the SuDS basin. The groundworks are scheduled to finish in May 2024 which is outside of the tree planting season. As a result, any tree and hedge planting within this phase will occur in the 2024-25 planting season.

Phase 1b landscaping will occur upon completion of the infrastructure and services, such as the road network. This phase will comprise the majority of the meadow grasslands around the DCs along with the feature and amenity tree planting. These are scheduled to be complete by June 2024 which also falls outside the tree planting season. Consequently, the tree and hedgerow planting within this phase will also most likely occur alongside that of Phase 1a in the 2024-25 planting season.

Phase 1c of the landscaping will occur in the planting season of 2025-26 upon completion of DCs 2 & 3 and the substation. This phase will comprise the amenity grass seeding around DCs 2 & 3 and the creation of the three seating areas around these two DCs.

Phase 2 landscaping will occur in the planting season of 2027-28 upon completion of DCs 4 & 5, the Energy Centre and the Vertical Farm. This phase will mainly comprise

the meadow grassland and the amenity and feature trees around the Vertical Farm, Energy Centre and Substation, as well as the amenity grass planting to DCs 4 & 5 and another of the seating areas located between the two DCs.

Phase 3 landscaping will occur upon completion of DCs 1 & 6. It will consist of the remaining seating area and amenity grasslands, and the seeding of the two car construction car parks and hedgerow planting of the gaps that provided access to the car parks. As this construction phase is scheduled to end by July 2029, any planting will be completed in the planting season of 2029-30.



Figure 3.3 Site Landscape Phasing Strategy

4.0 EXCAVATIONS

4.1 Archaeological and Architectural Heritage

An archaeological assessment of the proposed site area was carried out by the IAC Archaeology as part of the EIAR submission. The assessment was based on a desk study of published and unpublished documentary sources, as a field inspection.

The project archaeologist has confirmed that a 30-metre archaeological exclusion zone is suitable for protection of the Round Fort located on the site. The site will not be directly impacted by construction activities.

A full geophysical survey and programme of archaeological testing will be carried out prior to the commencement of construction. The works will be carried out under licence to the DoHGLH. This work will be carried out in order to identify any remains associated with CH 3, along with any buried archaeological remains within the landscape that may be affected by the proposed development. Further mitigation will be provided where required following the results of the assessment. Such mitigation will include preservation in-situ/by record and/or archaeological monitoring where required or appropriate. Any further mitigation will require the approval of the National Monuments Service of the DoHGLH.

Any archaeological sites discovered within the development area will be preserved by record (archaeological excavation), prior to construction taking place. All topsoil

stripping associated with the proposed development will be monitored by a suitably qualified archaeologist.

Should archaeological features or material be uncovered during archaeological testing or any phase of construction, ground works will cease immediately and the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht will be informed. Time must be allowed for a suitably qualified archaeologist to inspect and assess any material. If it is established that archaeologically significant material is present, the National Monuments Service may require that further archaeological mitigation be undertaken.

4.2 Ground Conditions

Site Investigations were undertaken in the period April - May 2021 to confirm ground conditions and to provide information for the hydrogeological assessment. The SI included a detailed geophysical survey, trial pitting, borehole drilling and representative soil sampling and soil testing.

The site is underlain by karstified and dolomitised limestone with the extent of dolomitisation increases towards the west of the site. The assessment has confirmed likely connection between the depressions in the north of the site and to the southeast of the Tulla road with Toureen Lough. Which is located in the southwest of the site. This lake ultimately discharges to the adjacent Ballymacahill River. This is described in Chapter 5 of the EIAR.

The site investigation did not encounter any contaminated soil. However, If any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*' using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos containing materials (ACMs) are found during demolition works, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos will be taken to a suitably licensed or permitted facility.

5.0 SITE LOGISTICS

5.1 Site Safety Compliance

The Contractor shall be responsible for overall management of the site for the duration of the proposed works and must progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works.

The Contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage.

5.2 Site Establishment and Security

The first activity to be carried out at the site will be the establishment of site facilities and security. It is anticipated that site establishment works will take approximately four weeks. The site office and welfare facilities will be confirmed in advance of the commencement of site works and agreed with Clare County Council (CCC).

Figure 5.1 point shows the proposed locations of the site compound and staff parking facilities. A larger version can be found in Appendix C of this plan.

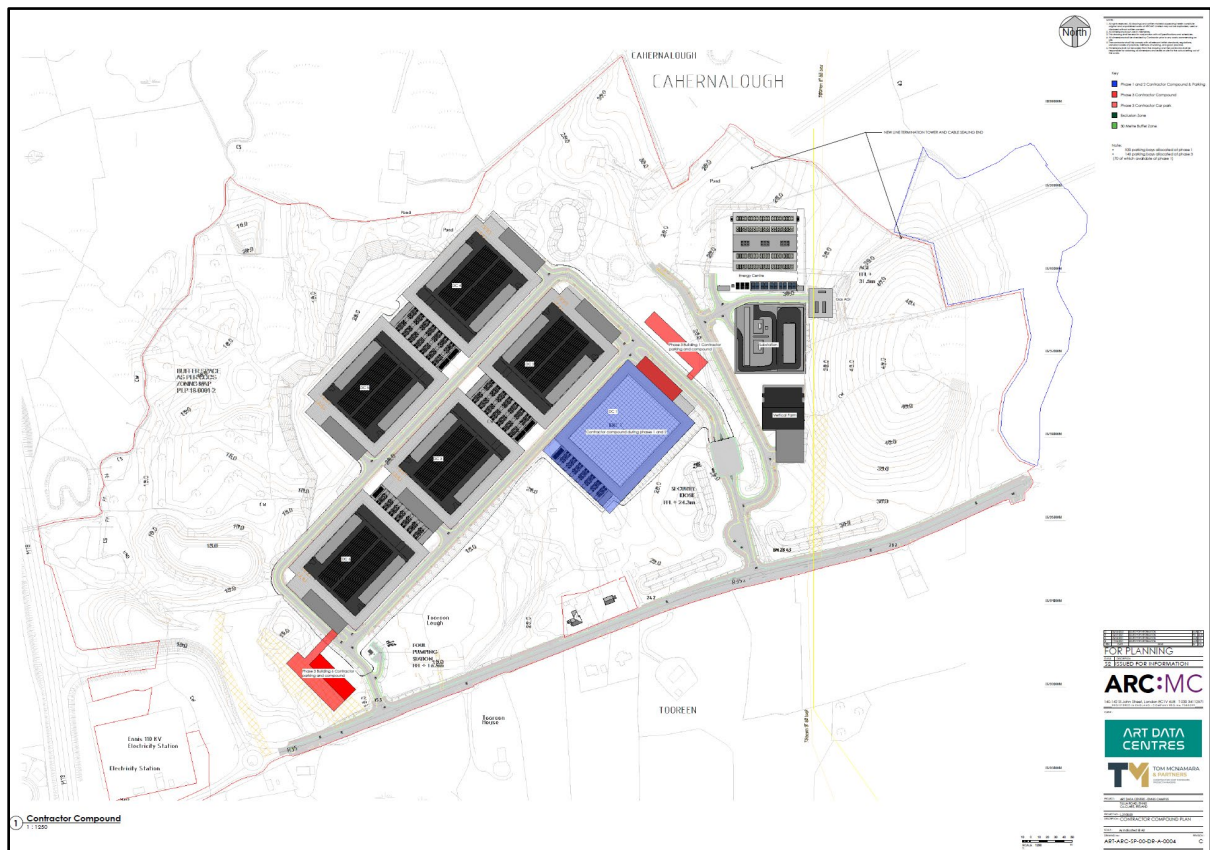


Figure 5.1 Proposed Site Compounds & Staff parking Locations (ART-ARC-SP-00-DR-A-004)

All of the sub-contractors as well as the main contractor and project managers will occupy offices within the construction compounds. The site parking for all staff, contractors and visitors will also be located in this area.

5.3 Consents and Licenses

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required.

5.4 Services and Utilities

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the demolition and construction phases of the proposed development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required.

The current electricity facilities on the site of the proposed development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Water supply required for welfare facilities, dust suppression and general construction activities will be sourced from the existing public piped supplies running into the site.

However, before connections are established to the water supply it may need to be trucked onto site. As with electrical works, this will be carried out by a suitably qualified contractor. It will be necessary to service the site with a reliable and safe water supply.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made). Further details regarding services and utilities can be found in Chapter 13 of the EIAR.

5.5 Material Handling and Storage

Key materials which will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where possible it is proposed to source general construction materials from the Clare area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, double skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

5.6 Visitor Management

Visitors will only be allowed to enter the main site compound via the designated pedestrian access gate. A dedicated, secured footpath to the site office is established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.7 Site Working Hours

Site development and building works will only be carried out between the hours of 0730 to 1730 Mondays to Fridays inclusive and between 0730 and 1430 hours on Saturdays. There will be no construction works carried out on Sundays or public holidays. Deviation from these times will only take place when written approval is granted by CCC in exceptional circumstances.

5.8 Employment and Management Workforce

It is estimated that there will initially be 200-250 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to 1200 staff and contractors on site per day.

It is anticipated that the key project managers and main contractor representatives will maintain a presence on site for the whole duration of the project and the labour workforce will be determined by the specialist contractors required on site.

All employees working on the site will be required to have a SafePass Card (or similar approved Construction Health & Safety card), manual handling training, CIF COVID 19 training and the necessary certificates to operate machinery as required. The details of training required, records maintained, and induction procedures will be outlined in the Main Contractor's Health and Safety Plan(s).

6.0 CONSTRUCTION TRAFFIC AND SITE ACCESS

The successful completion of the Art Data Centre will require significant coordination and planning, and a comprehensive set of mitigation measures will be in place before and during the construction stages in order to minimise the effects of the additional traffic generated on the adjacent road network. While a detailed **Traffic Management Plan (TMP)** will be submitted for agreement with the Road Section of Clare County Council well in advance of the construction phase of the proposed Art Data Centre. The OTMP, and subsequently, the TMP, will be finalised and agreed with Clare County Councils Road Section and An Garda Síochána prior to construction works commencing on site. The TMP will include as a minimum the following:

Traffic Management Coordinator – A competent Traffic Management Co-ordinator will be appointed by the Client / Contractor for the duration of the project. This person will be the main point of contact for the public and public bodies, including Clare County Council and An Garda Síochána, for all matters relating to traffic management during the construction of the proposed Art Data Centre.

Delivery Programme – A programme of deliveries will be submitted to Clare County Council in advance of all deliveries to the Art Data Site, with preliminary daily traffic volumes included by construction month included as Appendix 12.4 of this EIAR. The

proposed development will be constructed over a 6.5 year period, commencing in June 2023, with completion forecast in July 2029.

Identification of delivery routes – These routes will be agreed and adhered to by all contractors. As discussed with Clare County Councils Road Section during pre-planning, where possible suppliers will be selected to minimise the amount of distance travelled by truck and HGV movements generated during the construction phase. While the origins of the suppliers of general construction materials and data centre components are not known at this stage, in relation to supply of sand, aggregate, stone and cement, which will comprise a significant proportion of HGV traffic generated during the construction phase, 3 quarries have been identified for consideration, with the locations shown in Figure 6.1 below.

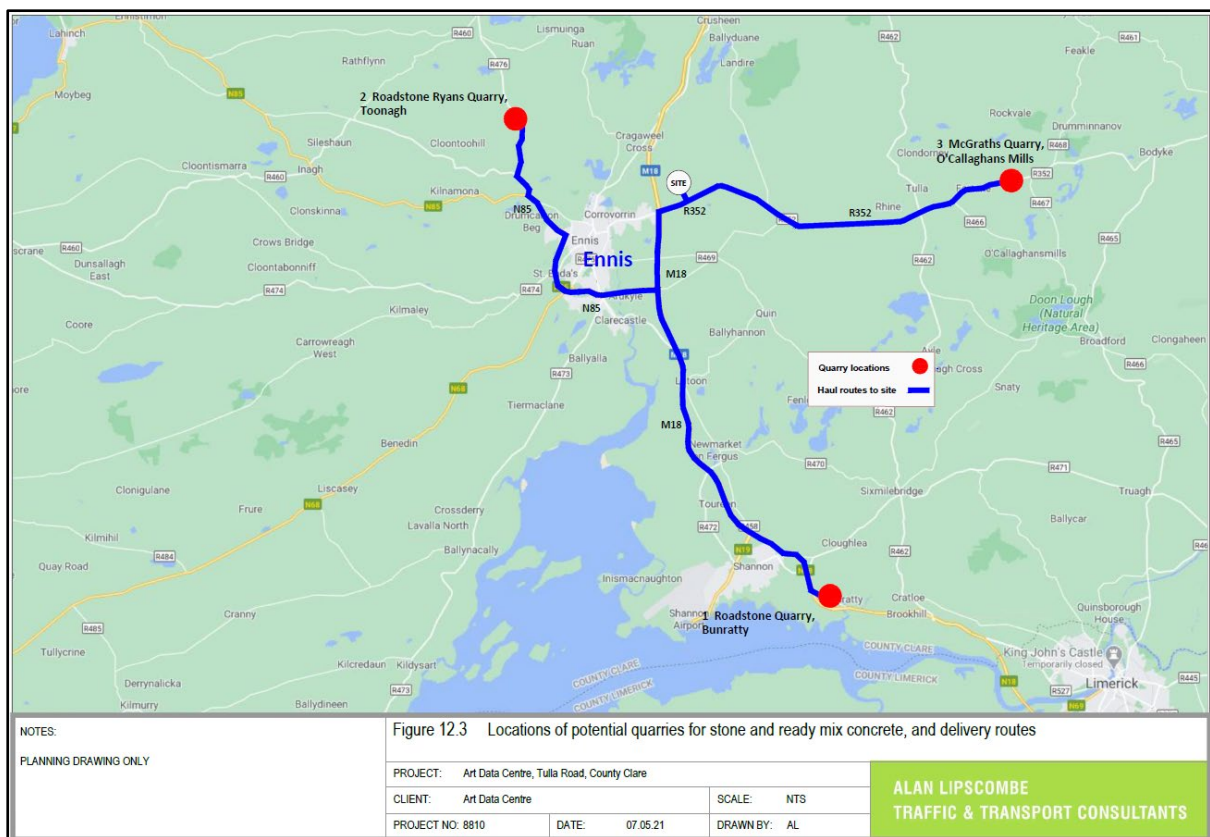


Figure 6.1 Locations of potential quarries and ready-mix concrete, and delivery routes

- Quarry Option 1 - located in Bunratty the total distance to the Art Data site is 24 kms of which the majority of the route is on the M18 motorway, with only a short section of the L3122 north of Bunratty and the 1km section of the R352 between the M18 and the site access being on non-national roads.
- Quarry Option 2 - located in Toonagh north of Ennis, the total travel distance is just 11 kms of which 4 kms is on the R476, and 1 km on the R352 between the M18 and the site access.
- Quarry Option 3 – This quarry is 17 kms from the site and is located to the east of Tulla with all of the route on the R352 non-national road.

Discussions will be held with the Road Section of Clare County Council to discuss the traffic implications of each quarry location well in advance of the commencement of construction.

Traffic volumes and impacts of traffic during construction – A summary of the traffic volumes and the forecast impacts of additional traffic movements generated during the construction of the Art Data Centre, (as set out in detail in Table 12.6 of the EIAR inserted) is as follows;

Staff trips – It is forecast that during the busiest construction month (month 61 in the year 2027) a maximum of 1,200 construction staff will require to travel to and from the site per day. While a detailed travel plan will be prepared by the contractor, which will involve the transportation to and from the site by bus for a significant number of construction staff, the scenario tested in the EIAR assumes that all construction staff will travel by car, with an average of 1.5 staff to each car. For the busiest construction days, this will result in 800 car trips to and from the site per day, with 40% (320 car trips) travelling to and from the site during the traditional peak hours. It is estimated that site staff will generate 464 cars trips on an average day, with 189 travelling during the traditional peak hours.

HGV – Again, for the busiest month taking account of all traffic generated by the site (HGVs and staff cars, month 61), it is forecast that a maximum of 29 HGV trips will travel to / from the site during one day, resulting in 3 trips to and from the site per hour, or on average 1 load in and out of the site every 30 minutes.



Figure 6.2 Local Road network

It is noted that when considering HGV movements only, the busiest period is forecast to be month 14, when it is estimated that 115 HGV movements will require to travel to / from the site during one day, resulting in 12 trips per hour, or on average 1 load in and out of the site every 5 minutes.

It is estimated that a total of 27,376 HGV trips to and from the site will be generated during Phase 1, with 13,217 during Phase 2 and 12,603 during Phase 3. Including a further 200 deliveries during the site preparation stage, it is estimated that a total of 53,396 HGV movements to and from the site will be generated during the construction of the Art Data Centre within the 6.5 year construction period.

Table 6.1 Summary of Art Data Centre trip generation during construction, by phase and vehicle type

Trip category		Pre-start (4 months)	Phase 1 (2 years, 4 months)	Phase 2 (3 years, 11 months)	Phase 3 (2 years, 2 months)	Total
Staff car trips	Maximum / day	50	474	474	474	NA
	Average / day	50	340	276	352	NA
HGV trips	Maximum / day	3	115	46	39	NA
	Average / day	2	46	13	23	NA
	Total HGV trips in Phase	200	27,376	13,217	12,603	53,396

Detailed capacity tests were undertaken at the proposed access junction on the R352 Tulla Road and the 2 roundabouts linking the M18 slip roads to the R352 Tulla Road (East Clare Roundabout and Tulla Road West roundabout, as shown in Figure 12.1 of the EIAR. At this preliminary stage it was assumed that 40% of all HGV trips will travel to/from the site via the M18 from the north, with the same amount to and from the M18 in the south. It was assumed that the remaining 20% would travel to and from the direction of the quarry located close to Tulla. For all cases the proposed access junction and roundabouts are forecast to operate well within capacity (maximum of 61.6% while up to 85% capacity is considered acceptable) with no queueing forecast for the M18 slip road approaches to the roundabouts (therefore no forecast risk of blocking back to M18 carriageway)..

It is acknowledge that the above capacity assessment is based on uniform arrivals / departures to and from the site, and this will require to be co-ordinated between the supplier and site staff during the peak construction months. This will include the presence of construction staff (flagman) located at key junctions during peak delivery days and times who will be constant 2-way radio contact. Continual monitoring of the M18 slip roads at the East Clare and Tulla Road West roundabouts will be undertaken during busing periods.

Travel plan and parking for construction workers – While the traffic impact assessment included in Section 12.5 of the EIAR assumes the worst case scenario that all construction workers will drive to the site, the construction company will be required to implement a travel plan for construction staff, which will include the provision of buses to / from the site for a significant portion of the workforce.

Based on the worst case it is forecast that up to 800 parking spaces will be required to be available for site staff during the busiest month, reducing to just over 350 for an average month.

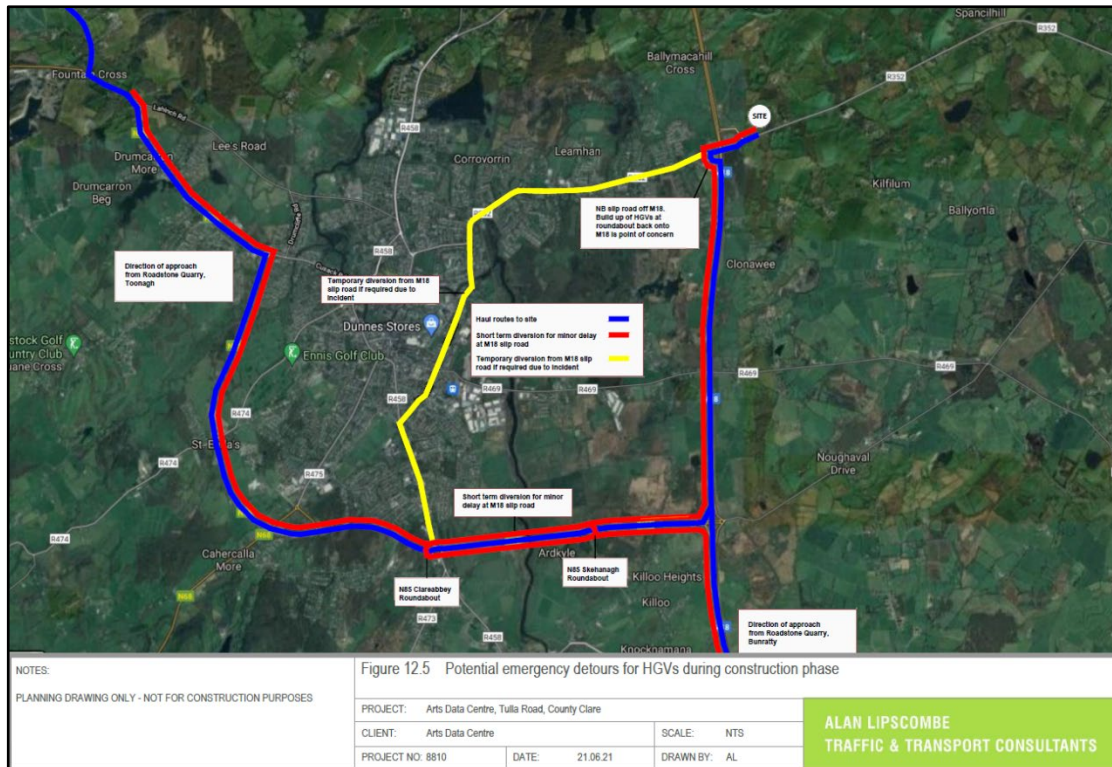


Figure 6.3 Potential emergency detours for HGVs during construction phase

Information to locals – All residents and businesses in the area will be informed of any upcoming traffic related matters. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the proposed development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

Liaison with the relevant local authority - Liaison with Clare County Councils Road Section and An Garda Siochana during the delivery of any abnormal loads, when an escort may be required.

Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including all the new junction providing access to the site the R352 Tulla Road. All measures will be in accordance with the "Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works" (DoT now DoTT&S) and "Guidance for the Control and Management of Traffic at Roadworks" (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery days and times. This will include the monitoring of traffic on the M18 slip roads at the East Clare and Tulla Road West roundabouts.

Delivery times of abnormal loads - The management plan will include the option to deliver any abnormal loads at night in order to minimise disruption to general traffic during the construction stage.

Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required.

Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the Road Section of Clare County Council. A roads conditions survey (and any other analyses required by the Roads Section of the Council) will be undertaken immediately prior to construction commencement of the project to assess the condition of the road network at that time and to agree any required works with the local authority. Such a survey would be repeated immediately after completion of the construction phase of the project in order to ensure that any reinstatement works were carried out to a satisfactory standard as required by the local authority.

Road Opening Licence – Roads works associated with the proposed access junction on the R352 Tulla Road will be undertaken in line with the requirements of a road opening licence to be applied for to CCC.

Potential detour routes for HGVs in case of queuing on M18 northbound exist slip approach the Tulla Road Roundabout – During the pre-planning process Clare County Councils Road Section requested that emergency contingency plans be proposed in the event that excessive numbers of HGV movements traveling north on the M18 and turning left off the motorway at Junction 13 resulted in traffic blocking back from the Tulla Road Roundabout onto the main M18 carriageway.

For the worst days during the construction phase it is forecasting that a maximum of 115 hgv's will require to access the site in any one day, which equates to 120 per hour. Junction capacity tests set out in the EIAR demonstrate that the Tulla Road roundabouts have sufficient capacity to cope with this demand without the potential for queues forming or blocking back to the main M18 carriageway.

Based on the 2 routes that would be impacted, Roadstone Toonagh via the N85, and Roadstone Bunratty from the M18 south, the proposed contingency plans are therefore for an unlikely event where queues form on the M18 slip road due to an incident, and the arrival of HGVs at the M18 slip road off the M18 is required to halt temporarily. The measures propose are as follows (refer to Figure 6.3 above);

- As stated previously, there will be site staff located at both Tulla Road Roundabouts during the busy construction days, who will be in constant contact with the Contract Project Co-ordinator on-site.
- On first sign of an incident resulting in queuing on the M18 slip, the Project Co-ordinator will contact the relevant quarry in Bunratty or Toonagh to inform of the incident and, depending on severity, request their delivery drivers to 1) Undertake short term diversion onto the N85 between the Clareabbey Roundabout and Skehanagh Roundabout, 2) Divert onto temporary route through Ennis via Clare Road and Clon Road.

In the case of a severe incident the quarries will be requested to suspend deliveries until normal operation at the M18 slip approach to the Tulla Road Roundabout resumes

Application for temporary 60 km/h speed limit on section of R352 Tulla Road adjacent to site – As part of the development it is proposed to provide a shared footpath and cycle lane on the northern side of the R352 Tulla Road, extending from the East Clare Roundabout to the west of the site, along the site frontage to the eastern boundary. It is also proposed to upgrade the existing footpath on the southern side of the R352 Tulla Road to a shared footpath and cycle lane. An application will be made to Clare County Council for a temporary reduction in the speed limit, on this section of

the R352 Tulla Road from 80 km/h to 60 km/h, for the duration of the construction period.

6.1.1 Garvey's Site Access and Egress

The Garvey's site access will be continuously facilitated during construction until the final road infrastructure is in place. The temporary access phasing strategy is attached in Appendix D.

Phase 1

Upon commencement of the works, access to the north lands will be maintained as existing while the section highlighted in red is constructed.

Phase 2

On phase 2 of the works the access from and to Tulla Road will be maintained as existing and the route throughout the site will be diverted onto the newly constructed road, finished under phase 1, and haul roads to close the gaps along the route.

Phase 3

On phase 3 the route throughout the site will be through the constructed roads, finished under phase 1 and phase 2, and the access from and to Tulla Road will be done temporarily via a haul road until works on Phase 3 are completed. Once all phases have been completed, access to the north lands will be done through the site internal roads.

6.2 **Traffic Queuing**

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic.

Deliveries to site shall be booked in advance using a delivery schedule, so as to prevent lorry congestion on the road networks surrounding the site. Alternative safe routeways shall be established for traffic and pedestrians where existing routeways have to be altered, removed or worked on during the project.

Potential detour routes for HGVs in case of queuing on M18 northbound exist slip approach the Tulla Road Roundabout – During the pre-planning process CCC's Road Section requested that emergency contingency plans be proposed in the event that excessive numbers of HGV movements traveling north on the M18 and turning left off the motorway at Junction 13 resulted in traffic blocking back from the Tulla Road Roundabout onto the main M18 carriageway.

For the worst days during the construction phase, it is forecasted that a maximum of 100 hgv's will require to access the site in any one day, which equates to 10 per hour. Junction capacity tests set out in the EIAR demonstrate that the Tulla Road roundabout has sufficient capacity to cope with this demand without the potential for queues forming or blocking back to the main M18 carriageway.

Based on the 2 routes that would be impacted, Roadstone Toonagh via the N85, and Roadstone Bunratty from the M18 south, the proposed contingency plans are therefore for an unlikely event where queues form on the M18 slip road due to an incident, and the HGVs arriving at the M18 slip road off the M18 are required to halt temporarily. The measures proposed are as follows (refer to Figure 12.5 attached);

- As stated previously, there will be site staff located at both Tulla Road Roundabouts during the busy construction days, who will be in constant contact with the Contract Project Co-ordinator on-site.
- On first sign of an incident resulting in queuing on the M18 slip, the Project Co-ordinator will contact the relevant quarry in Bunratty or Toonagh to inform of the incident and, depending on severity, request their delivery drivers to 1) Undertake short term diversion onto the N85 between the Clareabbey Roundabout and Skehanagh Roundabout, 2) Divert onto temporary route through Ennis via Clare Road and Clon Road.

In the case of a severe incident the quarries will be requested to suspend deliveries until normal operation at the M18 slip approach to the Tulla Road Roundabout Resumes.

6.3 Site Hoarding and Security Fencing

All areas of construction will be fenced / hoarded off to prevent unauthorized access. This fencing shall remain closed at all times during construction works and closed and locked after construction work hours / break times.

This fencing shall be erected in accordance with good practice and the Construction Regulations 2013. Fencing arrangements shall be reviewed as the life of the project progresses.

Access/Egress to site for site operatives and visitors shall be via biometric gates. Site security fencing/ hoarding up to a height of 2.4 m will be erected in line with the Construction Regulations 2013 that will clearly separate the work site from the surrounding public. It is not envisaged that the fencing will impinge upon the safe passage of pedestrians during the construction phase.

7.0 SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS

7.1 Construction Safety

The appointed main contractor will be required to prepare a detailed Construction Health & Safety Plan which will be put in place prior to commencement of the works. This plan will provide for the implementation of the measures referred to below. At a minimum, this plan will include:

- Construction Health & Safety training requirements;
- Covid 19 guidelines (if applicable);
- Induction procedures;
- Emergency protocols; and
- Details of welfare facilities.

7.2 Construction Lighting

Construction work will generally be confined to daylight hours and lighting will generally not be required for the construction phase. There will however be occasions where the provision of portable lighting will be required (works on roadways and power floating floors as examples). Where possible and without jeopardising site safety, lights will be pointed down at a 45-degree angle and away from sensitive receptors. The site compound will have external lights for safety and security. These lights will be pointed down at a 45-degree angle and away from sensitive receptors where possible.

7.3 Air Quality

This section describes the site policy with regard to dust management and the specific mitigation measures which will be put in place during construction works. The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the measures set out below have been formulated by drawing on best practice guidance from Ireland, the UK and the US, such as:

- Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004);
- US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition* (periodically updated) (1986);
- The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996); and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014).

7.3.1 Site Management

The site activities will be undertaken with due consideration of the surrounding environment and the close proximity of sensitive receptors such as residents and pedestrians. Dust management during the construction phase will be the most important aspect in terms of minimising the impacts of the project on the surrounding air quality. The following measures will also be implemented to ensure impacts are minimised:

- Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

Dust deposition levels will be monitored on a regular basis in order to assess the impact that site activities may have on the local ambient air quality. The following procedure will be implemented:

- The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at strategic locations near the boundaries of the site for a period of 30 (+/- 2) days if required. Monitoring should be conducted as required during periods when the highest levels of dust are expected to be generated i.e., during site preparation works and soil stripping activities.
- The exact locations will be determined after consideration of the requirements of Method VDI 2119 with respect to the location of the samplers relative to obstructions, height above ground and sample collection and analysis procedures.
- After each 30 (+/- 2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m²/day in accordance with the relevant standards.
- Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained by the Site Manager.

A limit value of 350 mg/m²/day will be used in comparison with recorded values.

7.3.2 Dust Control Measures

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design, planning and effective control strategies. The siting of construction activities and the limiting of stockpiling will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs.

- During working hours, technical staff will be available to monitor dust levels as appropriate; and
- At all times, the dust management procedures put in place will be strictly monitored and assessed.

The dust minimisation measures will be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Site Routes

Site access routes (particularly unpaved areas) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80% ⁵.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles or delivery vehicles within the vicinity of the site;
- Bowsers will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50% ⁶. The bowser(s) will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced areas shall be restricted to essential site traffic only.

Demolition / Excavation

Demolition and Excavation works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

The movement of truck containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

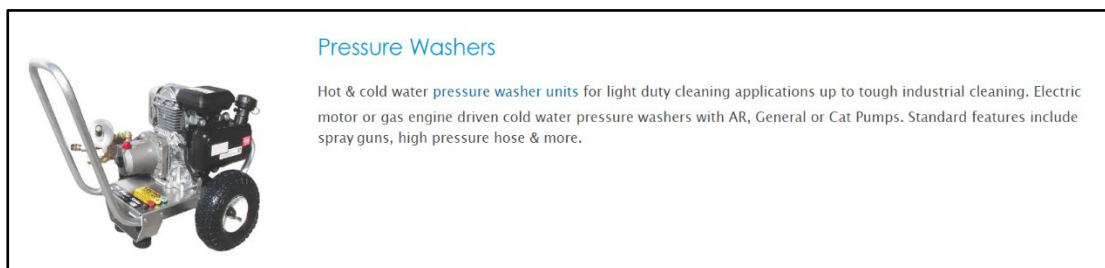
Stockpiling

The location and moisture content of stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible;
- Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust.

Site Traffic on Public Roads

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



Insert 7.1 Example of Proposed wheel cleaning equipment.

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate, and an example of the washing equipment can be seen in insert 7.1; and
- Road sweepers will be employed to clean the site access route as required.

General

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory management of dust by the construction contractor.

7.4 Ecology

The key strategies to be undertaken to minimise impact on the local flora and fauna during site clearing and construction can be found in the Appendix E of this document.

Ecological Buffer Zones

Figure 7.1 presents the site layout for the proposed masterplan. The proposed development occupies c. 45 of the total development site; the site layout reserves c. 10 ha of lands as ecological buffer zones. The indicated buffer zones on Figure 7.1

were delineated by the Clare County Development Plan 2017 – 2023 (Variation No. 1) to protect ecology during construction and operation of the proposed development.



Figure 7.1 Proposed ecological buffer zones.

Fencing off and installation of silt fences around ecological buffer zones will be undertaken to prevent any works being undertaken in these areas or discharge of silty water from works areas.

It is noted that there is interconnectivity between depressions in the north of the site, northeast of the proposed energy centre and a swallow hole to the south of the Tulla road. To ensure there is no change to the natural groundwater regime, no direct discharges to these delineated zones or direct interference with rock along these delineated zones will be allowed during construction.

Lamprey Protection

An Ecological Clerk of Works will supervise the following mitigation strategy at the location of the drainage outfall in the banks of the Spancelhill Stream:

- A silt curtain and spill boom will be put in place across the width of the river immediately downstream of the works location, to capture any sediment which is mobilised during the works and any hydrocarbon escape or spill during construction works;
- The works will be undertaken either by placement of sandbags or cofferdam to ensure working in the dry, or as close to dry conditions as possible. Once in place, water will be pumped out of the sandbagged/cofferdam area.
- Prior to pumping commencing the area will be inspected and hand and net searched by the EcOW to check for any lamprey present. Repeat inspections will be undertaken as water levels are lowered during the course of pumping. A sieve will be placed over the in-take pipe of the pump to prevent any accidental uptake of lamprey that may be present.
- Once the area has been substantially de-watered, if net and manual searches cannot comprehensively exclude the possibility of lamprey remaining, then an excavator located out of the water and on the bankside, will carefully excavate

the area small sections at a time and will deposit spoil in excess of 10m from the edge of the river bankside for inspection. The EcOW will manually search these spoil heaps for any lamprey present.

- Any lamprey recovered will be handled with care, temporarily stored in buckets of water and released back to the river at a downstream location within 20 minutes of capture.
- Once the outfill pipe has been fully constructed the EcOW will supervise the removal of the sandbags/cofferdam. The silt curtain and spill boom must remain in place until these have been removed and for a period until silt has settled/been captured.
- There will be no concrete pouring and all materials (i.e. pipe, headwall and mattress) will be pre-cast prior to installation.
- The mitigation measures relating to the protection of surface water quality in receiving watercourses during construction are detailed in Section 7.6.1.1 of the EIAR and apply for the works at this location and will be adhered to at all times.
- As detailed in Section 7.6.1.12 of the EIAR, the culvert, headwall and mattress have been designed in consultation with IFI and in accordance with the design criteria set out in *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (IFI, 2016).
- IFI's guidelines on bio-security measures (IFI, 2010) must be adhered to during works at Spancelhill Stream.



Photo 1: Silt curtain



Photo 2: Installed spill boom

White-clawed crayfish

The mitigation measures relating to the protection of lamprey species within the Spancelhill Stream described in Section 7.6.1.12 of the EIAR, will also apply to the protection of white-clawed crayfish and will be carried out in accordance with these measures.

7.5 Noise and Vibration

Noise impacts arising from demolition, earthworks and construction activities have the potential to cause annoyance or nuisance to local residents and businesses in the area.

