Our Ref SEP-0398/ESS/WF/Ltr01_20260130_v1
Date: 30 January 2026

Ms Sinead White
Executive Officer
An Coimisiún Pleanála
64 Marlborough Street
Dublin 1
D01 V902

AN COIMISIÚN PLEANÁLA
LDG- _____
ACP- _____
04 FEB 2026
Fee: € _____ Type: _____
Time: 16:15 By: Hand

Dear Sinead,

Re. Further Information (FI) Request– Case Number ABP-320916-24

We act on behalf of Coolpowra Flex Gen Limited, the applicant in the subject case. Any correspondence in respect of this appeal should be sent to the offices of Halston Environmental & Planning Limited.

PREAMBLE

Coolpowra Flexgen Limited submitted a planning application to Galway County Council (GCC) on 08 July 2024 for a proposed grid connected long duration energy storage facility at Coolpowra, Cooldorragha, Ballynaheskeragh, Gortlusky and Sheeaunrush, County Galway. GCC refused planning permission for the development proposal on the 30 August 2024. The applicant subsequently lodged an appeal to An Coimisiún Pleanála on 26 September 2024.

Under Section 132 of the Planning and Development Act 2000, as amended, An Coimisiún Pleanála requested the applicant to furnish further information (FI) in relation to the proposed development on 09 January 2026. The following presents the response to each FI item request. Supporting documents and drawings are provided in Attachments A-D of this letter. In addition (i) An EIAR Addendum Report, (ii) a Report for the purposes of Appropriate Assessment Screening and (iii) a Natura Impact Assessment (NIS) Report are provided in response to the FI request.

Yours sincerely,

Mr Colm Staunton
Director
Halston Environmental & Planning Limited

FI Item 1

In relation to the submitted Environmental Impact Assessment-

a. There are concerns regarding compliance with Article 94 and Schedule 6 of the Planning and Development Regulations 2001, as amended (PDR's). You are requested to address the following-

i. Provide a clear 'description of the likely significant effects on the environment of the proposed development' for each environmental factor in addition to the consideration of cumulative impacts from the other proposed development on this site.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR (July 2024) and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. A clear description of the likely significant effects on the environment of the proposed development' for each environmental factor in addition to the consideration of cumulative impacts from the other proposed development on this site is presented within.

ii. Provide a clear 'description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development'. It is suggested the EIAR is revised to include a separate chapter or schedule of all mitigation measures proposed for offsetting likely significant adverse effects, as identified, for each environmental factor.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. A clear *'description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development'* is presented within. The EIAR Addendum includes a separate chapter (Chapter 18) presenting schedule of all mitigation measures

proposed for offsetting likely significant adverse effects, as identified, for each environmental factor.

iii. Provide a more considered and comprehensive description of the 'reasonable alternatives' studied with particular emphasis on 'alternative locations' notwithstanding the information already set out in section 3.2.2 of the EIAR.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. Chapter 3 of the EIAR Addendum provides a more considered and comprehensive description of the *'reasonable alternatives'* studied with particular emphasis on *'alternative locations'*.

iv. Schedule 6 requires relevant aspects of the current state of the environment baseline scenario) .... to be provided within the EIAR. Sections 7.8 and 8.8 of the EIAR refers to a baseline site report that will be required as part of separate licensing arrangements for Project 1. You are requested to revise the EIAR to provide a comprehensive consideration of the baseline environment which complies with Schedule 6.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. Additional information is provided within the EIAR Addendum, including findings of a ground investigation, to further describe and provide a comprehensive consideration of the baseline environment. Baseline and assessment findings of the Soils & Geology (Chapter 7) and Water Environment (Chapter 8) Chapter contained in the July 2024 remain valid except where updated in this EIAR addendum chapter.

v. Schedule 6 requires a 'description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it'. Having regard to the nature and

extent of all development proposed within the site boundary i.e. Projects 1, 2 and 3 you are requested to update the EIAR to provide a comprehensive consideration of this requirement e.g. risk of explosions at the proposed gas generator and/or fire at the proposed BESS etc.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. Chapter 17 provides a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and /or disasters which are relevant to it. In accordance with the Health and Safety Authority (HSA) requirements, a Technical Land Use Plan (TLUP) Assessment has been carried out for the development and is included as Appendix 17.2 to this EIAR Addendum. The TLUP is prepared in accordance with HSA guidance[1] and interprets the HSA policy on the technical land-use planning (TLUP) advice requirements of the Seveso-III Directive (Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC), as implemented by the Chemicals Act (Control of Major Accidents Involving Dangerous Substances) Regulations 2015. A Fire Risk Assessment and Emergency Response Plan is also provided at Appendix 17.3 of the EIAR Addendum for the BESS facility,.

vi. Schedule 6 requires 'estimates, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases' etc. Please clarify the extent of topsoil stripping likely required and if sufficient quantities will be available for submitted landscaping proposals as required. If not, clarify the necessary requirements and demonstrate how they are to be supplied and accounted for within chapter 13 and elsewhere within the EIAR.

[1] HSA, Guidance on Technical Land Use Planning, 2023

RESPONSE

A comprehensive ground investigation was carried out within the proposed development as amended lands between August and October 2024 (see attached in Appendix 7.1 of the EIAR Addendum). Section 7.3.3 of the EIAR Addendum provides an Earthworks Assessment, i.e. an estimation of earthworks to quantify the volumes of cut and fill required to achieve the proposed finished ground levels across the site.

The results of the preliminary volumetric analysis indicate a combined unfactored cut volume of approximately 69,700m^3 across the development site. The total volume of earthworks associated with forming the landscaped berms, which have a combined footprint with an approximate plan area of 32,000m^2 is estimated to be in the order of 80,000m^3. These estimates have been developed based on the available topographical survey data, interpreted ground conditions, and the functional and operational requirements of the proposed infrastructure and associated ancillary equipment. The current assessment indicates that the majority of berm fill demand can be met from site-cut material. The earthworks balance demonstrates that there will be no requirement for off-site disposal, thereby avoiding off-site disposal movements, and that sufficient quantities of material will be available to facilitate the submitted landscaping proposals, including berm formation.

The berm geometry and associated volumes will be refined at detailed design stage following completion of detailed topographical modelling and confirmation of final slope profiles and crest configurations. Topsoil stripping will be undertaken in accordance with good practice across the relevant formation and landscaping areas. Stripped topsoil will be segregated, stockpiled and reused for berm and landscape reinstatement.

b. In relation to Schedule 5 of the PDR's and development for the purposes of EIA please address the following-

i. Clarify the functional and operational dependence of the proposed development with the other applications within this site i.e. is it intended the proposed LDES and Synchronous Condenser could/would operate independently from projects 1 and 3 or must it operate with project 1, 3 and/or both?

RESPONSE

The proposed 400kV GIS substation (Project 3) is designed as transmission infrastructure (to transfer and to be owned by the ESB in its role as Transmission Asset Owner (TAO) post-commissioning). The proposed GIS is the grid interface required to connect and operate the adjoining energy projects, a proposed reserve gas-fired generator (RGFG) and energy storage system (ESS), along with any other potential future renewable energy projects in the wider area of the development lands. In functional terms, it is the electrical "gateway" between the national transmission system and the generation /storage /renewable projects.

The proposed ESS (Project 2) and RGFG (Project 1) are operationally dependent on the GIS substation because, without an energised and commissioned transmission interface:

- they cannot lawfully or technically export or import power to the grid as applicable.
- they cannot reliably meet connection requirements around protection, fault clearance, system security, dispatchability, etc.
- they cannot deliver their intended system services (capacity, flexibility, ancillary services) to the transmission system.

The three proposed projects were determined by the planning authorities, to which the applications were lodged (the Commission and GCC), as being distinct in the context of applying for, and obtaining, valid planning consents under the Planning and Development Act 2000, as amended, relating to the making of an application and obtaining valid planning consents. The EIAR, which was lodged with each planning application, describes all of the key elements of the construction and operation of the three projects and provides a comprehensive assessment of the likely significant effects of those elements on the environment, along with their combined and cumulative effects.

This is consistent with EIA practice. The 2022 EPA EIAR Guidelines explicitly note that where a development "serves no function" without its connection to the national grid, the connection is "fundamental to the entire project" and the combined/cumulative effects must be assessed.

A GIS transmission substation is, by design, capable of operating as a stand-alone transmission asset. It can be constructed, energised, and operated for switching, network configuration, protection and operational flexibility. even if one or more planned connection bays remain unused. In purely technical terms, therefore, the substation could operate independently of the adjoining energy projects, similar to how the existing Oldstreet AIS substation operates. However, the proposed GIS is not a free-standing network reinforcement project. The purpose of the GIS is to provide connection capability

and capacity for the adjoining generation /storage projects and future connections at the same node. The delivery programme will be aligned with connected projects and grid requirements, and unused bays will remain unfulfilled until needed.

However, in the absence of committed connected plant, it would be expected that the timing and justification for construction /energisation would be reviewed, as the principal need case and utilisation of the asset arise from the associated connections.

ii. ***Having regard to Schedule 5, Part 2, Class 10 (dd) clarify if the proposed internal roads (permanent and temporary) are private roads in respect of the proposed construction, detail the total length of same and revise the EIAR accordingly if required.***

RESPONSE

The proposed internal roads (permanent and temporary which run from the public roads to the gate of each project compound) exceed the 2,000m threshold as set out under Class 10(dd). The relevant length is c.2,200m which is taken as the aggregate centreline length of the private road elements proposed. Additional private roads within each of the three project compounds total c.1,185m. This includes any spurs/branches and internal sections that form part of the overall development (temporary and permanent).

iii. ***The EU's publication 'Interpretation of definitions of project categories of annex I and II of the EIA Directive 2024', details there are types of activity that display the characteristics of more than one project category listed in the EIA Directive. Consider the proposal against the provisions of the following classes-***

1. ***Class 10(a) Industrial estate development projects, where the area would exceed 15 hectares***

2. ***Class 10 (b) (iv) Urban development which would involve an area greater than 20 hectares***

and justify conclusions on same.

RESPONSE

Environmental Impact Assessment ("EIA") in Ireland is provided for under Part X of the Planning and Development Act 2000 (as amended) ("the Act"), which gives effect to the

Environmental Impact Assessment Directive within the planning consent system. In accordance with Section 172(1) of the Act, the competent authority (the planning authority or An Coimisiún Pleanála, as the case may be) is required to carry out an EIA in respect of an application for consent where the proposed development is of a class specified in Schedule 5 of the Planning and Development Regulations 2001 (as amended) ("the Regulations") and either (i) equals or exceeds a relevant threshold (or no threshold is specified) or (ii) where sub-threshold development is determined to be likely to have significant effects on the environment.

The classes of development relevant to EIA are prescribed in Schedule 5 of the Regulations. Development listed in Part 1 of Schedule 5 that meets or exceeds the applicable threshold is subject to mandatory EIA. Development listed in Part 2 of Schedule 5 that is below the applicable threshold is subject to EIA screening, with the likelihood of significant effects assessed having regard to the criteria set out in Schedule 7 (and, where applicable, the screening information requirements in Schedule 7A).

The Proposed Development (as amended) includes a Reserve Gas-Fired Generator with a heat output of 300 MW or more and therefore falls within Part 1, paragraph 2(a) of Schedule 5 of the Regulations, i.e. *"a thermal power station or other combustion installation with a heat output of 300 megawatts or more"*. Accordingly, EIA is mandatory and an EIAR is required to accompany the application(s) for consent.

For completeness, and having regard to the nature, scale and land take of the Proposed Development (as amended), the overall project also may be characterised by reference to one or more of the Part 2, Schedule 5 *"Infrastructure Projects"* classes, in particular:

- Part 2, paragraph 10(a): *Industrial estate development projects, where the area would exceed 15 hectares*; and/or
- Part 2, paragraph 10(b)(iv): *Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.*
- *Part 2, paragraph 10 (dd): All private roads which would exceed 2000 metres in length.*

The Proposed Development (as amended) is located on a rural greenfield site with a red-line application boundary of approximately 46 hectares (i.e. "elsewhere" for the purposes of paragraph 10(b)(iv)), and therefore exceeds the 20-hectare area band referenced in Part 2, paragraph 10(b)(iv). The Proposed Development (as amended) also includes

private access and internal road /track infrastructure required to facilitate construction and operation of the development. The proposed private roads serving the compounds of each project exceed the 2,000m threshold as set out under Class 10(dd). A total length of approximately 2,200m is proposed calculated using the aggregate centreline length of the private road elements proposed. Including private roads within each of the project compounds (temporary and permanent), a further 1,185m of private road is proposed which includes spurs /branches and internal sections that form part of the overall development.

Identification of these additional Part 2 categories does not affect the requirement for EIA in this case (which is already triggered by Part 1, paragraph 2(a)) but assists in ensuring that the EIAR fully describes the Proposed Development (as amended) and addresses all relevant sources of potential environmental effects across the entire project.

A single EIAR has been prepared to assess the overall Proposed Development (as amended) comprising the interrelated components within the 46 hectare application boundary. This includes, but is not limited to, the Reserve Gas-Fired Generator, the Energy Storage System (ESS) facility, and the 400 kV GIS Substation, together with all integral ancillary works necessary to construct, operate and (where relevant) decommission the development. This approach ensures that the likely significant effects of the overall project are identified and assessed comprehensively, including effects arising from each component on a standalone basis and from interactions between components, as well as cumulative /in-combination effects where relevant.

This EIAR accompanies each of the three planning applications and is structured such that the potential environmental impacts and effects arising from each component are assessed both individually and in combination with the other components of the Proposed Development (as amended).

c. In relation to Chapter 6 of the EIAR- Biodiversity, please address the following-

i. In relation to section 1. 7 and 6.2.2 of the submitted EIAR provide clarity on who conducted the walkover survey for the purposes of Flora and Fauna. Clarify what other mammals if any were considered for the survey other than those detailed.

RESPONSE

The walkover survey for the purposes of Flora and Fauna was undertaken by Ger O'Donohoe B.Sc. Principal Ecologist; who studied Habitats, Aquatic Ecology, Non-volant Mammals in respect of the subject development. Further details are provided in Section 1.7.1.1 of the July 2024 EIAR. Ciaran Bruton B.Sc. M.Sc. Senior Ecologist; also assisted on the Flora and Fauna assessment covering Habitats, Rare Flora and Non-volant Mammals.

ii. ***It is noted the person who prepared the submitted Bird Survey is not detailed within section 1.7 of the EIAR. Please address.***

RESPONSE

As per Section 1.7.1.1 of the July 2024 EIAR, John Curtin, B.Sc. Principal Ecologist with Eire Ecology carried out the Bird Surveys. He was supported by colleagues as listed in Section 1.7.1.1 of the July 2024.

iii. ***Justify the findings of the submitted Winter bird surveys and the risk of the proposed development having regard to the fact that such surveys did not commence in October as detailed.***

RESPONSE

Bird surveys were completed, covering late winter/early spring and the full core breeding season. This level of effort is proportionate to the nature of the proposed development and the habitats present.

The site comprises improved grassland with hedgerows /treelines, supporting typical common farmland species. It does not contain habitats likely to support significant concentrations of wintering waterbirds, nor does it function as supporting habitat for the nearest SPA, which lies 5.84 km away. Surveys conducted on site were adequate to rule out the presence of large congregations of ex-situ populations of birds associated with either the Middle Shannon Callows SPA or the Lough Derg SPA. These surveys adequately proved there is no realistic pathway for significant effects on SPA bird features.

CIEEM guidance emphasises proportionality, requiring survey effort to reflect the risk pathways and sensitivity of receptors, rather than adherence to fixed seasonal windows. In this case, the key receptors are common passerines, which were fully captured within the January–May survey period.

NatureScot's bird survey guidance for onshore wind farms is acknowledged but is not directly applicable. Its winter survey requirements relate to collision and displacement risks from turbines, which do not arise in this instance.

Given:

- the low-risk development type,
- the absence of sensitive wintering bird habitat,
- the distance from designated sites, and
- the winter coverage already achieved,

the additional surveys would not be expected to change the assessment or mitigation. The survey effort is therefore considered adequate and proportionate for EcIA (including Biodiversity assessment prepared in support of an EIAR) and planning purposes.

d. In relation to subsoil, geology, hydrology and hydrogeology and consideration of the baseline environment, please address the following-

i. Notwithstanding Article 23(6) of the PDR's, the scale of the foundations and the structural requirements for the proposed development as set out in Section 2.5.1.2 of the submitted EIAR are considered insufficient for developments of the size and scale proposed. Provide further clarity on same.

RESPONSE

Additional information is provided in Section 2.1 of the EIAR Addendum to clarify the structural requirements for the proposed development (supporting Section 2.5.1.2 of the July 2024 EIAR).

ii. There are concerns regarding the extent of subsurface works required (including cumulative) and potential for unidentified environmental impacts from same.

1. Please undertake comprehensive site investigations that adequately inform consideration of the baseline environment and understanding of existing subsoil, geology and hydrogeology e.g. the geological profile of the site, identification of bedrock, characteristics of the overlying soils and depth of water table etc.

RESPONSE

A comprehensive ground investigation was carried out within the proposed development as amended lands between August and October 2024 (see attached in Appendix 7.1 of the EIAR Addendum). Thirty-eight trial pits, ten soakaway pits and seven rotary boreholes were completed between 10 September and 02 October 2024. A geophysical survey consisted of EM ground conductivity, 2D Electrical Resistivity Tomography (ERT) and Seismic Refraction profiling was carried out over a number of sessions between the 12 August and the 23 of October 2024. Findings and information collated from this work has been incorporated into the EIAR Addendum (see Chapters 7 Soils and Geology and Chapter 8 Water Environment).