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (if required), excavators, lifting equipment, dumper trucks, compressors and generators.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB $L_{Aeq,1hr}$
- Evening (19:00-23:00) = 65dB $L_{Aeq,1hr}$
- Day (07:00-19:00) = 70dB $L_{Aeq,1hr}$

The total construction noise ($L_{Aeq,1hr}$) which should not be exceeded during daytime is therefore 70dB.

Vibration limits to be applied for the infrastructure works are those specified in the TII document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, Revision 1, 2004). These limits are outlined below:

Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of;

- Less than 11Hz - 3mm/s
- 11 to 50 Hz - 3 to 8mm/s
- 50 to 110 Hz (and above) - 8 to 11mm/s

Any noise complaints related to activities at the site will be logged and investigated and, where required, measures taken to ameliorate the source of the noise complaint.

A designated noise liaison should be appointed to site during construction works. Any complaints should be logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. excavation close to a property, etc., the site contact should inform the nearest noise sensitive locations of the time and expected duration of the works.

All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the Contractor shall ensure that:

- In accordance with "Best Practicable Means", plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.
- A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

External noise and vibration monitoring will be undertaken at locations on the site boundary closest to sensitive locations. It is considered that it will be appropriate to amend the monitoring program as the works progress. Accordingly, monitors may be added, removed or relocated as necessary.

The noise monitoring terminals should provide the following at minimum:

- Logging at hourly intervals; and
- Daily automated Charge Injection Calibration (CIC).

Vibration monitoring terminals should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures*.

The mounting of the transducer to the vibrating structure, by way of resin fixings only, will need to comply with BS EN ISO 5348: 1998: *Mechanical vibration and shock – Mechanical mounting of accelerometers*. In summary, the following ideal mounting conditions apply:

- The transducer and its mountings should be as rigid as possible;
- The mounting surfaces should be as clean and flat as possible;
- Simple symmetric mountings are best, and;
- The mass of the mounting should be small in comparison to that of the structure under test.

7.6 Waste Management

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment. A site-specific Construction and Demolition Waste Management Plan has been prepared by AWN Consulting (ref CB/21/12145WMMR01) and will be employed to ensure sustainable and effective waste management throughout the excavation and construction and demolition phases of the project.

Adherence to the C&D WMP prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the *Waste Management Acts 1996 – 2011* as amended, associated Regulations, the *Litter Pollution Act of 1997-2009* as amended and the *Southern Region Waste Management Plan 2015 – 2021*, and that it will achieve optimum levels of waste reduction, re-use and recycling.

Typical waste materials that will be generated from the construction and demolition works will include:

- Soil and stones;
- Concrete, bricks, tiles and ceramics;
- Wood, glass and plastics;
- Metals;
- Gypsum-based construction material;
- Paper and cardboard;
- Mixed C&D waste;
- Chemicals (solvents, paints, adhesives, detergents etc.) ; and

The management of all hazardous waste arisings, if they occur, shall be coordinated in liaison with Health and Safety Management.

7.6.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows (and are described in more detail in the C&D WMP):

- Materials will be ordered on an 'as needed' basis to prevent over supply;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site;
- A waste tracking log will be established;
- Sub-contractors will be responsible for similarly managing their wastes; and
- All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

7.6.2 Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the development.

Waste materials generated will be segregated on at the site compound, where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors operating in the Clare County Region that provide this service.

The site construction manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

7.6.3 Responsibility

It will be the responsibility of the construction manager to ensure that a written record of all quantities and natures of wastes removed from the site are maintained on-site in a waste file (in hardcopy or electronically).

It is the responsibility of the project manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licensed or permitted waste facility in compliance with the relevant Regulations as outlined in the C&D WMP.

The contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in implementing the measures under the C&D WMP and in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Prior to commencement of the demolition, excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste stream will be provided to CCC, along with waste collection permit numbers.

7.7 Surface Water and Pollution Management

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. The development will be managed in accordance with the provided Flood Risk Assessment (FRA) in Appendix F and the Surface Water and Pollution Management Plan provided in Appendix G of this document. However, in general surface water and pollution management during the demolition, excavation and construction phases of the development will be managed as outlined below.

- Best practice as listed below must be implemented at all times in relation to any activities that may impact on surface water (Ballymacahill River) or riparian habitats (i.e. habitats along the banks of the river), existing ponds on the site (including Toureen Lough) and known subterranean shallow karst conduits.
- The guidelines document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites” (www.fishingireland.net/environment/constructionanddevelopment.htm) must be consulted and adhered to if applicable when planning to undertake works.
- The first phase of the work will be the construction of the attenuation pond, Wastewater Pumping Station and 24-hour storage tank, the access road and main drainage system. All clean surface water from the data storage building site must continue to be routed through the site grit and oil interceptors and the attenuation pond which discharges to the Ballymacahill River. Local silt traps/silt busters must be used to avoid clogging of the attenuation pond.
- Silt fences/similar should be used around each of the ponds, spring rises and swallow holes and the designated ecological buffer zones to avoid any runoff of silty water to these features. No process wastewater or concrete washwaters is permitted to go to the surface water drainage system or site attenuation pond.
- The contractor shall ensure that the monitoring requirements set out in the Surface Water Management Plan are adhered to.
- Monitoring during the Construction Phase of the development must consist of the following:
 - Normal quality control inspection of the works
 - Inspections of the surface water drains following completion of stages of the construction to ensure that the required construction standards are being maintained.
 - Pollutants which accumulate within the oil interceptors on site under the control of the contractors must be regularly monitored and removed, as necessary.
 - Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.
- The discharge from the treatment system must be tested and the specification is to achieve a pH of between 6.5 and 8.5 and a suspended solids content of <35mg/l. If coagulants and/or flocculants are to be used as part of the treatment system, then they must be non-ecotoxic, have no associated environmental impacts and be suitable for use in water treatment and must be approved by the Art Data Centre Contact before use.
- The generation of “silty” water from the construction site must be minimised. During excavations, Contractors must use interceptor drains/temporary berms to divert any potential surface water away from open excavations. Excavations must include a sump to enable capture of the surface water which must be pumped for treatment to remove the silt.
- The contractor must install, operate and maintain a system such that “silty” water can be treated in accordance with the requirements of the Surface Water Management Plan (SWMP) before it can be discharged to the attenuation pond.

Spoil Management

- The contractor must keep stockpiles of spoil to a minimum and remove spoil off-site as soon as possible unless it is required for re-use on site. The material must be stored away from any open water and covered by tarpaulin where practical. Such stockpiles must be surrounded by “adsorbent socks” or similar to minimise surface water run-off.
- Stockpiles must be kept below a height of 2 metres and at least 10 metres away from surface water drains, wetlands, springs and swallow holes and 50 metres away from the Ballymacahill River and ecological buffers delineated on the site.
- The contractors must submit and adhere to a method statement indicating the extent of areas likely to be affected by their work and demonstrating that this is the minimum disturbance necessary to achieve the required works. Where works are required beside or to water features, a method statement will be provided outlining appropriate mitigation measures.
- Where concrete removal and soil stripping occurs, the contractor must ensure that the resulting excavated material is separated into concrete, topsoil, and subsoil stockpiles.
- During demolition of farmyards, or where there is evidence of potential contamination, soil should be sampled and disposed of appropriately by a licenced contractor to a licenced waste facility.

Fuel Oil /Chemical Management

Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) within the designated contractor’s compound to prevent any seepage of potential pollutants into the local surface water network. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks.

All oils and bulk fuel will be stored within the contractor’s compound. These will be fully bunded and located on hard stand. Fuelling areas will also be located on hardstand and stormwater run-off from these areas will be to an oil interceptor.

All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters.

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas within the contractor’s compound. Oil and fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area within the contractor’s compound which will be away from surface water gullies or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment.

Guidelines such as 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001) will be complied with.

In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally banded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Emergency response procedures will be prepared. All personnel working on the site will be suitably trained in the implementation of the procedures, and upskilled where necessary.

Raw/Uncured Concrete and Concrete Wash Water

Where feasible, all ready-mixed concrete will be brought to site by truck.

- A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite and no washing of concrete from vehicles will be done on site.
- The pouring of concrete must take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Alternatively, if bedrock is reached, any fissures identified must be grouted.
- There are several options for the management of raw or uncured concrete and concrete wash-water, subject to approval by CCC:-
- The contractor shall arrange for the concrete to be mixed off-site and imported to the site. Wash down and washout of concrete transporting vehicles is to take place off site, or if it takes place on-site then the wash water is to be sent off-site to an appropriate treatment facility with relevant waste records being provided to the Art Data Centre Contact. Raw or uncured waste concrete shall be disposed of by removal from the site.
- The contractor will be required to install a suitable collection system (i.e. lined and impermeable) for concrete wash water which allows the concrete to harden. Water from this collection system may not be discharged to the surface water or ground. Discharges to foul sewer system are subject to approval by the Art Data Centre Contact and CCC. Alternatively, the water must be sent off-site to an appropriate treatment facility with relevant waste records being provided to the Art Data Centre Contact.
- No batching plant is included in the design.

Accidental Spills and Leaks

A robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced, and implemented for the duration of the works. Emergency procedures/ precautions and spillage kits will be available and construction staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages.

Wastewater Management

- Welfare facilities (canteens, toilets etc.) will be available within the construction compound and these will remain in place for the construction phase of the proposed development. The offices and site requirements will initially need to have their own power supply (generator), water deliveries and foul water

collection until connections are made to the mains networks All welfare systems will be fully sealed and temporary in terms of usage.

- All wastewater from the construction site must be discharged at a separate point to that of the operational sites point unless otherwise advised by the Art Data Centre Contact.
- In the case of pipe flushing, the Art Data Centre Contact must be contacted prior to commencement to ensure that sewer loadings are not exceeded in conjunction with existing process discharges and that there is no impact to current environmental licence and/or agreements with CCC. This request for approval will need to be presented to and agreed by the Environmental Excursions Prevention Team (EEPT).
- Solvent material, paints, oil, petroleum products etc. will NOT be allowed to be discharged to the foul sewer under any conditions

Protection of Hydrological/Hydrogeological Features

This section describes the specific mitigation measures implemented during construction for the protection of the existing identified surface water features and maintaining the existing surface water drainage system.

Tooreen Lough

There will be no construction works carried out within Tooreen Lough. There will be no oil or subsoil storage in the vicinity of this feature. An ecological buffer of at least 10 metres applies to this feature.

It is proposed that that overland stream discharging from Tooreen Lough will be culverted. This will ensure continued conveyance of existing flows without any upgradient or downgradient impacts on flow or water quality. The culvert will be adequately sized for current and future flow conditions.

Ardnamurry Lough

There are no construction activities planned for this area and this feature is located upgradient along the eastern boundary of the proposed development. Therefore, no mitigation measures are needed for this feature.

Swallow Hole (Receiving water from Tooreen Lough) located south of DC6

Prior to commencement of construction works, the discharge stream from Tooreen Lough and swallow hole will be clearly delineated and marked. The swallow hole will be surrounded by a concrete ring with chamber and accessed by a manhole cover to avoid blockage during works on the site. This swallow hole will be monitored daily to ensure it is free flowing. i.e. ensuring no change to the existing flow regime there.

Main Spring located north of DC6

Prior to commencement of construction works, the spring and areas around this feature will be clearly delineated and marked. There are no proposed construction works within this spring area and a buffer zone of at least 10 metres will be implemented to ensure that the integrity of the spring is protected. Therefore, maintaining the flow and water quality of this spring. Daily to weekly monitoring of the spring in terms of flow and water quality will be recorded during construction phase works.

Furthermore, provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems like this feature and hence protecting the integrity of this feature.

Pond located North of the Energy Centre

There are no construction activities proposed within this feature. It is proposed that the Energy Centre will be built up by infill material and a retaining wall will be built to protect the pond feature. An existing [field dividing] wall is in place and will be protected throughout the construction phase works.

As previously discussed, there will be no stockpiling of subsoil / rock matrix by this feature as well as no fuel storage - fuel will be adequately stored in effective bunds located within the contractor compound. Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems such as this feature and hence protecting the integrity of this attribute.

Ponds located North of the DC4

There are no construction phase activities proposed within these two (2) no. features, however the proposed Data Centre building DC4 is located in close proximity. It is proposed that the DC4 structure will be 'built up' using engineered infill material.

As previously discussed, there will be no stockpiling of subsoil/ rock matrix by this feature as well as fuel storage -fuel will be adequately stored in effective bunds located within the contractor compound. Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems like this feature and hence protecting the integrity of this attribute.

Karst Features - potential conduits/ flow paths

In areas where potential karst conduits are interpreted i.e. at proposed structures DC3 and DC6, additional geophysical surveying and a sufficient number of exploratory boreholes will be undertaken to further delineate areas of inferred conduit/ below ground flows. These building foundations will be piled, and the design of the piling methodology including pile depths/ spacing (m) designed to allow bridging of the existing [identified as potential] karst conduits i.e. ensuring no change to the existing groundwater flow regime across the site.

Surface Water Construction Phasing Plan

The surface water & pollution management has developed an envisaged construction phasing of the proposed surface water network in line with the proposed overall construction phasing of the development as set out on the masterplan phasing drawing ART-ARC-SP-00-DR-A-0003.

The proposed surface water network has been divided into five phases, where the three first phases coincide with the phases for the overall development. The surface water phasing plan can be seen in figure 7.5 below and in Appendix G.

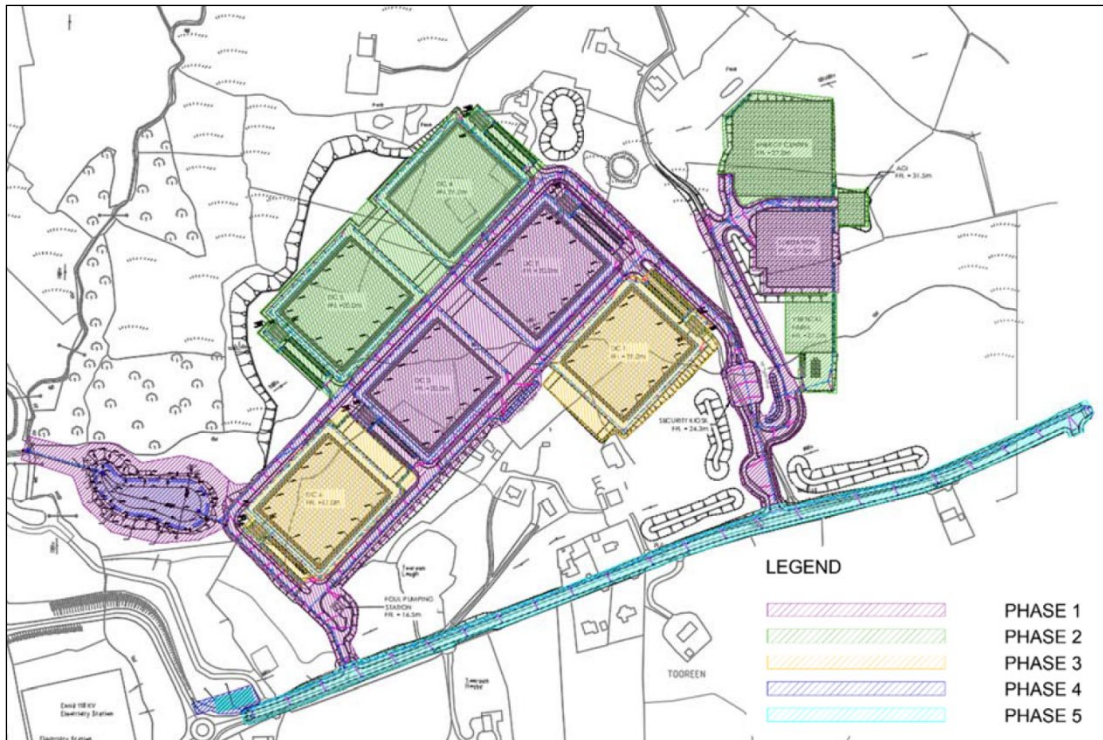


Figure 7.2 Proposed Surface Water Phasing Plan.

Aligned with the overall phasing of the development, the proposed surface water phasing plan indicates that the primary infrastructure is the first element of construction to be initiated – Phase 1 on the surface water phasing plan where the proposed attenuation pond is the first element to be finished within Phase 1.

Subsequently, once all the main surface water arms/lines have been constructed, the next phases can take place and tie in, where required, with the already constructed surface water main infrastructure.

The proposed surface water network on Tulla Road is divided into two main phases – Phase 4 and Phase 5. Phase 4 involves the construction of the attenuation system and Phase 5 involves the construction of the single surface water line, the proposed road gullies and its respective connections.

Monitoring

Scheduled monitoring of environmental performance and compliance with planning consents and legislation and regulations will be required throughout the construction phase of the Project. This will enable the overall effectiveness of the environmental controls to be determined and allows areas of non-compliance to be identified so corrective actions can be taken. Environmental monitoring will take place prior to construction to assess the baseline, during construction to assess the impact of the construction on the environment and after construction to assess the impact of the completed Project. Environmental monitoring will be required at various stages of construction for each environmental aspect as developed in specific environmental sub-plans and the Project. The overall monitoring schedule, including environmental aspects, frequency and monitoring requirements will be developed by the appointed Contractor and approved by CCC. The monitoring schedule will be a working document and will be amended and updated to reflect works being undertaken and receiving water conditions and management review changes.

- The overall monitoring schedule, including environmental aspects, frequency and monitoring requirements will be finalised by the appointed Contractor and approved by the Relevant Authority prior to works commencing on site.
- A daily visual inspection should be undertaken and recorded in the inspection checklist provided in Section 8.
- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or any other items, and that all soil storage is located at least 10 metres from the nearest surface water receptors. A regular log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not re-occur.
- Daily inspection of surface water run-off from the attenuation pond and sediment controls e.g. silt traps will be carried during the construction phase. Continuous monitoring system for pH, temperature, electrical conductivity and total organic carbon to be installed at the outlet to ensure water quality discharging from site is of good quality and meets the respective S.I. threshold values.
- Regular inspection of construction mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.
- Regular monitoring of the surface water drainage features and swallow holes to ensure all are free flowing.
- Regular monitoring of the silt traps/ trenches/ fences around established buffer zones to ensure on-going protection of all surface water attributes.
- checklist.

8.0 SUMMARY

This CEMP sets out the overall management strategy for demolition, excavation and construction works for the proposed development. The CEMP aims to ensure the management of demolition and construction activity is carried out in a planned, structured and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. Due to the nature of construction works, there may be unforeseen events which occur at the site and the project team will actively manage any changes and discuss with the relevant authorities, where required. The CEMP should be viewed as a live document that will be updated as the development progresses and circumstances change.

The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed so as to minimise potential impacts.

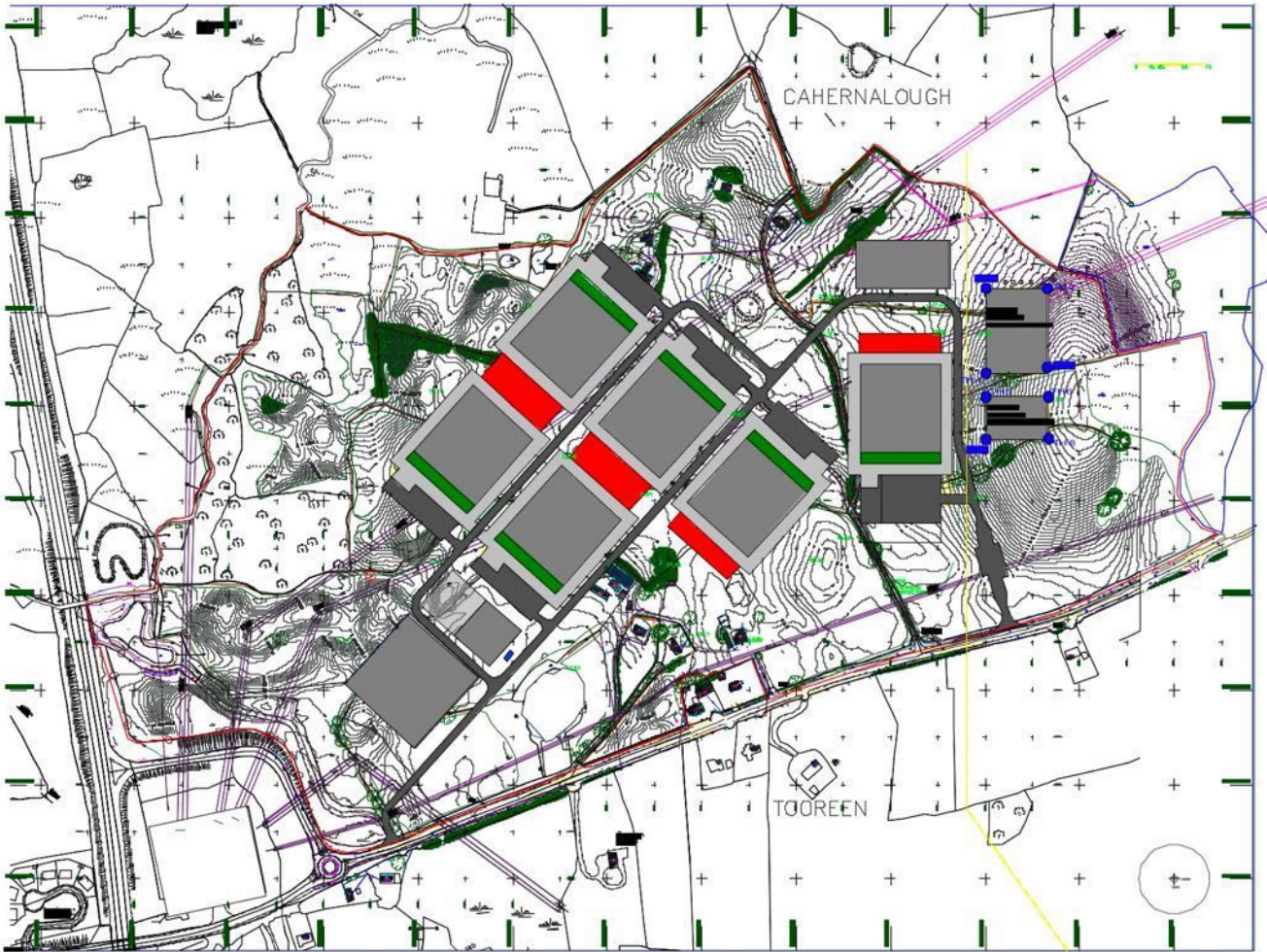
9.0 REFERENCES

1. Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004).
2. Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks (2010)
3. Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
4. Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (2019)
5. US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition (periodically updated)* (1986).
6. The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996).
7. Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014).
8. UK Office of Deputy Prime Minister, *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (2002).
9. USEPA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (1997).
10. *Waste Management Acts 1996 – 2011 Litter Pollution Act 1997* (No. 12 of 1997) as amended
11. *Clare County Council (CCC), Clare County Development Plan 2017 – 2023* (2017) (as Varied)
12. *Southern Region Waste Management Plan 2015 – 2021* (2015)
13. Construction Industry Research and Information Association (CIRIA) *Control of Water Pollution from construction Sites, Guidance for consultants and contractors* (C532).
14. CIRIA, *Environmental Good Practice on Site* (3rd edition) (C692).

Appendixes

- A – Building Demolition Report**
- B – Soft Landscaping Phasing Plan**
- C – Proposed Site Compounds & Staff Parking Locations (ART-ARC-SP-00-DR-A-004)**
- D – Temporary Traffic Access Plan (Garvey Access)**
- E – Biodiversity Schedule of Mitigation Measures**
- F – Flood Risk Assessment**
- G – Surface Water and Pollution Management Plan**

BUILDING DEMOLITION REPORT



PROJECT: ART DATA CENTRE - TOUREEN, ENNIS, CO. CLARE

Prepared by: Fergal Coughlan CEng MIEI BE

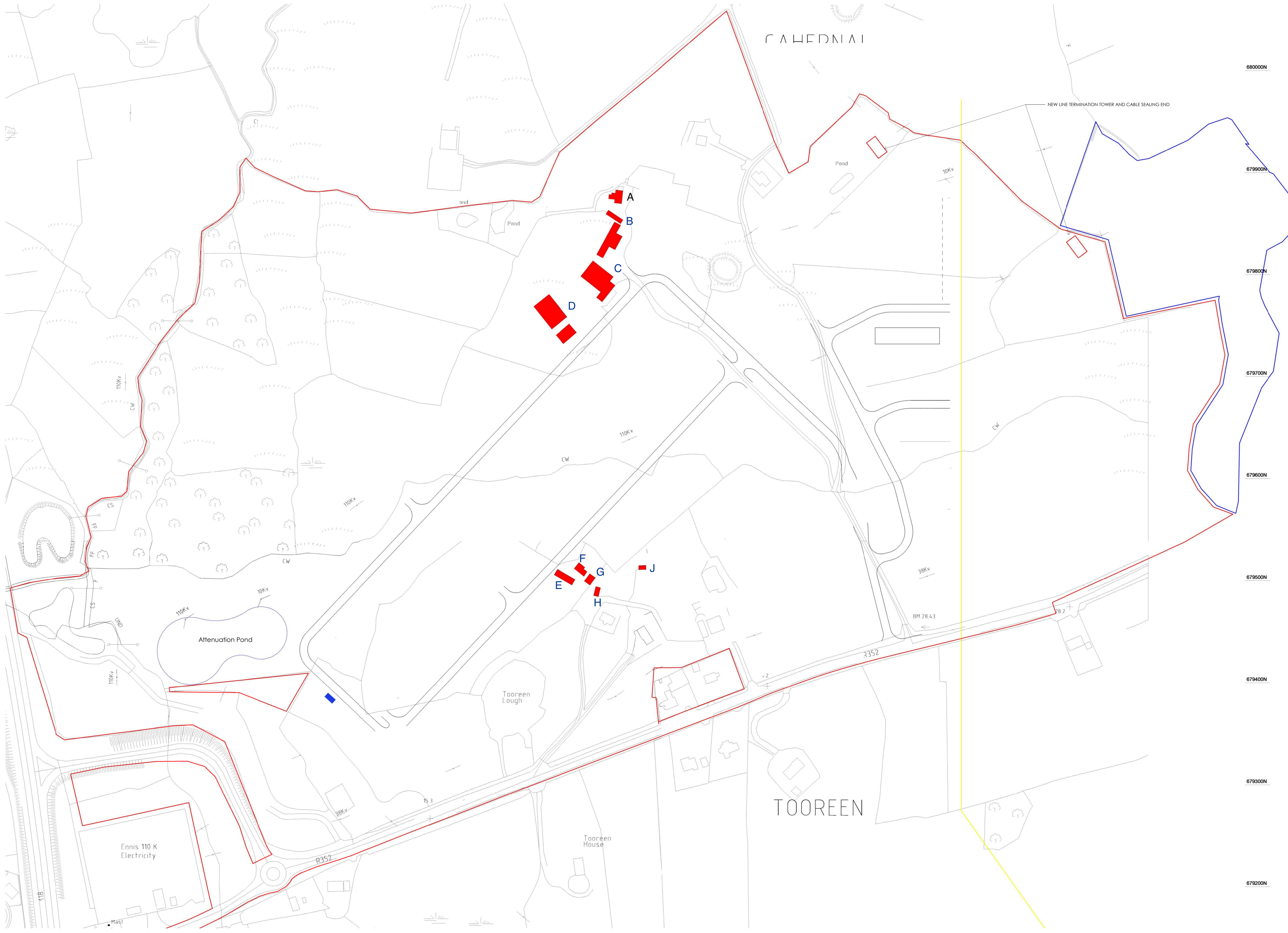
Date: May 2021

INTRODUCTION:

This report is based on a visual external inspection of all properties due to be demolished as part of the proposed planning application for the Art data centre. The proposed buildings to be demolished are shown on the following layout drawing and also on the attached drawings 1-3.

We have made comments where visibly possible if there are any evidence of asbestos present, but cannot account for presence if covered up or concealed.

NOTES:
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 2. All dimensions shown are in millimetres.
 3. This drawing shall be read in conjunction with all Specifications and schedules.
 4. All dimensions shall be checked by Contractor prior to any works commencing on site.
 5. The contractor shall be responsible for all relevant standards, regulations, statutory codes of practice, methods of working, and good practice.
 6. Dimensions shall be supplied from the drawing and the contractor shall be responsible for obtaining all dimensions and levels on site for the actual setting out of the works.



ESTIMATED FLOOR AREAS OF BUILDINGS(m2)	
A	101m2
B	477m2
C	650m2
D	555m2
E	127m2
F	76m2
G	58m2
H	42m2
J	25m2

1 Demolition Mark up
 1 : 1250

680000N
 679000N
 679000N
 679700N
 679000N
 679500N
 679400N
 679300N
 679200N

REV DATE DESIGNED BY
FOR INFORMATION
 SO WORK IN PROGRESS
ARC:MC
 140-142 St. John Street, London EC1V 4UB T 020 34112571
 REGISTERED IN ENGLAND COMPANY REG. NO. 1883249

PROJECT: PROJECT ART
 TITLE: TULLA ROAD, ENNIS
 Co. CLARE, IRELAND
 PROJECT NO.: L3108.00
 DESCRIPTION: Demolition Mark up
 SCALE: 1:1250 @ A0
 DRAWING NO.:
 REVISION:
0004

BUILDING A



This property was constructed circa 1950's and the outer walls are constructed in stone and rendered. There has been a flat roofed extension added to the rear some time after. The main house has a slate roof which may contain asbestos. Estimated area pitched roof of same is 78m².

BUILDING B



This property is an agricultural shed and is constructed of block/steel structure. The roof and wall cladding is of galvanised steel

BUILDING C



This property is an agricultural shed and is constructed of block/steel structure. The roof and wall cladding is of galvanised steel

BUILDING D



This property is an agricultural shed and is constructed of concrete/steel structure.
The roof and wall cladding is of powder coated steel.

BUILDING E



This property is an agricultural shed and is constructed of Concrete/steel structure.
The roof and wall cladding is of galvanised steel

BUILDING F



This property is an agricultural shed and is constructed of Concrete wall structure.

The roof cladding is of galvanised steel

BUILDING G



This property is an agricultural shed and is constructed of steel structure with low concrete walls around perimeter.
The roof and wall cladding is of galvanised steel

BUILDING H



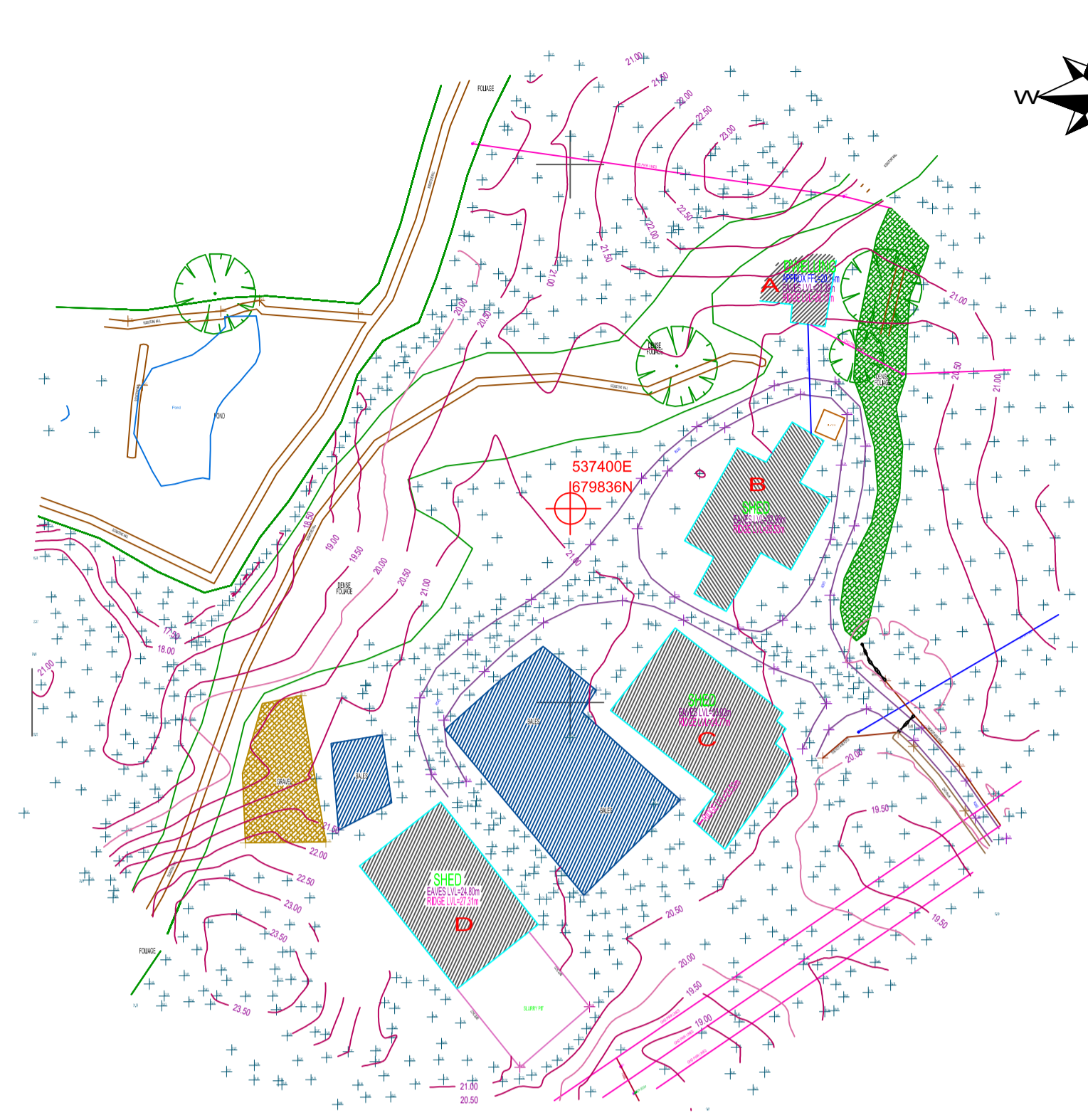
This property is an agricultural shed and is constructed of random stone rubble external walls/rendered.
The roof cladding is of galvanised steel

BUILDING J

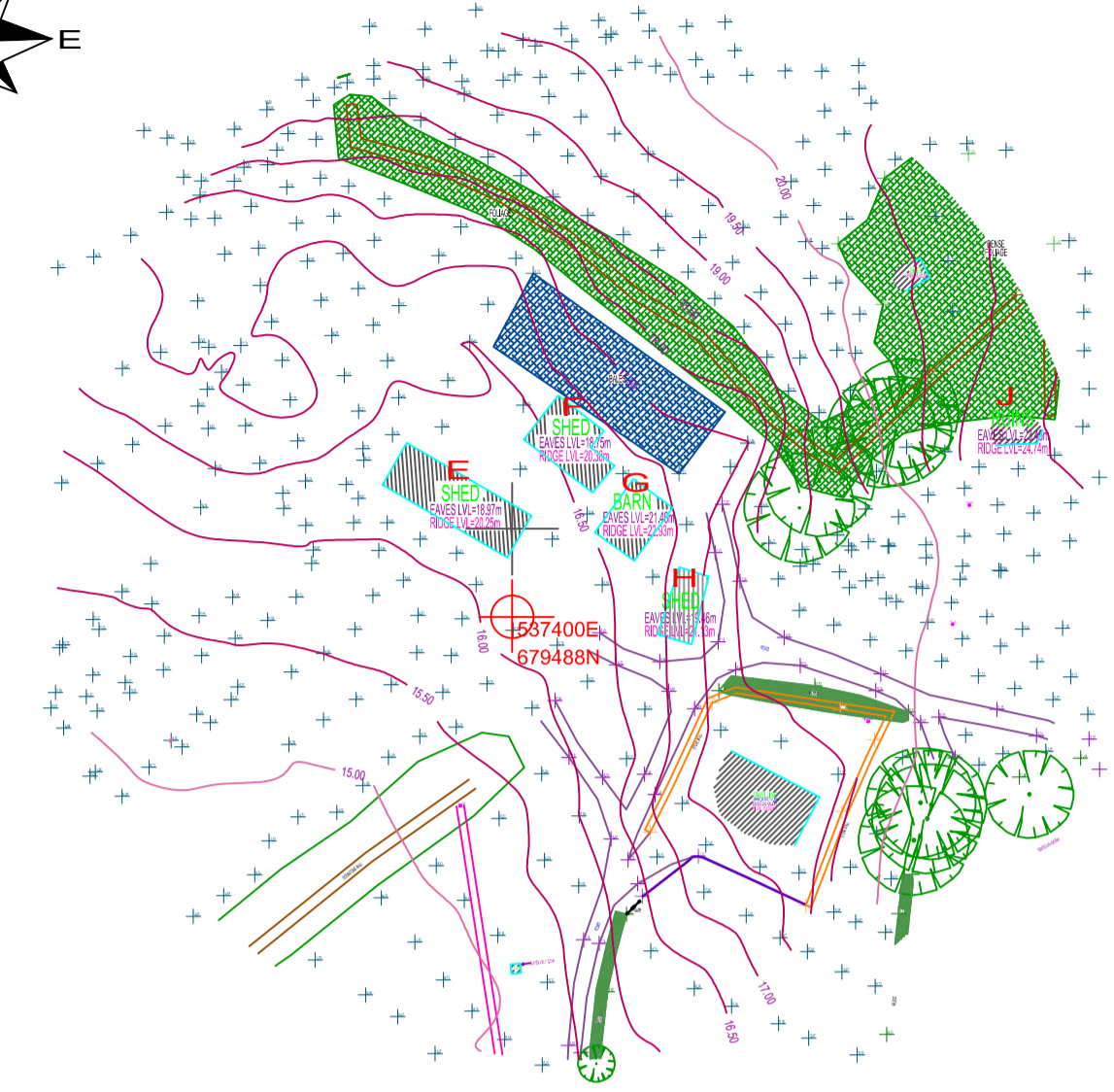


This property was an old shed which is now in ruins.

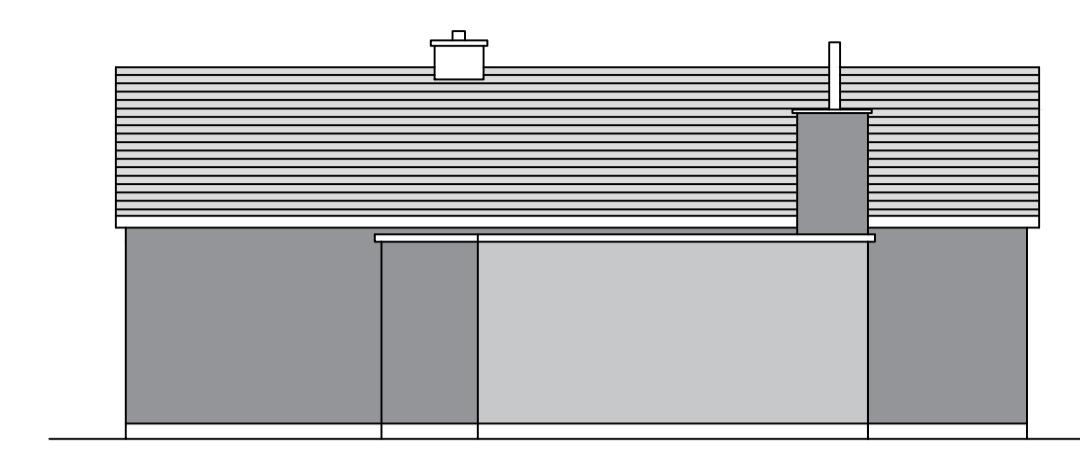
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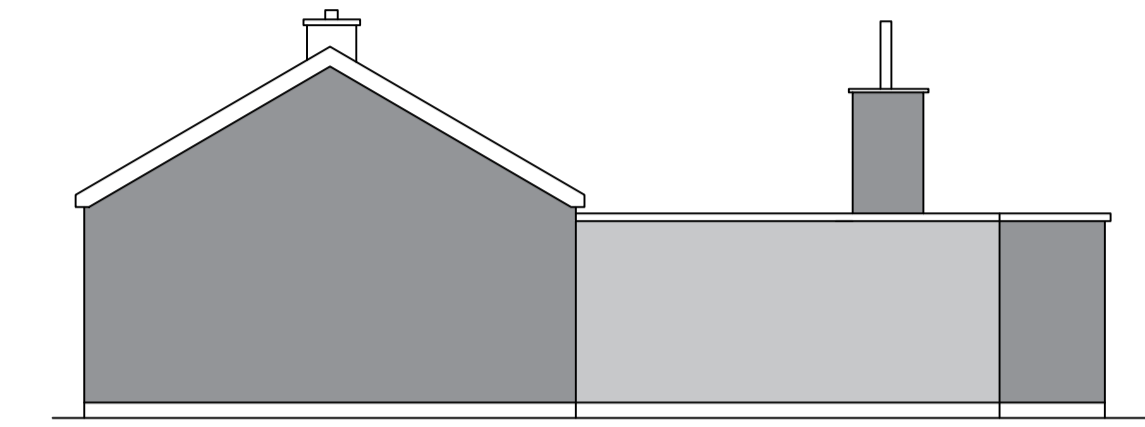
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WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION

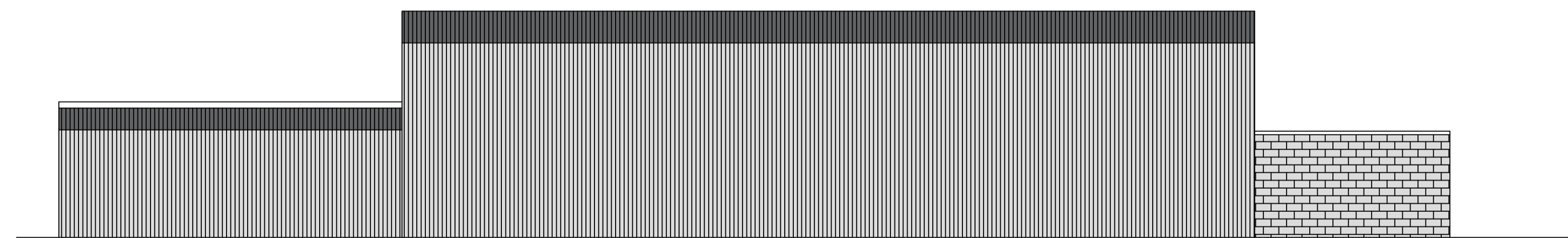


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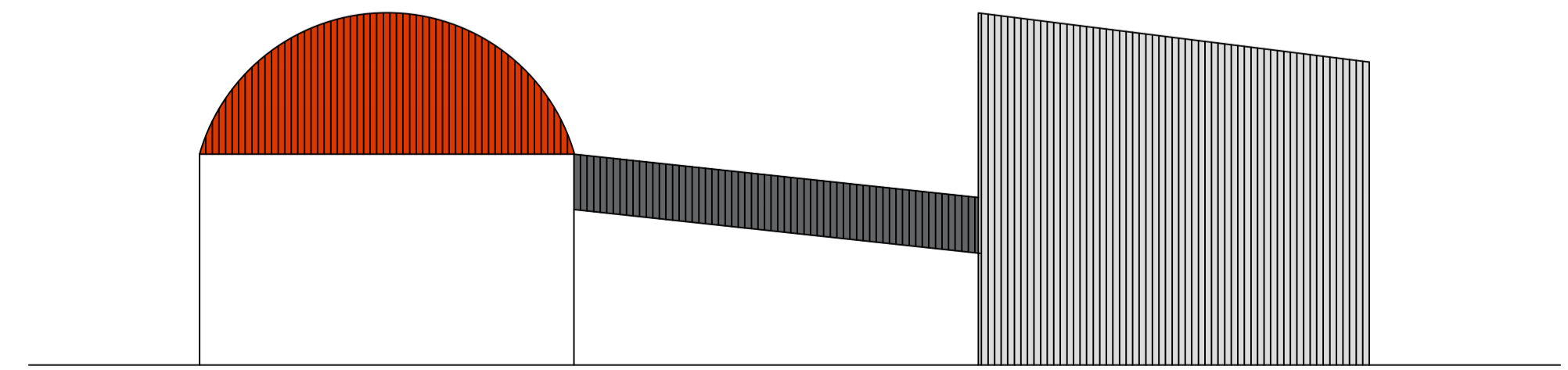
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 Scale 1:100



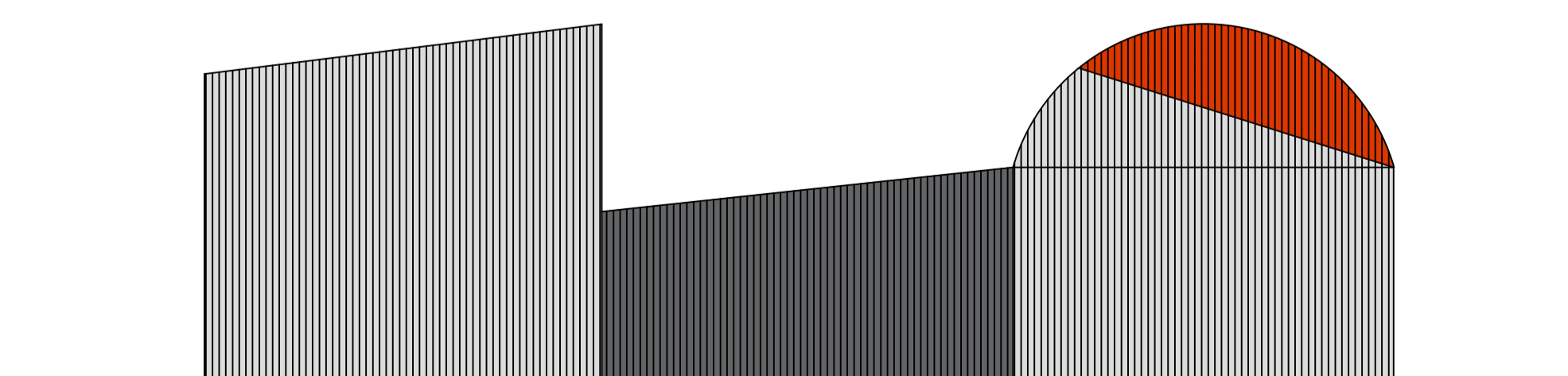
SOUTH EAST ELEVATION



NORTH WEST ELEVATION



NORTH EAST ELEVATION



SOUTH WEST ELEVATION

BUILDING B
 Scale 1:100

REV.	DESCRIPTION	DATE	BY

ARCHITECT

CLIENT TOUREEN ESTATES

JOB

ART DATA CENTRE @ TOUREEN, TULLA ROAD, ENNIS

TITLE PROPERTY DEMOLITION DETAILS
 SHEET 1 OF 3

STATUS **PLANNING STAGE**

Fergal Coughlan
 Chartered Engineer

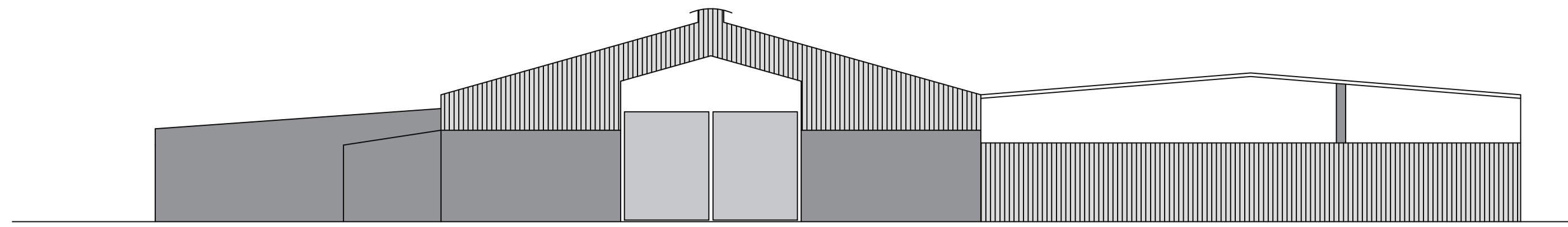
CONTACT DETAILS

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 Tullyvoghnan,
 Sperrinchill,
 Ennis,
 Co. Clare.

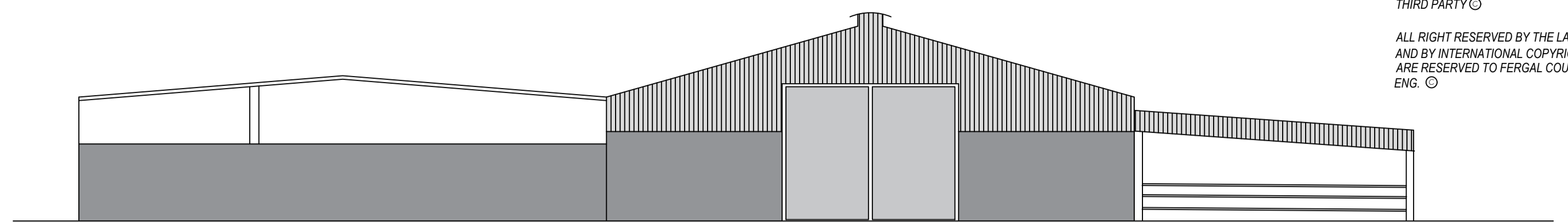
Phone: 076-6027333
 Mobile: 087-2696692
 Email: info@fergalcoughlan.com

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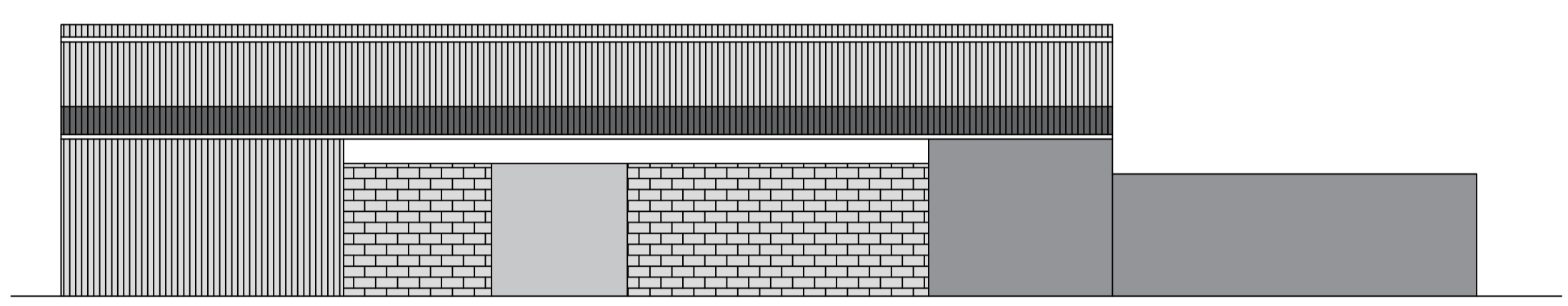
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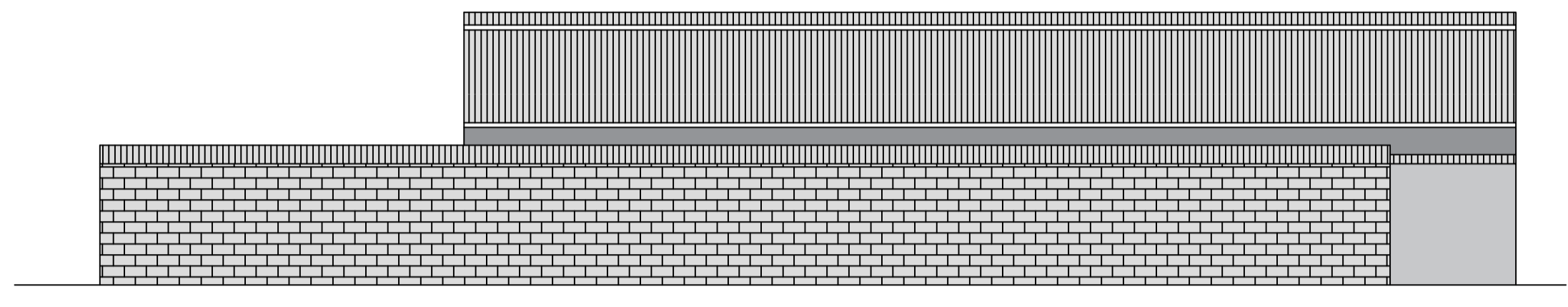
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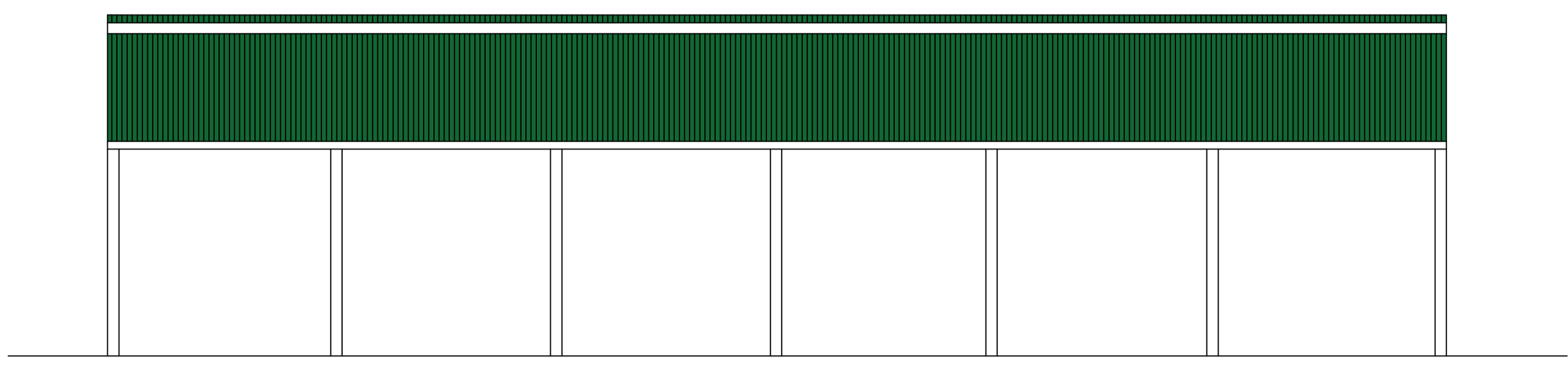


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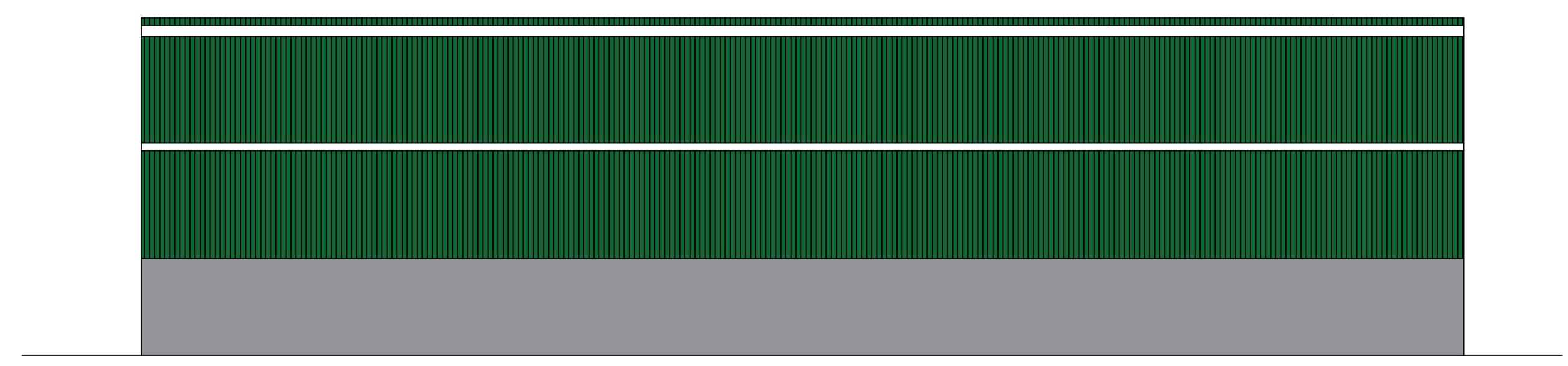


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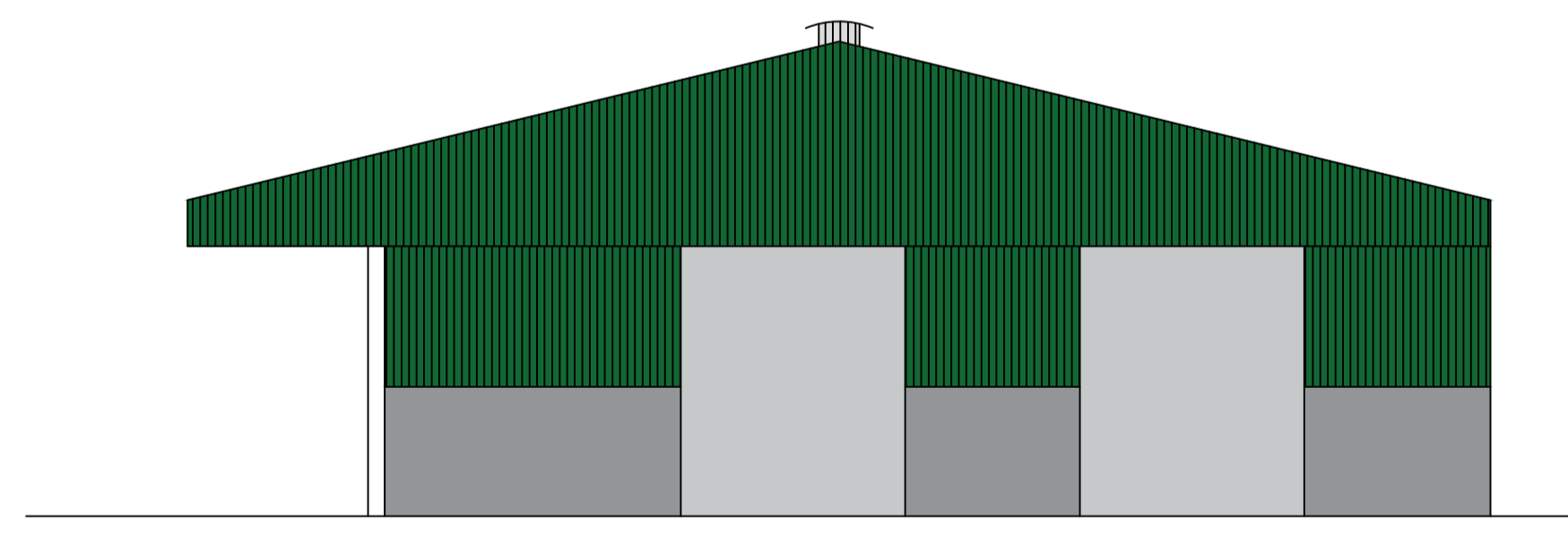
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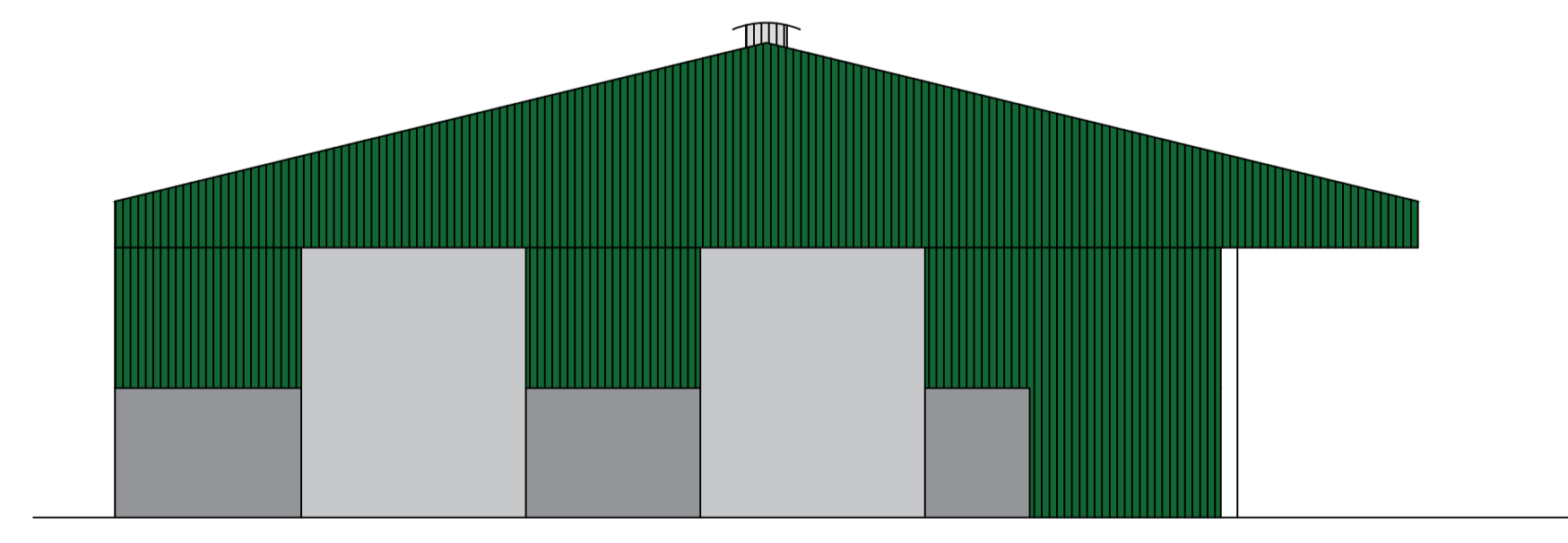
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SOUTH WEST ELEVATION



NORTH WEST ELEVATION



SOUTH EAST ELEVATION

BUILDING D
 Scale 1:100

REV.	DESCRIPTION	DATE	BY

ARCHITECT	
CLIENT	TOUREEN ESTATES
JOB	ART DATA CENTRE @ TOUREEN, TULLA ROAD, ENNIS
TITLE	PROPERTY DEMOLITION DETAILS SHEET 2 OF 3

STATUS **PLANNING STAGE**

Fergal Coughlan
 Chartered Engineer

CONTACT DETAILS

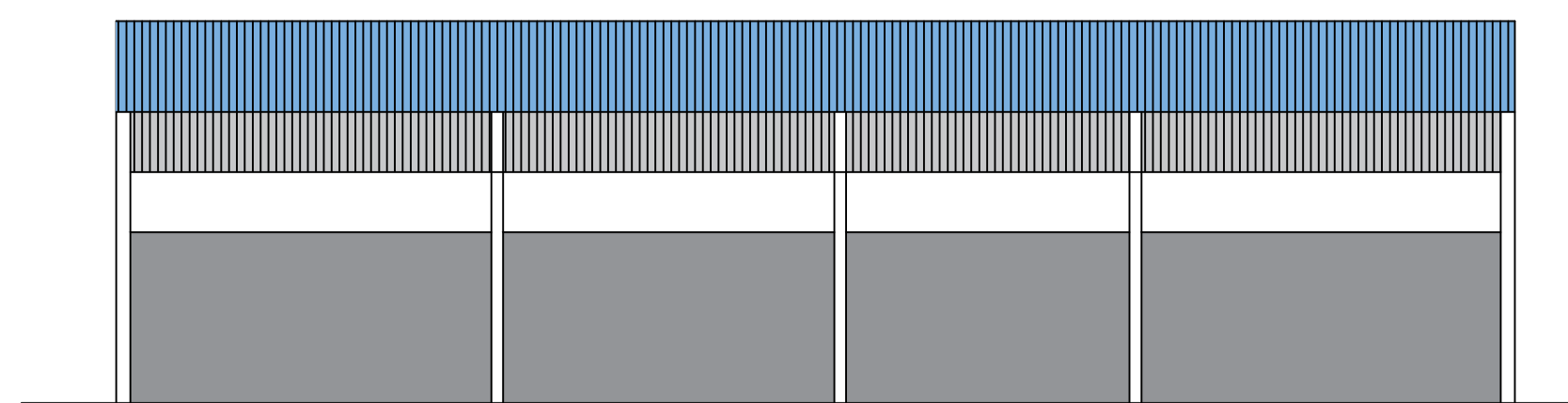
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 Sparrinhill,
 Ennis,
 Co. Clare.

Phone: 076-6027333
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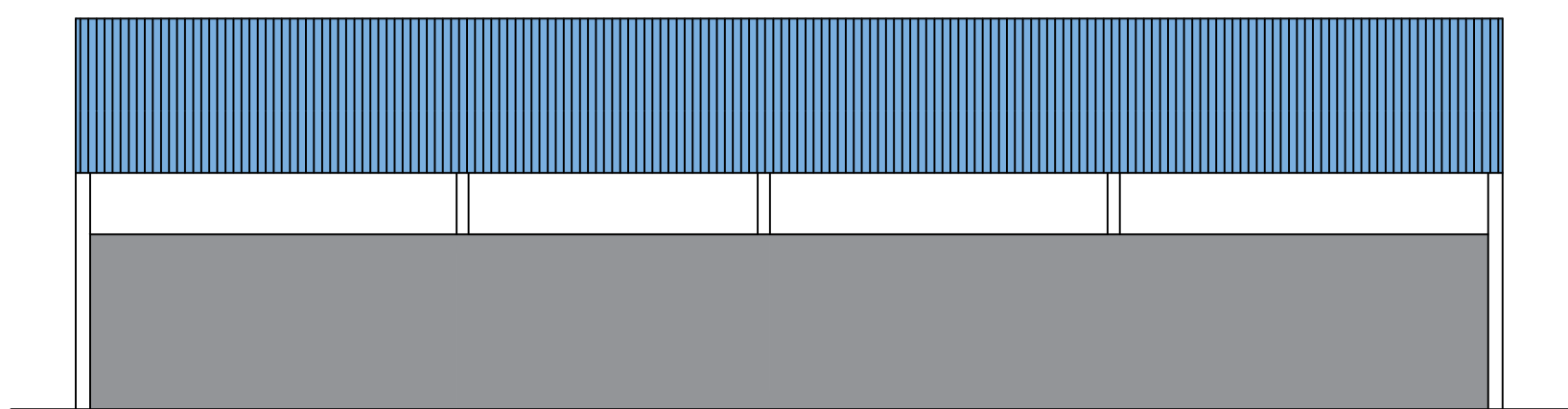
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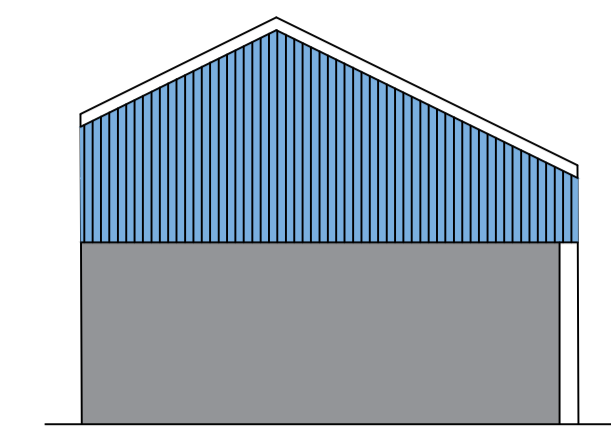
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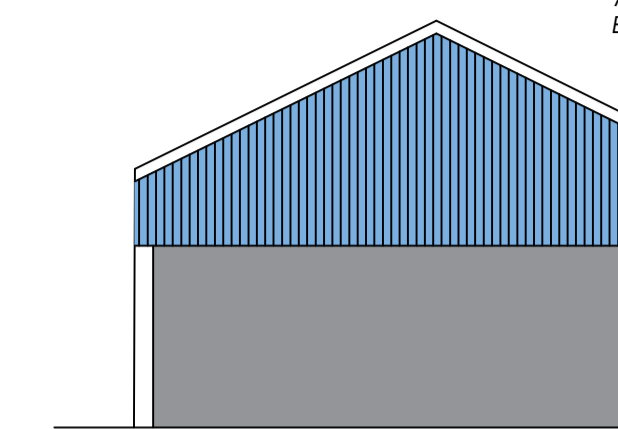
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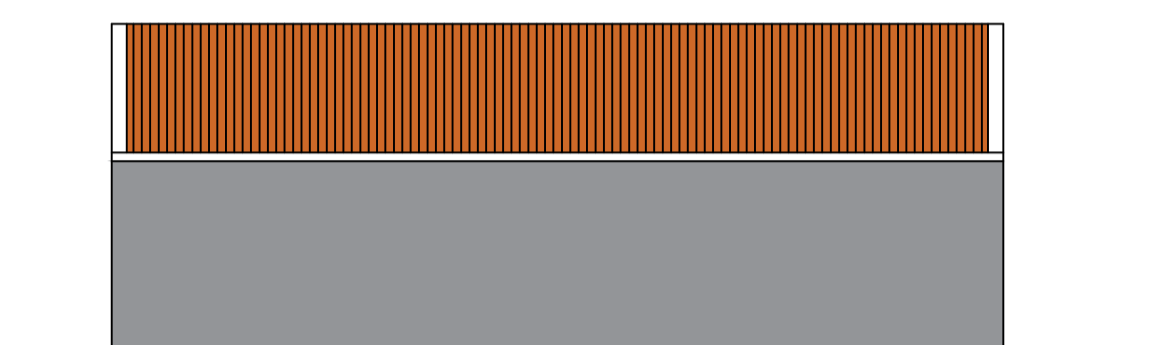


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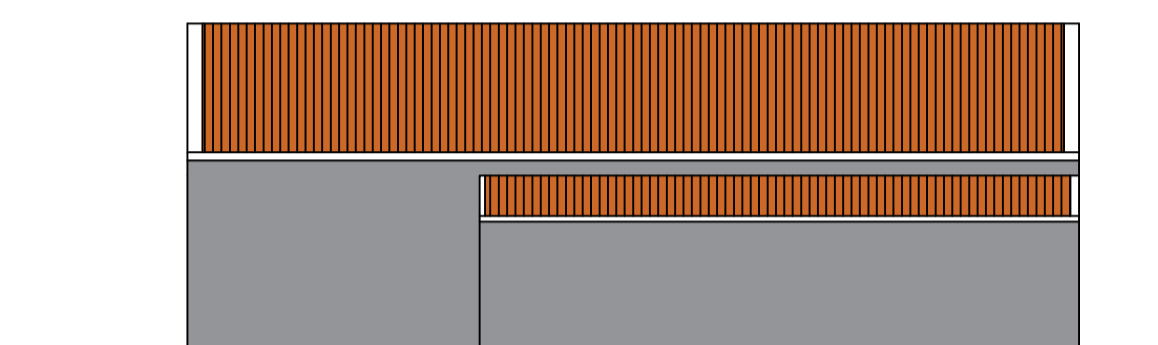