2. ***The information collected from the site investigation should then be used to inform the extent of the earthworks and the cut & fill involved in the construction stages and are key considerations to identify potential environmental impact on soils, geology and hydrogeology.***

RESPONSE

A comprehensive ground investigation was carried out within the proposed development as amended lands between August and October 2024 (see attached in Appendix 7.1 of the EIAR Addendum). Section 7.3.3 of the EIAR Addendum provides an Earthworks Assessment, i.e. an estimation of earthworks to quantify the volumes of cut and fill required to achieve the proposed finished ground levels across the site. The results of the preliminary volumetric analysis indicate a combined unfactored cut volume of approximately 69,700m^3 across the development site. The total volume of earthworks associated with forming the landscaped berms, which have a combined footprint with an approximate plan area of 32,000m^2 is estimated to be in the order of 80,000m^3. These estimates have been developed based on the available topographical survey data, interpreted ground conditions, and the functional and operational requirements of the proposed infrastructure and associated ancillary equipment. The current assessment indicates that berm material demand can be met from site cut /deposition. Topsoil stripping will be undertaken in accordance with good practice across the relevant formation and landscaping areas. Stripped topsoil will be segregated, stockpiled and reused for berm and landscape reinstatement. The berm geometry and associated volumes will be refined at detailed design stage following completion of detailed topographical modelling and confirmation of final slope profiles and crest configurations.

A Stage 2 FRA has been undertaken for the Proposed Development as Amended and is contained in Appendix 7.1 of the EIAR Addendum. The FRA confirmed that the application site is currently in Flood Zone C and will remain in Flood Zone C following proposed works (i.e. not at risk of flooding). The proposed works will not result in an increased flood risk within the site or downstream and the development can be constructed as proposed. Subject to the proposed works being carried out in accordance with the specifications presented, it is concluded that the proposed development will not have a negative impact, in terms of flood risk, on the local drainage network, on local private property, or to the surrounding environment and human health.

Section 7.3.4.1 of the submitted EIAR appear to relate to foul and storm drainage design only and is considered insufficient.

RESPONSE

A comprehensive ground investigation was carried out within the proposed development as amended lands between August and October 2024 (see attached in Appendix 7.1 of the EIAR Addendum). Findings and information collated from this work has been incorporated into the EIAR Addendum (see Chapters 7 Soils and Geology and Chapter 8 Water Environment). The entire site suitability assessment which was part of the engineering package lodged in support of the subject planning application is also submitted as part of this FI (Attachment A).

iii. In relation to the proposed realignment of the Treananearla stream, please address the following-

1. Submit a suitably scaled drawing clearly identifying and labelling all existing watercourses and drainage ditches running from outside and through the site to include direction of flow. Figures 6.3 and 8.3 of the submitted EIAR and submitted layout drawings are considered insufficient in this regard.

RESPONSE

Suitably scaled drawing provided in Attachment B clearly identifying and labelling all existing watercourses and drainage ditches running from outside and through the site to include direction of flow.

2. ***Submit a separate suitably scaled drawing clearly identifying the existing course of the Treananearla stream and the extent of the stream to be realigned including length of same.***

RESPONSE

Suitably scaled drawing provided in Attachment B clearly identifying the existing course of the Treananearla stream and the extent of the stream to be realigned including length of same.

3. ***Submit a detailed justification for the proposed realignment***

RESPONSE

The proposed realignment of on-site watercourses is required to facilitate delivery of the project design in a manner that is technically feasible, safe, operationally efficient, and compliant with environmental protection objectives. The primary driver for the realignment is the need to consolidate the proposed RGFG and associated IPP / AIS /GIS infrastructure in close proximity to the existing Oldstreet 400kV AIS node, to achieve an integrated layout that minimises electrical losses and cable runs, reduces the complexity of connections and interfaces, and ensures safe access, maintenance, and operational reliability consistent with applicable transmission system design standards and clearance requirements.

The proposed location and configuration of the new electrical infrastructure represent the most advantageous and practical arrangement from an electrical design and constructability perspective, for the following reasons:

- <u>System integration and safety</u>
  Co-location of the RGFG and AIS/GIS equipment adjacent to the existing 400kV AIS node minimises the number and length of high-voltage connections, interfaces, and crossing points, improving system reliability and reducing operational risk. The layout also supports required safety clearances, maintenance access, and emergency response arrangements.
- <u>Constructability and programme resilience</u>
  Installing and concentrating equipment in the preferred area avoids fragmented works across the site, reduces temporary construction interfaces, and improves sequencing, thereby reducing the duration and extent of ground disturbance and the potential for environmental incidents.

- Land-take efficiency and mitigation capacity

  The proposed positioning makes best use of available land within the site. It allows buffer space around watercourses and providing sufficient room for landscape and ecological mitigation, including riparian planting, reinstatement of banks, and long-term access for inspection and maintenance. The proposed layout provides the ability to provide meaningful landscape buffering.
- Operational practicality

  The preferred arrangement provides a coherent operational footprint and reduces the requirement for repeated access across sensitive areas during operation, supporting long-term environmental protection and asset management. It also allows each of the projects to securely sit within the development lands without creating interface conflict. The design and layout is set out to ensure that certain proposed infrastructural assets, such as the proposed 400kV GIS substation and AGI, will be transferred and operated by the relevant system operators (i.e. national network assets).

In accordance with the EIA Directive requirement to describe reasonable alternatives and provide reasons for the choice made, alternatives were considered at design stage. Examples of early iterations of development layouts are presented in Figures 3.1 to 3.3 of the EIAR (July 2024)

Options to reduce the extent of realignment were considered. However, localised crossing structures or culverting would introduce additional in-channel works, increase hydraulic and ecological constraints, and create long-term maintenance liabilities. In addition, such options would not fully resolve the fundamental requirement for a coherent consolidated equipment footprint adjacent to the existing AIS node.

The realignment of the Treananearla stream has been developed to ensure that the proposal is consistent with the EIA *"avoid-reduce-remedy"* hierarchy and with relevant water environment protection objectives. Key embedded measures include:

- Minimisation of footprint: realignment limited to the extent required to accommodate the consolidated infrastructure layout.
- Design for hydromorphological function: channel form and substrate designed to maintain conveyance and improve habitat potential where feasible.
- Buffers and riparian reinstatement: provision of set-back distances to facilitate riparian vegetation and landscape screening, and to protect the channel from operational effects.

- Construction controls: implementation of best practice pollution prevention, sediment control, and in-stream works management (including timing controls where relevant), with monitoring and contingency procedures

The proposed realignment is justified as a necessary enabling measure to deliver an operationally robust and safe electrical design by consolidating the RGFG and associated AIS/GIS infrastructure adjacent to the existing 400kV AIS node. Reasonable alternatives were considered and discounted on the basis that they would either prevent delivery of the required electrical configuration, increase land-take and construction disturbance, introduce additional watercourse crossings/culverting and long-term maintenance liabilities, or reduce the ability to provide meaningful buffers and landscape /ecological mitigation. The selected design therefore represents the most practical and environmentally responsible solution in EIA terms, with measures embedded to avoid and minimise effects on the water environment.

4. ***Provide evidence by way of aquatic survey or fisheries assessment including methodology and details of author to support conclusion that the Treananearla Stream has no fisheries value.***

RESPONSE

Watercourses were assessed for fisheries value primarily in the context of their potential to provide foraging habitat and prey resources for otter. Fisheries value determination is based on a broad appraisal /overview of the upstream and downstream habitat at each site to evaluate the likely contribution of the watercourse to salmonid and lamprey spawning and nursery function, and to its general suitability as fisheries habitat.

River habitat surveys and fisheries assessments were also carried out utilising elements of the approaches in the River Habitat Survey Methodology (Environment Agency, 2003) and Fishery Assessment Methodology (O'Grady, 2006) to broadly characterise the stream sites (i.e. channel profiles, substrata etc.).

References

- Environment Agency (2003) *River Habitat Survey in Britain and Ireland*. Field Survey Guidance Manual: 2003 Version (2022 Reprint)

- O'Grady, M.F. (2006). *Channels and challenges: enhancing Salmonid rivers*. Irish Fresh- water Fisheries Ecology and Management Series: Number 4. Central Fisheries Board, Dublin.

5. Proposed mitigation in Table 8.11 details the new channel will be dug in accordance with an agreed specification and best practice and the water will be rediverted. Please provide clarity on this specification to include a Method Statement and detailed drawings for the works proposed.

RESPONSE

See EIAR Addendum which provides a Method Statement in Section 8.5.1. This Method Statement was developed in conjunction with Flood Risk Assessment (FRA) works and is also contained within the accompanying FRA report.

6. You are advised to consult with the IFI regarding the works proposed including proposals for stream crossings and demonstrate evidence of such consultation in the response.

RESPONSE

All stream crossings will be carried out according to the IFI *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*[2]. All proper mitigation measures will be implemented to ensure that any works carried out have minimal impact upon water quality by adherence to the advice given in this document.

FI Item 2

A number of concerns have been raised by Galway County Council, Transport Infrastructure Ireland and the public in relation to proposed site access arrangements including works to the national and local road network. Having regard to these concerns, please clarify proposed site access arrangements proposed for construction and operation stages to include for all necessary consents as required from landowners. You are advised that if a new arrangement is proposed that provides for amendments to site boundaries it will be necessary to submit a revised EIAR. The Appropriate Assessment Screening

[2] Inland Fisheries Ireland (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (Report no. IFI/2016/1-4298). Available at Guidelines on protection of fisheries during construction works in and adjacent to waters | Inland Fisheries Ireland

Report and a Natura Impact Statement should also be reviewed in respect of same.

RESPONSE

An EIAR Addendum has been prepared in order to respond to the EIA related matters, update the EIAR and associated appendices (as appropriate) and to allow the Commission to complete a robust environmental impact assessment of the development. The EIAR Addendum includes assessment of (i) an Alternative Construction Access Road and associated temporary works, and (ii) a Revised Planning Application Boundary to incorporate these amendments. An Appropriate Assessment Screening Report and a Natura Impact Statement are also submitted in support of same.

FI Item 3

Significant concerns have been raised regarding fire safety from the proposed development at this site. Please address the following-

a. Submit a Fire Risk Management Plan (FRMP) to include

i Demonstration of how the potential risk of fire occurring on the site would be addressed and minimised with particular regard to the proximity of the separately proposed Reserve Gas Fired Generator, Above-ground Gas Installation and connections on this site.

ii Preventative measures for potential causes of fire hazard and evaluate the associated risk of same.

iii Specific measures to reduce the risk of a fire occurring onsite including the safe storage and maintenance of flammable substances and materials, the intended method(s) of extinguishment, and the installation of fire safety equipment and apparatus (fire alarms, detection systems, methods of suppression, etc.).

iv The FRMP should be prepared by a suitably qualified technical expert advisor. Details and qualifications to be submitted.

RESPONSE

A Fire Risk Assessment is provided as part of Appendix 17.3 of the EIAR Addendum in support of the planning application. The document sets out how fire risk will be managed and specifies the management framework and how risk is controlled and can enforced by planning condition. Subject to obtaining planning, further consultation will be undertaken with the Fire Servies Section of Galway County Council and a detailed version of the Fire Risk Assessment and ERP will be produced and agreed during detailed design once the exact BESS equipment supplier is known. Fire safety compliance will be addressed through the Fire Safety Certificate process under building control.

The report was prepared by the engineering department of Lumcloon Energy which was founded in 2008 as a project development company focused on flexible power and energy assets. Lumcloon Energy identified flexibility as a key component to address the changing needs of the evolving power systems, which are transitioning from fossil-based generation to renewable-based generation. Lumcloon Energy has developed several grid scale Battery Energy Storage Systems in conjunction with its international partners, the first of which has been in operation since 2021 (Lumcloon BESS facility located at adjacent to the Derrycarney 110kV AIS substation in Co. Offaly). Lumcloon Energy is highly experienced in energy project development and continues to maintain an interest in grid assets that have been successfully delivered, from early development and ongoing commercial operation.

b. Submit an Emergency Response Plan (ERP)

RESPONSE

Emergency Response Plan (ERP) provided as part of Appendix 17.3 of the EIAR Addendum.

i. Outlining a reactive strategy with clear procedures to follow in the event of a fire, detailing the specific actions the facility operator must take to respond quickly and effectively in the event of fire or similar emergency.

RESPONSE

See Emergency Response Plan (ERP) provided as part of Appendix 17.3 of the EIAR Addendum.

ii. A suitably qualified technical expert advisor should prepare the ERP. Details of qualifications and experience to be submitted.

The Emergency Response Plan provided as part of Appendix 17.3 of the EIAR Addendum was prepared by the engineering department (Mr Sergiu Albu: PhD Materials Science and Mr Jake Bracken: MSc Energy Management). Lumcloon Energy was founded in 2008 as a project development company focused on flexible power and energy assets. The company identified flexibility as a key component to address the changing needs of the evolving power systems, which are transitioning from fossil-based generation to renewable-based generation. Lumcloon Energy has developed several grid scale Battery Energy Storage Systems in conjunction with its international partners, the first of which has been in operation since 2021 (Lumcloon BESS facility located at adjacent to the Derrycarney 110kV AIS substation in Co. Offaly). Other operational grid-connected BESS facilities developed by Lumcloon Energy include Shannonbridge A and Shannonbridge B – it should be noted that Shannonbridge B comprises hybrid BESS and Synchronous Condenser technologies similar to that proposed at Coolpowra). Both Mr Albu and Mr Bracken have been directly involved with their development partners on such works and led and coordinated all technical correspondence with the relevant fire officers. Lumcloon Energy is highly experienced in energy project development and continues to maintain an interest in grid assets that have been successfully delivered, from early development and ongoing commercial operation.

c. While addressing the above the applicant is requested to-

i consider the provisions of the UK's National Fire Chiefs Council (NFCC) Grid Scale Battery Energy Storage System Planning - Guidance for the FRS (Fire & Rescue Services) and implement recommendations of same as appropriate e.g. access arrangements, water supplies, minimum spacing requirements, prevailing wind conditions etc.

ii. provide clarification in relation to the specific design, battery chemistry and specifications of the proposed Battery Energy Storage System (BESS) development and supporting infrastructure.

iii provide details of how permanent firefighting water will be sourced and retained within the site. The NFCC guidance details provision should be made to deliver no less than 1,900 litres per minute for at least 2 hours. There is significant concern over the likely reliance on a domestic well for water supply purposes in this regard. The Applicant is advised to consult with Uisce Eireann/private water supplier in

relation to any proposed connection to the public or alternative private water supply.

iv. Submit a revised Surface Water Drainage Plan and Strategy for the site which address the following:

1. ***A detailed methodology for fire water storage management along with any proposed mitigation measures to ensure no contamination of surface and ground water (e.g. drainage systems, interceptors, bunded lagoons etc.). Such measures shall be included in the ERP, as referred to above***

2. ***Considers the proposal in accordance with the objectives of the Water Framework Directive as well as potential for adverse significant effects and connectivity to designated European Sites.***

RESPONSE

The fire risk assessment and emergency response plan which are provided in Appendix 17.3 of the EIAR Addendum have been developed with reference to national and international codes, standards, and best-practice guidance, including but not limited to:

- NSAI I.S. 10101 – National Rules for Electrical Installations in Ireland
- NFPA 855 (2026) – Standard for the Installation of Stationary Energy Storage Systems
- UL 9540A – Standard Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
- FPA Zurich RE1 – Battery Storage Fire Safety Guidance
- ESB Networks Grid Code and Connection Standards relevant to medium-voltage infrastructure
- Local and regional fire authority regulations and planning conditions
- NFCC: Grid Scale Battery Energy Storage System Planning – Guidance for FRS

The BESS Compound includes one proprietary fire water storage tank with a capacity of 500 cubic metres (500m^3), located adjacent to the IPP building to ensure an adequate firefighting water supply. Surface finishes within the LDES compound comprise clean permeable stone fill.

The drainage /containment strategy of the BESS facility has been developed to be commensurate with risk using a source-pathway-receptor (SPR) model, consistent with

Irish environmental risk assessment practice for discharges to groundwater. Under the SPR concept, an adverse effect requires a credible contaminant source, a migration pathway, and a sensitive receptor.

Applying the source-pathway receptor model to the proposed development:

- Routine rainfall on the BESS compound: A credible contaminant source is not expected during normal operation; therefore, the appropriate control is SuDS source control and infiltration (subject to groundwater protection checks), rather than treating all rainfall as contaminated effluent.
- Transformer oil at MVPS: A credible pollutant source exists (hydrocarbon oil). The design therefore provides local containment and controlled bund drainage to prevent completion of a pathway to receptors.
- Stormwater from impervious /traffic-influenced areas around the IPP: A limited credible hydrocarbon source may exist (vehicle/plant leakage). The design therefore provides targeted collection and treatment via an interceptor prior to controlled discharge.
- Emergency-condition firewater: There is a potential for contamination soil and water by firefighting water mixed with electrolyte but this is a low-frequency, abnormal event. It is managed primarily through prevention /mitigation measures and emergency procedures within the Fire Risk Assessment and Emergency Response Plan, rather than by permanently bunding the entire compound.

The firewater supply system provides a cooling of nearby structures only in the event of a fire thus limiting the contaminants within the firewater as it will not be applied directly to a battery that is on fire. Although there is a potential for localised contamination of soil and water by firefighting water mixed with electrolyte, this is classed as a low-frequency, abnormal event. As discussed in the Environmental Risk Assessment (ERA) provide in Appendix 17.1, the level of harm caused is not likely to be significant enough to result in a major accident to the environment (MATTE) as it would be localised. Given the setting, it is appropriate that a fire event would be managed primarily through prevention /mitigation measures and emergency procedures within the Fire Risk Assessment and Emergency Response Plan, rather than by permanently bunding the entire compound.

As advised the Applicant has consulted with Uisce Eireann in relation to a proposed connection to the public water supply. The Confirmation of Feasibility states that "*subject to upgrades the existing Uisce Eireann owned Water Treatment Plant (Portumna WTP) is at capacity and unable to accept new connections without an upgrade. An upgrade is*

planned and included in the Irish Water Capital Investment Plan and is undergoing design and planning in Q4 2025 with construction completion 2027. A Connection will be feasible following completion". A Water Framework Directive (WFD) report is provided for the proposed development as amended and is contained in Appendix 8.3 of the EIAR Addendum.