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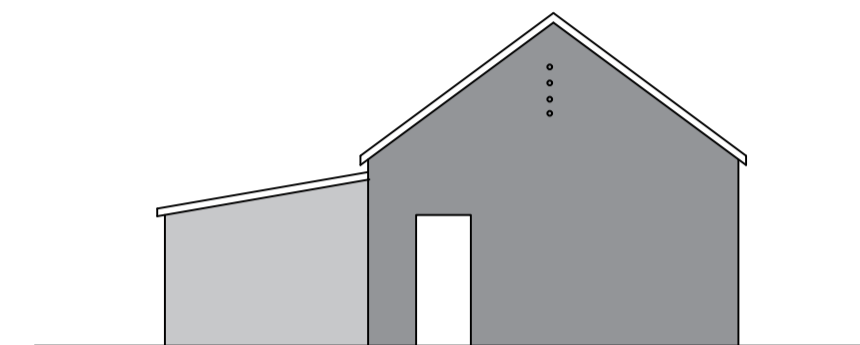
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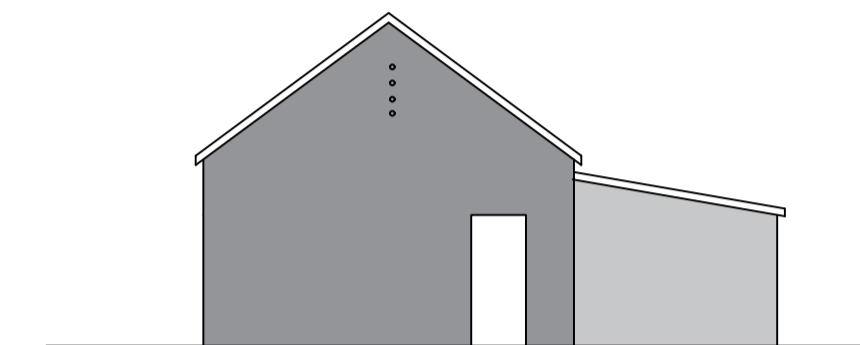
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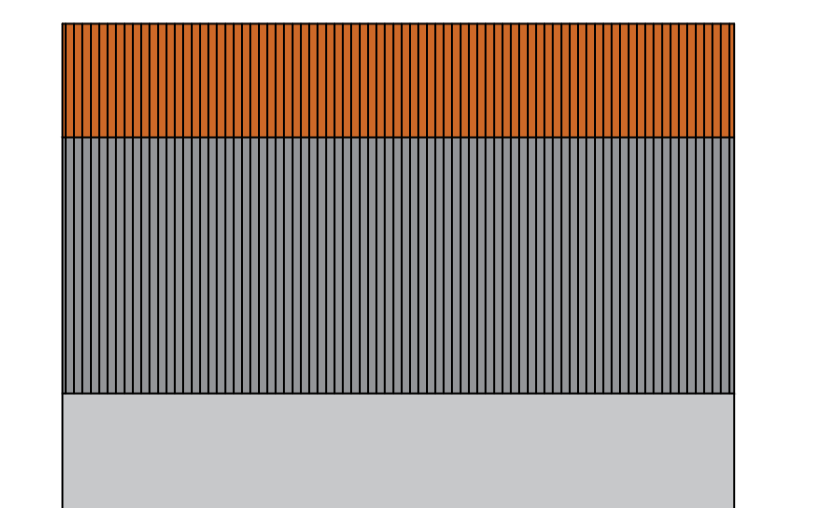


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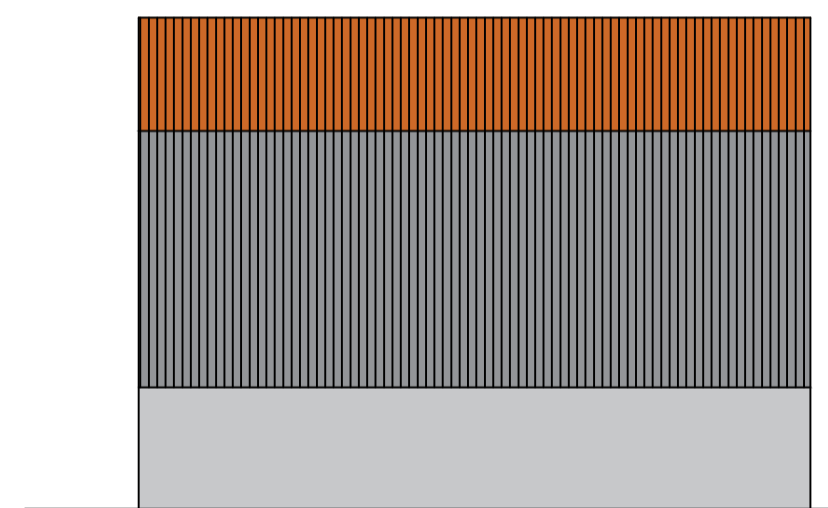


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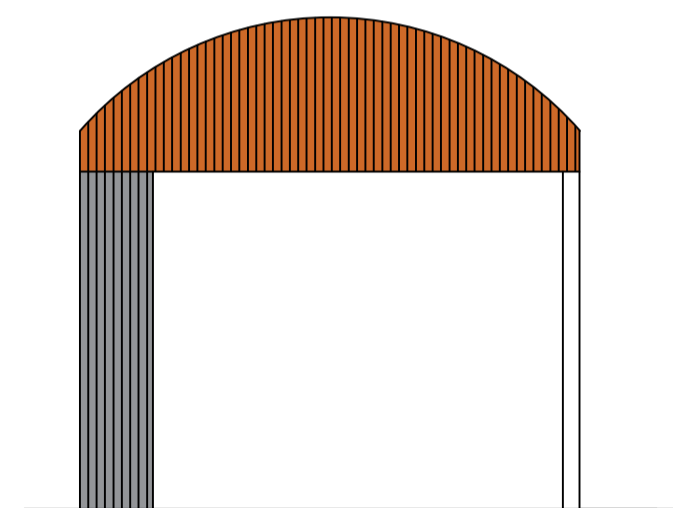
BUILDING F
 Scale 1:100



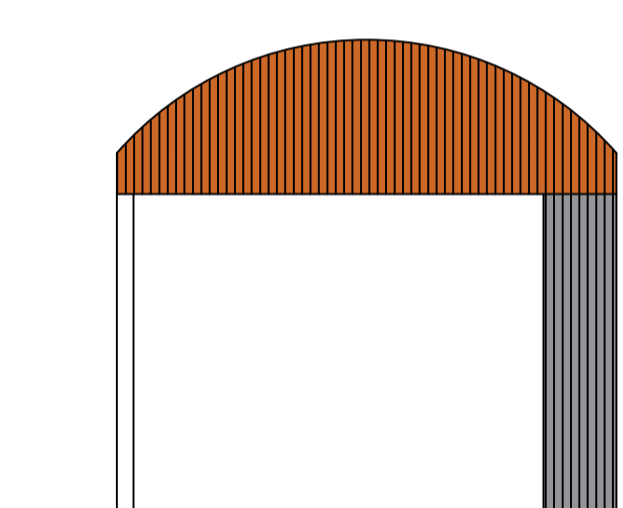
SOUTH EAST ELEVATION



NORTH WEST ELEVATION

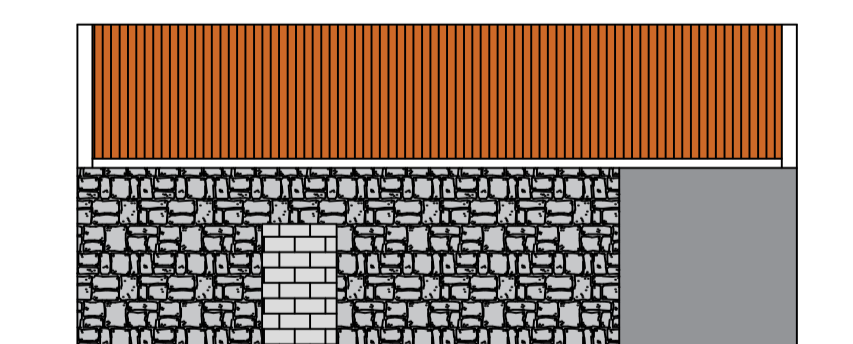


SOUTH WEST ELEVATION

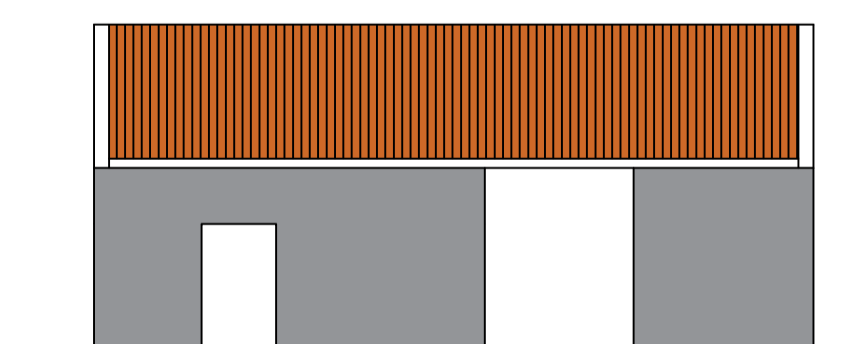


NORTH EAST ELEVATION

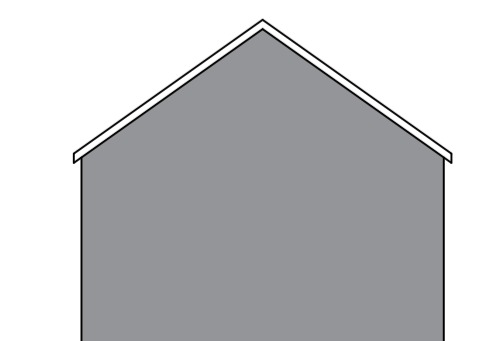
BUILDING G
 Scale 1:100



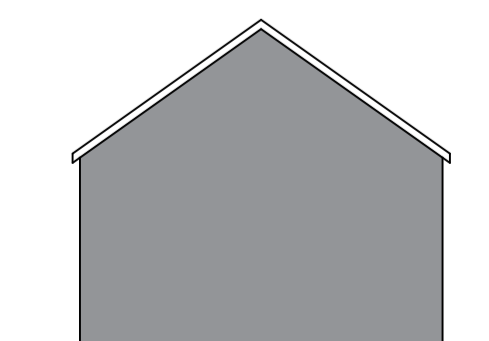
WEST ELEVATION



EAST ELEVATION

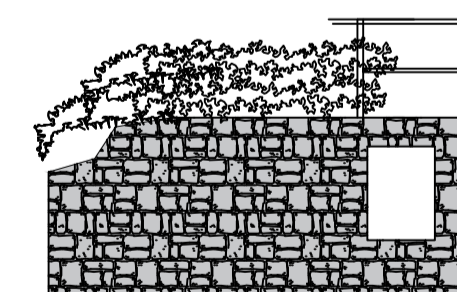


SOUTH ELEVATION



NORTH ELEVATION

BUILDING H
 Scale 1:100



SOUTH ELEVATION

BUILDING J
 Scale 1:100

NOTE:
 Rest of elevations of building J which is
 in ruins are all overgrown

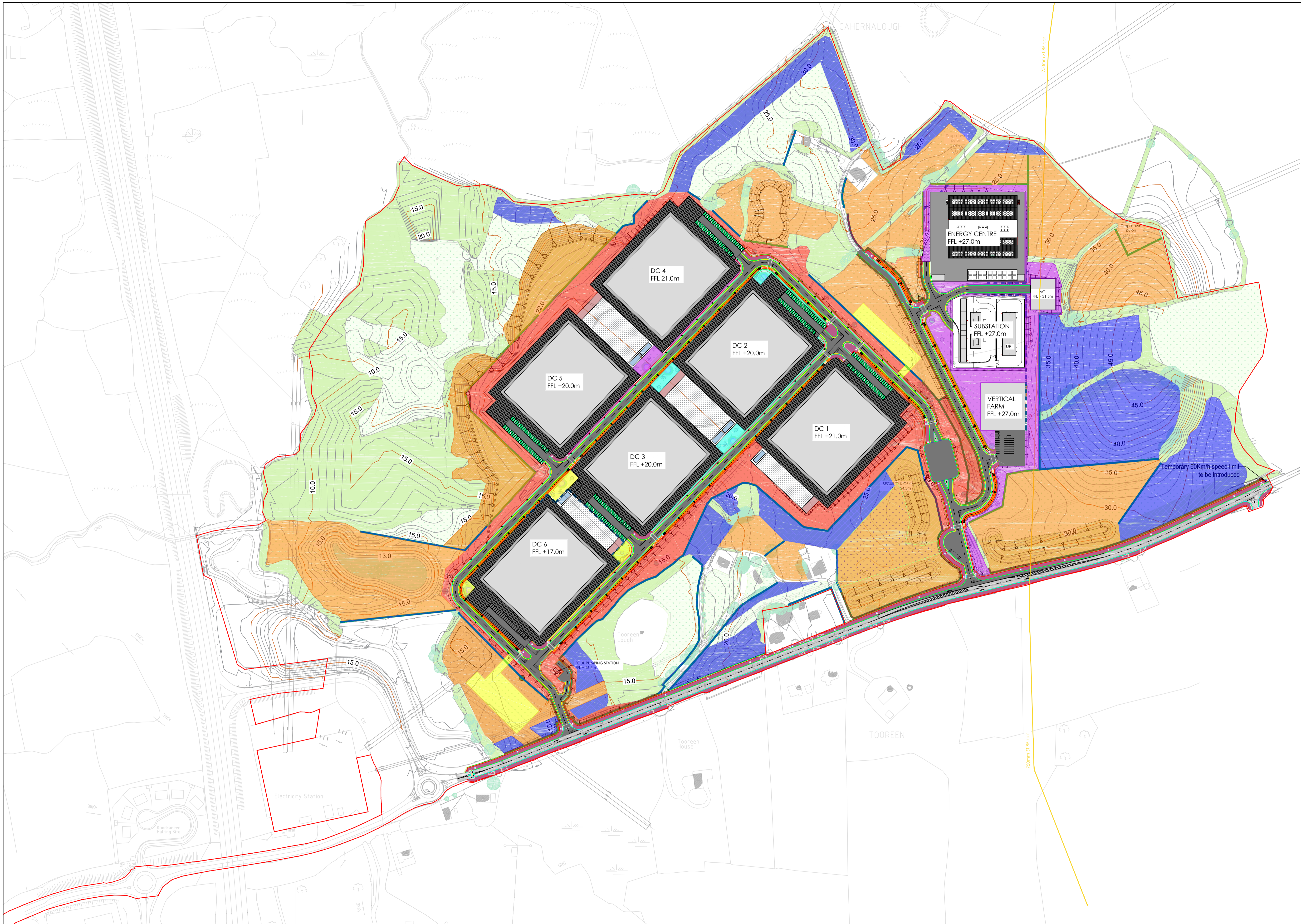
REV.	DESCRIPTION	DATE	BY

ARCHITECT	
CLIENT	TOUREEN ESTATES
JOB	ART DATA CENTRE @ TOUREEN, TULLA ROAD, ENNIS
TITLE	PROPERTY DEMOLITION DETAILS SHEET 3 OF 3

STATUS **PLANNING STAGE**

CONTACT DETAILS	
ADDRESS: Tullyvaghan, Ennis, Co. Clare.	Phone: 075-6027333 Mobile: 087-2566692 Email: info@fergalcoughlan.com

SCALES	As Shown	DRG. No.	
DATE	May 2020	DRAWN	FC
CHECKED		APPROVED	
		ARTD/PS/003	



- KEY**
- Pre-construction Landscaping
 - Phase 1a - Post Cut & Fill
 - Phase 1b - Post Roads and Infrastructure
 - Phase 1c - Post DCs 1&2 and Substation
 - Phase 2 - Post DCs 4&5, Energy Centre and Vertical Farm
 - Phase 3 - Post DCs 1&6

Note: Areas not shaded are not envisaged to be disturbed, if disturbed during construction these should be reseeded with field grass as soon as possible.

REVISION	DATE	DESCRIPTION
F	31.05.22	Boundary updated
E	17.12.21	Substation layout updated and drop-down pylons added
D	06.07.21	Phasing extents updated to take account of additional section of cycle lane
C	23.06.21	Phase 3 extents updated to reflect relocated compound and parking areas and Phase 1A extents to west and north of DCs 4 & 5 updated.
B	28.05.21	Phase 3 extents updated to reflect full extent of parking areas associated with construction of DCs 1 and 6.
A	19.05.21	Phase 3 extents updated to allow for parking areas associated with construction of DCs 1 and 6.

ART DATA CENTRE - ENNIS CAMPUS CO. CLARE

DRAWN : SMcK	STATUS: Planning	DRAWING No. ADC-L-003
CHECKED : SMcK	SCALE: 1:2,000 at A1	DATE: May 2021
APPROVED : SMcK	FILE NAME: 210528 Proposed landscaping.dwg	CLIENT : ART DATA CENTRES
PROJECT MANAGER : NdeJ	This drawing must not be either loaned, copied or otherwise reproduced in whole or in part or used for any purpose without the prior written permission of NdeJA	

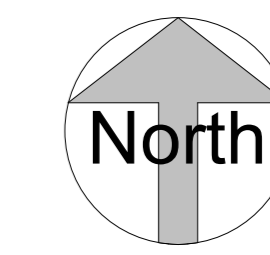
PROJECT: ART DATA CENTRE - ENNIS CAMPUS

TITLE: Soft Landscaping Phasing Plan

Nicholas de Jong Associates
URBAN DESIGN

REV. F





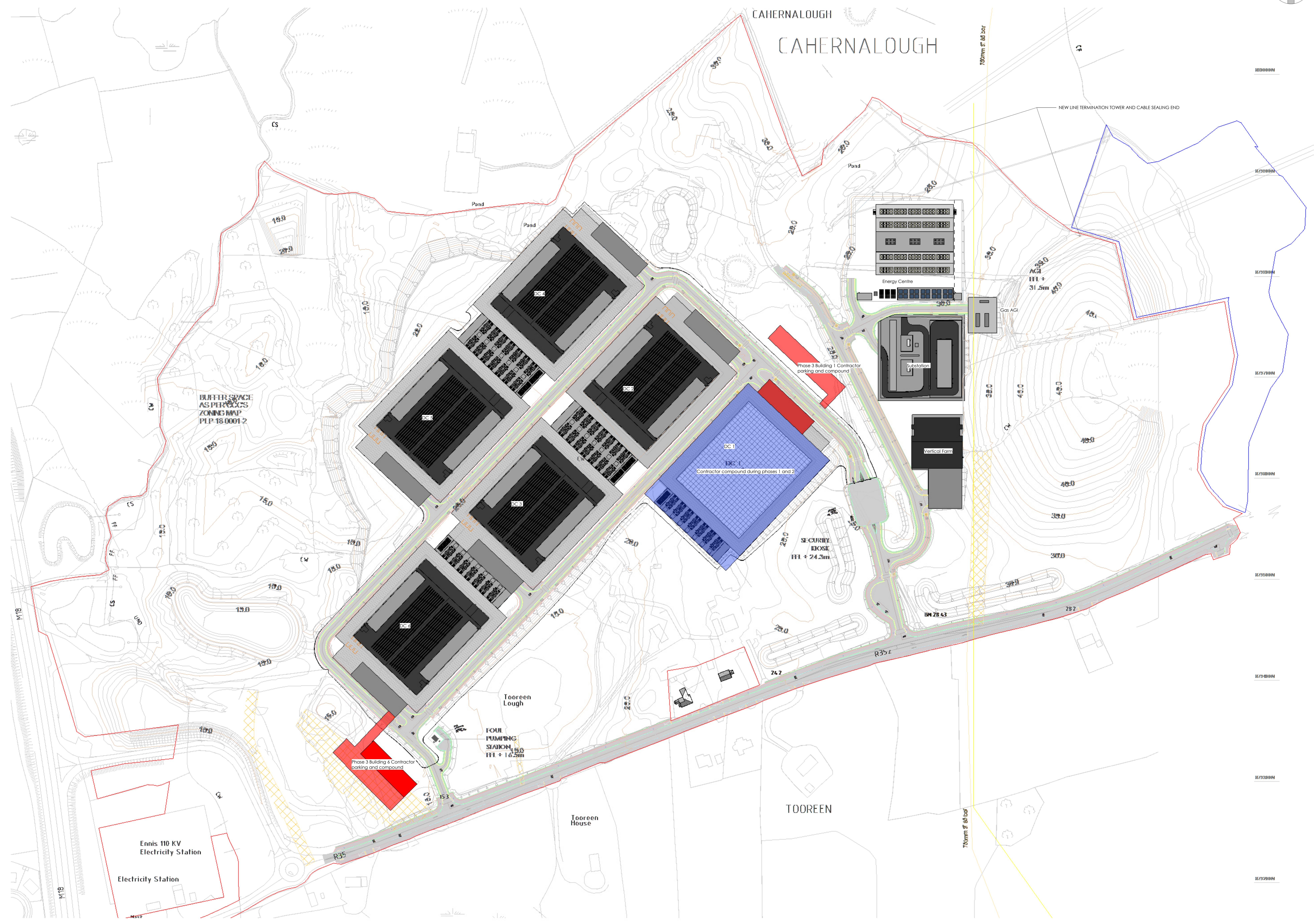
NOTES:

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- All dimensions shown are in millimetres.
- This drawing shall be used in conjunction with all Specifications and schedules.
- All dimensions shall be checked by Contractor prior to any work commencing on site.
- The Contractor shall comply with all environmental planning regulations, standard codes of practice, methods of working, and good practice.
- Generate plan for each sheet from the drawing and the contractor shall be responsible for obtaining all dimensions and levels on site for the actual setting out of the works.

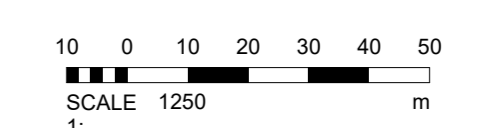
- Key
- Phase 1 and 2 Contractor Compound & Parking
 - Phase 3 Contractor Compound
 - Phase 3 Contractor Car park
 - Exclusion Zone
 - 30 Metre Buffer Zone

Note:

- 520 parking bays allocated at phase 1
- 140 parking bays allocated at phase 3 (70 of which available at phase 1)



1 Contractor Compound
1:1250



C	CONCEPT	DESIGN FOR INFORMATION	DATE
A	APPROVED	DESIGN FOR INFORMATION	DATE
F	FOR PLANNING	DESIGN FOR INFORMATION	DATE
REV	DATE	BY	DATE

FOR PLANNING
S2 ISSUED FOR INFORMATION

ARC:MC
140-142 St. John Street, London EC1V 4UB T 020 34112571
REGISTERED IN ENGLAND | COMPANY REG. NO. 7082311

ART DATA CENTRES

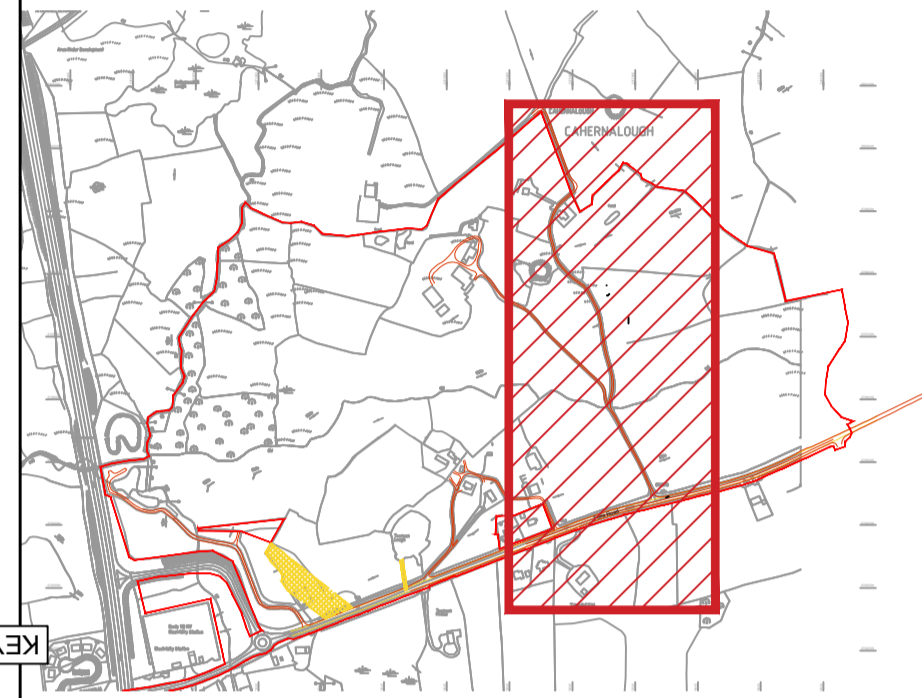
TM TOM MCNAMARA & PARTNERS
CONSTRUCTION COST MANAGERS
PROJECT MANAGERS

PROJECT: ART DATA CENTRE - ENNIS CAMPUS
TULLA ROAD, ENNIS
CO. CLARE, IRELAND

PROJECT NO: L3108.00
DESCRIPTION: CONTRACTOR COMPOUND PLAN

SCALE: As Indicated @ A0
DRAWING NO: ART-ARC-SP-00-DR-A-0004
REVISION: C

ART DATA CENTRES



- LEGEND**
- SITE BOUNDARY
 - PHASE 1 -
 - PHASE 2 -
 - PHASE 3 -
 - - - TEMPORARY ACCESS
 - - - FINAL PERMANENT ACCESS ONCE CONSTRUCTIONS OF PHASES ARE FINISHED
 - - - EDGE OF EXISTING ROAD / BOREEN ROAD

P01	FOR INFORMATION/AGREEMENT	PS	RG	27/05/21
Rev	Description	Drawn	Checked	Date

Clifton Scannell Emerson Associates
 Clifton Scannell Emerson Associates Limited
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ART DATA CENTRES

Client

ART DATA CENTRE ENNIS CAMPUS

Project

PHASING PLAN FOR TEMPORARY ACCESS FOR NORTH LANDS

Dwg. Title

Drawn By PS Date MAY 2021 20_110

Checked By RG AS INDICATED @ A1 CSEA Job No.

Project Code Originator Zone/Phase Level Type Role Dwg. No.

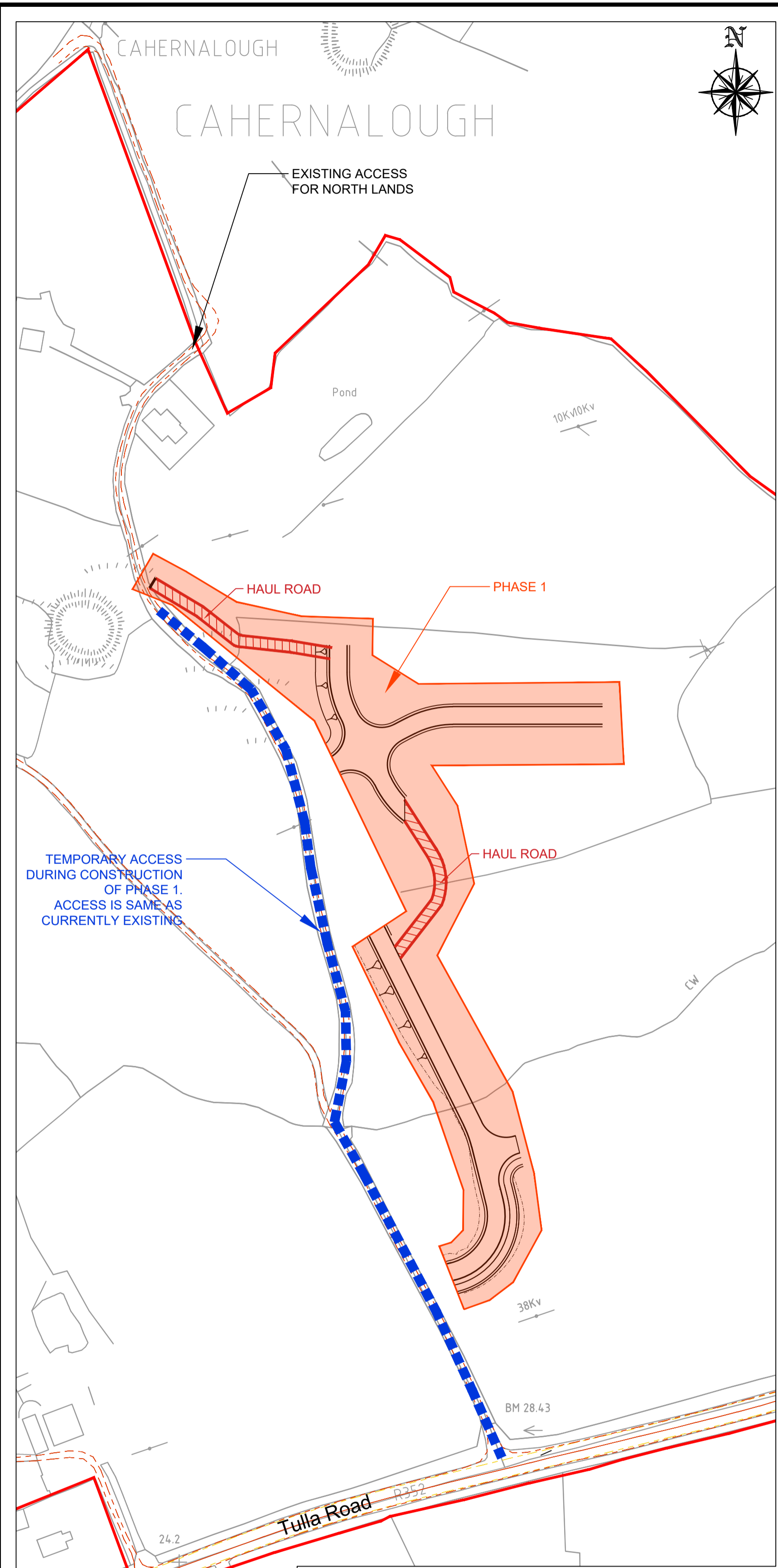
ART - CSE - ZZ - XX - DR - C - 1110

S2 FOR INFORMATION

Status Code Suitability Description

P01 PRELIMINARY

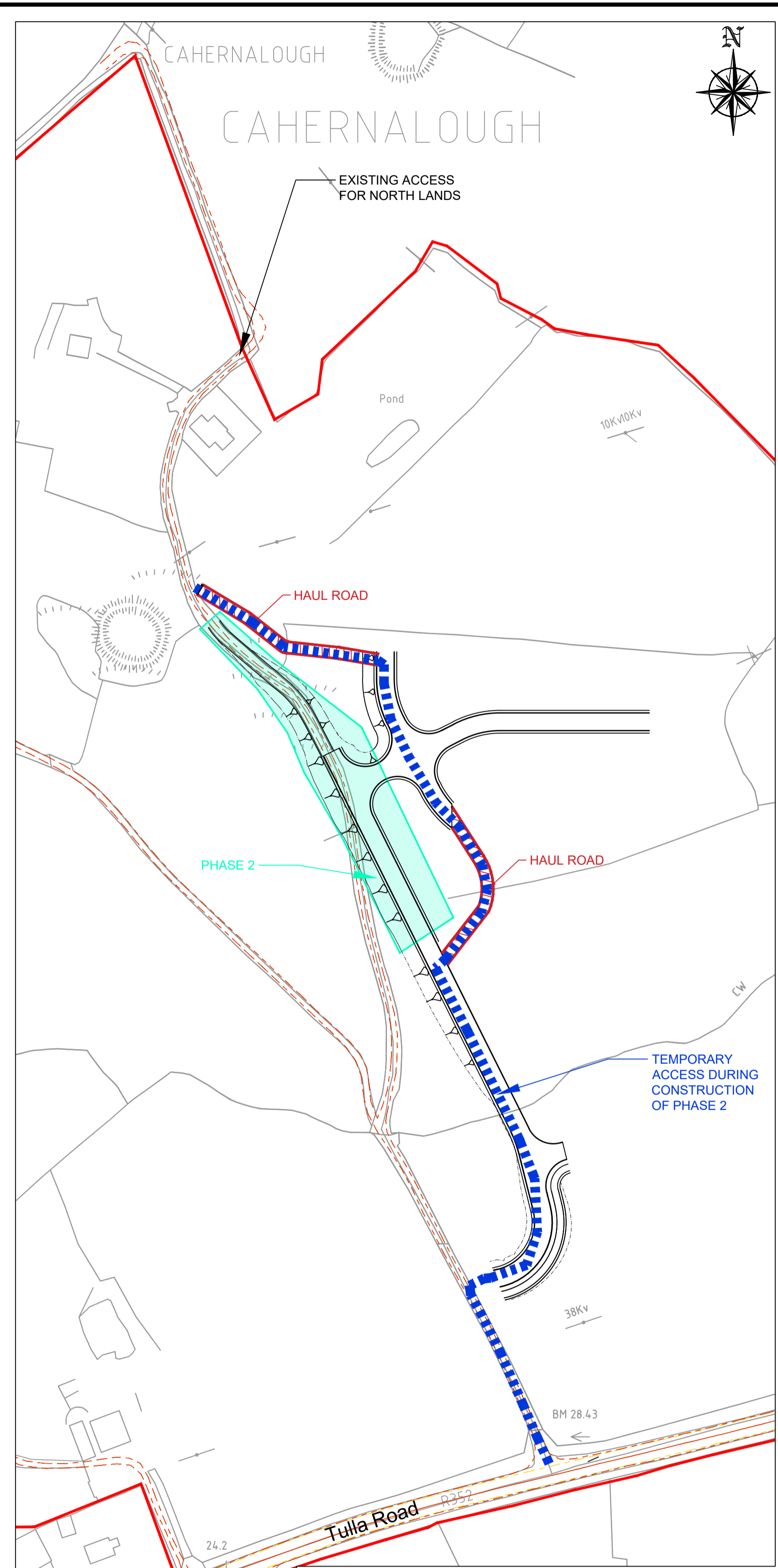
Revision Project Status



Phase 1

Upon commencement of the works, access to the north lands will be maintained as existing while the section highlighted in red is constructed.

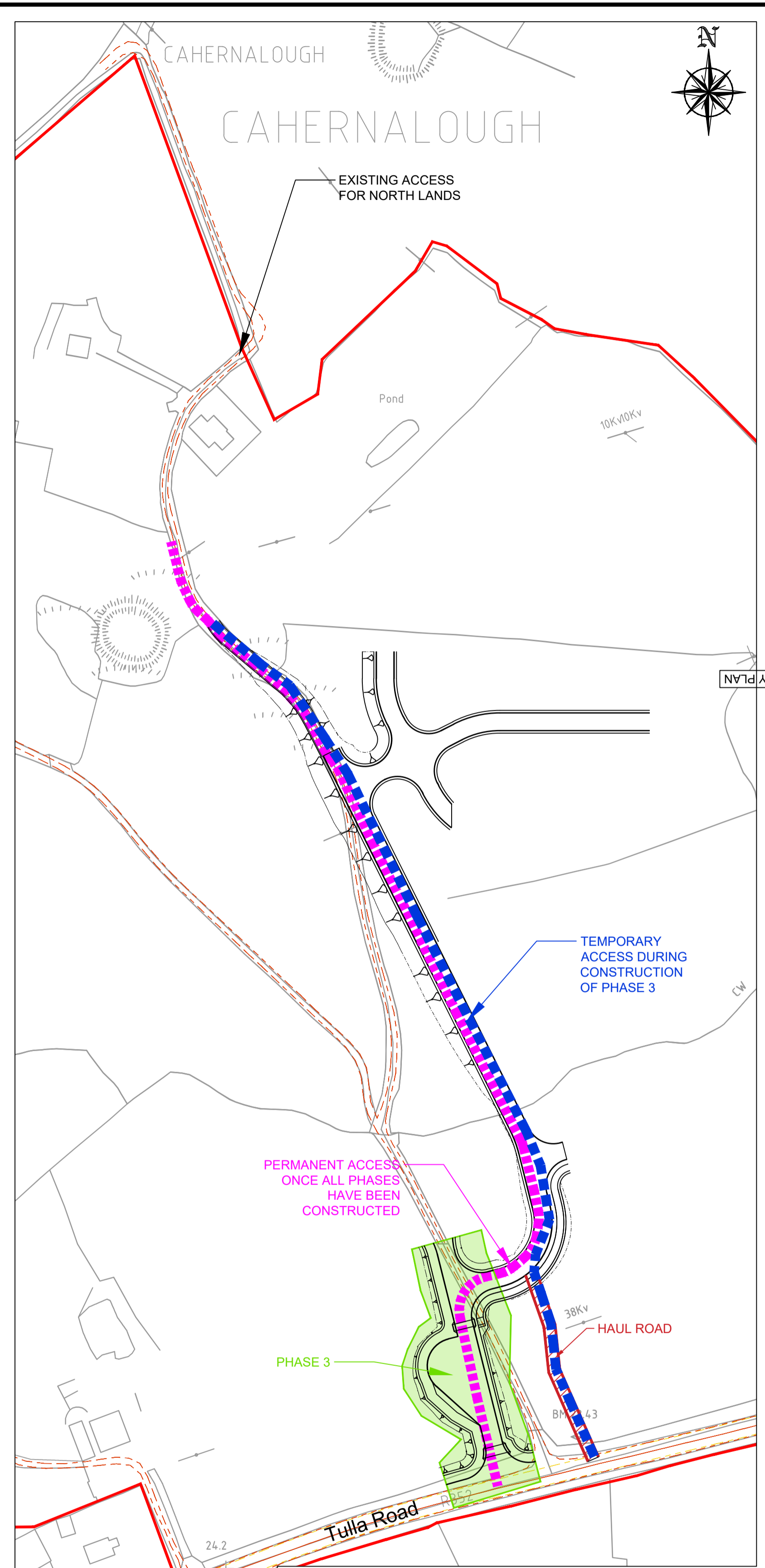
PLAN - PHASE 1
SCALE 1:1500



Phase 2

On phase 2 of the works the access from and to Tulla Road will be maintained as existing and the route throughout the site will be diverted onto the newly constructed road, finished under phase 1, and haul roads to close the gaps along the route.

PLAN - PHASE 2
SCALE 1:1500



Phase 3

On phase 3 the route throughout the site will be thought the constructed roads, finished under phase 1 and phase 2, and the access from and to Tulla Road will be done temporarily via a haul road until works on Phase 3 are completed. Once all phases have been completed, access the north lands will be done through the site internal roads.

PLAN - PHASE 3
SCALE 1:1500

Project Phase	Mitigated By	Justification	Mitigation Measures	References
Biodiversity				
Construction	Protection	Water protection (and ecological receptors that could be impacted by reduction in water quality)	<p>The construction contractor will be required to implement the following specific mitigation measures as a condition if granted by Clare County Council all of which will be incorporated into the CEMP, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:</p> <ul style="list-style-type: none"> • Specific measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment, during the construction work. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. • Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment. • Provision of temporary construction surface drainage and sediment control measures to be in place before earthworks commence. • Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site. • Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to any surface water drainage features, or drainage features connected to same. Pumped 	<ul style="list-style-type: none"> • Construction Industry Research and Information Association (CIRIA) (2005) Environmental Good Practice on Site (C692) • CIRIA, (2001) Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532) • CIRIA, (2000) Environmental Handbook for Building and Civil Engineering Projects (C512) • CIRIA, (2007) The SUDS Manual (C697) • CIRIA C648: Control of water pollution from linear construction projects: Technical guidance • CIRIA (2006) Control of water pollution from linear construction projects: Site guide (C648) • IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters • UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004 • BPGCS005, Oil Storage Guidelines

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to existing surface water drainage systems. Concrete washout areas will be located remote any surface water drainage features, where feasible, to avoid accidental discharge to watercourses. Washing out of any concrete trucks on site will be avoided.</p> <ul style="list-style-type: none"> • Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) to prevent any seepage of potential pollutants into the local surface water network. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks. • All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters. • A register of all hazardous substances, which will either be used on site or expected to be present (in the form of soil and/or groundwater contamination) will be established and maintained. This register will be available at all times and shall include as a minimum: 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<ul style="list-style-type: none"> ○ Valid Safety Data Sheets; ○ Health & Safety, Environmental controls to be implemented when storing, handling, using and in the event of spillage of materials; ○ Emergency response procedures/precautions for each material; and, ○ The Personal Protective Equipment (PPE) required when using the material. <ul style="list-style-type: none"> ● Implementation of response measures to potential pollution incidents. ● Robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced and implemented for the duration of the works. Emergency procedures/precautions and spillage kits will be available and construction staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages. ● All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points. 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<ul style="list-style-type: none"> • If groundwater is encountered during the proposed works and temporary pumping at a very localised location is required: <ul style="list-style-type: none"> ○ An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation, where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided. ○ Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment. • Water supplies shall be recycled for use in the wheel wash. All waters shall be drained through appropriate filter material prior to discharge from the construction sites. • The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same. • A discovery procedure for contaminated material will be prepared and adopted by the appointed 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.</p> <ul style="list-style-type: none"> • Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt). • All of the above measures implemented on site will be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise. 	
Construction	Protection	Ecological protection (wintering birds)	<p>Whilst disturbance of SCI birds from the proposed development during construction is not likely to impact the conservation objectives of nearby European sites, mitigation is provided for other non-SCI species.</p> <p>Measures to prevent to Disturbance and Displacement Impacts</p> <p>The proposed location of the temporary (suggested 2 years) construction compound is in open grassland in the south of the site. Given the proximity of the compound to known feeding sites i.e. Toureen Lough, attenuation pond, within the proposed development site, the following measures should be put in place to minimise disturbance to wintering bird species at this location.</p> <ul style="list-style-type: none"> • The compound shall be established outside of the wintering bird season (i.e. October to March); • The compound shall be fully screened on all sides for the duration of the works. The screening having 	

			<p>been put in place before the arrival of wintering birds;</p> <ul style="list-style-type: none"> • In respect of the physical screening, particular attention should be paid to the west side and additional noise abatement material installed to minimise potential impact on habitat for wintering bird species; • The normal hours of operation within the compound shall correspond to daylight working hours (8am – 6pm), when background traffic noise on adjacent road may “mask” construction noise within the compound; and • Outside of hours works during winter months shall only be carried out in areas which do not support or impinge on wintering bird species feeding or movement. 	
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Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p><u>Measures to Reduce impacts to wintering birds due to vegetation loss</u></p> <p>In the absence of any other ecological requirement/constraint, the removal of screening vegetation from adjacent or within/adjacent to inland forage/resting sites used by wintering bird species shall be undertaken outside the statutory breeding bird season (March 1st to August 31st) and before the arrival of wintering birds. Thus, vegetation clearance in areas adjacent to or within/adjoining or near feeding sites should be scheduled for September.</p> <p>Only that vegetation, which is absolutely necessary shall be removed, with very little suitable habitat being removed/alterd, the remainder shall be fenced off from works activity (as necessary) in accordance with accepted landscaping protocols.</p> <p><u>Habitat Degradation- Water Quality</u></p> <p>The mitigation measures relating to the protection of water quality in receiving watercourses during construction are outlined in are outlined in Section 1.X of Chapter 6, <i>Hydrology</i> and detailed in Section 7.6 of the CEMP.</p>	
Construction	protection	Ecological Protection (Amphibians)	<p><u>Disturbance & Mortality Risk</u></p> <p>If works to clear any of the habitat features suitable to support common frog are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), a pre-construction survey will be undertaken to determine whether breeding common frogs are present. Any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat by hand net and translocated to the nearest area of available suitable habitat, beyond the Zol of the proposed road development.</p> <p>Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.</p>	

			<p><u>Habitat Degradation- Water Quality</u> The mitigation measures relating to the protection of water quality in receiving watercourses during construction are outlined in Chapter 5 and 6, Hydrology and Hydrogeology and detailed in Section 7.6 of the CEMP</p>	
<p>Construction</p>	<p>Protection</p>	<p>Ecological protection (reptiles)</p>	<p>Given the broad range of habitat types favoured by the common lizard, and that the majority of the proposed development contains mosaics of such habitats, site clearance works at any time of year in suitable habitat are highly likely to encounter the species, cause disturbance and have the potential to kill or injure individuals.</p> <p>In order to minimise the risk of site clearance and construction works disturbing, or causing the mortality of, common lizard the following schedule of site clearance works will be followed in any areas of suitable habitat that will be removed (scrub, stone walls, exposed rock, dead wood):</p> <p>Grass or scrub vegetation will be removed during the winter period, where possible, avoiding potential common lizard hibernacula sites (dry sites which provide frost-free conditions e.g. stone walls, underground small mammal burrows, piles of dead wood or rubble).</p> <p>Where this is not possible and clearance will be undertaken during the active season (March through to September, inclusive), vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. This will allow the opportunity for lizards to be displaced by the disturbance and leave the affected area.</p>	

			Stone walls (or other potential hibernacula sites) will be removed during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards.	
Construction	Protection	Ecological protection (fish)	<u>Habitat Degradation – Surface Water Quality</u> The mitigation measures relating to the protection of water quality in receiving watercourses during construction are outlined in Chapter 5 Hydrogeology and Chapter 6 <i>Hydrology</i> and detailed in Section 7.6 of the CEMP.	
Construction	Protection	Ecological Protection (Invertebrates)	<u>White-clawed crayfish</u> The mitigation measures relating to the protection of water quality in receiving watercourses during construction are outlined in Section X of Chapter 6 Hydrology and detailed in Section 7.6 of the CEMP.	
Construction	Protection	Ecological protection (birds)	Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required. <u>Disturbance/displacement</u> Similar to the requirements provided above in terms of reducing mortality risk, vegetation clearance undertaken in the appropriate time should ensure that breeding birds have adequate time in which to identify alternative vegetation in which to establish nests.	

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Project Phase	Mitigated By	Justification	Mitigation Measures	References
Construction	Protection	Ecological protection (badger)	<p>The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on Badgers during construction works.</p> <p>As the usage of setts by badgers can change over time, a pre-construction check of the activity status of all setts will be carried out within 12 months of any construction work commencing within the Zol of the setts discussed below.</p> <p>As badger could potentially establish new setts in the future within the Zol of the proposed development, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:</p> <ul style="list-style-type: none"> • Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage • No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances • During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts 	Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (National Roads Authority, 2006).

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<ul style="list-style-type: none"> • Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist <p>As the proposed development will not result in the loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.</p>	
Construction	Protection	Ecological protection (otter)	<p><u>Pre-Construction Survey</u></p> <ul style="list-style-type: none"> • Prior to construction works commencing, the appointed contractor will engage the services of a suitably qualified ecologist to conduct a pre-construction otter survey of the proposed development. The survey will be undertaken within 10 months in advance of construction and supplemented by a further inspection of the proposed development immediately prior to site clearance to ensure that no new holts have been established in the intervening period. These surveys will be carried out in accordance with Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2006). • Where any new active holts/couches are recorded within 150m of the proposed development the appointed ecologist will ensure that adequate mitigation is provided in accordance with Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2006), and a derogation licence is sought from the NPWS where necessary. 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p><u>Ecological Clerk of Works/Retained Ecologist</u></p> <ul style="list-style-type: none"> • Were a new or reactivated holt to be encountered, within 150 metres (up and downstream) of watercourse crossing, and NPWs consultation sought, the services of an Ecological Clerk of works or retained Ecologist (both with experience with otter survey/mitigation) would be required. • The appointed contractor shall employ the services of an Ecological Clerk of Works (EcOW) with experience in otter, to oversee and advise works at watercourse crossings for the proposed development (they may also undertake the preconstruction survey). The EcOW will have the authority to: <ul style="list-style-type: none"> ○ Review method statements; ○ Oversee works; ○ Provide instruction to the appointed contractor(s); and, ○ Require the temporary cessation of works, where necessary. • The EcOW will deliver a toolbox talk on biodiversity including otter to the appointed contractor(s). This talk will include instructions on identifying otter and details on the protections afforded to otter under Irish and EU legislation. The EcOW will outline the actions which will be taken by the contractor(s) if otter are noted on or near the Proposed development during construction works. 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p><u>Measures to Prevent/Reduce Disturbance and Displacement</u></p> <ul style="list-style-type: none"> • Night working within/directly adjacent to watercourses where otter are known to commute should be avoided and will only be permitted with the prior approval of the planning authority. • Where night-working adjacent to watercourses known to support otter, is required, owing to practical considerations of traffic restrictions etc., the advice of a suitably qualified ecologist must be sought and a derogation licence, if necessary, may be sought from the NPWS permitting such works. 	
Construction	Prevention	Ecological prevention	<p><u>Measure to prevent the spread of invasive species during construction</u></p> <p><u>Pre-Construction Survey</u></p> <p>No invasive plant species were identified during surveys carried out within the proposed development. A pre-construction invasive species survey must be carried out prior to any construction activities (including enabling works) by a suitably qualified specialist to confirm the presence or absence and extent of any invasive species within the proposed development site prior to the development. Data collected as part of this survey will also include the approximate area of any respective colonies (m²) and a detailed description of the infestations (e.g. approximate total number of stems, pattern of growth and information on other vegetation present), if invasive species are identified. This information will inform calculations of volumes of infested soils to be excavated, as part of the measures outlined below.</p>	<p>TII Publication: <i>The Management of Invasive Alien Plant Species on National Roads – Technical Guidance</i> (TII, 2020)</p> <p><i>Managing invasive non-native plants in or near fresh water</i> (Environment Agency, 2010)</p>

			<p><u>General Measures to Avoid Spreading Invasive Species during Construction or Soil Movement</u></p> <p>The species noted in Section 7.5.1.2 are invasive and are particularly effective at colonising disturbed ground (e.g. construction sites). They have not been identified within the proposed development site, however mitigation is provided should they be introduced prior to construction or spread by construction activities. Some species spread by the re-growth of cut fragments or root material, they can readily re-grow in new areas if the existing stands are disturbed e.g. by machinery, people, livestock etc.</p> <p>The most common ways that these species can be spread following introduction is:</p> <ul style="list-style-type: none"> • Site and vegetation clearance, mowing, hedge-cutting or other landscaping activities; • Spread of plant fragments during the movement or transport of soil; • Spread of plant fragments through the local surface water and drainage network; • Contamination of vehicles or equipment with plant fragments which are then transported to other areas; and; • Importation of soil from off-site sources contaminated with invasive species plant material. <p>It is preferable to eradicate invasive species prior to the onset of construction of any proposed development in close proximity. If control programmes have not been achieved before construction begins then the affected areas must be fenced off prior to and during construction in order to avoid spreading seeds or plant fragments around or off the construction site. Earthworks or machinery movement must be avoided in these areas until the relevant species have been eradicated.</p> <p>If soil is imported to the site for landscaping, infilling or</p>	
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			<p>embankments, the contractor must gain documentation from suppliers that the material is free from invasive species.</p> <p><u>Disposal of Material if identified</u></p> <p>If any invasive species plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal does not lead to a risk of further spread. The movement of plant material of any plants listed on the Third Schedule requires a licence from the National Parks and Wildlife Service (NPWS) under Section 49 of <i>the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended)</i>. Invasive species (particularly roots, flower heads or seeds) must be disposed of at licensed waste facilities or composting sites, appropriately buried, or incinerated having regard to relevant legislation, for example; Section 32 of the Waste Management Act, 1996 to 2008; Section 4 of the Air Pollution Act, 1987; relevant local authority byelaws and any other relevant legislation. All disposals must be carried out in accordance with the relevant Waste Management legislation (as per guidance from NRA, 2008).</p> <p>It should be noted that some invasive species plant material or soil containing residual herbicides may be classified as either 'hazardous waste' or 'non-hazardous waste' under the terms of the Waste Management Acts, and both categories may require special disposal procedures or permissions. Advice should be sought from a suitably qualified waste expert regarding the classification of waste and the suitability of different disposal measures.</p> <p>As noted above, additional specific measures for the management of Japanese knotweed cuttings or contaminated soil can be found in the UK Environment Agency document <i>The Knotweed Code of Practice: Managing Japanese Knotweed on development sites</i> (UK Environment Agency, 2013 (withdrawn 2016)). No Japanese knotweed has been identified within the proposed development site during habitat surveys carried out in 2018 and 2020.</p>	
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			<p><i>Measures to be Followed During the Application of Herbicides</i></p> <p>The control options for some species will require the use of herbicides, which can pose a risk to human health, to non-target plants or to wildlife. In order to ensure the safety of herbicide applicators and of other public users of the site, a qualified and experienced contractor, and qualified Herbicide Advisor, must be employed to carry out all work.</p> <p>It is advised that the appointed contractor refer to the following documents, which provide detailed recommendations for the control of invasive species and noxious weeds:</p> <ul style="list-style-type: none"> • TII Publication: <i>The Management of Invasive Alien Plant Species on National Roads – Technical Guidance</i> (TII, 2020) • <i>Managing invasive non-native plants in or near fresh water</i> (Environment Agency, 2010) <p>These documents include measures to aid the identification of relevant species, with details for the timing, chemicals, methodology for chemical control, and for measures to avoid environmental damage during the use of herbicides.</p>	
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<p>Construction</p>	<p>Protection</p>	<p>Ecological protection (bats and habitats)</p>	<p><u>Measures to Protect bats from habitat loss/fragmentation impacts</u></p> <p>Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b), as follows:</p> <ul style="list-style-type: none"> All trees along the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to 	<p>Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b)</p>
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Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist</p> <ul style="list-style-type: none"> • Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it • The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10 m of any retained trees, hedgerows and treelines • A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist • A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged. <p>Surveys carried out confirmed that lesser horseshoe bat use the treelines and hedgerows located within the proposed development site as foraging and commuting habitat. The proposed development will result in a total loss of c. 2.3km hedgerows, and 38 trees; therefore replacement planting will be required to ensure that there</p>	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>will be no net loss of lesser horseshoe bat foraging and commuting habitat as a result of the proposed development. This will comprise of c. 4.8km of hedgerow and 57 native tree species within the proposed development site (i.e. c. double the amount of habitat being lost) (see Figure/Appendix XXXX for location map, planting schedule and specific details of proposed species). Native hedgerow planting will include the following species; Alder <i>Alnus glutinosa</i>, hazel <i>Corylus avellana</i>, hawthorn <i>Crataegus monogyna</i>, holly <i>Ilex aquifolium</i>, honeysuckle <i>Lonicera periclymenum</i>, crab apple <i>Malus sylvestris</i>, wild cherry <i>Prunus avium</i>, blackthorn <i>Prunus spinosa</i>, dog rose <i>Rosa canina</i>, elder <i>Samucus nigris</i>, and guelder rose <i>Viburnum opulus</i>. Tree planting will include semi-mature species such as: Sessile oak <i>Quercus petraea</i>, beech <i>Fagus sylvatica</i>, strawberry tree <i>Arbustus unedo</i>, Scot's pine <i>Pinus sylvestris</i>, multistem birch <i>Betula pendula</i>, rowan <i>Sorbus acuparia</i>, double flowering wild cherry <i>Prunus avium plena</i>, and crab apple. There will also be woodland structure planting on the peripheries of the site and around the buildings, which will total c. 46,788m² of planting, with 3300 trees per/ha. This will ensure the proposed development compiles with Objective 14.11 of the Clare County Development Plan 2017-2023 (As varied), and the requirement that there is no net loss of lesser horseshoe bat habitat within the proposed development, with with Objective 14.17 of the Clare County Development Plan 2017-2023 (As varied), and the requirement that any tree that will be felled will be replaced by a minimum ratio of 10 new native trees per 1 tree felled. This proposed planting has been designed to ensure that connectivity for foraging and commuting bats is maintained - i.e. along the peripheries of the site, and within the site from the woodland in the north west to suitable foraging habitats such as Toureen Lough, and along hedgerows in the north to woodland and wetland</p>	<p>Downs, N., & Sanderson, L. (2010). Do Bats Forage Over Cattle Dung or Over Cattle?. <i>Acta Chiropterologica</i>, 12(2), 349-358.</p>

			<p>habitats in the east. Existing hedgerows along the southern boundary that are less species rich, will be enhanced through additional planting of native species. The proposed planting will occur in phases (See Figure XX), with the earliest planting occurring along important foraging and/or commuting routes in the north, south and east of the site, at pre-construction stage and prior to removal of any habitats. This will ensure that suitable foraging and commuting habitat for local bat species is established prior to the removal of such habitat during the construction of the proposed development; therefore maintaining the site's suitability for bat species. Cattle grazed fields are known to have higher rates of bat activity than ungrazed grassland (Downs et al. 2010), therefore in addition to the hedgerows and treeline planting, areas of cattle grazed grassland will be maintained as they are currently in the east, north and west of the site with additional hedgerows separating fields, to provide further suitable habitat for lesser horseshoe bat.</p>	
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<p>Construction</p>	<p>Protection</p>	<p>Protection of potential roosting structures</p>	<p>The following mitigation measures are proposed in relation to structures considered to have the potential to support roosting bats:</p> <ul style="list-style-type: none"> • Prior to demolitions, all structures that were confirmed as having potential for bats will be re-examined immediately prior to demolition to assess whether bats are present at the time of demolition. This will be an all-night examination to determine if bats enter the building during the night or early morning. This will provide adequate information to proceed with demolitions unless weather conditions were unsuitable for feeding bats. If bats are present, then they will require exclusion from the property over several nights or if possible physical removal by hand by a licenced bat specialist to be placed in a bat box or similar for release in the evening after capture. • For structures which have not been confirmed as bat roosts but regarded to have potential for bats, a bat detector assessment of the property to be demolished will be carried out. If demolitions are proposed during the period May – August (note this time period will not be permitted in the case of the confirmed bat roosts to be demolished). This will be an all-night examination to determine if bats enter the building during the night or early morning. This will provide adequate information to proceed with demolition unless weather conditions were unsuitable for feeding bats. If bats are present, then they will require exclusion from the property over several 	
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Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>nights or if possible physical removal by hand by a licenced bat specialist to be placed in a bat box or similar for release in the evening after capture.</p> <ul style="list-style-type: none"> Once structures containing roosts are deemed to be clear of bats, the bat specialist will be on site to supervise the demolition procedure until the structure is no longer deemed able to support a bat roost. Bats may re-enter a partially demolished structure overnight so the bat specialist may be required to be present during demolition works until they are completed. 	
Construction	Protection	Ecological protection (bats)	<p>The following mitigation measures are proposed in relation to those trees and trees groups identified as having potential to support roosting bats (Figure ---). Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore there is an inherent risk that bats could be affected by the proposed felling works. Where possible, trees with PRFs should be retained. Where this is not possible, the following mitigation procedures will be followed:</p> <ul style="list-style-type: none"> Felling of confirmed and potential tree roosts will be undertaken during the periods April – May or September – October as during this period bats are capable of flight and may avoid the risks from tree felling if proper measures are undertaken, but also are neither breeding nor in hibernation Use of detectors alone may not be sufficient to record bat emergence and re-entry in darkness. Therefore, prior to felling of confirmed and potential tree roosts, an emergence survey using infra-red illumination and video camera(s) and bat detectors will be carried out on the night immediately preceding the felling operation to determine if bats are present 	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<ul style="list-style-type: none"> • Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist • Trees should only be felled “in section” where the sections can be rigged to avoid sudden movements or jarring of the sections • Where remedial works (e.g. pruning of limbs) is to be undertaken to trees deemed to be suitable for bats, the affected sections of the tree will be checked by a bat specialist (using endoscope under a separate derogation licence held by that individual) for potential roost features before removal. For limbs containing potential roost features high in the tree canopy, this will necessitate the rigging and lowering of the limb to the ground (with the potential roost feature intact) for inspection by the bat specialist before it is cut up or mulched. If bats are found to be present, they will be removed by a bat specialist licenced to handle bats and released in the area in the evening following capture • If any bat tree roosts are confirmed, and will be removed by the proposed felling works, then a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes. 	
Operation	Management	Ecological management	Replanting of treeline, hedgerow and scrub habitats within/alongside the proposed Project boundary as detailed in the landscape drawings (Figures X to X) will	

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>over time provide suitable compensatory habitat for the breeding bird species to expand, and disturbance/displacement impacts occurring during the construction phase should reduce.</p> <p>To further minimise the effects of breeding habitat loss, a total of X nest boxes will be erected by a qualified ecologist. The siting and type of nest boxes will be decided on by an ecologist at locations adjacent to where new trees will be planted or at suitable retained vegetation along the proposed development.</p>	
			<p><u>Measures to Protect Surface Water Quality during Operation</u></p> <p>Mitigation measures to protect surface water in the receiving local environment during operation are detailed in Chapter 5 and Chapter 6: Hydrology, and in the Outline Construction Environmental Management Plan (CEMP), and include: -</p> <ul style="list-style-type: none"> • Continued management, monitoring and maintenance of the waste water discharge in line with IW requirements. • Runoff from the site will be attenuated within the on-site attenuation tanks, swales, and hydrobrakes and downstream defender will also be employed to control the rate of discharge. In combination these SuDS measures significantly reduce the volume and rate of surface water discharging from the site. • The SuDS treatment train will pre-treat the surface water discharging to the Spancelhill Stream, removing pollutants and hydrocarbons from the surface water runoff. <p>These mitigation measures are for the protection of the water quality within Toureen Lough, Spancelhill Stream, River Fergus, and for the protection of European Sites downstream as there are significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed</p>	

			above in Section 7.5.1.	
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Operation	Protection	Ecological protection (bats)	<p>Surveys carried out confirmed that lesser horseshoe bat use the treelines and hedgerows located within the proposed development site as foraging and commuting habitat. The proposed development will result in a total loss of c. 2.3km hedgerows, and 38 trees; therefore replacement planting will be required to ensure that there will be no net loss of lesser horseshoe bat foraging and commuting habitat as a result of the proposed development. This will comprise of c. 4.8km of hedgerow and 57 native tree species within the proposed development site (i.e. c. double the amount of habitat being lost) (see Figure/Appendix XXXX for location map, planting schedule and specific details of proposed species). Native hedgerow planting will include the following species; Alder <i>Alnus glutinosa</i>, hazel <i>Corylus avellana</i>, hawthorn <i>Crataegus monogyna</i>, holly <i>Ilex aquifolium</i>, honeysuckle <i>Lonicera periclymenum</i>, crab apple <i>Malus sylvestris</i>, wild cherry <i>Prunus avium</i>, blackthorn <i>Prunus spinosa</i>, dog rose <i>Rosa canina</i>, elder <i>Sambucus nigra</i>, and guelder rose <i>Viburnum opulus</i>. Tree planting will include semi-mature species such as: Sessile oak <i>Quercus petraea</i>, beech <i>Fagus sylvatica</i>, strawberry tree <i>Arbutus unedo</i>, Scot's pine <i>Pinus sylvestris</i>, multistem birch <i>Betula pendula</i>, rowan <i>Sorbus aucuparia</i>, double flowering wild cherry <i>Prunus avium</i></p>	<p>Eurobats Guideline No.8, Institution of Lighting Professionals (ILP) Guidance Note No.8 <i>Guidance Note for: Planners, engineers, architects and developers.</i> Bat Conservation Ireland (2010)</p>
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			<p>plena, and crab apple. This will ensure the proposed development complies with Objective 14.11 of the Clare County Development Plan 2017-2023 (As varied), and the requirement that there is no net loss of lesser horseshoe bat habitat within the proposed development. This proposed planting has been designed to ensure that connectivity for foraging and commuting bats is maintained - i.e. along the peripheries of the site, and within the site from the woodland in the north west to suitable foraging habitats such as Toureen Lough, and along hedgerows in the north to woodland and wetland habitats in the east. Existing hedgerows along the southern boundary that are less species rich, will be enhanced through additional planting of native species. The proposed planting will occur in phases (See Figure XX), with the earliest planting occurring along important foraging and/or commuting routes in the north, south and east of the site, at pre-construction stage and prior to removal of any habitats. This will ensure that suitable foraging and commuting habitat for lesser horseshoe bat is established prior to the removal of such habitat during the construction of the proposed development; therefore maintaining the site's suitability for lesser horseshoe bat.</p> <p><u>Measures to protect bats from disturbance/displacement impacts</u></p> <p>A light spill model study was undertaken by Hurley Palmer Flatt (May 2021) to determine the effects of artificial light and Artificial Light At Night (ALAN) on bats as a result of the proposed development and identify how to reduce ALAN onsite, based on information from both Eurobats Guideline No.8, the Institution of Lighting Professionals (ILP) Guidance Note No.8. and Bat Conservation Ireland <i>Guidance Notes for: Planners</i></p>	
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Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p><i>engineers, architects and developers</i>¹. Potential impacts of lighting during construction will be negligible as all works will be undertaken during the day, and therefore no light spill is predicted. During operation, the strategies in place are to limit the duration of the lighting at night and also limit lux levels wherever possible. However there is potential for light spill from the proposed development on suitable areas of foraging and/or commuting habitats used by lesser horseshoe bats. A light spill modelling drawing has been used to indicate where any areas of light spill may be within and beyond the proposed development (Appendix XX). The following mitigation measures will be in place to ensure the habitats on site remain suitable for lesser horseshoe bats:</p> <ul style="list-style-type: none"> • Street lighting within the development is required for safety and will not be operational at night unless in an emergency and site evacuation, and will consist of minimal number of light fixtures and installed on short poles with the use of shields to restrict beam angles and avoid light spillage where illuminance is not required; • Tree and hedgerow planting will be implemented around the buildings and along the access roads to screen the development, planted at pre-construction to ensure sufficient screening is in place; • Office lighting will be controlled to avoid light spill to the outdoors through the glass windows, using black-out blinds from dusk until dawn; • External lighting for pedestrian pathways and low-traffic roads will be controlled and dimmed and will only be at higher Lux levels when required, i.e. 	

¹ *Guidance Note for: Planners, engineers, architects and developers*. Bat Conservation Ireland (2010)

Project Phase	Mitigated By	Justification	Mitigation Measures	References
			<p>during emergencies, and with the use of shields to limit the light emitted to above or to the sides;</p> <ul style="list-style-type: none"> • LED luminaries will be used to ensure light pollution is kept to a minimum and to avoid uplighting. Where practical, directional luminaries will be utilised to enable precise projection of light; • External lighting will normally be turned off, and internal building lighting will be controlled by PIR switching; • During night-time hours, lighting will only be provided for circulation areas with no lighting on surrounding areas, including protected important foraging and/or commuting areas for bats; and • There will be no light trespass over 0.1 Lux on surrounding areas beyond the buildings by the use of shielded luminaries, lighting beam angles, low height street lighting columns, and minimal numbers of luminaries used. <p>To ensure important bat corridors are maintained throughout the site before, during and after construction, a 30m dark zone buffer will be in place along all hedgerows and treelines within the site, and along the Clare County Council Ecological buffer zones.</p>	

Operation	Protection	Ecological Protection (Fish)	<p><u>Habitat Degradation – Surface Water</u> The mitigation measures relating to the protection of water quality in receiving watercourses during operation are detailed in Section 7.6 of the CEMP and Section XX of Chapter 6 <i>Hydrology</i>.</p>	
Construction	Management	Habitat Management	<p>An area of c. 0.79ha of Annex I habitat dry calcareous grassland [6210], which occurs within the footprint of the proposed development, will be translocated south of the area to be retained, adjacent to the protected ecological buffer space area, in order to maximise its prospect of successful re-establishment in a new location. The condition of the new location are suitable for the habitats re-establishment, as the habitat present is currently species poor amenity grassland. A Landscape and Biodiversity Management Plan accompanies this application to advise the developer on the relocation and management of this habitat type within the proposed development.</p> <p>The proposed methodology for translocation of this area of Annex I grassland habitat will include the following steps:</p> <ul style="list-style-type: none"> • Preparation – The area where the habitat is to be relocated will be prepared by stripping the topsoil to a depth of between c. 10-30cm. • The donor site (<i>i.e.</i> location of existing Annex I dry calcareous grassland [6210]) and receptor site (<i>i.e.</i> location where habitat will be relocated to) will be fenced off for the duration of construction works, to minimise any disturbance/ accidental damage to these habitats. 	

			<ul style="list-style-type: none"> • Translocation - The soils of the grassland which are to be relocated are carefully removed using a suitable excavator, during suitable weather conditions, and laid out on the prepared receptor site. • Again, the donor (including pre-existing Annex I grassland) and receptor sites will be fenced off for the duration of construction works, to minimise disturbance/ accidental damage to these habitats. • Its establishment can be aided by following the correct management methods and by sowing the land with Irish wildflower seed mixes, which include positive indicator species for 'this Annex I grassland. It will be ensured that this seed mix is of Irish origin to avoid planting invasive non-native species that will deteriorate the quality of the existing Annex I grassland. • Management - Commitment to the Landscape and Biodiversity Management plan will be required to ensure the successful establishment of the Annex I dry calcareous grassland on site. The proposed management will include mowing the grass once a year, and the removal of the cuttings after the plants have seeded. The area under management will be fenced off, to avoid trampling, until the grassland has established. • Monitoring - The areas of translocated habitat will be monitored annually for three consecutive years, and in addition five years and 10 years following completion. It may take some time for the newly relocated grassland to establish and success cannot be guaranteed. <p>The above proposed methodology will be included within the Landscape and Biodiversity Management Plan and will need to be agreed with the local authority prior to construction.</p>	
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Project Phase	Mitigated By	Justification	Mitigation Measures	References
Construction	Protection	Habitat protection	<p>To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and, sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.</p> <p>Dust screens will be implemented at locations where there is the potential for air quality impacts on sensitive ecological receptors (i.e. within 100m of the works), such as on the protected buffer zone areas, and wetland features within the site, during the construction phase.</p>	
Construction	Protection	Ecological Protection	Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1st to August 31st.	<p>CIRIA Report C532 of Water Pollution from Construction Sites.</p> <p>CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland. Institute of Ecology and Environmental Management.</p> <p>Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).</p> <p>EC (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.</p> <p>EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC. European Commission, Brussels.</p>



Clifton Scannell Emerson
Associates

Flood Risk Assessment

Art Data Centres – Ennis Campus

**ART DATA
CENTRES**



**TOM MCNAMARA
& PARTNERS**
CONSTRUCTION COST MANAGERS
PROJECT MANAGERS

Client: ART Data Centres

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Engineering

Structural
Engineering

Transport
Engineering

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1 Introduction

Clifton Scannell Emerson Associates (CSEA) have been commissioned by the applicant to prepare a Flood Risk Assessment Report (FRA) for the proposed Art Data Centre located North of Tulla Road R352 beside junction 13 off the M18, Ennis, Co. Clare. The following report is submitted as part of the planning application. This report outlines the Stage 1 and Stage 2 assessment of flood risk associated with the proposed development.

Following the submission of this report Issue No. 2, Clare County Council Planning Authority noted that the proposed outfall from the stormwater attenuation pond could potentially be surcharged due to flood water levels in the Ballymacahill River, and the design proposals should be reviewed based on the following:

- Conduct a suitable review of the flood hydrology for the Ballymacahill River and consider the Shannon CFRAM hydrology report conducted further downstream;
- Conduct Hydraulic Modelling of the Ballymacahill River, which should extend sufficiently upstream of the study area and downstream of the M18 Road Culvert;
- Inflows should be modelled up to the 0.1% Annual Exceedance Probability (AEP).

The abovementioned items are addressed in the Ballymacahill River Hydraulic Modelling Report (RPT-20_110-004) included in **Appendix G**. This report has been updated to reflect the outcomes of the hydraulic modelling report.

1.1 Scope of the Report

This Report is prepared in accordance with the OPW guidelines publication, “The Planning System and Flood Risk Management, Guidelines for Planning Authorities”, published in November 2009. The scope of this assessment is a review of flood risks which may affect the proposed development and/or the effect of increased flood risk to adjacent properties resulting from the proposed development.

1.2 Site Description

The proposed Art Data Centre site subject to this Flood Risk Assessment is in Ennis, Co. Clare and bordered to the West by the M18 and to the South by Tulla Road R352 with an entire area of approximately 60 hectares. Which includes an approximate length of 2.1 km of the existing Tulla Road R352 (i.e. all existing carriageway, footpath and cycle lane along this length is included). The subject site encompasses a rezoned area as for Enterprise but with retaining the existing ecological areas and waterbodies which are being conserved within the subject site in accordance with 2019 revised Clare County Development Plan 2017-2023.