The Applicant is advised to consult with Fire Services section of Galway County Council in this regard and to demonstrate same in their FI response.

RESPONSE

The Fire Services Section of Galway County Council was contacted by telephone on a number of occasions by the applicant in January 2026. Due to their unavailability, the applicant was unable to speak directly with the relevant person. The applicant will continue efforts to arrange a meeting with the Fire Services Section of Galway County Council to discuss the submission Fire Risk Assessment and Emergency Response Plan submitted for the purposes of planning.

FI Item 3

Please review the Appropriate Assessment Screening Report and Natura Impact Statement submitted in light of this Further Information request and include consideration of the following-

b. potential for significant in-combination effects arising from proposed project 2 the LDES (BESS) i.e. firewater management strategy etc.

c. all potential pathways from the site to Barroughter Bog SAC e.g. potential for atmospheric pollution (including nitrogen) from the RGFG and potential flooding of watercourses near the bog and subsequent infiltration and/or interception of the bog.

d. potential pathways to Lough Derg North-East Shore SAC and Lough Derg (Shannon) SPA and mitigation measures already proposed that may mitigate concerns to such designated sites.

RESPONSE

An Appropriate Assessment Screening Report and Natura Impact Statement has been prepared and submitted in response to this Further Information request. The reports include consideration of the following:

- potential for significant in-combination effects arising from proposed project 2 the LDES (BESS) i.e. firewater management strategy etc.
- all potential pathways from the site to Barroughter Bog SAC e.g. potential for atmospheric pollution (including nitrogen) from the RGFG and potential flooding of watercourses near the bog and subsequent infiltration and/or interception of the bog.
- potential pathways to Lough Derg North-East Shore SAC and Lough Derg (Shannon) SPA and mitigation measures already proposed that may mitigate concerns to such designated sites.

CONCLUDING STATEMENT

The proposed development addresses the key challenges to ensuring security of electricity supply as set out in the *Government's Policy Statement on Security of Supply* (November 2021). This states that *"ensuring continued security of electricity supply is considered a priority at national level and within the overarching EU policy framework in which the electricity market operates".*

As further significant renewable energy growth is the primary objective, additional large-scale grid connected energy storage, such as that proposed, is essential to bridge variability and support renewable generation intermittency. As referenced in the recent (2025) International Energy Agency (IEA) Report *"Powering Ireland's Energy Future"* which was published in December 2025[3], the IEA concludes that Ireland's future system adequacy depends on the timely delivery of a portfolio of resources including dispatchable generation, storage, interconnection and flexibility. The report highlights that both short duration and long-duration energy storage (LDES) are system critical in high renewable energy futures providing flexibility and balancing services. IEA modelling calculates that by 2035, that energy storage will grow from 1GW today to 6GW by 2035 (an additional 5GW storage required).

[3] International Energy Agency (IEA) (2025) *Powering Ireland's Energy Future: Approaches for a secure, renewables-led electricity system to 2035*. France: International Energy Agency

We submit that there is overwhelming evidence to support this strategically important development which aligns with Government Commitments as presented in the *Climate Action Plan 2025* and we therefore hereby respectfully request An Coimisiún Pleanála to grant permission in accordance with the proper planning and sustainable development of the area, having regard to National, Regional and Local Planning and Development Policy.

ATTACHMENT A

ENGINEERING REPORTS - SITE SUITABILITY

LALLY
CHARTERED ENGINEERS

Site Assessment

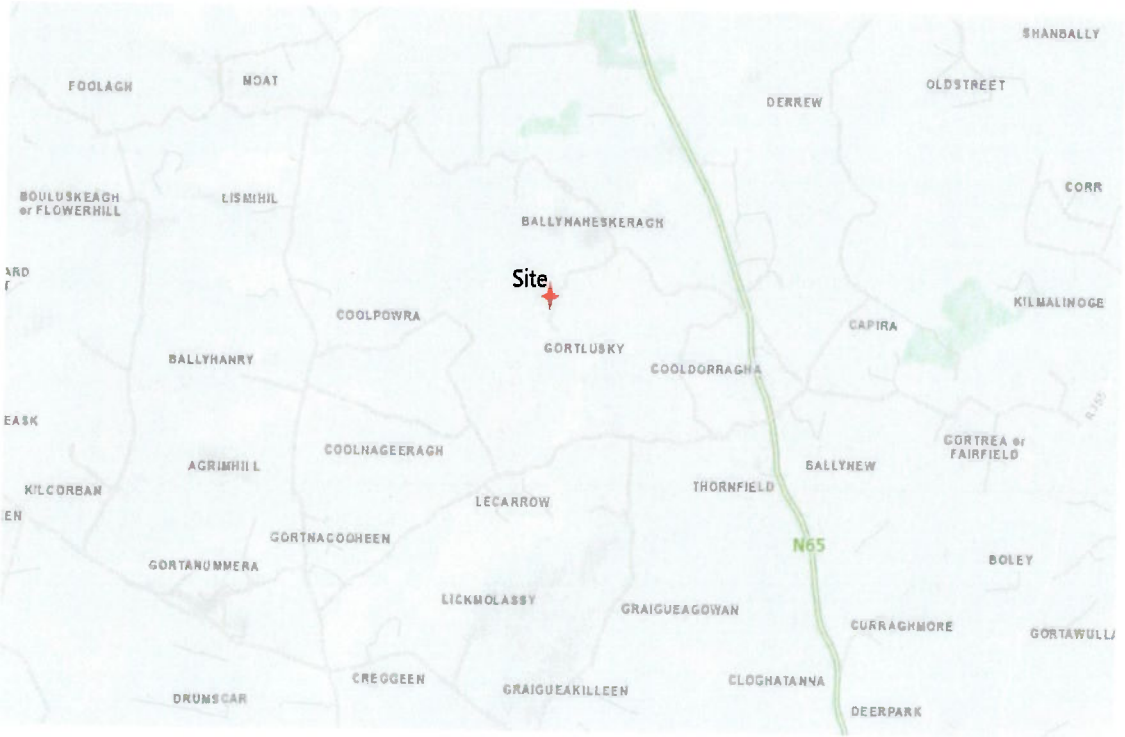
For

COOLPOWRA FLEXGEN LIMITED

At

COOLPOWRA

CO. GALWAY



Date of Issue: 17/04/2024

APPENDIX A: SITE CHARACTERISATION FORM

File Reference: 24-018

1.0 GENERAL DETAILS (From planning application)

Prefix: First Name: COOLPOWRA FLEXGEN LTD Surname:

Address:
COOLPOWRA, CO. GALWAY

Site Location and Townland:
COOLPOWRA, CO. GALWAY

Number of Bedrooms: Maximum Number of Residents: 4

Comments on population equivalent

5 PE Based on 10 no. full time office/maintenance staff with canteen
Hydraulic loading 60 litres /day/person
Organic Loading (BOD5) 30 grams/day/person

Proposed Water Supply:

Mains ☐ Private Well/Borehole ☑ Existing well on-site Group Well/Borehole ☐

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type): National soils - Mullabane, BminDW - Deep well drained mineral

Subsoil, (Specify Type): TLs, Till derived from limestones

Bedrock Type: Lucan Formation - limestone and shale

Aquifer Category: Regionally Important Locally Important LI Poor

Vulnerability: Extreme ☐ High ☐ Moderate ☑ Low ☐

Groundwater Body: Tynagh Status Good

Name of Public/Group Scheme Water Supply within 1 km: Irish Water

Source Protection Area: ZOC ☐ SI ☐ SO ☐ Groundwater Protection Response: R1

Presence of Significant Sites (Archaeological, Natural & Historical): Capira/Derrew Bog NHA 1.92km East, Ardgraigue Bog SAC/pNHA 4.18km North

Past experience in the area: Septic tanks & proprietary effluent treatment systems with percolation area used in locality

Comments:

(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, and/or any potential site restrictions).

Local groundwaters are a potential target at risk,
Groundwater Protection Response: R1, According to EPA code of practice this is categorized as Acceptable subject to normal good practice

Barroughter Bog SAC/pNHA 5.66km South.

Desk study suggests site should be suitable subject to percolation test results

Note: Only information available at the desk study stage should be used in this section.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

Landscape Position: Level landscape

Slope: Steep (>1:5) ☐ Shallow (1:5-1:20) ☐ Relatively Flat (<1:20) ☑

Slope Comment

West - East

Surface Features within a minimum of 250m (Distance To Features Should Be Noted In Metres)

Houses:

Dwelling - 150m South
Dwelling - 286m South

Existing Land Use:

Agricultural tillage & grazing

Vegetation Indicators:

grass, mature hedging at ditches, some mature trees along boundaries

Groundwater Flow Direction: West - East

Ground Condition:

Good, Solid under foot, no surface ponding observed

Site Boundaries:

mature hedging & trees

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Roads:

Local access road to right of test location continuing North East and joining L-8763

Outcrops (Bedrock And/Or Subsoil):

None present

Surface Water Ponding:

None present

Lakes:

Lake Segment_Code 25_283, Approx 1.50km Southeast

Beaches/Shellfish Areas:

None present

Wetlands:

None present

Karst Features:

None present

Watercourses/Streams:*

Stream 35m North West flowing to River shannon (lower)

*Note and record water level

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Drainage Ditches:*

None present

Springs:*

None present

Wells:*

Domestic well approximately 150m South (at dwelling)

Comments:
(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, the suitability of the site to treat the wastewater and the location of the proposed system within the site).

The land appears well drained,
Main targets at risk are - receiving groundwaters, stream approximately 35m Northwest, Domestic well approximately 150m South

Visual assessment would suggest site should be suitable subject to percolation test results.

*Note and record water level

3.2 **Trial Hole** (should be a minimum of 2.1m deep (3m for regionally important aquifers))

To avoid any accidental damage, a trial hole assessment or percolation tests should not be undertaken in areas which are at or adjacent to significant sites, (e.g. NHAs, SACs, SPAs, and/or Archaeological etc.), without prior advice from National Parks and Wildlife Service or the Heritage Service.

Depth of trial hole (m): 2.10

Depth from ground surface to bedrock (m) (if present): 2.10

Depth from ground surface to water table (m) (if present): n/a

Depth of water ingress: 0

Rock type (if present): Limestones

Date and time of excavation: 11-Apr-2024 10:00

Date and time of examination: 12-Apr-2024 09:00

Depth of Surface and Subsurface Percolation Tests	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m	Topsoil	3 threads > 90mm 1 Ribbon > 40mm non dilatant	Crumb	Compact	Brown	Grass roots
0.2 m						
0.3 m						
0.4 m P-Test						
0.5 m						
0.6 m						
0.7 m	Gravel with clay, Cobbles & Boulders	0 threads 0 Ribbons	Granular	Firm	Blue/Grey	Cobbles/Boulders
0.8 m T-Test						
0.9 m						
1.0 m						
1.1 m						
1.2 m						
1.3 m						
1.4 m						
1.5 m						
1.6 m						
1.7 m						
1.8 m						
1.9 m						
2.0 m						
2.1 m Pit						
2.2 m						
2.3 m						
2.4 m						
2.5 m						
2.6 m						
2.7 m						
2.8 m						
2.9 m						
3.0 m						
3.1 m						
3.2 m						
3.3 m						
3.4 m						
3.5 m						

Likely Subsurface Percolation Value: 30

Likely Surface Percolation Value: 10

Note: *Depth of percolation test holes should be indicated on log above. ('Enter Surface or Subsurface at depths as appropriate).
** See Appendix E for BS 5930 classification.
*** 3 samples to be tested for each horizon and results should be entered above for each horizon.
**** All signs of mottling should be recorded.

3.2 Trial Hole (contd.) Evaluation:

Good depth at 2.10m
Bedrock at 2.10m
no water present

3.3(a) Subsurface Percolation Test for Subsoil

Step 1: Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm) (A)	400	400	400
Depth from ground surface to base of hole (mm) (B)	800	800	800
Depth of hole (mm) [B - A]	400	400	400
Dimensions of hole [length x breadth (mm)]	305 x 310	300 x 310	305 x 305

Step 2: Pre-Soaking Test Holes

		1	2	3
Pre-soak start	Date	11-Apr-2024	11-Apr-2024	11-Apr-2024
	Time	10:30	10:45	11:00
2nd pre-soak start	Date	11-Apr-2024	11-Apr-2024	11-Apr-2024
	Time	15:00	15:05	15:10

Each hole should be pre-soaked twice before the test is carried out.

Step 3: Measuring T_{100}

Percolation Test Hole No.	1	2	3
Date of test	12-04-2024	12-04-2024	12-04-2024
Time filled to 400 mm	09:00	09:05	09:10
Time water level at 300 mm	09:35	10:00	10:55
Time (min.) to drop 100 mm (T_{100})	35.00	55.00	105.00
Average T_{100}			65.00

If T_{100} > 480 minutes then Subsurface Percolation value >120 – site unsuitable for discharge to ground
If $T_{100} \leq 210$ minutes then go to Step 4;
If T_{100} > 210 minutes then go to Step 5;

Step 4: Standard Method (where $T_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)
1	09:35	10:30	55.00	10:00	11:10	70.00	10:55	12:55	120.00
2	10:30	12:00	90.00	11:10	13:00	110.00	12:55	15:40	165.00
3	12:00	14:30	150.00	13:00	16:00	180.00	15:40	19:20	220.00
Average Δt Value			98.33			120.00			168.33
	Average Δt/4 = [Hole No.1]		24.58 (t_1)	Average Δt/4 = [Hole No.2]		30.00 (t_2)	Average Δt/4 = [Hole No.3]		42.08 (t_3)

Result of Test: Subsurface Percolation Value = 32.22 (min/25 mm)

Comments:

Test result - 32.22 - According to EPA code of practice Table 6.4, site suitable for Secondary treatment system and soil polishing filter or Tertiary treatment system and infiltration area

Step 5: Modified Method (where $T_{100} > 210$ minutes)

Percolation Test Hole No. 1

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 1 = (T_1)		0.00	

Percolation Test Hole No. 2

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 2 = (T_2)		0.00	

Percolation Test Hole No. 3

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 3 = (T_2)		0.00	

Result of Test: Subsurface Percolation Value = 0.00 (min/25 mm)

Comments:

3.3(b) Surface Percolation Test for Soil

Step 1: Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm)	0	0	0
Depth from ground surface to base of hole (mm)	400	400	400
Depth of hole (mm)	400	400	400
Dimensions of hole [length x breadth (mm)]	305 x 300	300 x 300	310 x 310

Step 2: Pre-Soaking Test Holes

		1	2	3
Pre-soak start	Date	11-Apr-2024	11-Apr-2024	11-Apr-2024
	Time	11:10	11:20	11:30
2nd pre-soak start	Date	11-Apr-2024	11-Apr-2024	11-Apr-2024
	Time	15:15	15:20	15:25

Each hole should be pre-soaked twice before the test is carried out.

Step 3: Measuring T_{100}

Percolation Test Hole No.	1	2	3
Date of test	12-Apr-24	12-Apr-24	12-Apr-2024
Time filled to 400 mm	09:00	09:05	09:10
Time water level at 300 mm	09:17	09:30	09:28
Time to drop 100 mm (T_{100})	17.00	25.00	18.00
Average T_{100}			20.00

If T_{100} > 480 minutes then Surface Percolation value >90 – site unsuitable for discharge to ground
If $T_{100} \leq 210$ minutes then go to Step 4;
If T_{100} > 210 minutes then go to Step 5;

Step 4: Standard Method (where $T_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	ΔT (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	ΔT (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	ΔT (min)
1	09:17	09:40	23.00	09:30	10:10	40.00	09:28	09:55	27.00
2	09:40	10:25	45.00	10:10	11:15	65.00	09:55	10:45	50.00
3	10:25	11:35	70.00	11:15	12:45	90.00	10:45	12:10	85.00
Average ΔT Value			46.00			65.00			54.00
	Average ΔT/4 = [Hole No.1]		11.50 (T_1)	Average ΔT/4 = [Hole No.2]		16.25 (T_2)	Average ΔT/4 = [Hole No.3]		13.50 (T_3)

Result of Test: Surface Percolation Value = 13.75 (min/25 mm)

Comments:

Test result - 13.75 - According to EPA code of practice Table 6.4, site suitable for Secondary treatment system and soil polishing filter or Tertiary treatment system and infiltration area

Step 5: Modified Method (where $T_{100} > 210$ minutes)

Percolation Test Hole No. 1

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 1 = (T_1)			0.00

Percolation Test Hole No. 2

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 2 = (T_2)			0.00

Percolation Test Hole No. 3

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T – Value = 4.45 / K_{fs}
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value		T- Value Hole 3 = (T_2)			0.00

Result of Test: Surface Percolation Value = 0.00 (min/25 mm)

Comments:

3.4 The following associated Maps, Drawings and Photographs should be appended to this site characterisation form.

1. Discovery Series 1:50,000 Map indicating overall drainage, groundwater flow direction and housing density in the area.
2. Supporting maps for vulnerability, aquifer classification, soil, subsoil, bedrock.
3. North point should always be included.
4. (a) Scaled sketch of site showing measurements to Trial Hole location and
   (b) Percolation Test Hole locations,
   (c) wells and
   (d) direction of groundwater flow (if known),
   (e) proposed house (incl. distances from boundaries)
   (f) adjacent houses,
   (g) watercourses,
   (h) significant sites
   (i) and other relevant features.
5. Site specific cross sectional drawing of the site and the proposed layout[1] should be submitted.
6. Photographs of the trial hole, test holes and site including landmarks (date and time referenced).
7. Pumped design must be designed by a suitably qualified person.

[1] The calculated percolation area or polishing filter area should be set out accurately on the site layout drawing in accordance with the code of practice's requirements.