The topography of the site is highly variable with an overall level difference of approximately 40 m in existing ground levels from a higher elevation in the east to a lower elevation to the west of the site. The Ballymacahill River flows along the northern and western boundary and exit the site from the west under the M18 via an existing Culvert. The subject site has small groundwater fed streams and springs which discharge into the Ballymacahill. A groundwater fed lake (Tooreen Lough) is situated at the southern site boundary.

Access to the proposed site is afforded by 2 no. of proposed entrances locations in the Southern boundary from the existing Tulla Road/R352.

The development area is currently a greenfield with a few small residential and farm buildings that located within the proposed site boundaries. Please see site location in **Figure 1** below.

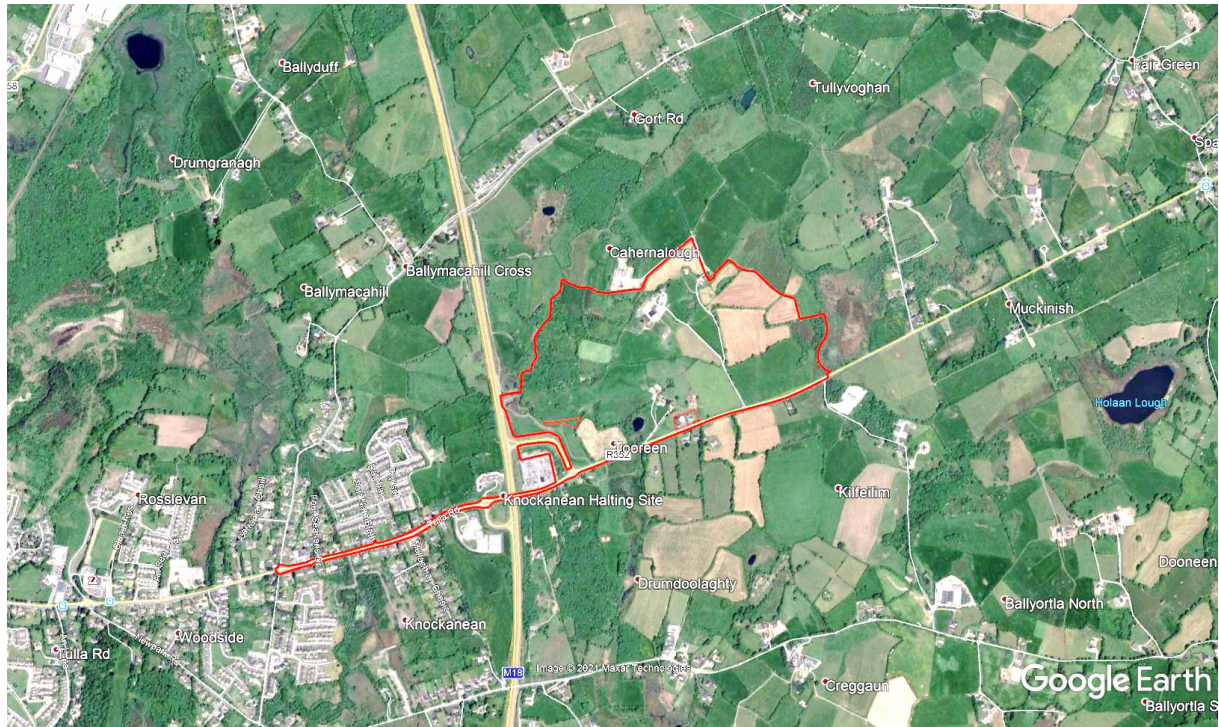


Figure 1: Site Location, Art Data Centres

1.3 Nature of Proposed Development

The proposed development is to demolish an existing dwelling house and a number of farm outbuildings and to develop six data centre facilities, an energy centre, an Above-Ground Installation (AGI) for a gas supply building, a vertical farm, an electrical substation compound and associated ancillary development on a C. 58 Ha. greenfield site (currently used for agriculture and hosting power transmission infrastructure) in the townlands of Tooreen and Cahernalough, Tulla Road, Ennis, Co Clare.

The development will consist of the following:

- The demolition of an existing farm dwelling house together with a number of farm outbuildings on the overall site;
- The construction of 6 No. two storey data centre buildings with three storey plant/office levels and associated ancillary development that will have a combined gross floor area of 118,740 sq.m. These data halls are 86 x 105 x 18m high and will consist of multi levels 9m slab to slab for the data halls and air handling units and 4.5m slab to slab for offices and ancillary plant and support.
- Each of the six data centre buildings halls will include data halls, associated electrical and mechanical plant rooms, loading bays, maintenance and storage spaces, office administration areas, pump rooms plus water storage tanks and plant as well as backup

(standby) generators for emergency use only (11 per building) situated along one elevation of the building. The standby diesel generators will have associated 8 m high flues. Each generator will also include local diesel storage tanks with a single refuelling area to serve the proposed emergency generators.

- Two single storey buildings used for 20/10 kV switchgear control and ancillary (each approx. 20m x 6m x 6m height)
- A gas-powered energy centre and Above Ground Installation (AGI). The energy centre will primarily comprise 18 no. lean-burn natural gas engines. Each generator will have its own flue of 25m height. The energy centre will be on a 110m x 100m plot and buildings within the compound will be 12 m high. The building will house an office and welfare facilities and associated parking.
- A two storey Vertical Farm Building. The vertical farm will be c. 50 x 50 x 12m high. It will comprise c. 60% growing space and 40% office area.
- Solar Panels and Rainwater harvesting included in the development.
- Undergrounding of two of the existing overhead 110kV circuits
- Ancillary site development works, that will include attenuation ponds and the installation and connection to the underground public water supply, foul and storm water drainage network, and installation of utility ducts and cables. Other ancillary site development works will include hard and soft landscaping throughout the site, lighting, fencing, signage, central services road, security gate, 299 No. car parking spaces, and 1126 no. bicycle parking spaces. The development will be enclosed with landscaping to all frontages including the retention of an ecological buffer area to the west.
- The development will be accessed from the Tulla Road (R352) with the provision of a new vehicular access road, together with an emergency access/egress road to the southwest of the site.

1.4 Background Information

1.4.1 Catchment-based Flood Risk Assessment and Management

The Catchment-based Flood Risk Assessment and Management (CFRAM) program has been implemented by the Office of Public Works (OPW) as a competent authority in Ireland for the EU floods directive. Over 29 Flood Risk Management Plans (FRMPs) have been prepared in coordination with the implementation of the Water Framework Directive (WFD). The FRMPs involved undertaking detailed engineering assessments and producing flood protection measures. The assessments addressed the potential impact of the proposed measures on waterbodies, hydro-morphology and quality status.

1.4.2 OPW Flood Guidelines for Planning Authorities

The purpose of The Planning System and Flood Risk Management Guidelines for Planning Authorities published by the OPW in 2009 (OPW Guidelines) is to introduce comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process.

1.4.3 Objectives of OPW Guidelines

Floods can have a broad range of impacts on people, property, infrastructure, and the environment. Flooding can cause damage to infrastructure including electricity and other utilities with significant

detrimental impacts on local and regional economies. This may cause long-term closures of businesses, leading to economic loss other than the damage caused during the event. The following are the core objectives of the OPW Guidelines:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for development permitted in floodplains;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

1.4.4 Flood Risk Assessment FRA Key Concepts

For carrying out a Site-specific Flood Risk Assessment (SSFRA), the OPW Guidelines recommend using the Source-Path-Receptor concept model to identify where the flood originates from, the floodwaters path, and the areas in which assets and people might be affected by such flooding (section 2.18 of the OPW Guidelines, 2009). **Figure 2** below displays a schematic representation of S-P-R model.

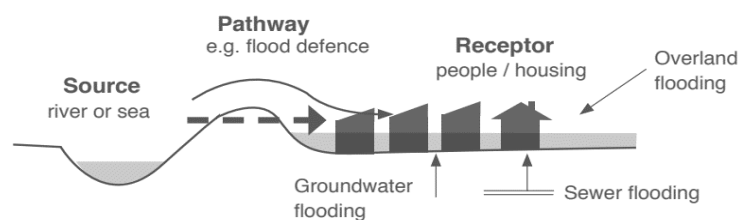


Figure 2: Source-Path-Receptor Model (extracted from OPW Guidelines, 2009)

The other key concept in flood management is the “Flood Risk”, which is “the combination of the likelihood of flooding and the potential consequences arising”. Consideration of flood risk must be addressed in terms of:

- The likelihood of flooding, expressed as percentage probability or exceedance each year; and;
- The consequences of flooding as the associated hazard e.g. flood depth and velocity.

Flood risk is then expressed with the relationship:

$$\text{Flood Risk} = \text{Likelihood of flooding} \times \text{Consequences of flooding.}$$

1.4.5 Flood Zones

The Flood Zone is the spatial inundation area that falls within a range of likelihood of flooding. The OPW Guidelines specify three levels of flood zones as shown on Figure 3:

Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% Annual Exceedance Probability (AEP) for river flooding and 0.5% AEP for coastal flooding);

Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% and 1% AEP for river flooding and between 0.1% and 0.5% AEP for coastal flooding);

Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% AEP for both river and coastal flooding).

Flood Zone C covers all areas of the plan which are not in Zones A or B.

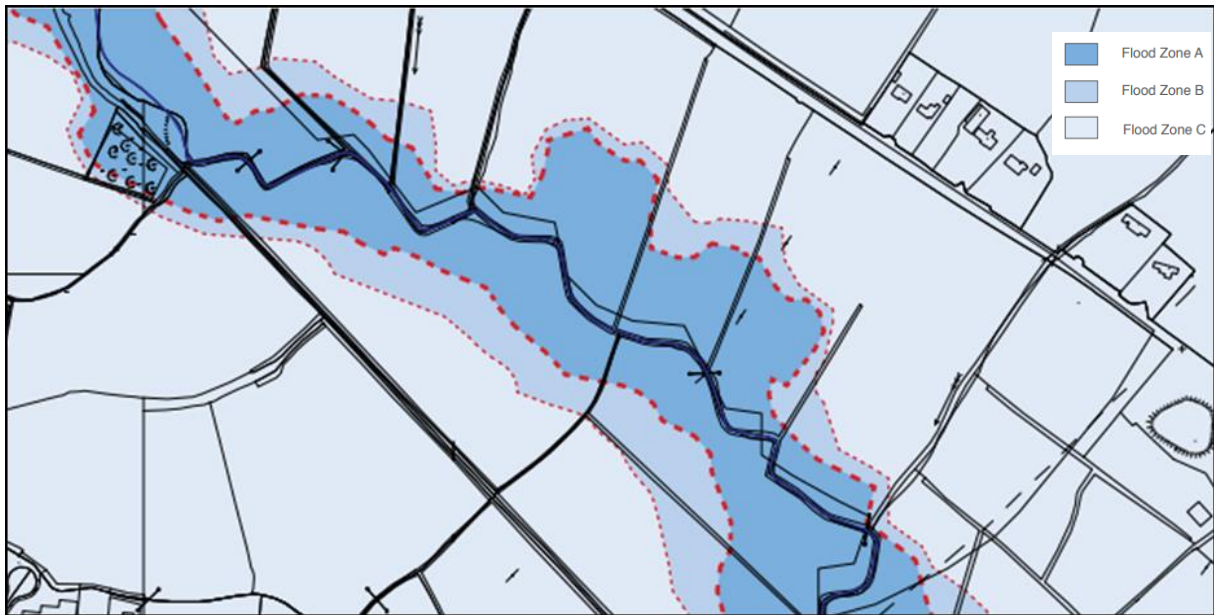


Figure 3: Example of the three flood risk zones (extracted from OPW Guidelines, 2009)

According to the OPW Guidelines, the planning implications for each of the zones mentioned above are:

Zone A - High probability of flooding. Most types of development would be considered inappropriate in this zone.

Zone B - Moderate probability of flooding. Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate in this zone.

Zone C - Low probability of flooding. Development in this zone is appropriate from a flood risk perspective (subject to an assessment of flood hazards from sources other than rivers and the coast), but would need to meet the normal range of other planning and sustainable development considerations.

1.4.6 Sequential Approach

The Sequential Approach is an important tool used in the planning process which gives preference to locate a new development in the Low Flood Risk Zone and ensures that it does not have an adverse impact of flooding.

According to the sequential approach, if the development lies within a Flood Zone, it is required to consider measures for mitigating the flood impact to an acceptable level. It is also required to provide justification for proposing a development on a higher risk flood zone (see **Figure 4** and **5** below).

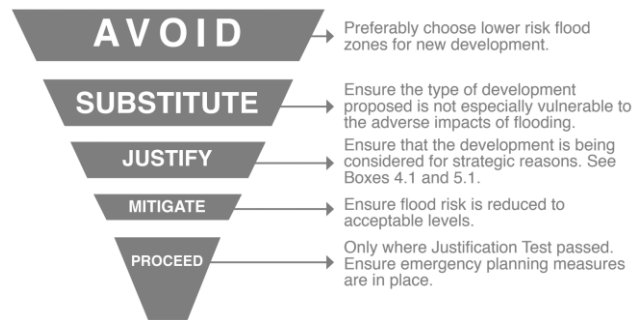


Figure 4: FRA Sequential Approach (extracted from OPW Guidelines, 2009)

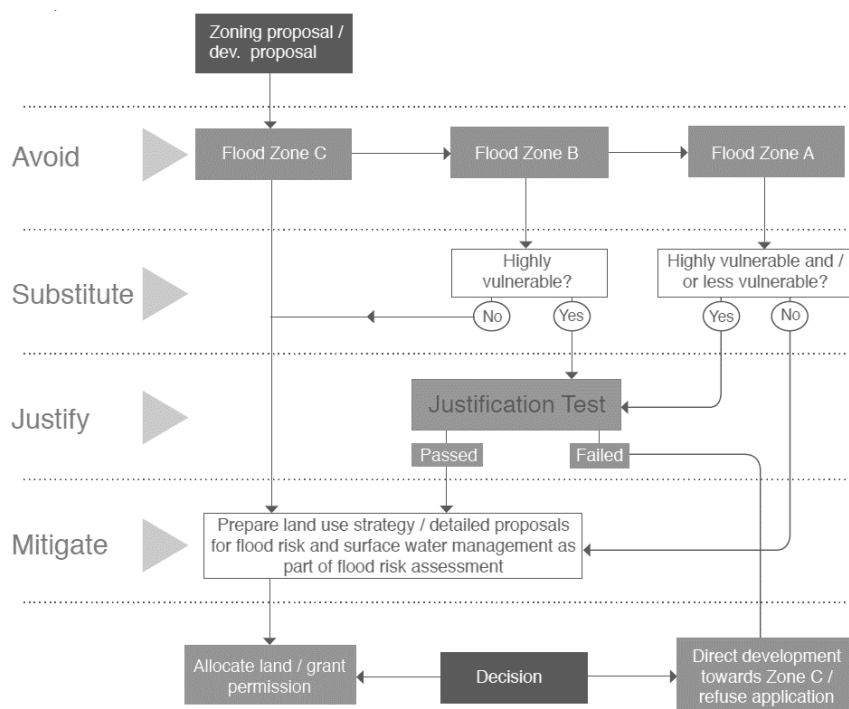


Figure 5: Sequential approach mechanism in the planning process (extracted from OPW Guidelines, 2009)

1.4.7 Development Classification

The OPW Guidelines provided three vulnerability categories based on the type of development which are:

- **Highly vulnerable:** This includes essential infrastructure, such as primary transport and utilities distribution, electricity generating power stations and sub-stations
- **Less vulnerable:** This category includes land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;

- **Water compatible:** Includes water-based flood control and recreational developments and other amenities, open space, outdoor sports and recreation facilities.

The OPW Guidelines, as described in Section 2.2.4 of this report, sets out a sequential approach which makes use of flood risk assessments and classifies the vulnerability of flooding of different types of developments.

Table 3.2 of the OPW Guidelines illustrates those types of developments that would be appropriate to each flood zone (reproduced in **Table 1** below) and those that would be required to meet a Justification Test in accordance to Box 5.1 in the guidelines.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 1: Matrix of vulnerability versus flood zone (extracted from OPW Guidelines, 2009)

1.5 Impact of Climate Change on Flood Risk

The OPW states in the “Climate Change Sectoral Adaptation Plan 2015-2019” that climate change will significantly increase the flood risk by different mechanisms including:

- Sea level rise;
- Increase in Rainfall/Runoff;
- Increase in wind speed and hence extreme storm surge events.

The OPW specified two main Climate Change Scenarios for the Pilot CFRAMS Studies, which are: (1) Mid-Range Future Scenario MRFS and; (2) High-End Future Scenario HEFS. Table 2 below shows the parameters of each scenario.

Parameter	MRFS	HEFS
Rainfall	+20%	+30%
Flood Flows	+20%	+30%
Sea Level Rising	+500 mm	+1000 mm

Table 2: Flood Parameters for the Mid-Range Future and High-End Future Scenarios. Adopted From “Climate Change Sectoral Adaptation Plan 2015-2019”

2 Stage 1 - Flood Risk Identification

The flood risk assessment is undertaken to determine if a flood risk exists for the proposed development, and if so to determine the extent of the risk. The following documents and sources were reviewed.

2.1 Historical Flood Records

The OPW floodinfo.ie website has been consulted. The entire footprint of the subject site has no record of historical flooding. However, the nearest historical flooding record is noted at one location approximately 500 m to the North of the subject site at Ballymacahill area which occurred in Feb 2002. See **Appendix A** for details.

2.1 EPA Maps

EPA maps available in <https://gis.epa.ie/EPAMaps/> show existing water features such as rivers, streams through the subject site which would contribute to flooding. See **Appendix B** for details.

It is noted that the Ballymacahill River is identified as part the EPA River Waterbodies under the name (Spancelhill River) Code IE_SH_27S030400. This River runs along the northern border of the development and exits the site from the western border under the M81 motorway via an existing culvert as shown in Figure 6 below.



Figure 6 Existing Culvert on Ballymacahill River under the M81 Motorway - looking at the inlet face

2.2 OPW Flood Risk Maps

The OPW Flood Maps Viewer available in www.floodinfo.ie, allows access to flood mapping data through an interactive map search. OPW flood maps predict flooding to the site under the following headings:

- Coastal Flood Extents (low, medium and high probability)
- River Flood Extents (low, medium and high probability)

The OPW database have been reviewed for the subject site. According to the available OPW data, it was noted that the extent of modelled streams covers the existing river/stream network in the region west of the M81 motorway over *Ballymacahill*, *Knockanean* and *Rosslevan* lands. The OPW flood maps show remarkable inundation area of fluvial flooding - Zone A & B - over the greenfield North to these three areas with some impact being on the residential areas at *Rosslevan*. The maps also show a significant footprint of coastal flooding affecting the same region west of the M81 motorway. Please see **Appendix C** for details. Also see **Appendix D** for the Shannon CFRAM’s Map No. S27ENS_EXFCD_F1_08 of fluvial flood extent and S27ENS_EXCCD_F1_08 of coastal flood extent.

The available OPW maps, however, does not show fluvial or coastal flood extent data within the subject site.

2.3 Shannon CFRAM Study

The available Shannon Catchment-based Flood Risk Assessment and Management CFRAM Study was produced by Jacobs Engineering in 2017. The study comprises 6 no. Units of Management (UoMs) which cover the entire watershed of the Shannon catchment and its tributaries; namely UoM 23, 24, 25, 26, 27 & 28. Each UoM consists of several Areas for Further Assessment (AFAs) whereby hydrologic and hydraulic modelling has been conducted for. The existing river network system in Ennis town fall within UoM 27 in the AFA of Ennis as shown in Figure 7 below.

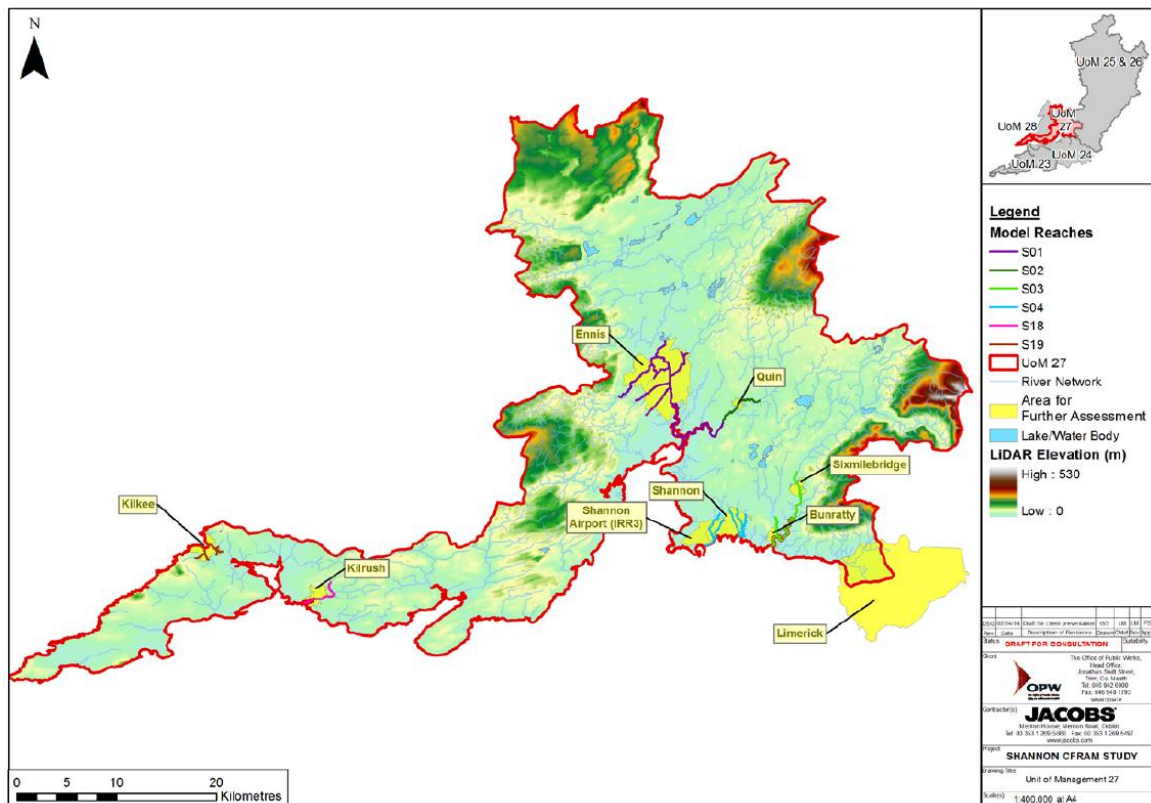


Figure 7 Extract from Shannon CFRAM Study showing catchment UoM 27 Ennis and AFA of Ennis

It is noted that the subject site does not lie within the designated Ennis AFA in accordance with the CFRAM study and therefore not within the extent of modelled streams as shown in Figure 8 below.

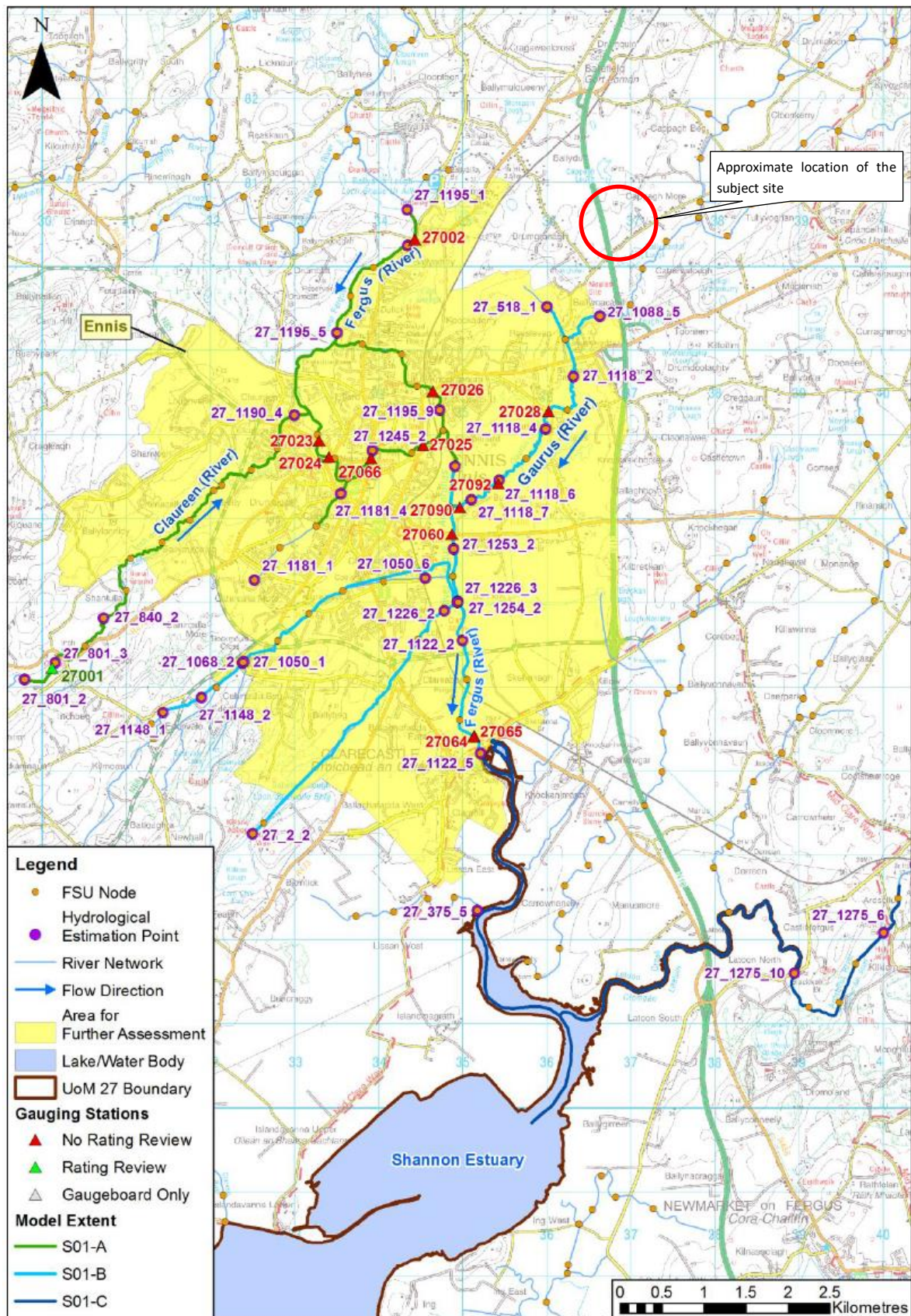


Figure 8 Extract from Shannon CFRAM Study showing the extent of modelled streams within AFA of Ennis

2.4 Variation No.1 on Clare County Development Plan 2017–2023

A Strategic Flood Risk Assessment SFRA was prepared by JBA in 2019 in support to the proposed variation on the Clare County Development Plan CCDP 2017-2023. The variation on CCDP recommended rezoning of 55ha with inclusion of the subject site as Enterprise. As part of this SFRA Fluvial flood mapping of the area and along Ballymacahill River was carried out in 2010 (Clare County Development Plan 2017-2023) and showed the western portion of the site to be within Flood Zone A and B. See Figure 9 below.

Below is an extract from the SFRA in relation to flood mapping results over the study area:

“The river flows within a low elevation area with an area of hills and higher ground separating it from the central and eastern sections of the site within the land use boundary. The level of detail of the previous study is indicative, however the majority of the mapping was verified during the site visit with minor changes made to allow for the inclusion of the unnamed surface stream in Flood Zone A”

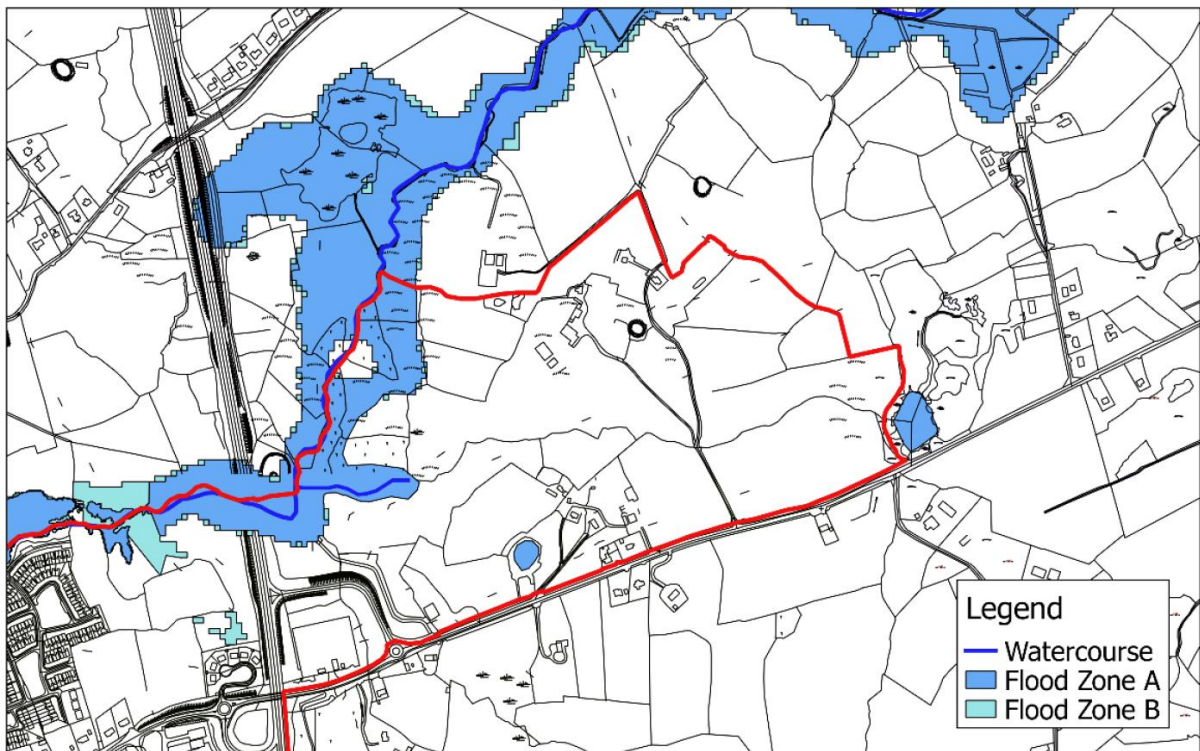


Figure 9 Extract from “Clare County Development Plan 2017–2023, Variation No.1 : Flood Risk Assessment” report, Available at : <https://www.clarecoco.ie/services/planning/ccdp2017-2023/>

2.5 Source-Path-Receptor

A Source-Pathway-Receptor model has been produced to assess the possible sources of floodwater and their likelihood, the pathways by which flood water reaches receptors and the receptors that could be affected by potential flooding, as summarized in Table 3 below.

Flooding Type	Source	Path	Receptor	Likelihood	Impact	Risk
Tidal	Shannon estuary	Ballymacahill River	People and Property, infrastructure (the proposed development).	Possible	High	Very Low
Fluvial	Ballymacahill River	Roads	People and Property (the proposed development).	Possible	High	Moderate
Pluvial/Surface Water	Flooding from the existing ditches running through the site	Internal/access Roads within the site	People and Property (the proposed development).	Possible	Moderate	Moderate
Ground Water	Rising GWL on the site. TBC	Buildings/Open space	People and Property (the proposed development).	Possible	Low	Very Low
Other Source	Flooding due to human or mechanical error in sizing of Petrol interceptor or the hydrobrake/blockage at any drainage system component.	Internal/access Roads within the site	People and Property (the proposed development).	Possible	Moderate	Moderate

Table 3 SPR model

From the SPR analysis presented above, it is noted that the proposed development site has low to moderate risk of tidal (Coastal) and fluvial flooding (Ballymacahill River) due to its geographic location from these sources.

Stage 2 of this FRA will provide further discussion on the possible source of flooding noted in table 4 above.

3 Stage 2: Initial Flood Risk Assessment

3.1 Tidal Flood Risk

As discussed in section 2.2 of this report and the OPW flood maps No. S27ENS_EXCCD_F1_08 in **Appendix D**, Significant areas setting floodwaters (Flood Zone A & B) over the greenfield North to Ballymacahill, Knockanean and Rosslevan lands with some impact being noted on the residential areas of Rosslevan. The flood map showed a maximum tidal water level of **5.92 mOD** in the nearest model node to the subject site along Ballymacahill River. This tidal water level represents the 1 in 1000-year coastal flood event. The proposed lowest finish flood level in the development is **17.0 mOD** and hence 11.0 meters higher than the worst-case scenario. Therefore, the subject site has no tidal flood risk.

3.2 Fluvial Flood Risk

As discussed in Section 2.2, 2.3 and 2.4, the only available source of data shows flooding extent within the subject site was found in the Clare County Strategic Flood Risk Assessment report, please see **Appendix E**. It was verified that the entire developed area within the subject site lies in flood Zone C with c.37 m minimum distance from Zone B flood extent of Ballymacahill River. However, the extent of the modelled floodplain of Zone A and B covers the existing ecological and waterbodies conservation areas in the West of the development. Refer to **Section 6** of the hydraulic modelling report for a comparison between the JBA 2010 fluvial flood inundation extents.

As noted by Clare County Council, the proposed stormwater attenuation pond outfall could potentially be surcharged by flood water levels in the Ballymacahill River. Refer to the Flood Modelling Report included in **Appendix G** that provides detail regarding the hydrological review, fluvial flood water levels in the Ballymacahill River and the levels/depths of surcharge on the proposed outfall pipeline. Table 4 and 5 below summarises the outcomes from the hydrodynamic flood modelling completed for the Ballymacahill River.

Flood Event	Description	Water Level (mOD)	Depth of surcharge (m)
1% AEP	1:100 yr RI	7.72	0.75
1% AEP MRFS	20% MRFS	7.78	0.81
0.1% AEP	1:1000 yr RI	7.8	0.83
0.1% AEP MRFS	20% MRFS	7.82	0.85
Stormwater Ourfall Invert Level = 6.97 mOD			

Table 4: Summary of surcharge depths on stormwater outfall

Ballymacahill River					
Return Period AEP		1% AEP	1% AEP MRFS	0.1% AEP	0.1% MRFS
Peak Flow (m ³ /s)		5.3	6.36	7.38	8.86
Chainages	DTM Stream Level (mOD)	W.S.E (mOD)			
CH 15	13.84	14.21	14.26	14.27	14.33
CH 250	11.10	11.68	11.71	11.72	11.75
CH 500	9.90	11.15	11.20	11.21	11.25
CH 750	9.18	9.97	10.03	10.04	10.10
CH 1000	5.71	7.49	7.64	7.69	7.86
CH 1250	5.80	6.77	6.84	6.86	6.93
CH 1500	5.13	6.65	6.73	6.76	6.84
CH 1750	5.46	6.64	6.73	6.75	6.83

Table 5: Summary of Water Surface Elevations along river chainages

3.3 Pluvial Flooding from Surface Water Drainage

The Source-Pathway-Receptor model presented in Stage 1 indicated the likelihood of Fluvial and Pluvial flooding types within the site. The identified risk of flooding in the study area is primarily associated with the future drainage networks service to the proposed development. The drainage system will not have a potential to cause local flooding as it is designed to cater for the 100- year storm return periods plus 20% allowance for climate change. Proper operation and maintenance of the drainage system should be implemented to reduce the pluvial flood risk due to human/ mechanical error. **Appendix F** presents a proposed Operation and Maintenance O&M Plan for the drainage system in the development.

3.4 Ground Water Flooding

Groundwater flooding occurs when storage in the underground aquifer is full and rainfall (recharge) cannot discharge quick enough, causing the water table to rise above the ground surface. According to the Geological Survey of Ireland (GSI), groundwater flooding in Ireland occurs mainly on the limestone lowlands to the west of the Shannon. The prevalence of groundwater flooding in the western counties is fundamentally linked to bedrock geology. The limestone bedrock in these areas has been dissolved over time in a process known as karstification, creating a subterranean network of water-bearing fractures and conduits with limited storage capacity. Surface drainage systems are frequently absent within well-developed karst landscapes. Instead, the groundwater conduit flow system acts as the main drainage mechanism for the region.

The following site-specific data was used to determine the potential of groundwater flooding across the site:

- CFRAM flood maps.
- Topography.
- Walk over survey to assess water level marks and review of historical photographs of surface water features, including lakes.
- Review of contemporary borehole logs drilled through both the overburden and the underlying bedrock.

These data have been used to assess the potential for groundwater flooding.

The topographical gradient is quite variable across the proposed development. Overall, the elevation falls from east to west/ southwest with detailed elevation of approx. +15mOD (meters above Ordnance datum) in the west and +46mOD in the east. The topography (presence of low-lying depressions) and presence of springs and discharge points (sinkholes) is crucial in determining where groundwater flooding occurs within the proposed development boundary.

There are four water features of significance either within the site boundary or along the site boundary where flooding historically occurs (see **Figure 10**). These are; Tooreen Lough to the south (within the proposed development area), Ardnamurry Lough farther to the east (outside but adjacent to the site boundary line), and two pond features located to the north and northeast -both within the proposed development. These features discharge to ground at nearby sink holes also identified on **Figure 10**. All four areas are likely to be a combination of groundwater contribution and ponding rainfall. The latter two (i.e. ponds to the north/ northeast) are seen to continue to discharge during dry spells as observed on site (April/ May 2021). All four features are located in [locally] low lying depressions within the landscape.

All of these water features have been observed to expand in terms of lateral extent seasonally with autumn/ winter flooding and this footprint is generally followed by recession during drier conditions in summertime. This filling and emptying/ lowering of water levels is likely based on exceedance of storage capacity of the karst conduit system in wetter months in addition to pluvial components.

In terms of bedrock geology, groundwater flooding is more susceptible in areas where karstification is more prominent than where competent limestone bedrock prevails. Defining the geological setting in which the full site boundary lines is based on a combination of data provided by studies carried out by the GSI as well as based on the site-specific exploratory hole drilling and geophysical studies. Karst limestone with the presence of dolomite as the dominant bedrock geology has been identified in the western and south-western section of the

site while more competent limestone rock is interpreted to prevail from the boundary with the karst in the west towards the centre of the site and extending eastwards.

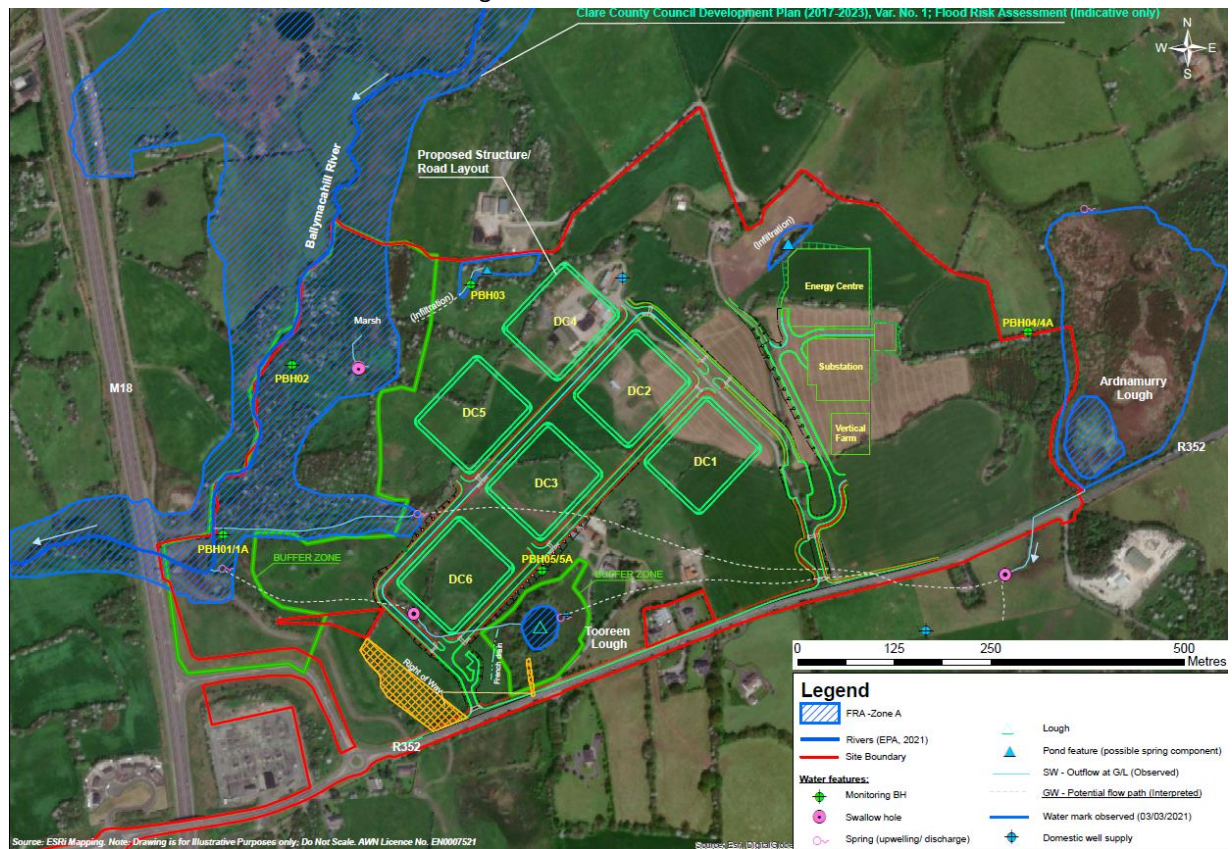


Figure 10 Local Drainage features

based on hydrology/ hydrogeology investigations (AWN Consulting)

Figure 10 indicates that part of the access road clashes with an existing stream that flows from Tooreen Lough. It is therefore proposed to divert/culvert this existing stream and redirect its flow to ring-type soakaway where an existing Swallow Hole was observed. Any overflow from this proposed diversion network will be redirected to an overflow basin that will attenuate the water while it percolates into the ground and connect with the existing ground water paths. See Figure 11 below and CSEA drawing no. 1410 for further details.

Water level loggers were installed for Tooreen Lough to monitor the fluctuations in water levels from 08/04/2021 to 13/01/2022. As shown in Figure 12, the minimum water level recorded of 14.244 mOD occurred in the beginning of May 2021 and the maximum level recorded on approximately the 10th of December 2021 of 14.511 mOD. The approximate historical high water level mark is indicated to be 14.60 mOD, as surveyed by Fergal Coughlan in early 2021. It is not anticipated that the Tooreen Lough poses any flood risk from Fluvial, Pluvial or Groundwater flooding to the proposed infrastructure due to the minor fluctuations in the water levels. Figure 13 below shows the recorded water levels as mentioned above in relation to the proposed development design levels. Refer to Drawing ART-CSE-XX-ZZ-DR-C-1242 included in **Appendix H**.

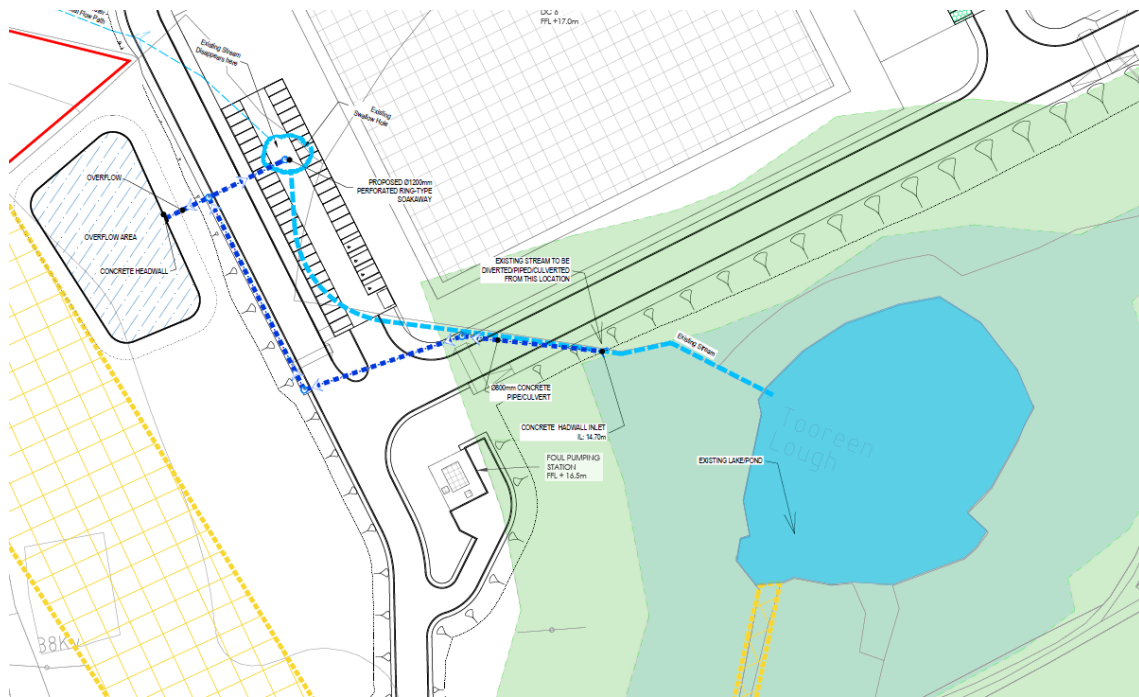


Figure 11 Tooreen Lough Diversion of flow proposal.

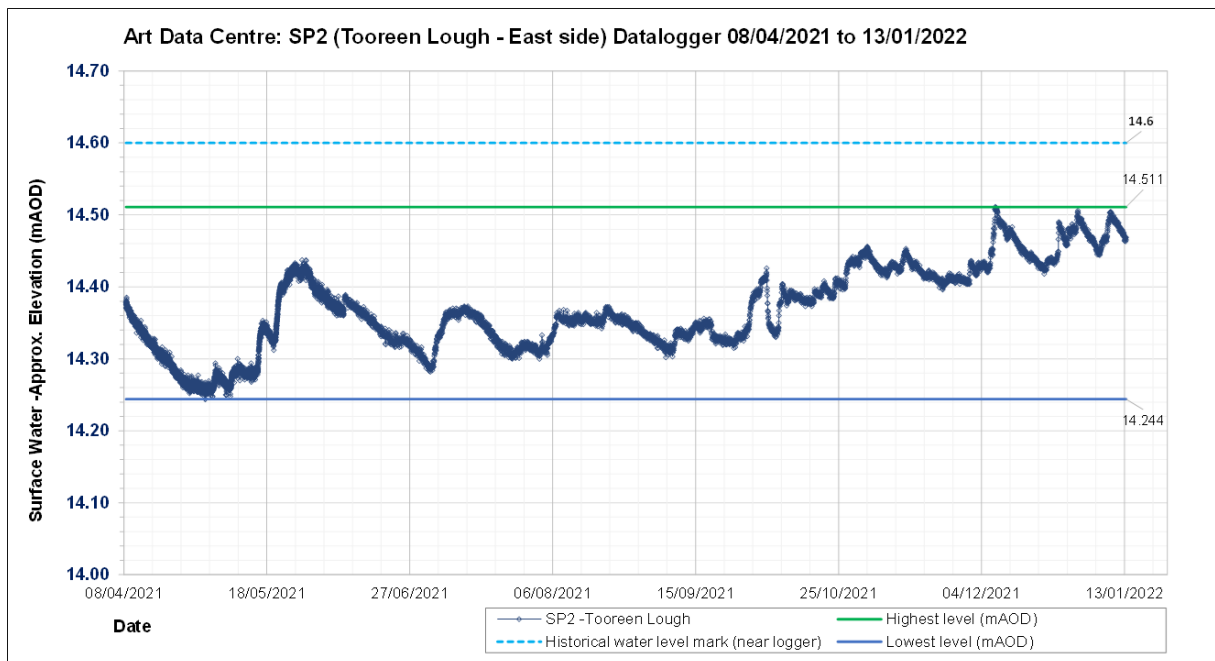


Figure 12: Tooreen Lough water level hydrograph

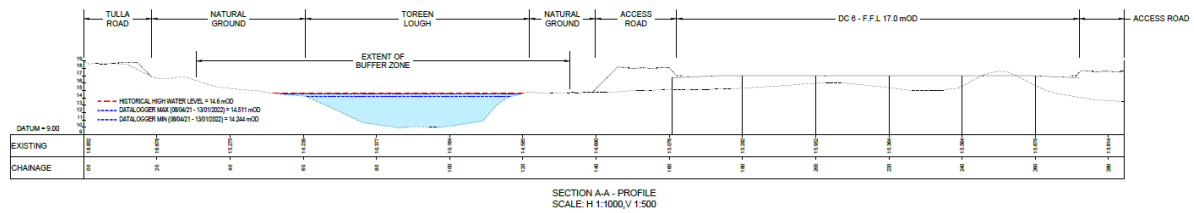


Figure 13: Tooreen Lough Water Level Fluctuations

3.5 Increasing flood risk downstream

Shannon CFRAM flood risk study indicates a peak flow in Ballymacahill River of 9.6 m³/s and 7.11 m³/s during the events 1 in 1000 year and 1 in 100 year respectively. This flow data was shown at the nearest node along the modelled reach of Ballymacahill River (see **Appendix D**, S27ENS_EXCCD_F1_08 of Fluvial Flood Extent).

The entire development area equates c.60 hectares (Red outline) but the land being developed is only c.17.3 hectares. The hardstanding areas within the site will result in a surface water peak discharge of approximately 2114.3 l/s (2.1 m³/s) during 1 in 100-year storm event plus 20% climate change allowance. The proposed drainage system will convey this amount (2.1 m³/s) into a proposed attenuation basin which has a capacity of c.8000m³. The flow from the attenuation basin will be regulated prior to discharge to a proposed outfall at Ballymacahill River. The discharge from the site will be regulated via a proposed flow control structure which will restrict the flow to 50 l/s (0.05 m³/s) during design storm event up to 1 in 1000 years. See CSEA Engineering Planning Report (RPT-20_110_001) for further details.

A post-development scenario was simulated in the hydraulic modelling with a consistent discharge from the proposed stormwater attenuation pond, which is based on the maximum allowable greenfield discharge of 98.61 l/s (0.1 m³/s) for the proposed development.

Compared to the flood peak of the 1% AEP event of 5.30 m³/s, the additional post-development flow is considered to be “negligible” and resulted in a rise of 5 mm in water elevation above the proposed stormwater outfall position. Refer to **Section 8.2** in the Hydraulic Modelling Report included in **Appendix G**.

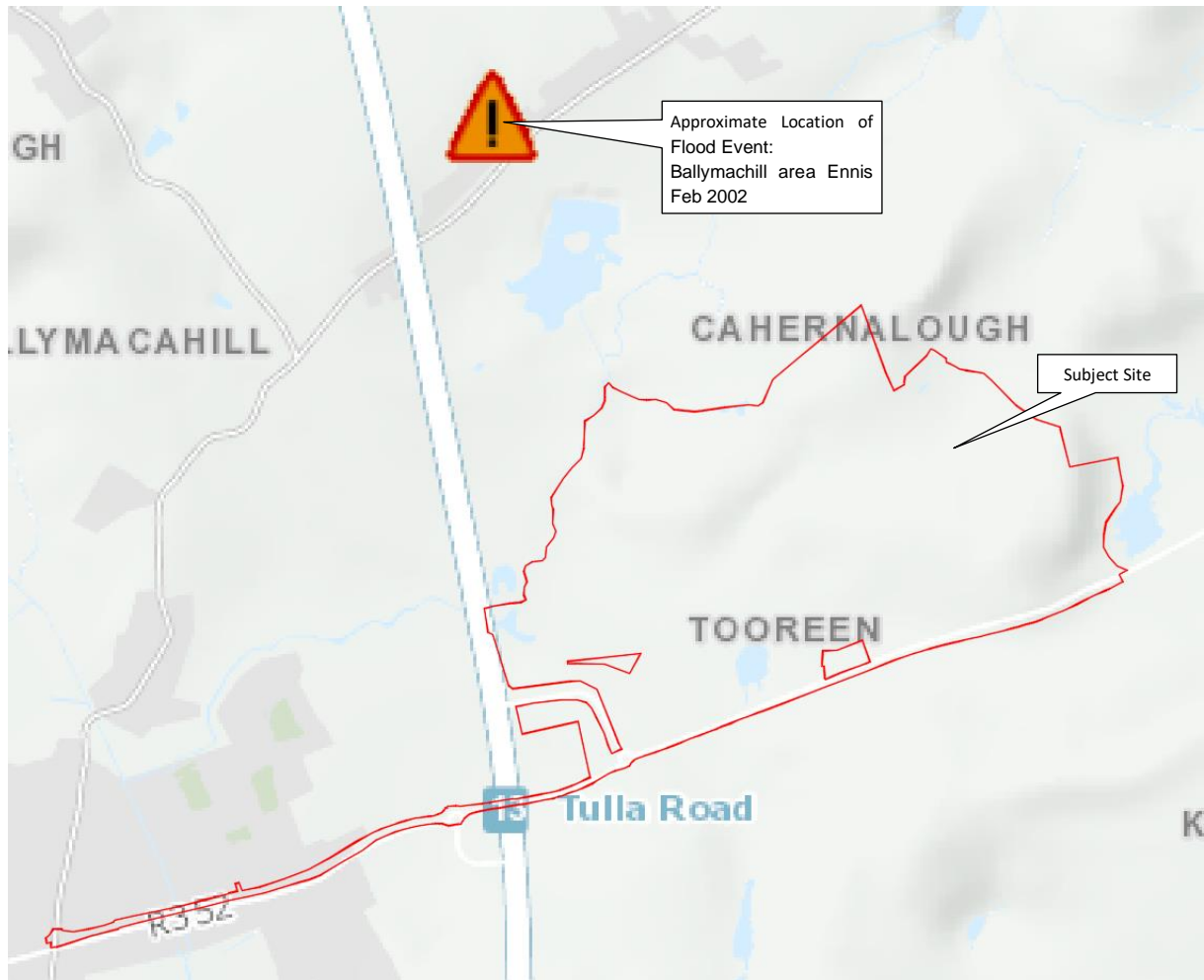
4 Conclusion

This Site-Specific Flood Risk Assessment for the proposed development was undertaken to the requirements of the OPW Guidelines, 2009, “Planning System and Flood Risk Management Guidelines for Planning Authorities”. Following two stages of flood risk assessment, it was determined that the site is within Flood Zone C as defined by the Guidelines and based on the available flood risk mapping. Therefore, the development on the subject site is appropriate for the site’s flood zone category and a justification test as outlined in the Guidelines is not required.

A regularly maintained drainage system would ensure that the network remains effective and in good working order should a large pluvial storm occur. It was also concluded that the proposed development will not increase flood risk in downstream third-party land.

This report should be read in conjunction with the Ballymacahill River Flood Modelling Report (RPT-20_110-004) included in **Appendix G**, which details the hydrological review based on the Flood Studies Update methodology and the 2D hydrodynamic model set up for the river to determine the potential surcharge levels on the proposed stormwater attenuation pond outfall. Updated flood maps have been compiled for the modelling as shown on Drawing No. ART-CSE-ZZ-XX-DR-C-1240 and ART-CSE-ZZ-XX-DR-C-1241 in **Appendix C** of the modelling report.

Appendix A – OPW Historical Flood Records (www.floodinfo.ie)



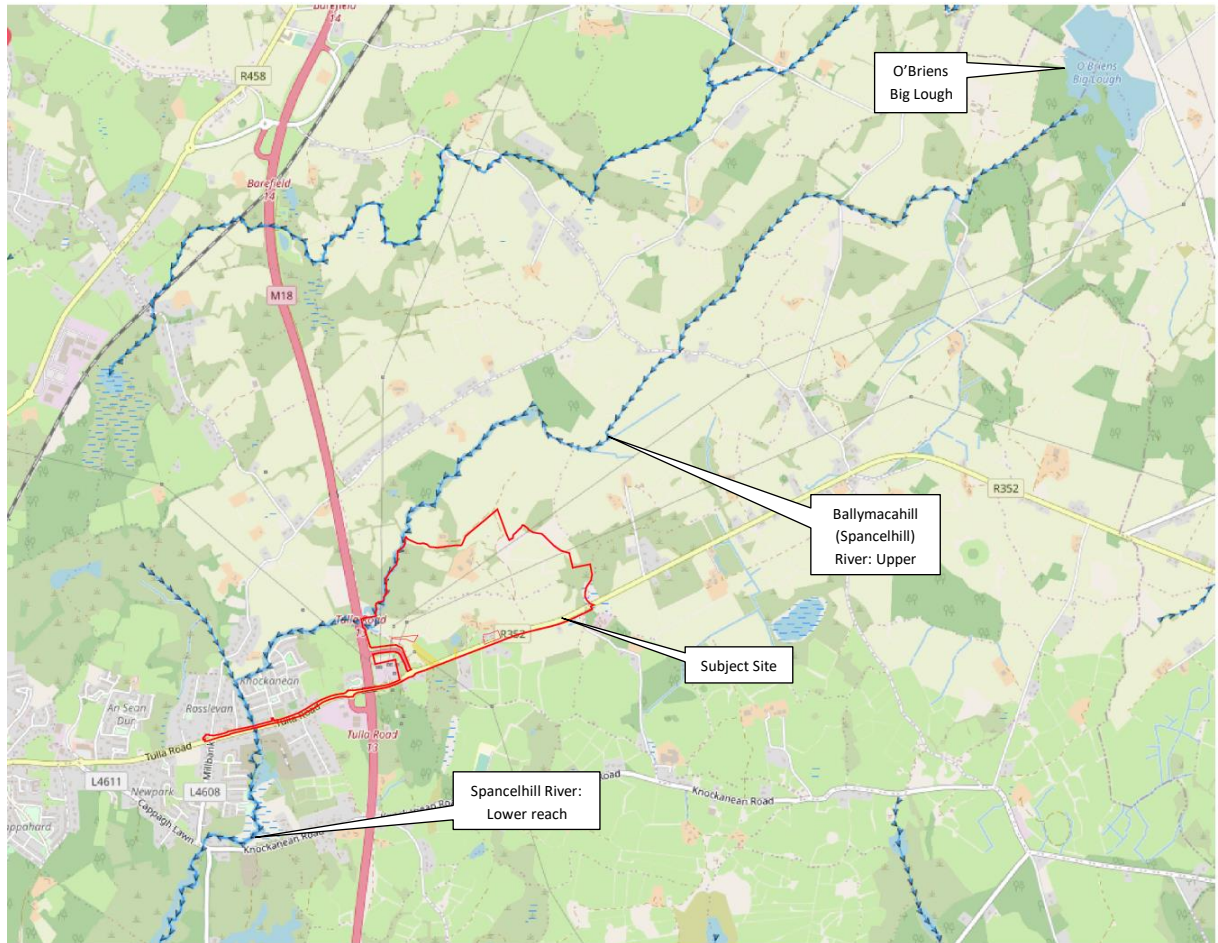
Flood Summary (ID-4504) ×

Flood Event:
Ballymachill area Ennis Feb 2002

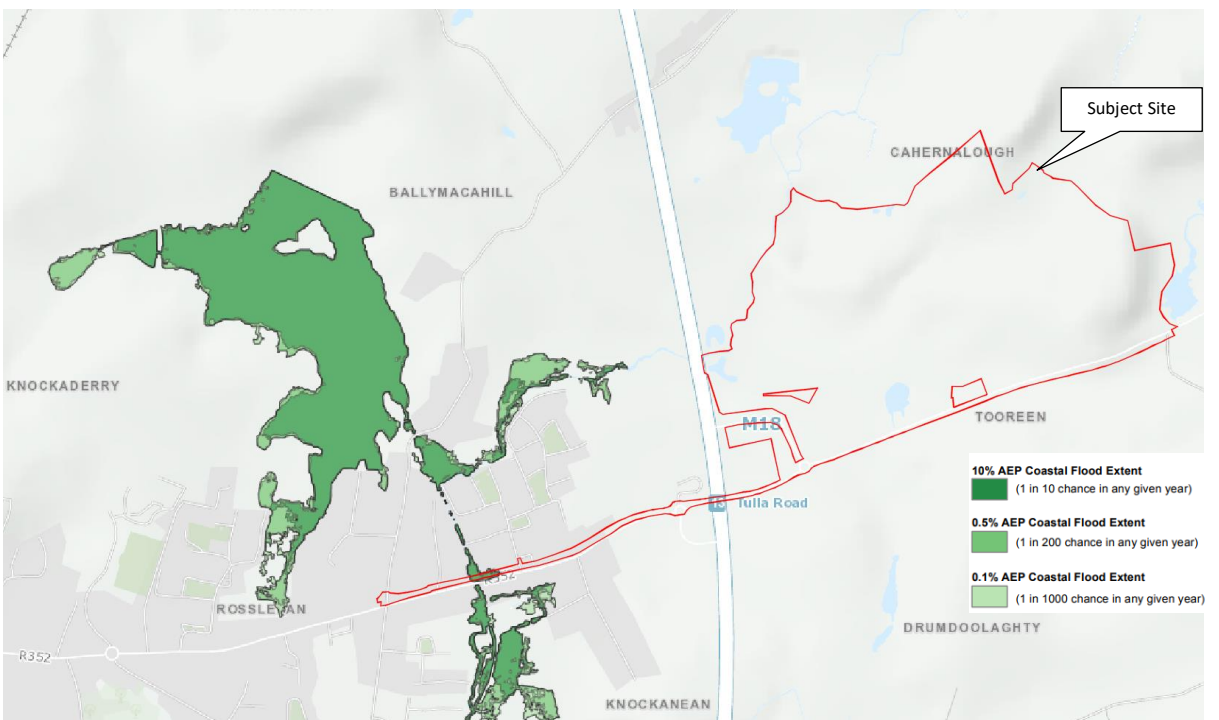
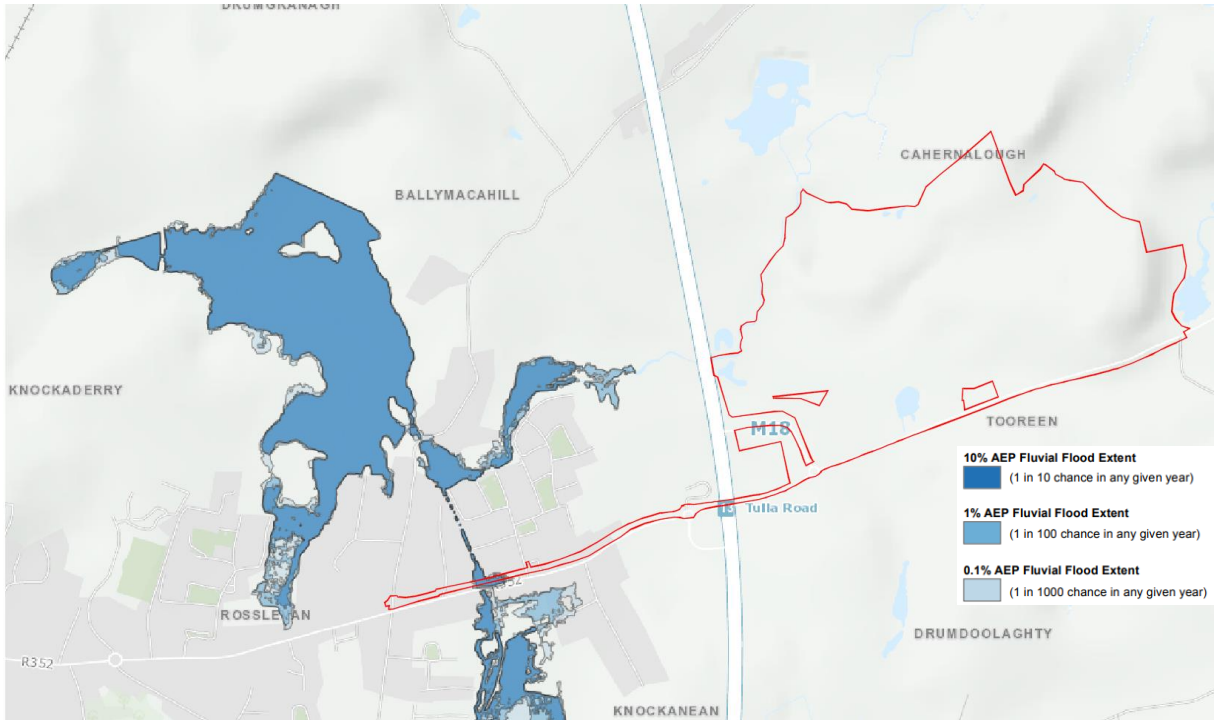
This is a Dated Flood - 01/02/2002 from the following source: null

Flooding here is associated with the Fergus catchment. The flood name is Ballymachill area Ennis Feb 2002 and the location is an Approximate Point.

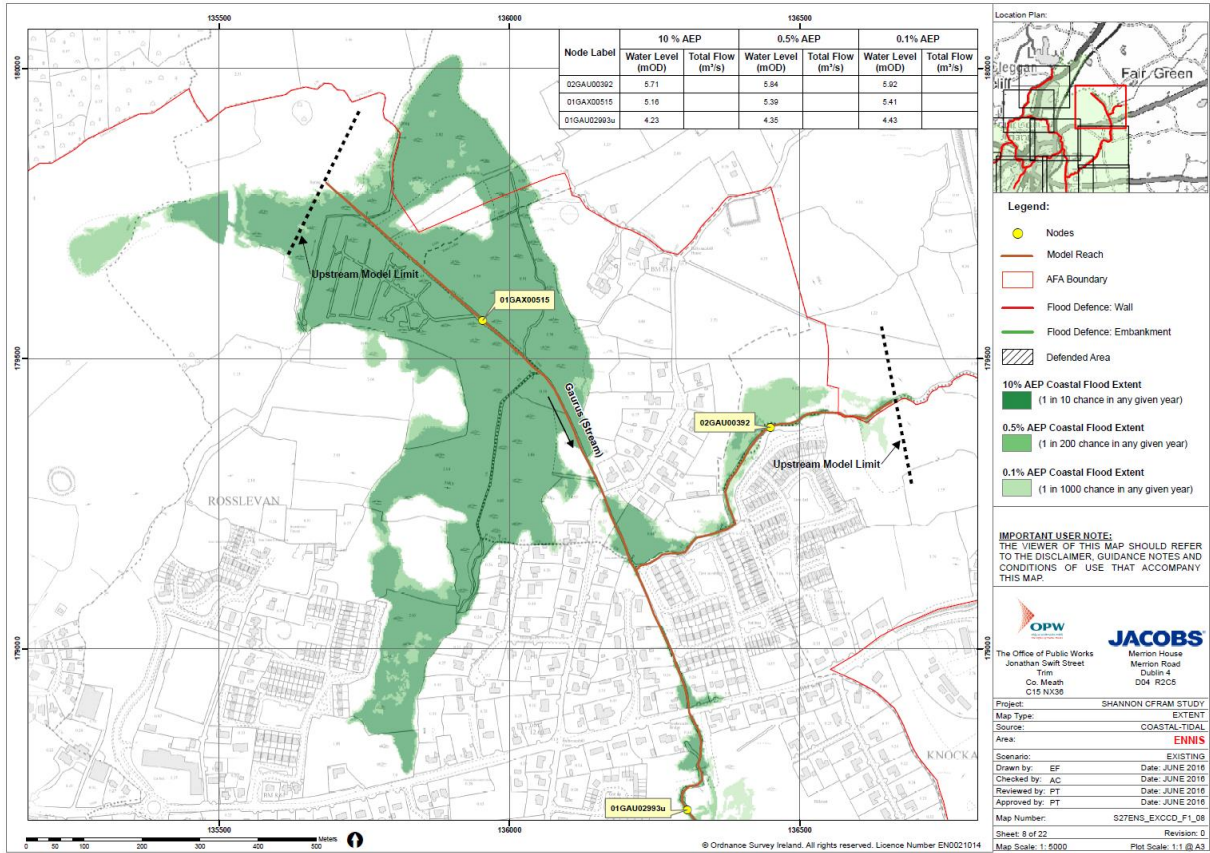
Appendix B – EPA <https://gis.epa.ie/EPAMaps/> Identified River Waterbodies



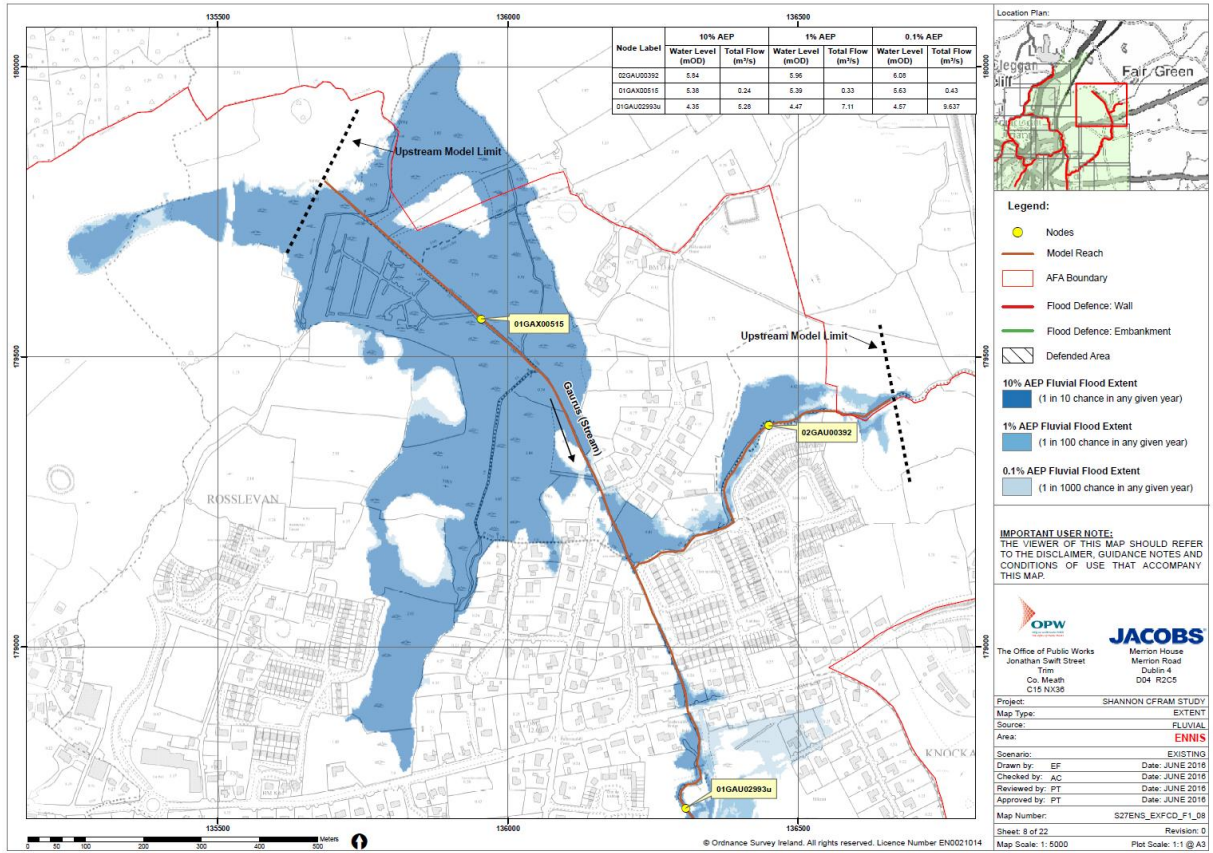
Appendix C – Flood Risk Map (www.floodinfo.ie)



Appendix D: Fluvial/Costal Flood Maps (www.floodinfo.ie)

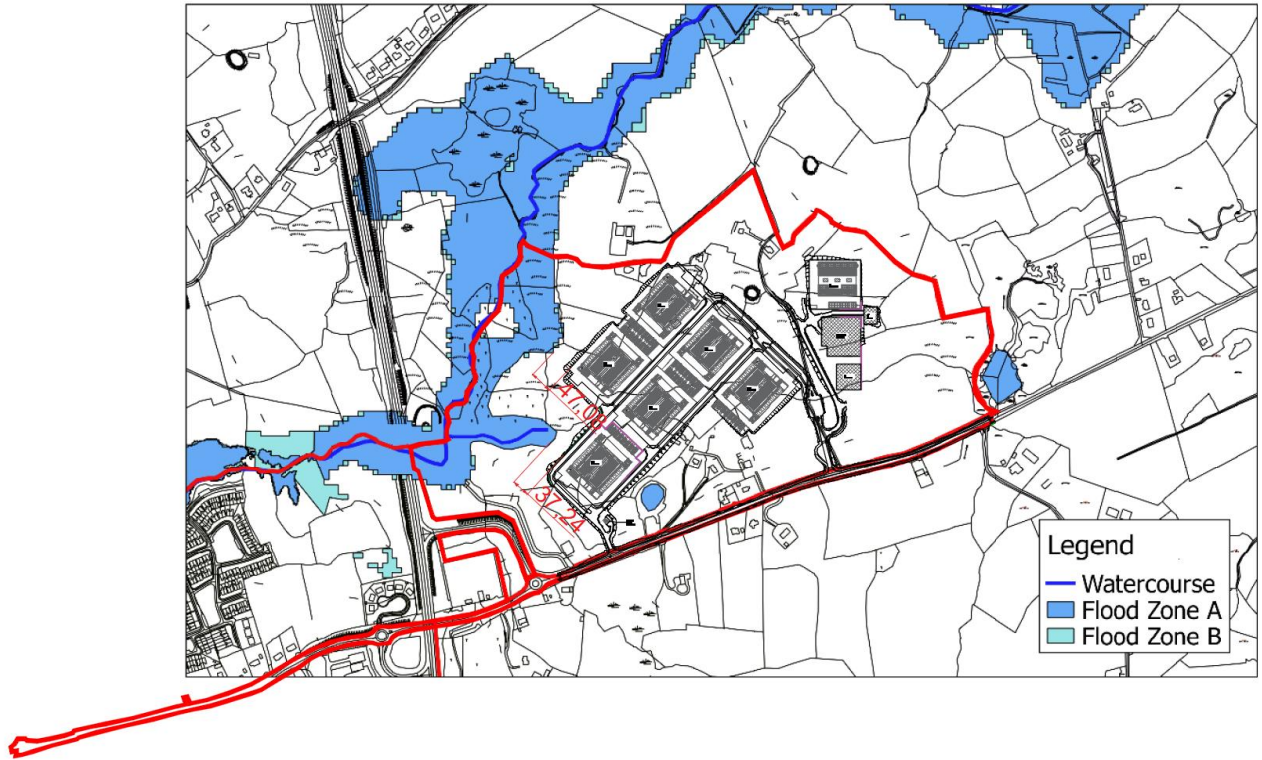


S27ENS_EXFCD_F1_08 of Coastal Flood Extent



S27ENS_EXCCD_F1_08 of Fluvial Flood Extent

Appendix E: Fluvial Flood Risk Map : Clare County Strategic Flood risk Assessment



Appendix F: Surface Water Operation and Maintenance (O&M) Activities

All operation and maintenance activities should be in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study GSDSDS- Volume 3 – Environmental Management
- CIRIA 2015SuDS Manual, Part E - Chapter 32

Considerations for surface water O&M:

Requirement	Assessment/Action
Maintenance access – ensuring appropriate and long-term access to all points in the system where future maintenance may be required	A standard minimum of 600mm diameter opening is provided for all manhole, chambers and treatment system. Removable gullies grate opening with a minimum size of 450mm X 320mm.
Forebays and/or appropriate pre-treatment structures to facilitate the sediment management process.	Service manholes are proposed upstream and downstream of the attenuation system. Road gullies and the petrol interceptor will also facilitate sediment management process.
Bypass systems or appropriate temporary drainage infrastructure for use if required during sediment management or other maintenance activities.	Not required
The availability of disposal areas for organic arisings (green waste) and sediments.	To be included as part of maintenance contract of the development.