4.0 CONCLUSION of SITE CHARACTERISATION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment, trial hole and percolation tests) above and conclude the type of system(s) that is (are) appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Slope of proposed infiltration / treatment area: 1:200

Are all minimum separation distances met? ✓

Depth of unsaturated soil and/or subsoil beneath invert of gravel (or drip tubing in the case of drip dispersal system) 1.20

Percolation test result: Surface: 13.75 Sub-surface: 32.22

Not Suitable for Development ☐ **Suitable for Development** ✓

Identify all suitable options

1.	Septic tank system (septic tank and percolation area) **(Chapter 7)**	No
2.	Secondary Treatment System **(Chapters 8 and 9)** and soil polishing filter **(Section 10.1)**	Yes
3.	Tertiary Treatment System and Infiltration / treatment area **(Section 10.2)**	Yes

Discharge Route [1]

Ground water

5.0 SELECTED DWWTS

Propose to install: Secondary Treatment System and soil polishing filter

and discharge to: Ground Water

Invert level of the trench/bed gravel or drip tubing (m) 0.80

Site Specific Conditions (e.g. special works, site improvement works testing etc.

SEE SITE SPECIFIC REPORT
For your site, we recommend a Novo IRL6+ wastewater treatment plant which is designed to treat a maximum of 900 litres of wastewater per day. The Tricel Novo range of wastewater treatment plants is fully in conformance with EN12566-3 and complies with SR66. The Novo IRL6+ has a capacity of 4000 litres, of which 2400 are in the primary chamber, this ensures a long desludging interval.

The proposed solution for disposal is percolation trenches which consists of a series of pipework which distributes the effluent for treatment using in situ subsoil.
Based on a Population of 5 and a percolation value of 21-40 on the site, the chosen polishing filter for this site is percolation trenches. The minimum amount of pipe required will be 60m. This is based on trench length required per person for the given percolation value as stated in table 10.1 of the EPA Code of Practice 2021.
It recommends that each percolation trench should be equal in length and no longer than 10m

[1] A discharge of sewage effluent to "waters" (definition includes any or any part of any river, stream, lake, canal, reservoir, aquifer, pond, watercourse or other inland waters, whether natural or artificial) will require a licence under the Water Pollution Acts 1977-90. Refer to Section 2.4.

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank Systems (Chapter 7)

Tank Capacity (m^3)

Percolation Area		Mounded Percolation Area	
No. of Trenches		No. of Trenches	
Length of Trenches (m)		Length of Trenches (m)	
Invert Level (m)		Invert Level (m)	

SYSTEM TYPE: Secondary Treatment System (Chapters 8 and 9) and polishing filter (Section 10.1)

Secondary Treatment Systems receiving septic tank effluent (Chapter 8)

Media Type	Area (m^2)*	Depth of Filter	Invert Level
Sand/Soil			
Soil			
Constructed Wetland			
Other			

Packaged Secondary Treatment Systems receiving raw wastewater (Chapter 9)

Type: Novo IRL6+

Capacity PE: 6

Sizing of Primary Compartment: 2.40 m^3

Polishing Filter*: (Section 10.1)

Surface Area (m^2)*

Option 1 - Direct Discharge
Surface area (m^2)

Option 2 - Pumped Discharge
Surface area (m^2)

Option 3 - Gravity Discharge
Trench length (m): 60.00

Option 4 - Low Pressure
Pipe Distribution
Trench length (m)

Option 5 - Drip Dispersal
Surface area (m^2)

SYSTEM TYPE: Tertiary Treatment System and infiltration / treatment area (Section 10.2)

Identify purpose of tertiary treatment	Provide performance information demonstrating system will provide required treatment levels	Provide design information
Receiving Subsoils	BOD5 - 11mg/l NH4N - 8 mg/l SS - 16 mg/l	SR66 and the EPA Code of Practice

DISCHARGE ROUTE:

Groundwater ☑ Hydraulic Loading Rate * ($l/m^2.d$): 60.00 Surface area (m^2)

Surface Water ** ☐ Discharge Rate (m^3/hr)

* Hydraulic loading rate is determined by the percolation rate of subsoil

** Water Pollution Act discharge licence required

6.0 TREATMENT SYSTEM DETAILS

QUALITY ASSURANCE:

Installation & Commissioning

Installation and Commissioning to be undertaken and completed by competent and trained personnel

On-going Maintenance

Maintenance to be undertaken and completed by competent and trained personnel

7.0 SITE ASSESSOR DETAILS

Company: Lally Chartered Engineers

Prefix: Mr First Name: David Surname: Lally

Address: Údarás Business Park, Tourmakeady, Co.Mayo

Qualifications/Experience: BE CEng MAppSc MIEI MIOSH

Date of Report: 17-Apr-2024

Phone: 0872804367 E-mail david@lallyeng.com

Indemnity Insurance Number: B07401503624

Signature: _____

ENGINEERS IRELAND
David Lally
Chartered Engineer
Registrant 058146
of The Institution of Engineers of Ireland

FETAC
Further Education and Training Awards Council

Level 6 Specific Purpose Certificate
Teastas Cuspóra Shainiúil Leibhéal 6

Site Suitability On-Site Wastewater Treatment

Awarded to
Bronnta ar

David Michael Lally

15/12/2008

EF294258 722383

LALLY
CHARTERED ENGINEERS

APPENDIX

(1) 1:50000 OS Map

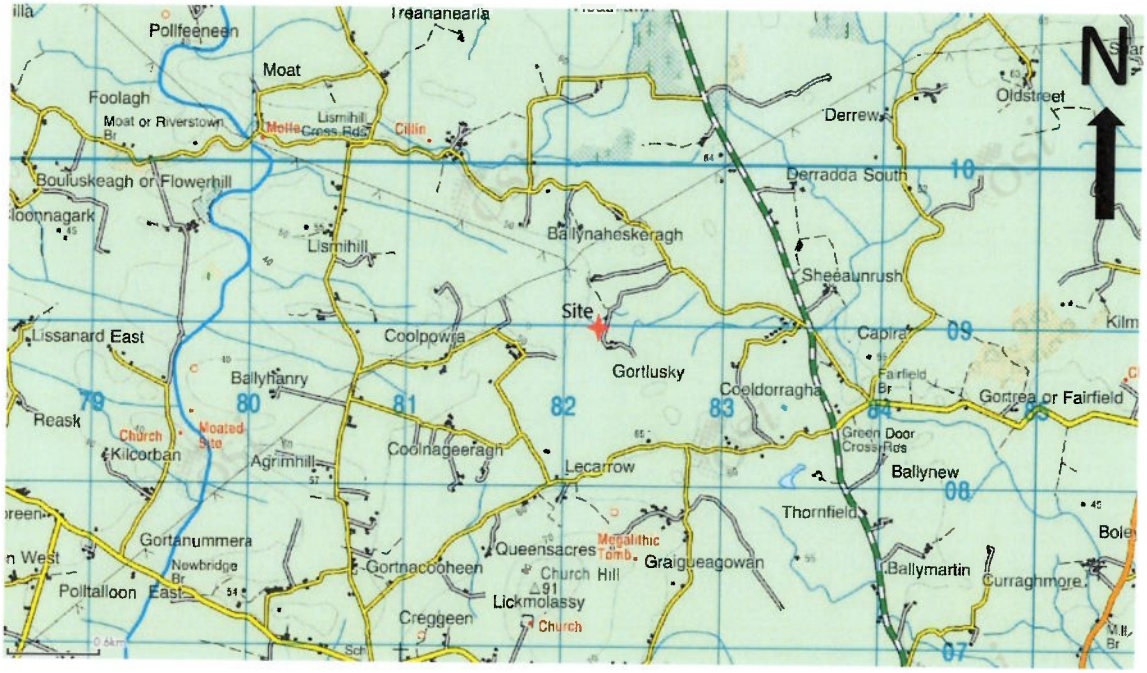
(2) Photographs – Trial hole, test hole and site

(3) Geology Maps

(4) Percolation Details – Installation & Specification Report

---

(1) 1:50000 OS Map



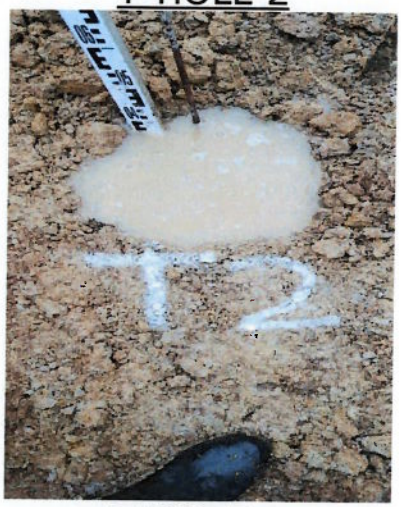
(2) Photographs

P-HOLE 1

T-HOLE 1

P-HOLE 2

T-HOLE 2



P-HOLE 3

T-HOLE 3

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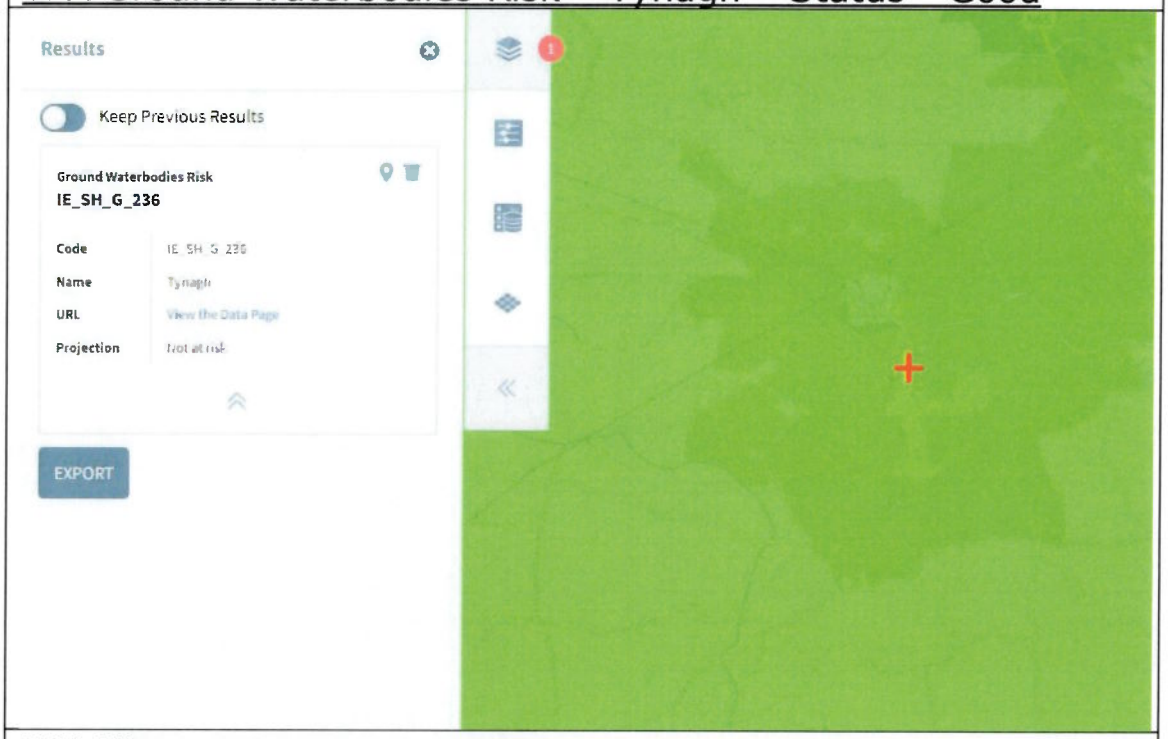
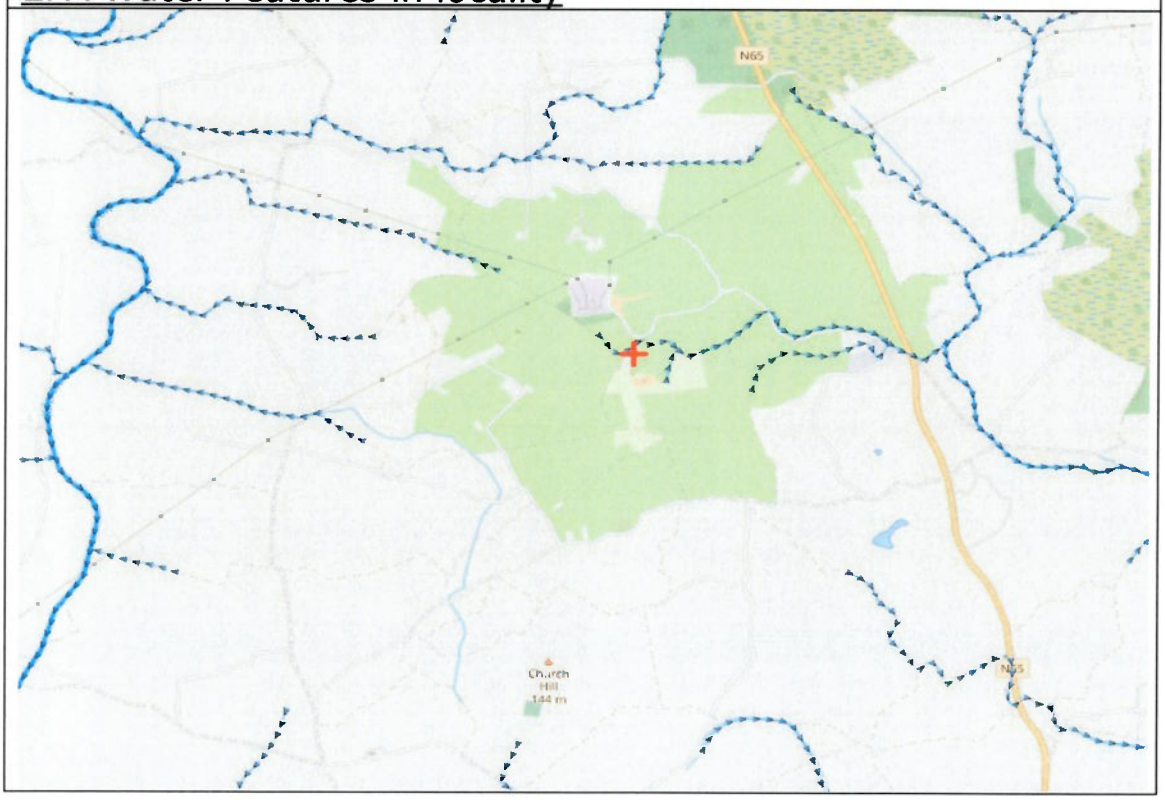
(2) Photographs - Trial Hole

(3) Geology Maps

EPA Ground Waterbodies Risk – Tynagh – Status - Good



EPA Water Features in locality



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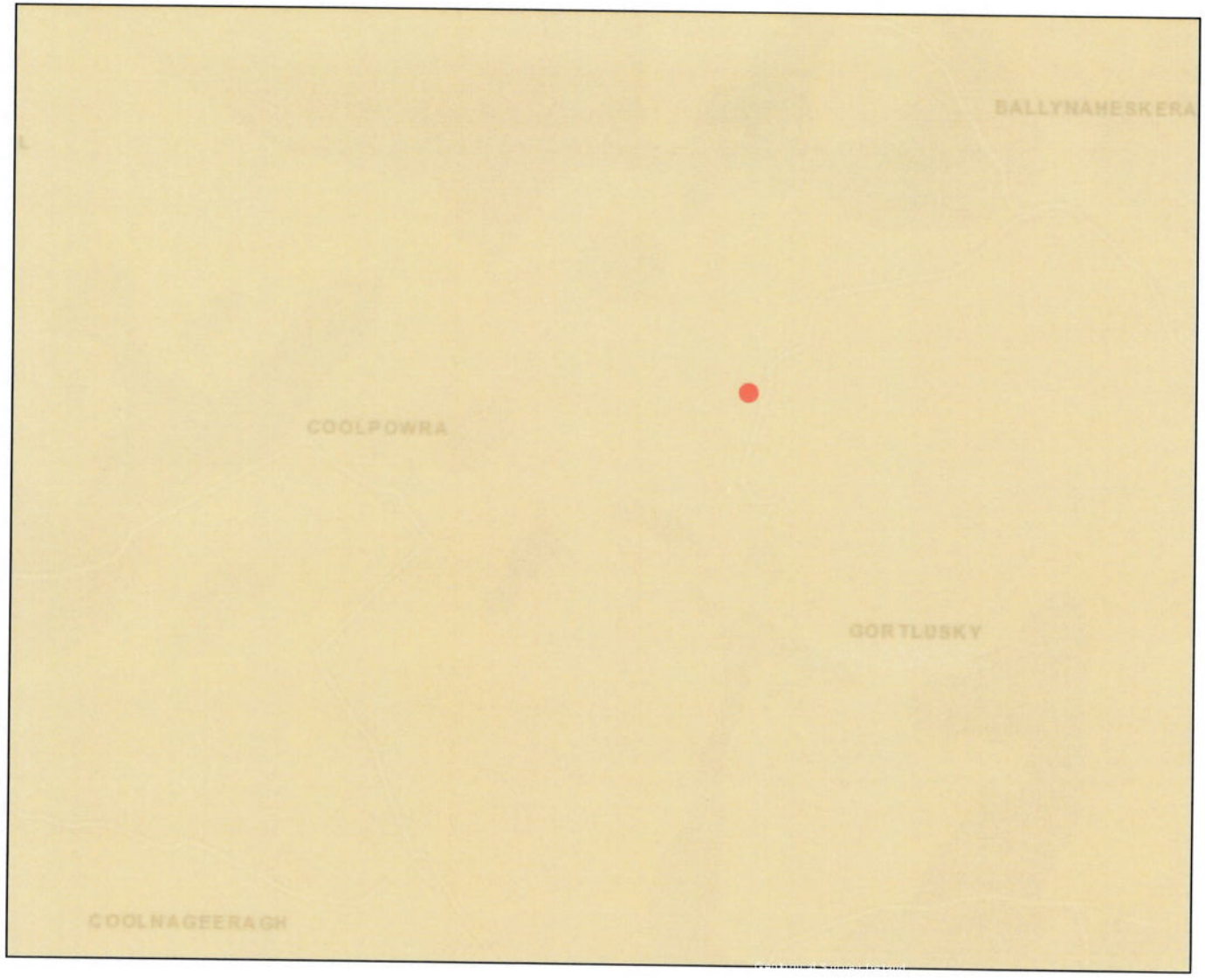
Ireland | Éireann

Aquifers - Locally Important



Legend

IE_GSI_Bedrock_Aqui...

- Rkc - Regionally Important Aquifer - Karstified (conduit)
- Rkd - Regionally Important Aquifer - Karstified (diffuse)
- Rk - Regionally Important Aquifer - Karstified
- Rf - Regionally Important Aquifer - Fissured bedrock
- Rf/Rk - Regionally Important Aquifer - Fissured bedrock/Regionally Important Aquifer - Karstified
- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
- Lk - Locally Important Aquifer - Karstified
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
- Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
- Pu - Poor Aquifer - Bedrock which is Generally Unproductive
- Lake
- Unclassified

Scale: 1:10,000

Geological Survey Ireland

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N W E S

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Map Centre Coordinates (ITM) 581,978 708,931

4/17/2024, 11:08:18 AM

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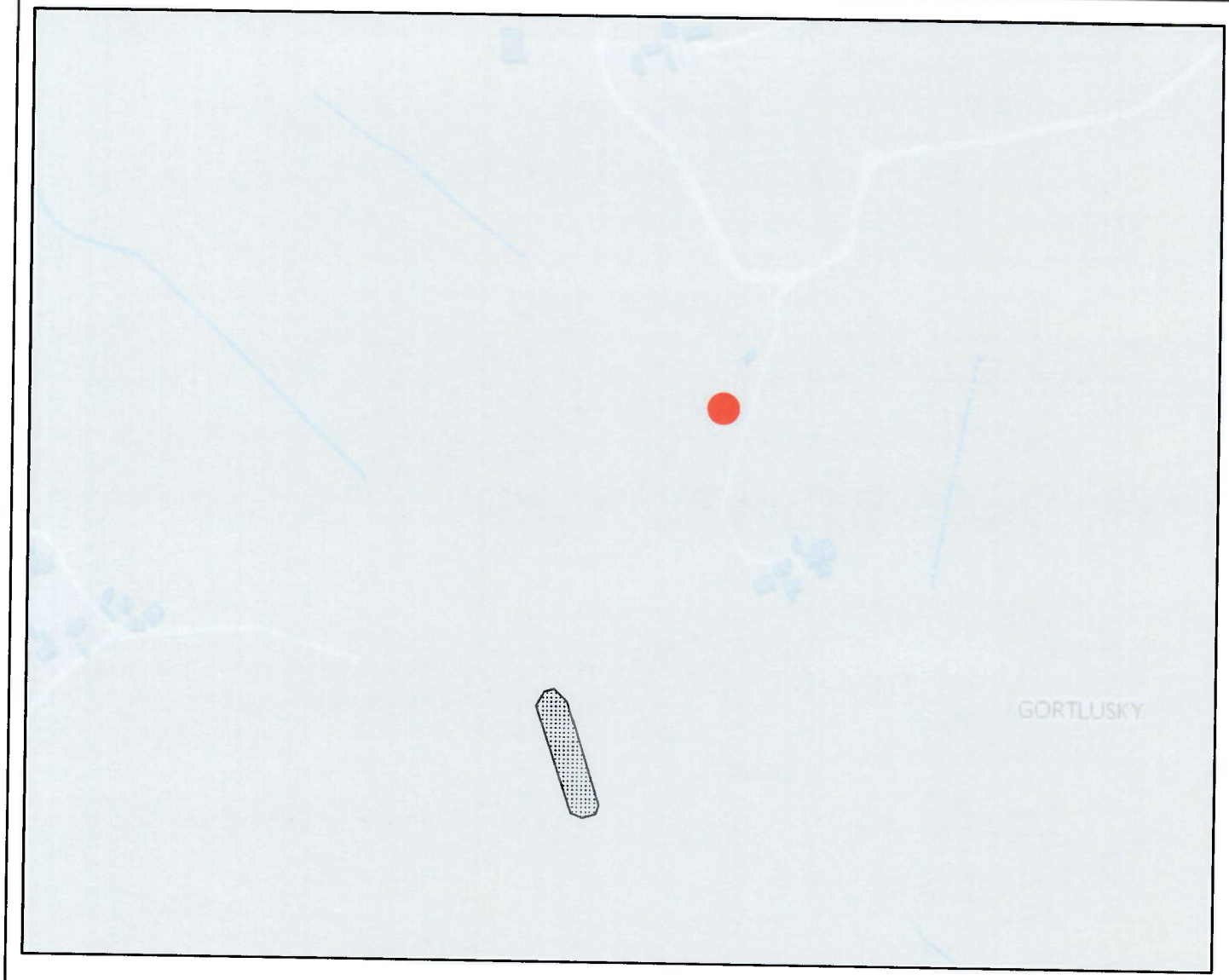
Bedrock - Lucan Formation



Legend

Bedrock Outcrops 100 ITM 2018

Bedrock Polygons 100k ITM 2018

Lucan Formation

Scale: 1:5,000

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N W E S

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

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4/17/2024, 9:10:17 AM

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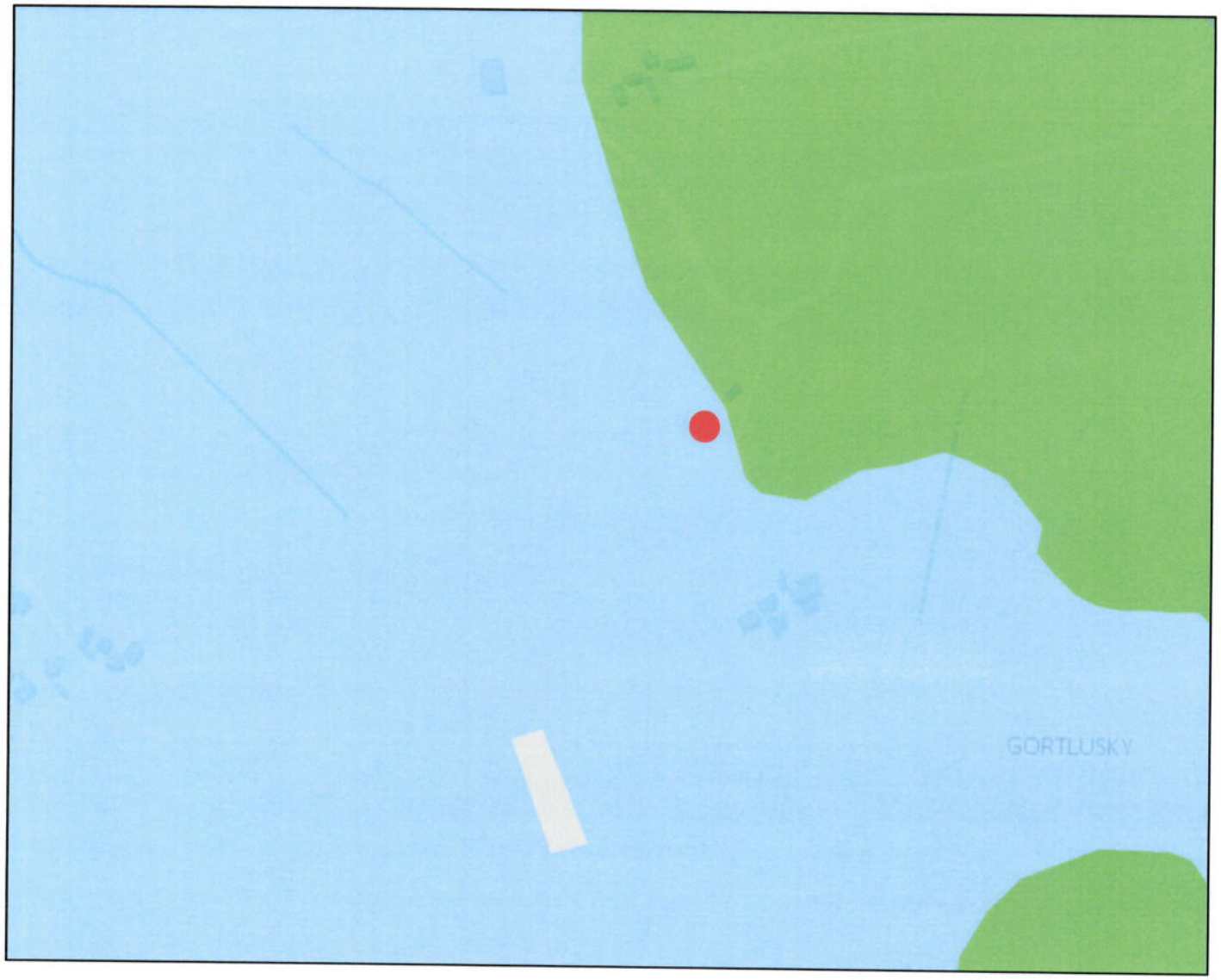
Subsoils - TLs



Legend

IE_GSI_Quaternary_Sediments_50K_I...

- BasEsk, Eskers comprised of gravels of basic reaction
- GLs, Gravels derived from Limestones
- Rck, Bedrock outcrop or subcrop
- TLs, Till derived from limestones

Scale: 1:5,000

Geological Survey Ireland

N W E S

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

Map Centre Coordinates (ITM) 582,119 708,995

4/16/2024, 4:43:30 PM

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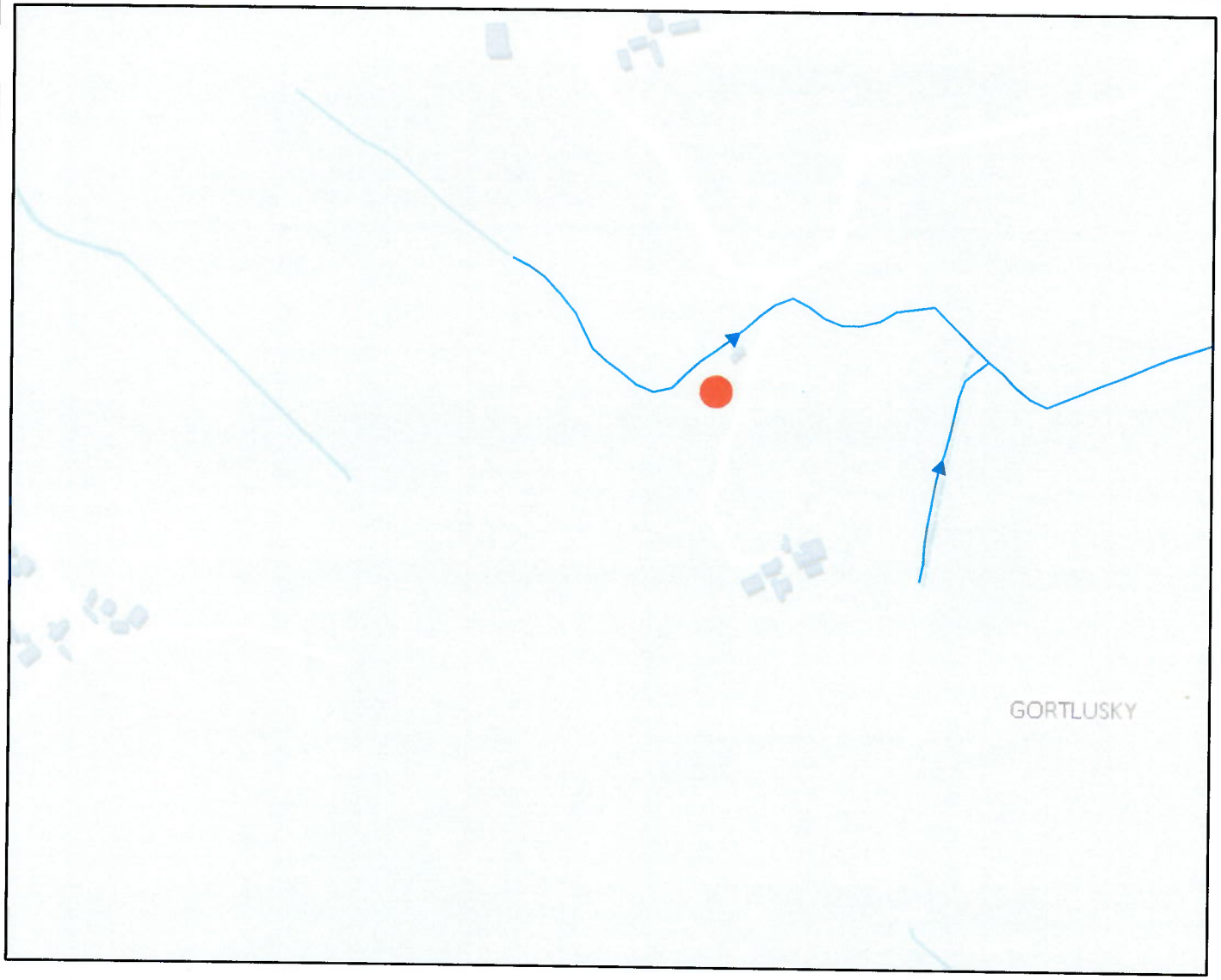
Surface water features in locality



Legend

River Network and River Flow Direction Arrows

Scale: 1:5,000

Geological Survey Ireland

N W E S

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

Map Centre Coordinates (ITM) 582,117 708,966

4/17/2024, 8:54:40 AM

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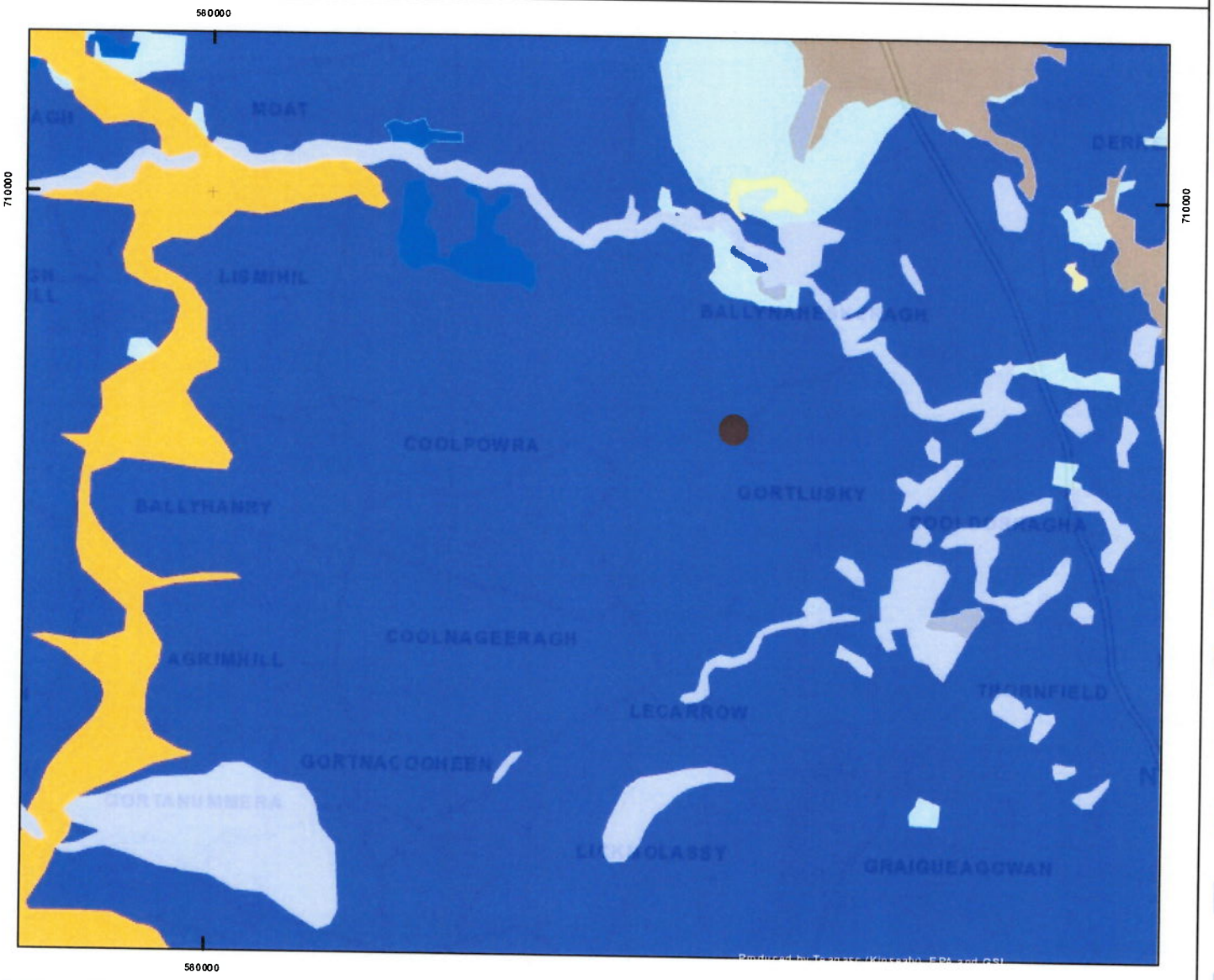
Teagasc Soils - BminDW



Legend

TEAGASC_Soils_50K...