Types of SuDS systems used that require O&M activities:

- Detention Pond: proposed open attenuation basin.
- Soakaway: N/A.
- Pervious Paving: proposed permeable paving areas proposed within the development.
- Treatment system: proposed petrol interceptor as part of road and parking drainage system

O&M activities required as following:

Operation and maintenance activities	SuDS Component			
	Attenuation Tank	Soakaway	Pervious Paving	Treatment System
O&M Activities				
Regular maintenance				
Inspection	■	■	■	■
Litter/debris removal	■		■	
Grass cutting			■	
Weed/invasive plant control	■		■	
Shrub management			■	■
Shoreline vegetation management				
Aquatic vegetation management				
Occasional maintenance				
Sediment management	■	■	■	■
Vegetation/plant replacement				
Vacuum sweeping and brushing			■	
Remedial maintenance				
Structure rehabilitation/repair	□	□		□
Infiltration surface reconditioning		□		
■ Will be required □ May be required				

Project Number: 20_110

Project: Art Data Centres – Ennis Campus

Title: Flood Risk Assessment

Appendix G: Ballymacahill River Hydraulic Modelling Report

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Surface Water and Pollution Management Plan Art Data Centre



Client: ART Data Centres

Date: June 2021

Job Number: 20_110

Civil
Engineering

Structural
Engineering

Transport
Engineering

Environmental
Engineering

Project
Management

Health
and Safety

CONSULTING ENGINEERS



Document Control Sheet

Project Name: Art Data Centre
Project Number: 20_110
Report Title: Surface Water and Pollution Management Plan
Filename: RPT-20_110-003

Issue No.	Issue Status	Date	Prepared by	Checked by
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1 Introduction

This Surface Water Management Plan (SWMP) was prepared to clearly set out the requirements for Contractors on the management of surface water run-off during construction activities. The aim is to protect Ballymakill River and the existing wetlands located within the site boundary. The SWMP should be read in its entirety and all requirements/mitigation measures specified herein adhered to by the Contractors for all construction works.

It is the duty of the Contractor to ensure that any work within their scope is carried out in accordance with these measures. In addition, it is the duty of the Contractors to comply with any relevant commitment or conditions imposed by virtue of the Planning Permissions Granted by Clare County Council (CCC). All the measures are the responsibility of the contractor unless specifically stated otherwise. If the contractor requires any further information on the extent of their responsibilities, it is their duty to request such guidance from ART Data Centres Limited.

2 Objective of Surface Water Management Plan & Pollution Management Plan

The following Surface Water Management Plan (SWMP) provides the water management measures to be implemented by the contractor to ensure that the work is carried out with minimal impact on the existing water environment.

This report describes briefly the existing hydrological and hydrogeological settings of the site, and then sets out the proposed measures required for surface water management during the construction phase.

Contamination of the receiving surface water environment during the construction phase has the potential to cause environmental damage mainly through the movement of silt, either directly or indirectly, into receiving waters. Other possible construction impacts include accidental release of oils and diesel, or discharge of alkaline water during cementing works. The main aim of the surface water management plan is to ensure protection of the local receiving water (surface water and groundwater) and compliance with current guidance documents. This is to be achieved through the following measures:

- Understanding of the local receiving water environment, pollutant linkage pathways and the legislative requirements.
- Implementation of measures to protect the receiving water environment.
- Set out a monitoring and training system.

The main areas of surface water related concerns covered by this document are:

- Pre-Construction, Construction Phase drainage controls;
- Earthworks (i.e. infrastructure & drainage) and surface water quality protection;
- Temporary stockpiles water management and controls;
- Stream / watercourse culverts and outfalls;
- Fuel usage, Cementing works, storage and management;
- Working at or near existing streams / watercourses;
- Blockage of swallow holes/conduits and,
- Wastewater and on-site sanitation.

3 Hydrological Settings

Regional surface water drainage near the proposed development boundary includes the Ballymacahill (EPA ref: Spancelhill) River to the north/ west of the site boundary. The Ballymacahill River generally

aligns with the full western site boundary with only a section of the river (to the immediate east of the M18 road) shown to lie within the south-western boundary of the site. The river flows in a NE to SW direction crossing beneath the M18 road. The river converges with the River Fergus c. 3.0Km farther to the SW and this river ultimately discharges into the Shannon Estuary at the Lower River Shannon Special Area of Conservation (SAC) located >7.0Km downstream of the site.

Note: The perimeter of the Lower River Shannon SAC extends upstream along the River Fergus towards Ennis and approx. 2.1 km southwest of the site. Therefore, the proposed development has direct connectivity to the Lower River Shannon SAC via the Ballymacahill River feature to the west.

Drainage within the site boundary comprises Toureen Lough, a number of ponds, swallow holes and spring discharges, the latter as streams to the main watercourse, Ballymacahill River. Local drainage at the proposed development site is typical of a karst environment.

Spring discharges have been identified mainly to the west of the site and include a spring to the immediate east of Toureen Lough discharging to this feature, and a spring to the NW of the lough which may potentially receive groundwater from a swallow hole located farther east and south of the R352 road (this water is discharged from the Ardnamurry Lough wetlands located adjacent to the eastern site boundary line -refer to Figure 1 below). It is likely, under increased local water levels [head] at the lake, that Toureen Lough ultimately discharges into the Ballymacahill River under gradient flow. Local drainage would also typically follow the topographical decline in gradient recorded from east to west/southwest.

The buffer zones on Figure 2 (green transparent hatch) were delineated following assessment undertaken as part of the area assessment within the Clare County Development Plan 2017 – 2023 (Variation No. 1). Further assessment will be undertaken by the project ecologist to protect ecology during construction and operation of the proposed development.

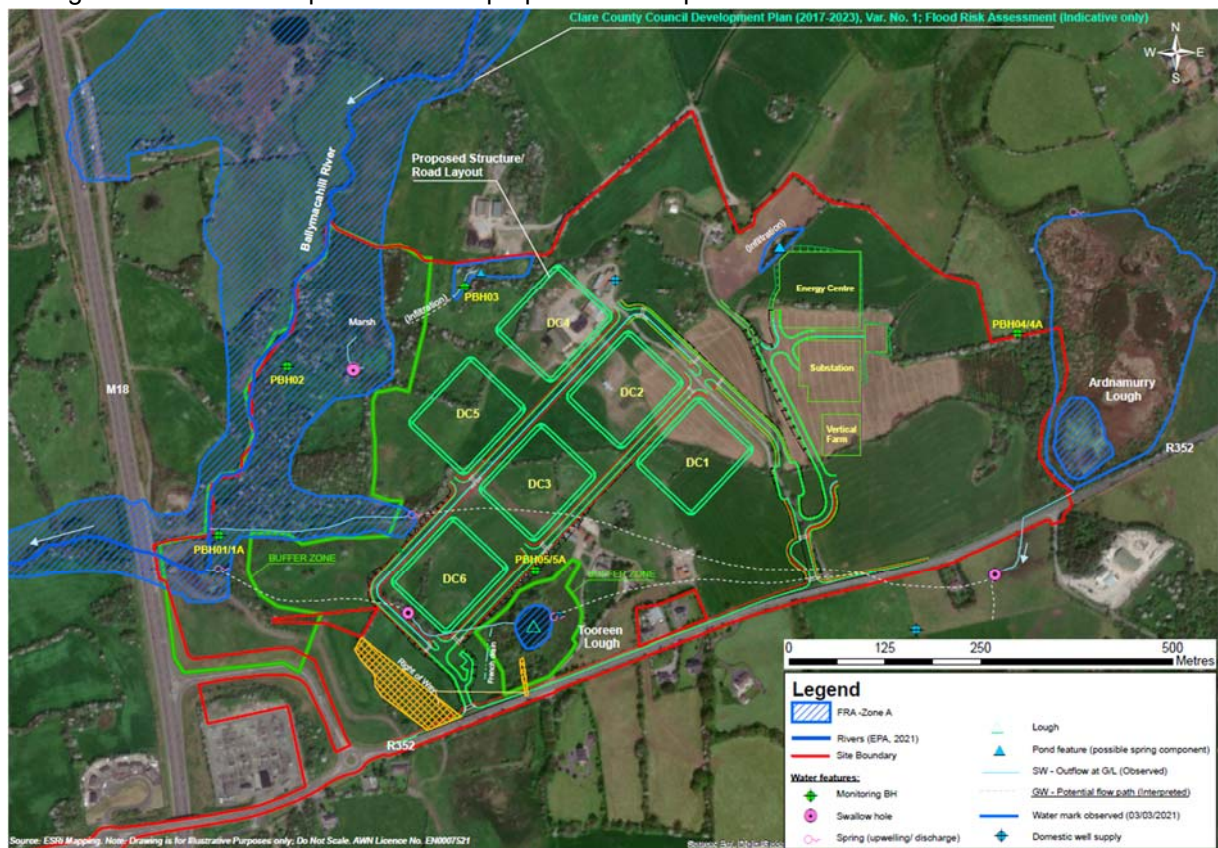


Figure 1 - Local Drainage

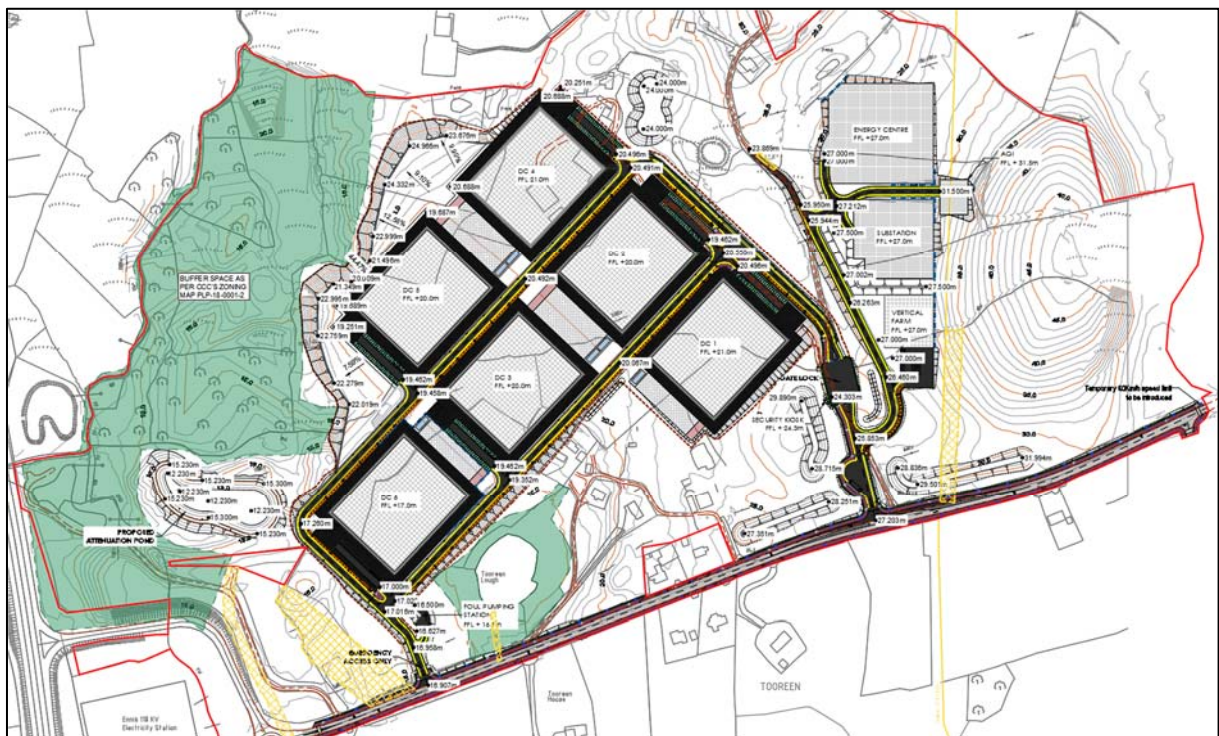


Figure 2 -Proposed layout. Green Transparent Hatch shows the Buffer Zones as per Clare Co. Co. Zoning Map LPL-18-0001-2.

4 Relevant Legislation

It is proposed that all surface water control measures relating to the proposed development will be constructed using best practice and in conformance with the requirements of the relevant regulatory authorities.

The key legislation which will be adhered to are defined as follows:

- Water Framework Directive (2000/60/EC);
- Local Government (Water Pollution) Act, 1977–1990;
- Water Quality (Dangerous Substances) Regulations, 2000;
- Arterial Drainage Act, 1945;
- S.I. No. 41 of 1999 Protection of Groundwater Regulations, resulting from EU Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive);
- S.I. No. 272 of 2009 and amendments (2015 and 2019) European Communities Environmental Objectives (Surface Waters) Regulations;
- S.I. No. 9 of 2010 and amendment 2016) European Communities Environmental Objectives (Groundwater) Regulations;
- Wildlife Act, 1976 (as amended 2000). National Parks and Wildlife Service;
- Flora Protection Order, 1999. National Parks and Wildlife Service;
- Fisheries (Consolidation) Act, 1959 (as amended 1999). Regional Fisheries Boards;
- EU Birds Directive (79/409/EEC) National Parks and Wildlife Service;
- EU Habitats Directive (92/43/EEC) National Parks and Wildlife Service;
- EU Freshwater Fish Directive (78/659/EEC) Local Authority;
- EU Surface Water Directive (75/440/EEC) EPA;
- European Communities (Water Policy) Regulations, 2003 Environmental Protection Agency and Local Authorities;
- Local Government (Water Pollution) Acts, 1977 and 1990;

- Local Government (Planning and Development) Act 2000.

The key drainage and water quality guidance documentation relevant to this site are defined set out as follows:

- Guidelines on protection of fisheries during construction works in and adjacent to waters Inland Fisheries Ireland (2016);
- Dublin City Council (2005) Greater Dublin Strategic Drainage Study (GDSDS): Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- Transport Infrastructure Ireland's Guidelines for the crossing of watercourses during the construction of national road schemes (TII, 2008).
- Construction Industry Research and Information Association (CIRIA):
 - CIRIA Report C502 Environmental Good Practice on Site;
 - CIRIA Report C532 Control of Water Pollution from Construction Sites;
 - CIRIA Report C648 Control of Pollution from Linear Construction Project; Technical Guidance;
 - CIRIA Handbook C650 Environmental good practice on site;
 - CIRIA Handbook C651 Environmental good practice on site checklist;
 - CIRIA Report C609 - SUDS – hydraulic, structural & water quality advice; and,
 - CIRIA Report C697 – The SUDS Manual

5 Proposed Surface Water Management Plan

5.1 Surface Water Management

- Best practice must be implemented at all times in relation to any activities that may impact on surface water (Ballymacahill River) or riparian habitats (i.e. habitats along the banks of the river), existing ponds on the site (including Toureen Lough) and known subterranean shallow karst conduits.
- The guidelines document “Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites” (www.fishingireland.net/environment/constructionanddevelopment.htm) must be consulted and adhered to if applicable when planning to undertake works.
- The first phase of the work will be the construction of the attenuation pond, Wastewater Pumping Station and 24 hour storage tank, the access road and main drainage system. All clean surface water from the data storage building site must continue to be routed through the site grit and oil interceptors and the attenuation pond which discharges to the Ballymacahill River. Local silt traps/siltbusters must be used to avoid clogging of the attenuation pond.
- Silt fences/similiar should be used around each of the ponds , spring rises and swallow holes and the designated ecological buffer zones to avoid any runoff of silty water to these features.
- No process wastewater or concrete wash-waters is permitted to go to the surface water drainage system or site attenuation pond.
- The contractor shall ensure that the monitoring requirements set out in the Surface Water Management Plan are adhered to.
- Monitoring during the Construction Phase of the development must consist of the following:
 - Normal quality control inspection of the works
 - Inspections of the surface water drains following completion of stages of the construction to ensure that the required construction standards are being maintained.
 - Pollutants which accumulate within the oil interceptors on site under the control of the contractors must be regularly monitored and removed, as necessary.
 - Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.
- The discharge from the treatment system must be tested and the specification is to achieve a pH of between 6.5 and 8.5 and a suspended solids content of <35mg/l. If coagulants and/or flocculants are to be used as part of the treatment system, then they must be non-ecotoxic, have no associated environmental impacts and be suitable for use in water treatment and must be approved by the Art Data Centre Contact before use.
- The generation of “silty” water from the construction site must be minimised. During excavations, Contractors must use interceptor drains/temporary berms to divert any potential surface water away from open excavations. Excavations must include a sump to enable capture of the surface water which must be pumped for treatment to remove the silt.
- The contractor must install, operate and maintain a system such that “silty” water can be treated in accordance with the requirements of the Surface Water Management Plan (SWMP) before it can be discharged to the attenuation pond.

5.2 Spoil Management

- The contractor must keep stockpiles of spoil to a minimum and remove spoil off-site as soon as possible unless it is required for re-use on site. The material must be stored away from any open water and covered by tarpaulin where practical. Such stockpiles must be surrounded by “adsorbent socks” or similar to minimise surface water run-off.
- Stockpiles must be kept below a height of 2 metres and at least 10 metres away from surface water drains, wetlands, springs and swallow holes and 50 metres away from the Ballymacahill River and ecological buffers delineated on the site.
- The contractors must submit and adhere to a method statement indicating the extent of areas likely to be affected by their work and demonstrating that this is the minimum disturbance necessary to achieve the required works. Where works are required beside or to water features, a method statement will be provided outlining appropriate mitigation measures.
- Where concrete removal and soil stripping occurs, the contractor must ensure that the resulting excavated material is separated into concrete, topsoil, and subsoil stockpiles.
- During demolition of farm yards, or where there is evidence of potential contamination, soil should be sampled and disposed of appropriately by a licenced contractor to a licenced waste facility.

5.3 Fuel Oil /Chemical Management

Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) within the designated contractor’s compound to prevent any seepage of potential pollutants into the local surface water network. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks.

All oils and bulk fuel will be stored within the contractors compound. These will be fully bunded and located on hard stand. Fuelling areas will also be located on hardstand and Stormwater run-off from these areas will be to an oil interceptor.

All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters.

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas within the contractor’s compound. Oil and fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

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

In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Emergency response procedures will be prepared. All personnel working on the site will be suitably trained in the implementation of the procedures, and upskilled where necessary.

5.4 Raw/Uncured Concrete and Concrete Washwater

Where feasible, all ready-mixed concrete will be brought to site by truck.

- A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite and no washing of concrete from vehicles will be done on site.
- The pouring of concrete must take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Alternatively, if bedrock is reached, any fissures identified must be grouted.
- There are several options for the management of raw or uncured concrete and concrete washwater, subject to approval by CCC :-
- The contractor shall arrange for the concrete to be mixed off-site and imported to the site. Wash down and washout of concrete transporting vehicles is to take place off site, or if it takes place on-site then the washwater is to be sent off-site to an appropriate treatment facility with relevant waste records being provided to the Art Data Centre Contact. Raw or uncured waste concrete shall be disposed of by removal from the site.
- The contractor installs a suitable collection system (i.e. lined and impermeable) for concrete washwater which allows the concrete to harden. Water from this collection system may not be discharged to the surface water or ground. Discharges to foul sewer system are subject to approval by the Art Data Centre Contact and Clare County Council. Alternatively, the water must be sent off-site to an appropriate treatment facility with relevant waste records being provided to the Art Data Centre Contact.
- If a batching plant is to be installed on site, then measures are put in place to collect concrete washwater and measures agreed with the Art Data Centre Contact for the management of this wastewater.

5.5 Accidental Spills

A robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced, and implemented for the duration of the works. Emergency procedures/ precautions and spillage kits will be available and construction staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages.

5.6 Wastewater Management

- Welfare facilities (canteens, toilets etc.) will be available within the construction compound and these will remain in place for the construction phase of the proposed development. The offices and site requirements will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks All welfare systems will be fully sealed and temporary in terms of usage.
- All wastewater from the construction site must be discharged at a separate point to that of the operational sites point unless otherwise advised by the Art Data Centre Contact.
- In the case of pipe flushing, the Art Data Centre Contact must be contacted prior to commencement to ensure that sewer loadings are not exceeded in conjunction with existing process discharges and that there is no impact to current environmental licence and/or agreements with Clare County Council. This request for approval will need to be presented to and agreed by the Environmental Excursions Prevention Team (EEPT).
- Solvent material, paints, oil, petroleum products etc. will NOT be allowed to be discharged to the foul sewer under any conditions.

5.7 Protection of Hydrological/Hydrogeological Features

This section describes the specific mitigation measures implemented during construction for the protection of the existing identified surface water features and maintaining the existing surface water drainage system.

Tooreen Lough

There will be no construction works carried out within Tooreen Lough. There will be no oil or subsoil storage in the vicinity of this feature. An ecological buffer of at least 10 metres applies to this feature.

It is proposed that that overland stream discharging from Tooreen Lough will be culverted. This will ensure continued conveyance of existing flows without any upgradient or downgradient impacts on flow or water quality. The culvert will be adequately sized for current and future flow conditions.

Ardnamurry Lough

There are no construction activities planned for this area and this feature is located upgradient along the eastern boundary of the proposed development. Therefore, no mitigation measures are needed for this feature.

Swallow Hole (Receiving water from Tooreen Lough) located south of DC6

Prior to commencement of construction works, the discharge stream from Tooreen Lough and swallow hole will be clearly delineated and marked. The swallow hole will be surrounded by a concrete ring with chamber and accessed by a manhole cover to avoid blockage during works on the site. This swallow hole will be monitored daily to ensure it is free flowing. i.e. ensuring no change to the existing flow regime there.

Main Spring located north of DC6

Prior to commencement of construction works, the spring and areas around this feature will be clearly delineated and marked. There are no proposed construction works within this spring area and a buffer zone of at least 10 metres will be implemented to ensure that the integrity of the spring is protected. Therefore, maintaining the flow and water quality of this spring. Daily to weekly monitoring of the spring in terms of flow and water quality will be recorded during construction phase works.

Furthermore, provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems like this feature and hence protecting the integrity of this feature.

Pond located North of the Energy Centre

There are no construction activities proposed within this feature. It is proposed that the Energy Centre will be built up by infill material and a retaining wall will be built to protect the pond feature. An existing [field dividing] wall is in place and will be protected throughout the construction phase works.

As previously discussed, there will be no stockpiling of subsoil/ rock matrix by this feature as well as no fuel storage - fuel will be adequately stored in effective bunds located within the contractor compound. Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems such as this feature and hence protecting the integrity of this attribute.

Ponds located North of the DC4

There are no construction phase activities proposed within these two (2) no. features, however the proposed Data Centre building DC4 is located in close proximity. It is proposed that the DC4 structure will be 'built up' using engineered infill material.

As previously discussed, there will be no stockpiling of subsoil/ rock matrix by this feature as well as fuel storage -fuel will be adequately stored in effective bunds located within the contractor compound. Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems like this feature and hence protecting the integrity of this attribute.

Karst Features - potential conduits/ flow paths

In areas where potential karst conduits are interpreted i.e. at proposed structures DC3 and DC6, additional geophysical surveying and a sufficient number of exploratory boreholes will be undertaken to further delineate areas of inferred conduit/ below ground flows as indicated in **Figure 1**. These building foundations will be piled, and the design of the piling methodology including pile depths/ spacing (m) designed to allow bridging of the existing [identified as potential] karst conduits i.e. ensuring no change to the existing groundwater flow regime across the site.

5.8 Surface Water Construction Phasing Plan

The surface water & pollution management has developed an envisaged construction phasing of the proposed surface water network in line with the proposed overall construction phasing of the development as set out on the masterplan phasing drawing ART-ARC-SP-00-DR-A-0003.

The proposed surface water network has been divided into five phases, where the three first phases coincide with the phases for the overall development. The full surface water phasing plan drawings is presented on Appendix A and also displayed on figure 3 below.

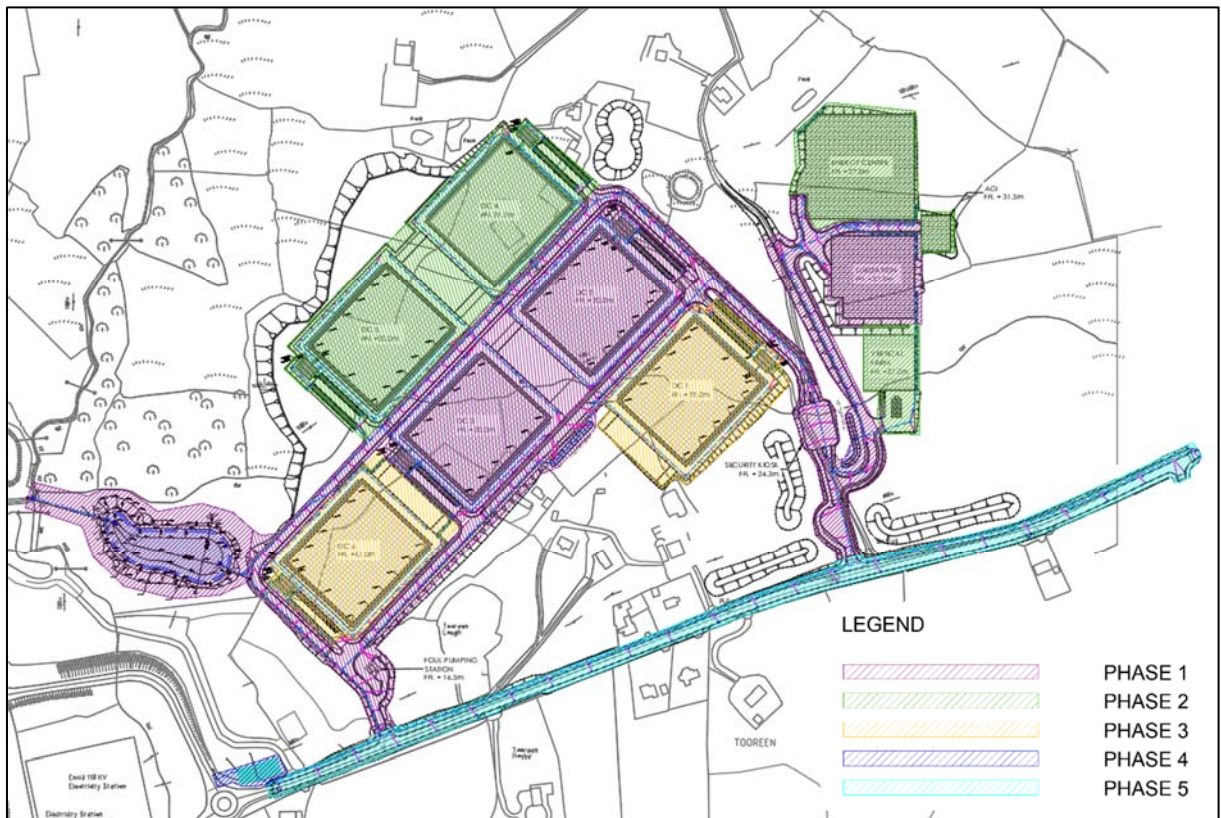


Figure 3 - Proposed Surface Water Phasing Plan

Aligned with the overall phasing of the development, the proposed surface water phasing plan indicates that the primary infrastructure is the first element of construction to be initiated – Phase 1 on the surface

water phasing plan where the proposed attenuation pond is to be the first element to be finished within Phase 1.

Subsequently, once all the main surface water arms/lines have been constructed, the next phases can take place and tie in, where required, with the already constructed surface water main infrastructure.

The proposed surface water network on Tulla Road is divided into two main phases – Phase 4 and Phase 5. Phase 4 involves the construction of the attenuation system and Phase 5 involves the construction of the single surface water line, the proposed road gullies and its respective connections.

6 Monitoring

6.1 Requirements

Scheduled monitoring of environmental performance and compliance with planning consents and legislation and regulations will be required throughout the construction phase of the Project. This will enable the overall effectiveness of the environmental controls to be determined and allows areas of non-compliance to be identified so corrective actions can be taken. Environmental monitoring will take place prior to construction to assess the baseline, during construction to assess the impact of the construction on the environment and after construction to assess the impact of the completed Project. Environmental monitoring will be required at various stages of construction for each environmental aspect as developed in specific environmental sub-plans and the Project. The overall monitoring schedule, including environmental aspects, frequency and monitoring requirements will be developed by the appointed Contractor and approved by CCC. The monitoring schedule will be a working document and will be amended and updated to reflect works being undertaken and receiving water conditions and management review changes.

- The overall monitoring schedule, including environmental aspects, frequency and monitoring requirements will be finalised by the appointed Contractor and approved by the Relevant Authority prior to works commencing on site.
- A daily visual inspection should be undertaken and recorded in the inspection checklist provided in Section 8.
- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or any other items, and that all soil storage is located at least 10 metres from the nearest surface water receptors. A regular log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not re-occur.
- Daily inspection of surface water run-off from the attenuation pond and sediment controls e.g. silt traps will be carried during the construction phase. Continuous monitoring system for pH, temperature, electrical conductivity and total organic carbon to be installed at the outlet to ensure water quality discharging from site is of good quality and meets the respective S.I. threshold values.
- Regular inspection of construction mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.
- Regular monitoring of the surface water drainage features and swallow holes to ensure all are free flowing.
- Regular monitoring of the silt traps/ trenches/ fences around established buffer zones to ensure on-going protection of all surface water attributes.
checklist

The checklist below should be used to carry out the daily visual inspection recommended above.

Inspection Checklist
Name of Supervisor:

Construction Project:Location			Contractor:	
Date of Inspection:		Time Start: Finish:		
Weather Conditions :				
Description of current phase of construction:				
Construction Element	Maintenance Required			Comments on the effectiveness of sediment control measure
	Yes	No	N/A	
Discharge drain clear?				
Monitoring being undertaken				
Silt pond/ silt fences in good condition				
Integrity of soil heaps				
Gully protection in place				
Mobile Treatment Tanks:				
De-sludging required?				
Other:				
Additional Comments:				
Inspector			Supervisor	
Signed			Signed	
Date			Date	

7 Training

Training will include at minimum:

- Induction training including environmental requirements for all operatives and subcontractors;
- More detailed training for staff or subcontractors with specific responsibilities e.g. Waste Rep;
- Toolbox talks, depending on the type of works being undertaken and the environmental impacts that may result from these activities e.g. training on water pollution prevention before works near watercourses. Training to be given will include:
 - Protected species/habitats
 - Environmental incidents
 - Invasive plants
 - Water pollution prevention
 - Waste management
 - Spill control & spill kits
 - Dust and Air Quality
 - Storage and use of petrol diesel and oils

Project Number: 20_110

Project: Art Data Centre

Title: Surface Water and Pollution Management Plan

APPENDIX A

ART DATA CENTRES



LEGEND

- ▨ PHASE 1
- ▨ PHASE 2
- ▨ PHASE 3
- ▨ PHASE 4
- ▨ PHASE 5



Rev	Description	PS	RG	Drawn	Checked	Date
P01	FOR INFORMATION					22/06/21

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Client		ART DATA CENTRES	
Project		ART DATA CENTRE ENNIS CAMPUS	
Dwg. Title		PROPOSED SURFACE WATER PHASING PLAN	
Drawn By	OS	Date	JUNE 2021
Checked By	RG	Scale	1:2000 @ A1
Project Code	Originator	Zone/Phase	Level Type Role
ART - CSE - ZZ - XX - DR - C - 1120			
Status Code	FOR INFORMATION		
P01	PRELIMINARY		

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