- AminDW - Deep well drained mineral (Mainly acidic)
- AminPD - Mineral poorly drained (Mainly acidic)
- AminPDPT - Peaty poorly drained mineral (Mainly acidic)
- AminSW - Shallow well drained mineral (Mainly acidic)
- AminSP - Shallow poorly drained mineral (Mainly acidic)
- AminSPPT - Shallow peaty poorly drained mineral (Mainly acidic)
- AminSRPT - Shallow, rocky, peaty/non-peatymi... complexes (Mainly acidic)
- BminDW - Deep well drained mineral (Mainly basic)
- BminPD - Mineral poorly drained (Mainly basic)
- BminPDPT - Peaty poorly drained mineral (Mainly basic)
- BminSW - Shallow well drained mineral (Mainly basic)
- BminSP - Shallow poorly drained mineral (Mainly basic)
- BminSPPT - Shallow peaty poorly drained mineral (Mainly basic)
- BminSRPT - Shallow, rocky, peaty/non-peatymi... complexes (Mainly basic)
- BktPt - Blanket peat
- FenPt - Fen peat
- RsPt - Raised Peat
- Cut - Cutover/cutaway peat
- AlluvMIN - Alluvial (mineral)
- AlluvMRL - Alluvial (marl)
- Lac - Lacustrine type soils
- Scree - Scree
- AeoUND - Aeolian undifferentiated
- MarSands - Marine sand and gravel
- MarSed - Marine/estuarine sediments
- Made - Made ground
- Water - Water
- Unclass

Scale: 1:25,000

Geological Survey Ireland

N W E S

0 0.175 0.35 0.7 mi

0 0.275 0.55 1.1 km

Map Centre Coordinates (ITM) 581,577 708,774

4/17/2024, 9:47:32 AM

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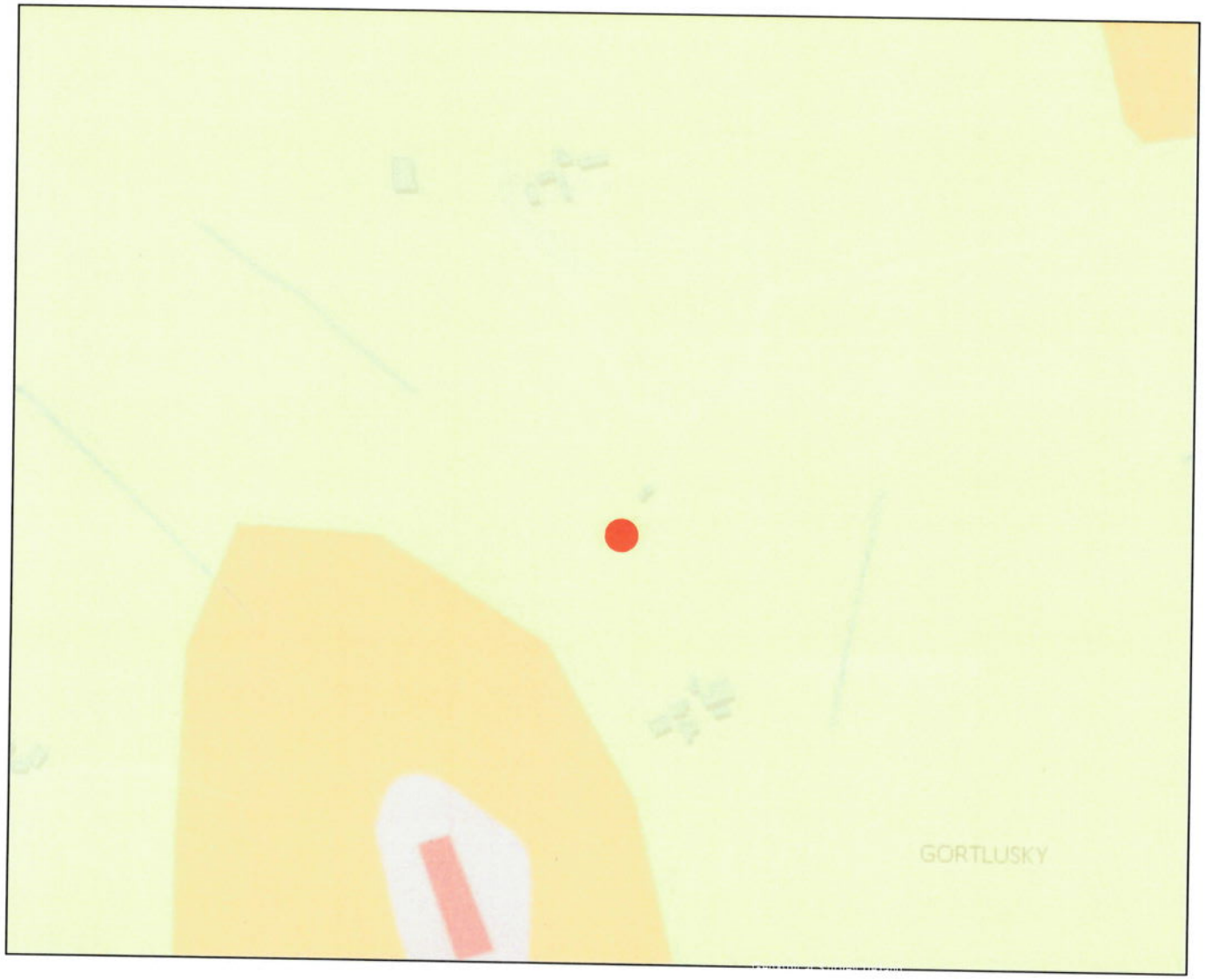
Vulnerability - Moderate



Legend

IE_GSI_Groundwater_...

- Rock at or near Surface or Karst
- Extreme
- High
- Moderate
- Low
- Water

Scale: 1:5,000

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N W E S

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

Map Centre Coordinates (ITM) 582,183 709,077

4/16/2024, 4:29:09 PM

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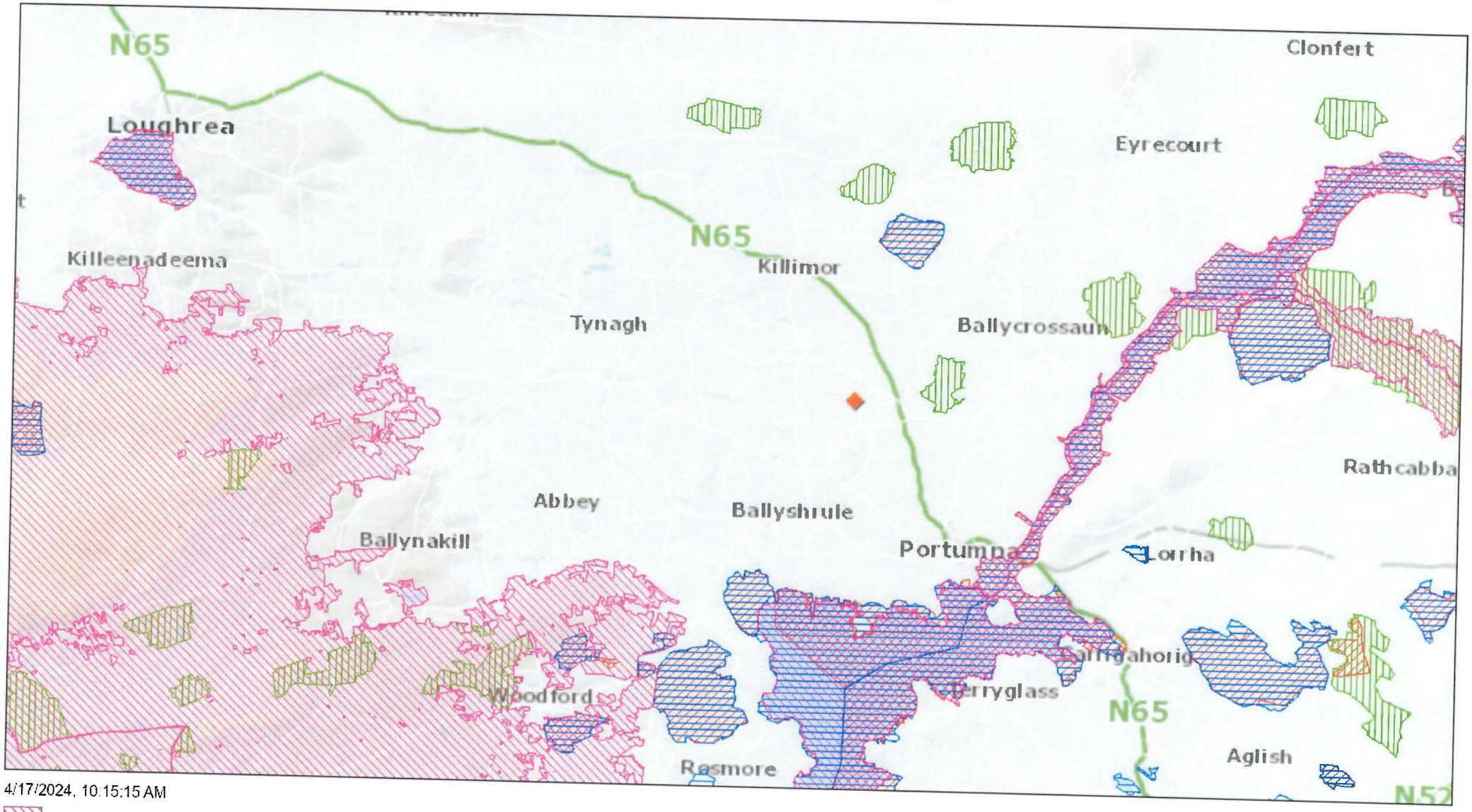
NPWS Designations Viewer



4/17/2024, 10:15:15 AM

- Special Protection Areas (SPA)
- Proposed Natural Heritage Areas (pNHA)
- Natural Heritage Areas (NHA)
- Special Area of Conservation (SAC)

1:175,634

0 1.25 2.5 5 mi
0 2 4 8 km

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Lally Chartered Engineers
Tailte Eireann

Tricel Site Recommendation Report
Tricel Novo Package Plant and Gravity Soil Polishing filter (Percolation Area)

Date	17/04/2024
Report No:	TSA_G_15248
Client Name	COOLPOWRA FLEXGEN LTD
Site Location & Townland	COOLPOWRA, PORTUMNA, Galway

Thank you for choosing Tricel for your wastewater treatment requirements. This report contains the following information for your site and is based on a population of 5 and a subsurface/surface value of between 21-40.

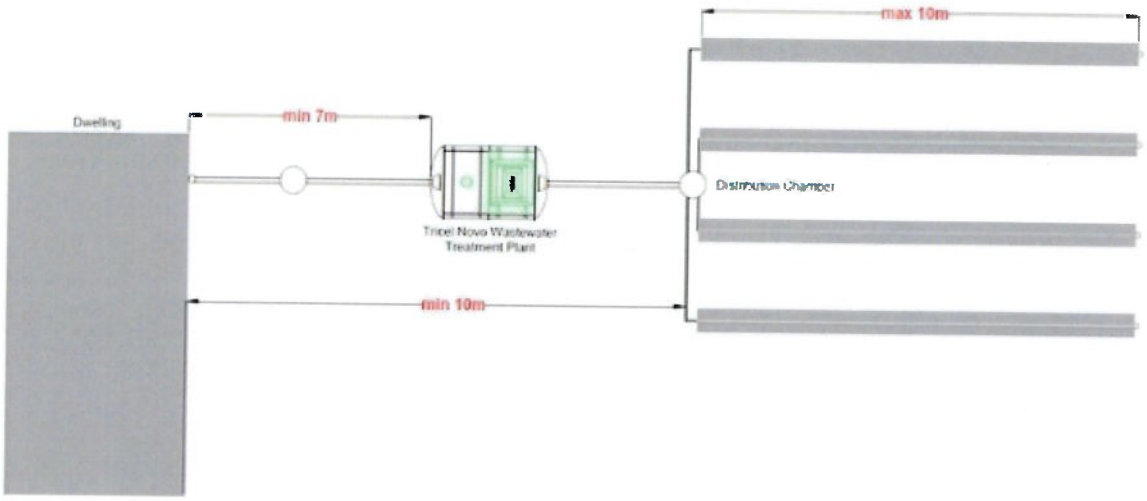
The population is calculated based on 'EPA Wastewater Treatment Manuals (1999) - Treatment systems for small communities, business, leisure centres and hotels' which outlines the following recommended wastewater loading rates:

Situation	Source	Hydraulic Load litres/day/person)	Organic Load (BOD5) grams/day/person	Users
Industrial	Office and/or factory with canteen	60	30	10

The Design Population Equivalent (PE) for this wastewater treatment system is 5. This PE value is based on the Organic Load of 300 BOD5 grams/day per person.

Based on the information provided to us and using SR66 and the EPA Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10), the appropriate solution for treating wastewater on your site is a Tricel Novo Package Plant and Gravity Soil Polishing filter (Percolation Area).

Typical layout of a Tricel Novo Package Plant and Gravity Soil Polishing filter (Percolation Area):



Note:
In the above named site, a substitute wastewater treatment system may not be put in place of the following recommendation.

This recommendation only applies to the above named site based on the information supplied to Tricel.

A Site Characterisation Form should accompany this report. Tricel cannot be responsible for misinformation due to misleading information being received by us from clients.

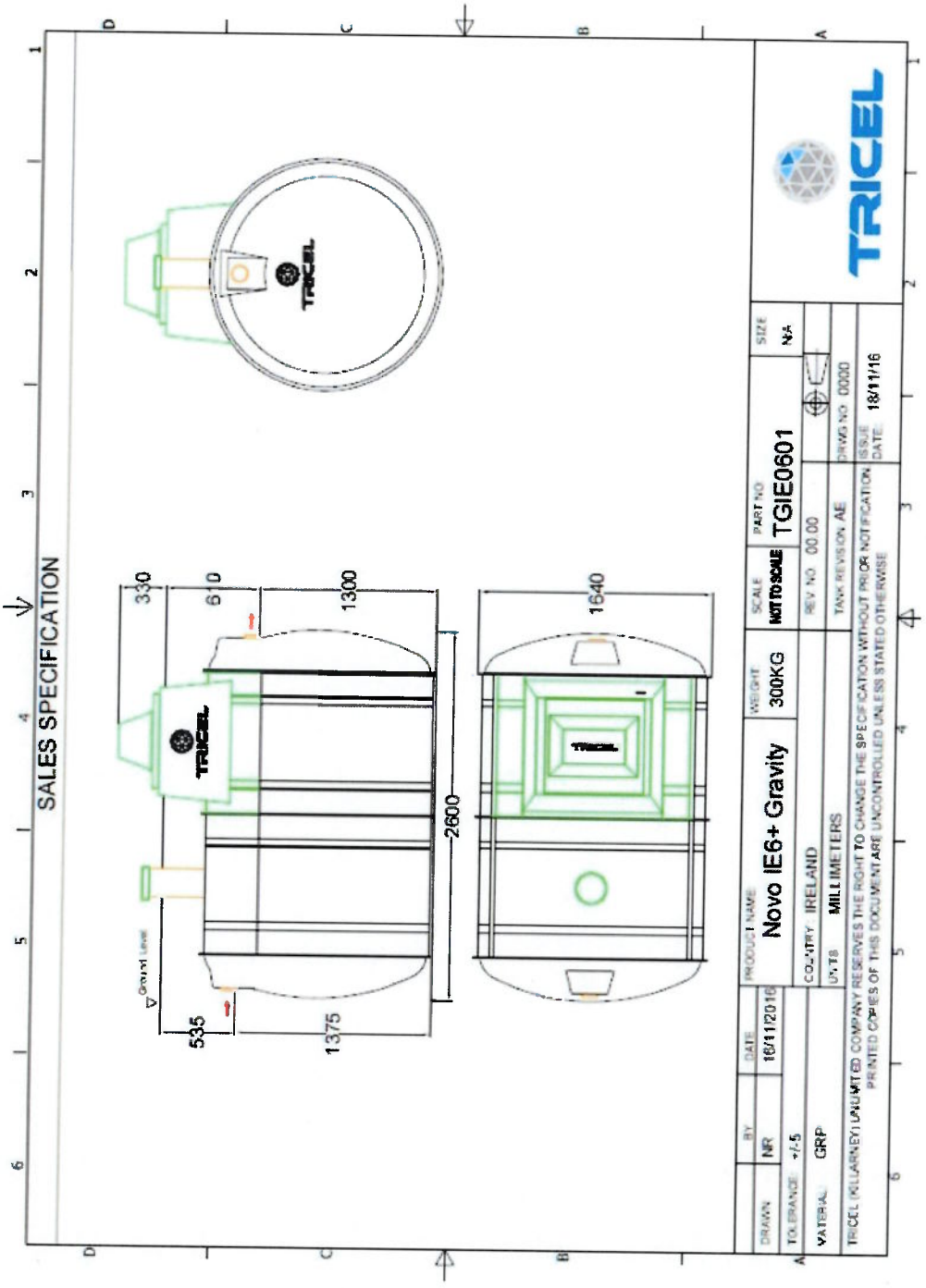
Section 1: Information on the Novo Package Plant

- Manufacturers report and sizing of the Tricel Novo Package Plant.
- Drawings of the Novo Package Plant.
- Certification of the selected Novo Package Plant.
- Brochure on the Novo Package Plant.
- Optional Novo maintenance agreement.

For your site, we recommend a Novo IRL6+ wastewater treatment plant which is designed to treat a maximum of 900 litres of wastewater per day. The Tricel Novo range of wastewater treatment plants is fully in conformance with EN12566-3 and complies with SR66.

The Novo IRL6+ has a capacity of 4000 litres, of which 2400 are in the primary chamber, this ensures a long desludging interval.

Section 1


SALES SPECIFICATION
330
610
1300
1640
2600
535
1375
Ground Level
TRICEL
Novo IE6+ Gravity
TGIE0601
300KG
GRP
MILLIMETERS
IRELAND
NR
18/11/2016
18/11/16
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00.00
NOT TO SCALE
TRICEL (KILLARNEY) UNLIMITED COMPANY RESERVES THE RIGHT TO CHANGE THE SPECIFICATION WITHOUT PRIOR NOTIFICATION
PRINTED COPIES OF THIS DOCUMENT ARE UNCONTROLLED UNLESS STATED OTHERWISE

Certificate in accordance with SR66 for EN12566-Part 3

Prüfinstitut für Abwassertechnik GmbH

TREATMENT PERFORMANCE RESULTS

Tricel (Killarney)
Ballyspillane Industrial Est., Killarney, Co. Kerry, Ireland

EN 12566-3
Results corresponding to EN 12566-3 and S.R. 66

PIA-SR66-1512-1062

Novo
Submerged fixed film

Nominal organic daily load	0.26 kg/d		
Nominal hydraulic daily load	0.90 m³/d		
Material	Glass reinforced plastic		
Watertightness	Pass		
Structural behaviour (Calculation)	Pass (also wet conditions)		
Durability	Pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	91.6 %	52 mg/l
	BOD_5	95.9 %	11 mg/l
	NH_4-N	79.9 %	8 mg/l
	SS	95.3 %	16 mg/l
Number of desludging	Not more than once		
Electrical consumption	1.1 kWh/d		

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking

Notified Body No. 1739

Certified according to ISO 9001:2008

DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

Prüfinstitut für Abwassertechnik GmbH
geprüft - tested - testé

Elmar Lamé July 2015

NOVO BROCHURE

Homeowners: Individual domestic installation

The lightweight nature of the system makes for easy on-site delivery.

No need for big excavators and large holes that disrupt and disturb your garden.

Very low visual impact from fully installed units.

Larger projects: Commercial installations up to 50PE

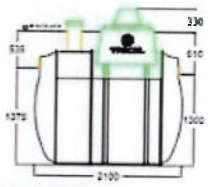
These units are suitable for installation at housing estates, camping sites, hotels etc., and have low maintenance and running costs.

Each WWTP unit is constructed of lightweight SMC and is easy to maneuver which simplifies the installation process.

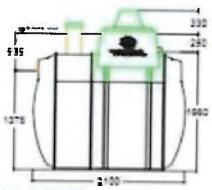
Example of a fully installed 50PE Novo wastewater treatment unit in a 5-star hotel.

Technical characteristics/ Plant dimensions

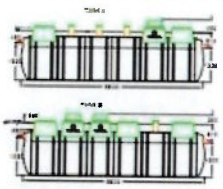
Novo Design Population	No. of people	Length	Width	Height	Nominal Inlet/ outlet diameter	Weight empty	Inlet invert to base	Outlet invert to base	Inlet invert to ground level	Air blower rating
		m			mm	kg	m			watts
IE4		1-4	2.1	1.64	2.24	110	270	1.375	1.3	0.535	60
IE4**		2-4	2.6	1.64	2.24	110	300	1.375	1.3	0.535	60
IE8		2-8	2.6	1.64	2.24	110	300	1.375	1.3	0.535	80
IE10		3-10	3.1	1.64	2.24	110	370	1.375	1.3	0.535	80
IE12		4-12	3.6	1.64	2.27	110	400	1.375	1.3	0.535	100
IE18		6-18	4.6	1.64	2.27	110	500	1.375	1.3	0.535	200
IE24		8-24	6.6	1.64	2.27	150	700	1.35	1.3	0.56	200
IE30	Tank A	10-30	2.6	1.64	1.99	150	320	1.35	1.3	0.46	
	Tank B		3.6	1.64	2.27	150	600	1.35	1.3	0.56	200 + 80
IE36	Tank A	12-36	3.6	1.64	1.99	150	400	1.35	1.3	0.46	
	Tank B		6.6	1.64	2.27	150	700	1.35	1.3	0.56	200 + 80
IE42	Tank A	14-42	3.6	1.64	2.27	150	600	1.35	1.3	0.46	
	Tank B		3.6	1.64	2.27	150	600	1.35	1.3	0.56	200 x 2
IE50	Tank A	16-50	6.6	1.64	2.27	150	700	1.35	1.3	0.46	
	Tank B		6.6	1.64	2.27	150	700	1.35	1.3	0.56	200 + 120 + 80



IE6 gravity outlet
Up to 6PE domestic gravity flow outlet.



IE6 pumped outlet
1-6 domestic pumped unit. Suitable for pumping to a raised discharge area (over).



Gravity IE50 outlet
Suitable for commercial installation, caters for up to 50 people.

Tricel Novo riser options for deep installation

Tricel offer 3 different manhole riser heights to suit different invert/inlet levels. Manhole risers allow for the positioning of the treatment plants at the depth which is optimum to each individual installation.Wastewater is gravity fed from the home to your treatment plant. The inlet pipe's position from the premises determines the excavation depth for the WWT plant. Tricel offer a choice of manhole risers 250mm/500mm/750mm to help with installation where site conditions require a flexible solution.

Tricel Novo: Wastewater Treatment System
Service Agreement

Establishing a regime of yearly inspections and maintenance is advised to ensure that your Tricel Novo continues to perform to the same high standards throughout its lifetime. The service agreement covers travel, the service and the labour cost of servicing only. Other labour costs are excluded, as are all replacement parts.

Tricel (Killarney) Unlimited Company, Ballyspillane Industrial Estate, Killarney, Co. Kerry, V93 X253, Ireland ("the Company") enter this Tricel Novo service agreement with the Customer named below.

Customer Details:			
Name:			
Address:		Address of Site: (If other)	
Telephone No.:			
Date of Tricel Novo Order:			
Work Order No.:			
Date of Delivery of Tricel Novo:			
Date of System Commissioning:			
Service Agreement Fee Paid:			
Date of Service Agreement Commencement:			
Unit Serial No.:			

During routine servicing, the service technician will perform a series of checks and procedures:

Checks:

- The air-diffuser is monitored to check for sufficient dispersion of air.
- The sludge return system is functioning correctly.
- The covers and locks are in place and in good condition.
- General appearance and condition of the treatment system is good.

Procedures:

- The blower is tested.
- The blower filter is replaced.
- The system alarm is tested.
- The pump and float-switch are tested (if applicable).
- The vents are cleared of any blockages.
- The sludge level in the primary chamber is measured.

Notes:

- Full inspection labour is covered (including any immediate minor system adjustment required) This service agreement does not cover the cost of any labour or materials that may arise as a result of this inspection.
- Components that require replacing will incur additional charges.
- All service agreements exclude de-sludging.

Tricel (Killarney) Unlimited Company trading as Tricel.

March 2017

Section 2: Information on the disposal route

The proposed solution for disposal is percolation trenches which consists of a series of pipework which distributes the effluent for treatment using in situ subsoil.

Based on a Population of 5 and a percolation value of 21-40 on the site, the chosen polishing filter for this site is percolation trenches. The minimum amount of pipe required will be 60m. This is based on trench length required per person for the given percolation value as stated in table 10.1 of the EPA Code of Practice 2021.

It recommends that each percolation trench should be equal in length and no longer than 10m

Please see attached the accompanying documents in Section 2 for the Percolation area

- Percolation area separation distances
- Construction Requirements

The location and construction of the percolation area is the responsibility of the site engineer. A full site layout drawing should accompany this report.

The EPA CoP 2021 outlines the design, siting and construction requirements for percolation areas.

The tables below outline some of the key factors to take into consideration when designing and locating a polishing filter.

Table 6.2 Minimum separation distances from the area DWWTS

Features			DWWTS – periphery of tank/plant and infiltration/ treatment area (m)
Public/group water supply abstraction points/wells			60
Down-gradient domestic well	3 ≤ PV ≤ 10 (usually SAND- or GRAVEL-dominated material)	Depth of soil/subsoil ≥ 2.0 m between invert level and bedrock, and water table 1.2–2.0 m	60
		Depth of soil/subsoil 2.0–8.0 m between invert level and bedrock, and water table > 2.0 m	40
		Depth of soil/subsoil > 8.0 m between invert level and bedrock, and water table > 2.0 m	30
	10 < PV ≤ 30 (usually SILT- or SAND- or silty GRAVEL-dominated material)	Depth of soil/subsoil 1.2–8.0 m between invert level and bedrock	45
		Depth of soil/subsoil > 8.0 m between invert level and bedrock	30
	30 < PV ≤ 120 (usually SILT/ CLAY- or CLAY-dominated material)	Depth of soil/subsoil 1.2–3.0 m between invert level and bedrock	40
		Depth of soil/subsoil ≥ 3.0 m between invert level and bedrock	30
Alongside domestic well			25
Up-gradient domestic well			15
Karst feature			15
Lake or foreshore			50
Watercourse/stream			10
Open drain or drainage ditch			10
Adjacent tank/plant and percolation area, polishing filter or infiltration area			10
On-site dwelling house			7 (tank/plant)
			10 (free water surface constructed wetland)
			10 (infiltration/ treatment area)
Neighbouring dwelling house			7 (tank/plant)
			25 (free water surface constructed wetland)
			10 (infiltration/ treatment area)
Surface water soakaway[a]			5
Road			4
Slope breaks/cuts			4
Trees[b]			3
Site boundary			3
Heritage features, NHA/SAC/SPA			See note

PV, percolation value

[a] The soakaway for surface water drainage should be located down-gradient of the infiltration/treatment area. It should also be ensured that this distance is maintained from neighbouring storm water disposal areas or soakaways.

[b] Tree roots may lead to PFPs developing. The canopy spread indicates potential root coverage.

[c] The distances required depend on the importance of the feature. Therefore, advice should be sought from the local authority and/or from the the Department of Housing, Local Government and Heritage, specifically the National Monuments Service and the National Parks and Wildlife Service.

Table 6.2 EPA CoP 2021: Minimum separation distances

Table 10.1: Infiltration/treatment area and trench length design for tertiary treatment, per PE

Percolation values (PVs)	Pumped or underlying gravity discharge (Options 1 and 2)	Gravity discharge into 500 mm wide trenches (Option 3)	Low-pressure pipe distribution into 300 mm wide trenches (Option 4)	Drip dispersal system (Option 5)	Tertiary infiltration area (Option 6)
	Area required per person (m^2)	**Trench length required per person (m)**	**Trench length required per person (m)**	**Area required per person (m^2)**	**Area required per person (m^2)**
3 ≤ PV ≤ 20	≥7.5	≥6	≥6	≥5	≥3.75
21 < PV ≤ 40	≥15	≥12	≥12	≥14	≥7.5
41 < PV ≤ 50	≥30	≥17	≥17	≥16	≥15
51 < PV ≤ 75	≥50	≥19	≥19	≥22	≥25
76 < PV ≤ 90	–	–	≥28	≥34	–
91 < PV ≤ 120	–	–	–	≥54	–

Table 10.1 from EPA CoP 2021 - Loading rates for the soil polishing filter

Table 7.3: Requirements of a percolation trench (gravity fed)

Percolation trench characteristics	Requirements
Slope of pipe from tank to distribution device	1 in 40 for earthenware or concrete, 1 in 60 for uPVC
Slope of percolation trench from distribution device	1 in 200
Length of percolation pipe in each trench	18 m maximum
Minimum separation distance between percolation trenches	2 m (2.5 m centre to centre)
Diameter of pipe from septic tank to distribution device	100–110 mm
Percolation pipes[a]	100 mm bore, perforated (typically at 4, 6 and 8 o'clock) smooth wall PVC drainage pipes with perforations of 8 mm diameter at about 75 mm centres along the pipe or pipes with similar hydraulic properties. Maximum of six pipes per distribution device
Width of percolation trench	500 mm
Depth of percolation trench	Ideally, about 850mm[b] below ground surface depending on site (as per Figures 7.1 and 7.3)
Depth of unsaturated soil and/or subsoil beneath percolation trench and above the bedrock and the water table	Minimum 1.2 m for GWPRs of R1 or R2[1]. Minimum 2.0 m for GWPRs of R2[2], R2[3], R2[4], R3[3] or R3[4]
Backfilling of percolation trench (see Figure 7.1)	300 mm of 12–32 mm washed gravel or broken stone aggregate on invert; pipe laid at a 1 in 200 slope surrounded by 12–32 mm clean washed gravel or broken stone aggregate and with 150 mm of similar aggregate over pipe, geotextile layer followed by topsoil to ground surface
Geotextile	Geotextile should be in accordance with EN ISO 10319
Access/inspection points and vents	These are recommended for the ends of the percolation pipes. The covers should be visible and installed to prevent entry of water. They may also be used for rodding or scouring purposes

a Before installation the holes in the percolation pipe should be inspected to check that they are the correct size and free from debris.

b The percolation pipes may be located at a shallower depth, provided that a minimum of 450 mm of material is placed above the pipes to provide the required protection against damage from above.

Table 7.3 EPA CoP 2021: Construction of percolation trenches. For secondary treated waste water, the maximum length of percolation pipe in each trench should be 10m as outlined in section 10.1.1 option 3

Terms and conditions:

Tricel cannot accept responsibility for incorrect site details or calculations as these are based on user inputs which are outside of Tricel control.
Full terms of website use are available at www.tricelsiteassessor.ie./TermsOfWebsiteUse

LALLY
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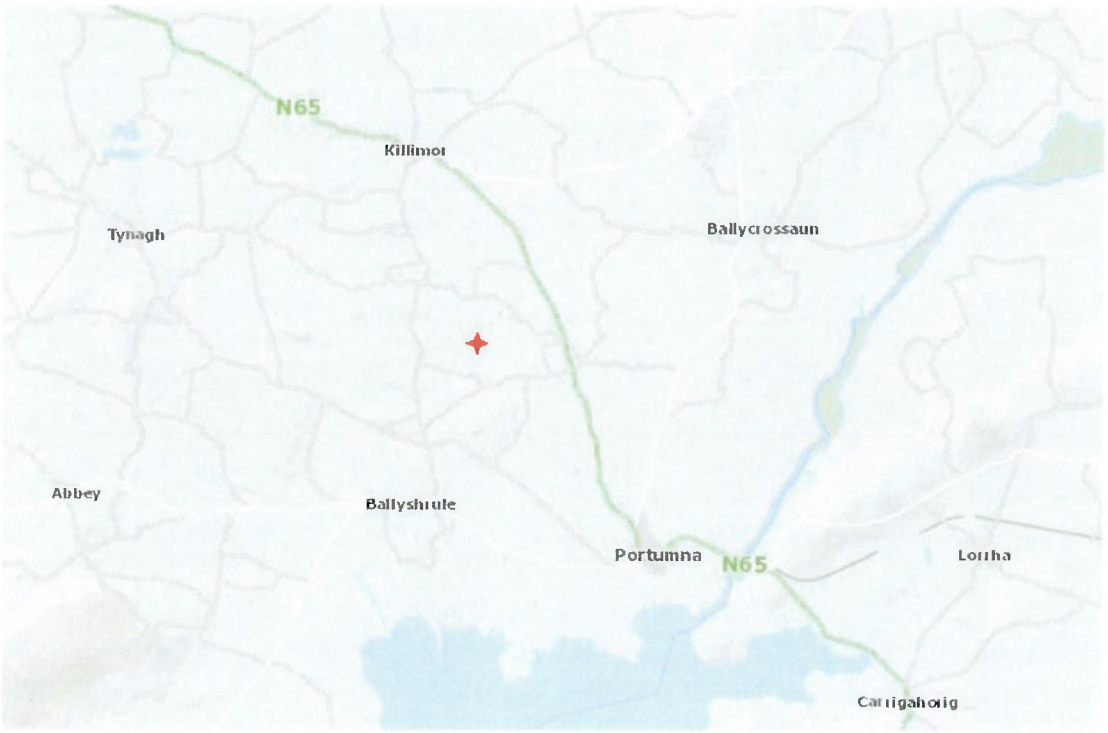
BRE Digest 365 Soil Infiltration Tests

For

Halston
on behalf of Coolpowra Flexgen Ltd

At

Coolpowra,
Co. Galway



Date of Issue: 22/05/2024

INTRODUCTION

This report is based on the findings of soil infiltration test examinations and provides calculations of soil infiltration rates as per BRE Digest 365, carried out by Lally Chartered Engineers.

The site assessment was undertaken on the 11th & 12th of April 2024.

3 no. Trial pits (T1, T2, T3) were dug by excavator and all indicated a well-drained subsoil profile. (See photographs).

The assessment and report have been undertaken in accordance with the following documents.

BRE Digest 365 CIRIA Guidance Documents,

Met Eireann rainfall return periods for Coolpowra, Co. Galway.

SITE SPECIFIC INFORMATION

Site Address: Coolpowra, Co. Galway

Project Management by Halston, on Behalf of Coolpowra Flexgen Ltd.

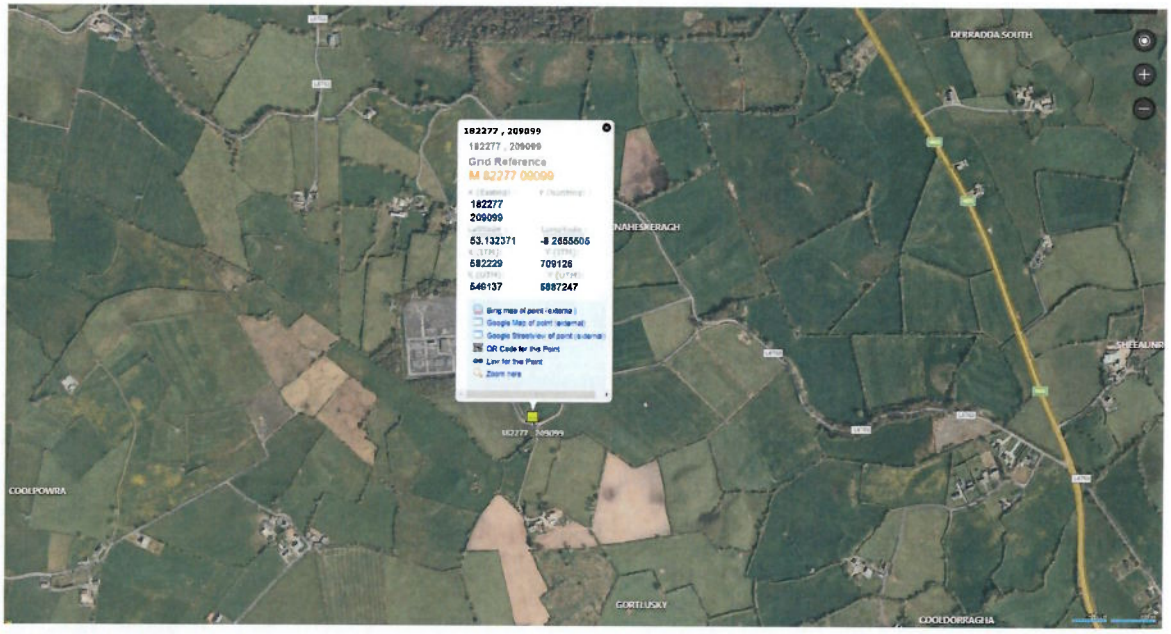


Fig 1. Site Location

Irish Grid Coordinates: Easting 182277, Northing 209099,

ITM Coordinates: Easting 582229, Northing 709126

GSI MAPS

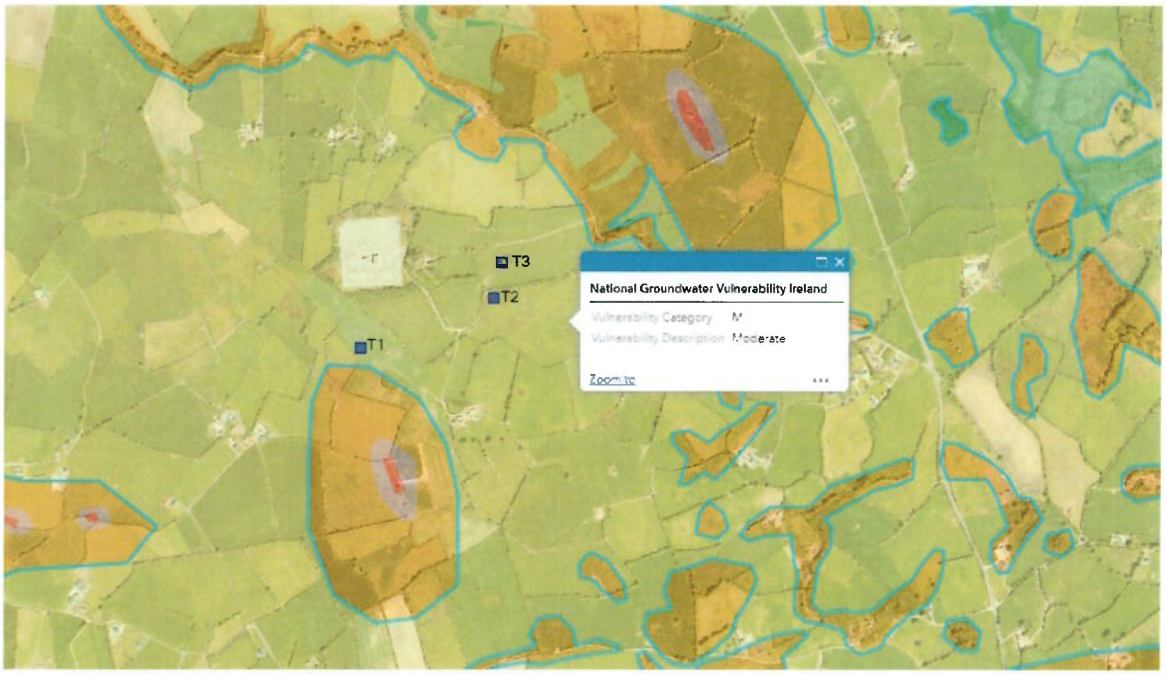


Fig 2. Groundwater Vulnerability – Moderate

Fig 3. Bedrock – Lucan Formation

Fig 4. Subsoils – T1 - TLs, T2-T3 - GLs

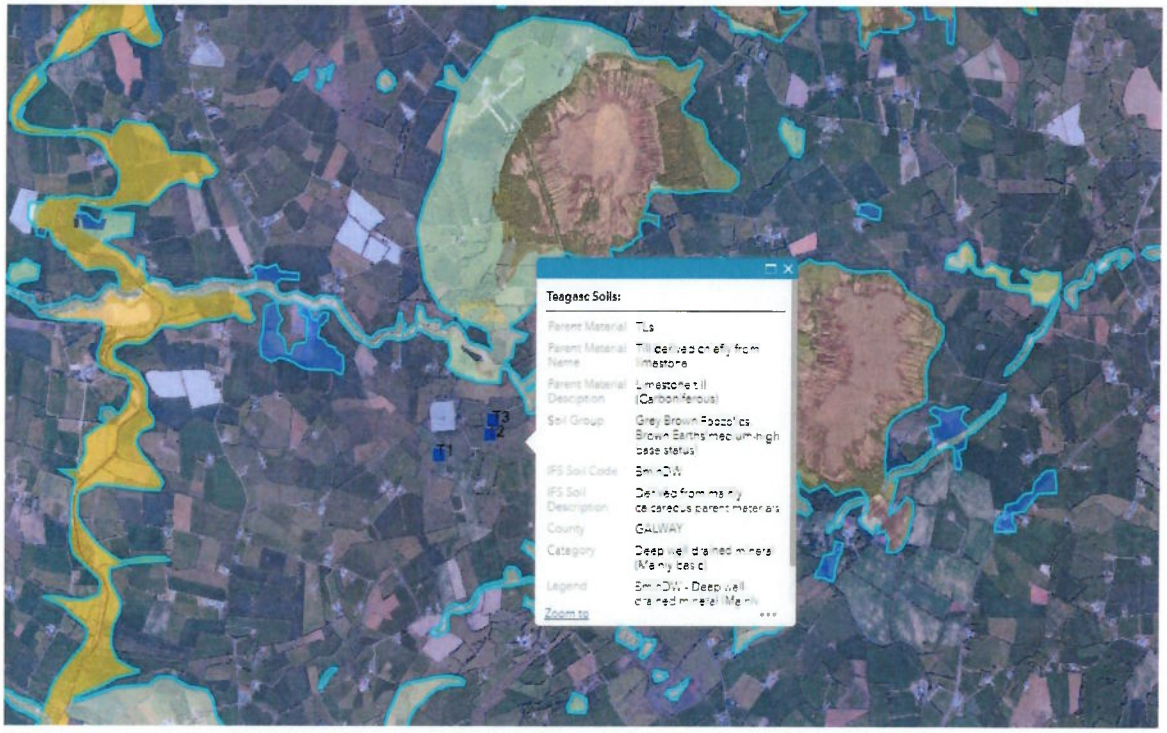


Fig 5. Teagasc Soils – BminDW – Deep well drained mineral

TRIAL PIT 1 (T1)

A trial pit measuring 1.70m long x 1.0m wide x 2.0m deep was dug by excavator. The soil/subsoil profile consisted of an uncompact crumb topsoil 0.3m deep over a brownish grey coloured uncompact gravel layer 1.70m deep.

The soil types observed in the trial hole are consistent with the GSI maps soils description.

Teagasc Soils - BminDW - Deep well drained mineral (Mainly basic).

Subsoils – TLs - Till derived from Limestones.

Bedrock Geology - Lucan Formation - Dark limestone & shale.

These can be moderately to well drained.

The effective depth of the soakaway test was 0.8m. The time for water to infiltrate from 75% to 25% of the effective depth was 60 minutes or 3600 sec.

Test Hole Size	Length	Width	Depth	Inlet Level	Depth Water Test	
	m	m	m	m		
	1.7	1.2	2	1.2	0.8	
Depth to Water Table	n/a					
Infilltration Test No. 1	**Description**	**Depths**	**Staff Reading**			**Time Taken**
Details *Average Fill Details*	Trench Depth Inlet Depth 25% Water Drop 75% Water Drop	2 1.2 0.2 0.6	2 0.8 0.6 0.2			
	Average Time Taken to Drop 25% to 75% test hole =					60

Inputs		
Input Time Taken to drop from 75% to 25%	**60.00**	Minutes
Input depth to invert of outlet (m)	**1.20**	Meters
Input depth of soakway below outlet	**0.80**	Meters
Input Length Soakpit (m)	**1.70**	Meters
Input Width Soakpit (m)	**1.20**	Meters
Effective Depth = 0.5 soakaway (m)	**0.4**	Meters
Mean Surface Area of Soakway	**4.36**	m2
Surface Area subjected to infiltration	**4.94**	m2
Volume Outflowing between 75% and 25%	**2**	m3
Soil Infilltration m/s	**0.0001125** **1.125E-04**	**m/hr** **0.4048583**

PIC 1 - T1

PIC 2 - T1

PIC 3 - T1

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TRIAL PIT 2 (T2)

A trial pit measuring 1.80m long x 0.9m wide x 1.6m deep was dug by excavator. The soil/subsoil profile consisted of firm dense topsoil 0.5m deep over a blueish grey coloured compact gravel layer 1.10m deep.

The soil types observed in the trial hole are consistent with the GSI maps soils description.

Teagasc Soils - BminDW - Deep well drained mineral (Mainly basic).

Subsoils – GLs - Gravel derived from Limestones.

Bedrock Geology - Lucan Formation - Dark limestone & shale.

These can be moderately to well drained.

The effective depth of the soakaway test was 0.85m. The time for water to infiltrate from 75% to 25% of the effective depth was 175 minutes or 10500 sec.

Test Hole Size	**Length**	**Width**	**Depth**	**Inlet Level**	**Depth Water Test**	
	m	**m**	**m**	**m**		
	1.8	0.9	1.6	0.75	0.85	
Depth to Water Table	n/a					
Infilltration Test No. 1	**Description**	**Depths**	**Staff Reading**			**Time Taken**
Details	Trench Depth	1.6	1.6			
Average Fill Details	Inlet Depth	0.75	0.85			
	25% Water Drop	0.2125	0.6375			
	75% Water Drop	0.6375	0.2125			
	Average Time Taken to Drop 25% to 75% test hole =					175

Inputs		
Input Time Taken to drop from 75% to 25%	**175.00**	Minutes
Input depth to invert of outlet (m)	**0.75**	Meters
Input depth of soakway below outlet	**0.85**	Meters
Input Length Soakpit (m)	**1.80**	Meters
Input Width Soakpit (m)	**0.90**	Meters
Effective Depth = 0.5 soakaway (m)	**0.425**	Meters
Mean Surface Area of Soakway	**3.915**	m2
Surface Area subjected to infiltration	**4.32**	m2
Volume Outflowing between 75% and 25%	**2**	m3
Soil Infilltration m/s	**0.0000441** **4.409E-05**	**m/hr** **0.1587302**

Pic 4 – T2

Pic 5 – T2

Pic 6 – T2

LALLY
CHARTERED ENGINEERS

TRIAL PIT 3 (T3)

A trial pit measuring 1.70m long x 1.2m wide x 1.4m deep was dug by excavator. The soil/subsoil profile consisted of compact topsoil 0.6m deep over a blueish grey coloured compact gravel layer 0.80m deep.

The soil types observed in the trial hole are consistent with the GSI maps soils description.

Teagasc Soils - BminDW - Deep well drained mineral (Mainly basic).

Subsoils – GLs - Gravel derived from Limestones.

Bedrock Geology - Lucan Formation - Dark limestone & shale.

These can be moderately to well drained.

The effective depth of the soakaway test was 0.80m. The time for water to infiltrate from 75% to 25% of the effective depth was 75 minutes or 4500 sec.

Test Hole Size	Length	Width	Depth	Inlet Level	Depth Water Test	
	m	m	m	m		
	1.7	1.2	1.4	0.6	0.8	
Depth to Water Table	n/a					
Infilltration Test No. 1	Description	Depths	Staff Reading			Time Taken
Details *Average Fill Details*	Trench Depth Inlet Depth 25% Water Drop 75% Water Drop	1.4 0.6 0.2 0.6	1.4 0.8 0.6 0.2			
	Average Time Taken to Drop 25% to 75% test hole =					75

Inputs		
Input Time Taken to drop from 75% to 25%	**75.00**	Minutes
Input depth to invert of outlet (m)	**0.60**	Meters
Input depth of soakway below outlet	**0.80**	Meters
Input Length Soakpit (m)	**1.70**	Meters
Input Width Soakpit (m)	**1.20**	Meters
Effective Depth = 0.5 soakaway (m)	**0.4**	Meters
Mean Surface Area of Soakway	**4.36**	m2
Surface Area subjected to infiltration	**4.94**	m2
Volume Outflowing between 75% and 25%	**2**	m3
Soil Infilltration m/s	**0.0000900** **8.997E-05**	**m/hr** **0.3238866**

Pic 7 – T3

Pic 8 – T3

Pic 9 – T3

Pic 10 – T3

Met Eireann

Return Period Rainfall Depths for sliding Durations

Irish Grid: Easting: 182277, Northing: 209099,

DURATION	Interval 6months, 1year,		Years 2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.6,	3.5,	4.0,	4.7,	5.2,	5.5,	6.7,	7.9,	8.7,	9.9,	10.9,	11.6,	12.8,	13.7,	14.4,	N/A ,
10 mins	3.6,	4.9,	5.6,	6.5,	7.2,	7.7,	9.3,	11.0,	12.2,	13.8,	15.1,	16.2,	17.8,	19.1,	20.1,	N/A ,
15 mins	4.3,	5.8,	6.5,	7.7,	8.4,	9.0,	10.9,	13.0,	14.3,	16.2,	17.8,	19.1,	21.0,	22.4,	23.6,	N/A ,
30 mins	5.7,	7.5,	8.5,	9.9,	10.8,	11.5,	13.7,	16.1,	17.6,	19.7,	21.6,	23.0,	25.1,	26.7,	28.1,	N/A ,
1 hours	7.6,	9.9,	11.0,	12.6,	13.7,	14.5,	17.1,	19.9,	21.6,	24.0,	26.1,	27.7,	30.1,	31.9,	33.4,	N/A ,
2 hours	10.2,	12.9,	14.3,	16.2,	17.5,	18.4,	21.4,	24.6,	26.6,	29.3,	31.6,	33.4,	36.0,	38.0,	39.6,	N/A ,
3 hours	12.0,	15.1,	16.6,	18.7,	20.1,	21.2,	24.4,	27.9,	30.0,	32.9,	35.4,	37.2,	40.0,	42.1,	43.8,	N/A ,
4 hours	13.6,	16.9,	18.5,	20.8,	22.3,	23.4,	26.8,	30.4,	32.7,	35.7,	38.3,	40.2,	43.1,	45.3,	47.0,	N/A ,
6 hours	16.1,	19.7,	21.5,	24.0,	25.7,	26.9,	30.6,	34.5,	36.9,	40.1,	42.8,	44.9,	47.9,	50.2,	52.0,	N/A ,
9 hours	19.0,	23.1,	25.1,	27.8,	29.6,	30.9,	34.9,	39.0,	41.6,	45.0,	47.9,	50.1,	53.2,	55.6,	57.5,	N/A ,
12 hours	21.4,	25.8,	27.9,	30.8,	32.7,	34.1,	38.3,	42.7,	45.3,	48.9,	51.9,	54.1,	57.4,	59.8,	61.8,	N/A ,
18 hours	25.4,	30.2,	32.5,	35.7,	37.7,	39.2,	43.7,	48.3,	51.1,	54.9,	58.0,	60.3,	63.8,	66.3,	68.3,	N/A ,
24 hours	28.6,	33.8,	36.2,	39.6,	41.7,	43.2,	48.0,	52.8,	55.7,	59.6,	62.8,	65.2,	68.7,	71.3,	73.4,	80.2,
2 days	35.2,	41.3,	44.2,	48.2,	50.7,	52.5,	58.1,	63.8,	67.2,	71.7,	75.5,	78.3,	82.4,	85.4,	87.9,	95.8,
3 days	40.7,	47.7,	50.9,	55.5,	58.3,	60.4,	66.7,	73.1,	77.0,	82.1,	86.3,	89.5,	94.1,	97.5,	100.2,	109.1,
4 days	45.7,	53.4,	57.0,	62.0,	65.1,	67.4,	74.4,	81.4,	85.7,	91.3,	96.0,	99.5,	104.5,	108.2,	111.2,	121.0,
6 days	54.6,	63.7,	67.9,	73.8,	77.4,	80.1,	88.2,	96.4,	101.4,	108.0,	113.4,	117.4,	123.2,	127.6,	131.0,	142.3,
8 days	62.7,	73.0,	77.8,	84.4,	88.5,	91.6,	100.8,	110.0,	115.6,	123.0,	129.1,	133.6,	140.1,	145.0,	148.9,	161.5,
10 days	70.3,	81.7,	87.0,	94.4,	98.9,	102.3,	112.4,	122.6,	128.8,	136.9,	143.7,	148.6,	155.9,	161.2,	165.5,	179.4,
12 days	77.5,	89.9,	95.8,	103.8,	108.7,	112.4,	123.5,	134.6,	141.3,	150.1,	157.5,	162.9,	170.7,	176.5,	181.2,	196.3,
16 days	91.1,	105.5,	112.3,	121.5,	127.3,	131.5,	144.3,	157.1,	164.9,	175.0,	183.4,	189.6,	198.7,	205.4,	210.7,	228.1,
20 days	104.0,	120.2,	127.9,	138.3,	144.7,	149.5,	163.9,	178.3,	187.0,	198.4,	207.9,	214.8,	225.0,	232.4,	238.4,	257.9,
25 days	119.3,	137.8,	146.4,	158.2,	165.6,	171.0,	187.2,	203.5,	213.4,	226.3,	236.9,	244.8,	256.2,	264.6,	271.3,	293.3,

NOTES:

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

For details refer to:

'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',

Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

ATTACHMENT B

STREAM REALIGNMENT DRAWINGS