Introduction

The proposed site is located at the rear of Zone C, IDA Business Park in Mullingar. The site, which is greenfield has been used predominantly for grazing in the past, with no known industrial use. It is currently IDA owned with industrial, residential and commercial use predominant to the north with agricultural lands to the south, east and west which are sparsely populated with residential dwellings. The site is currently in the process of being purchased by Soltec Ireland Ltd, with the agreement expected to be finalised in the coming months. As a result of the latter access is restricted, therefore samples of groundwater and soil has been unable to be taken to date. However, a full review of the geology and hydrogeology of the site and local environment has been completed as part of the planning application and EIAR submitted, ref. 6.3 Volume III-Appendix 5.1.

Fig 1. Aerial View of Site

The land is zoned Enterprise and Employment within the Mullingar Local Area Plan 2014-2020.

Photos of the site

Summary of Hydrology & Hydrogeology of the Proposed Site

Existing Environment

- **Bedrock Geology**

Unit Name	Lucan Formation
Stratigraphic Code	LU
Description	Dark limestone & shale (`calp)
Sheet Number	16
SHAPE	
Formation	Lucan Formation
Definition	Nolan (1989) first used the name and briefly described the formation which he had previously described more fully as the Dublin Formation (Nolan 1986). The Lucan formation is approximately equivalent to the Calp of Marchant and Sevastopulo (1980).
Type Section	The type section is designated in four quarries in the Lucan area as described by Marchant and Sevastopulo (1980).
Lithology Description	The formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar
Lithology Legend	Dark limestone & shale
Rock Type	Limestone
Thickness	The formation ranges from 300m to 800m in thickness.
System	Carboniferous
Series	Dinantian
Stage	Late Chadian to Asbian
Comments	The beds are predominantly fine-grained distal turbidites in the north Dublin Basin. The formation is intermittently exposed on the coast between Rush and Drumanagh Head.

Figure 1: Bedrock Formation (Source GSI Maps)

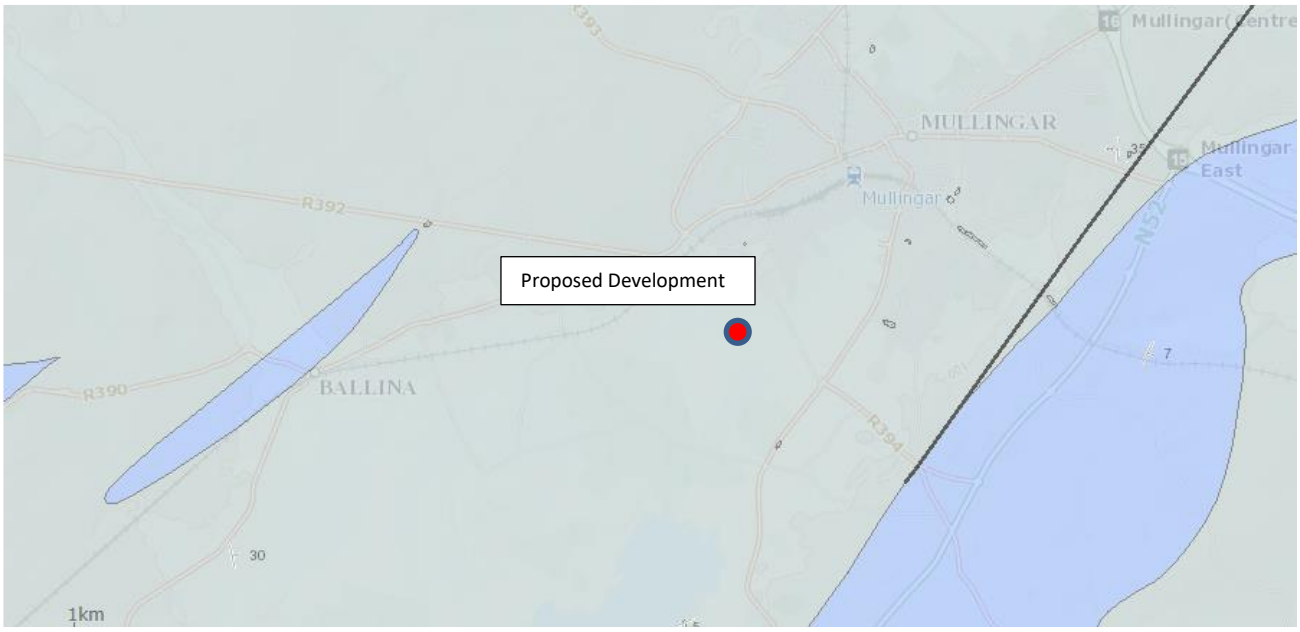
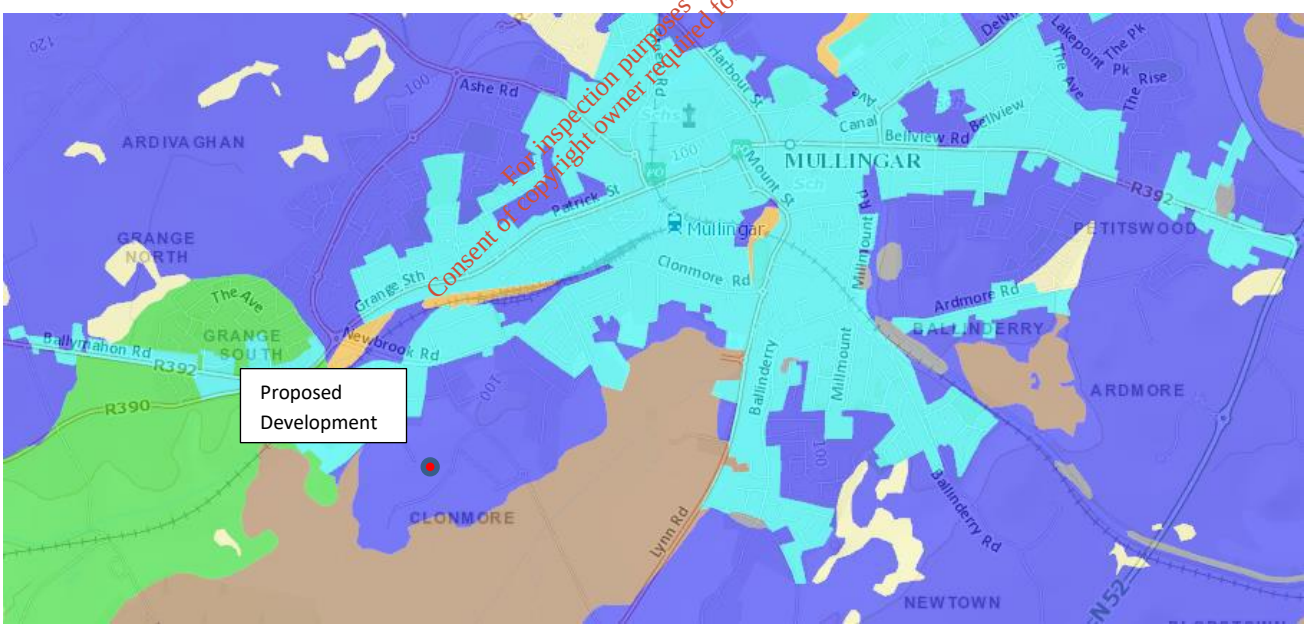
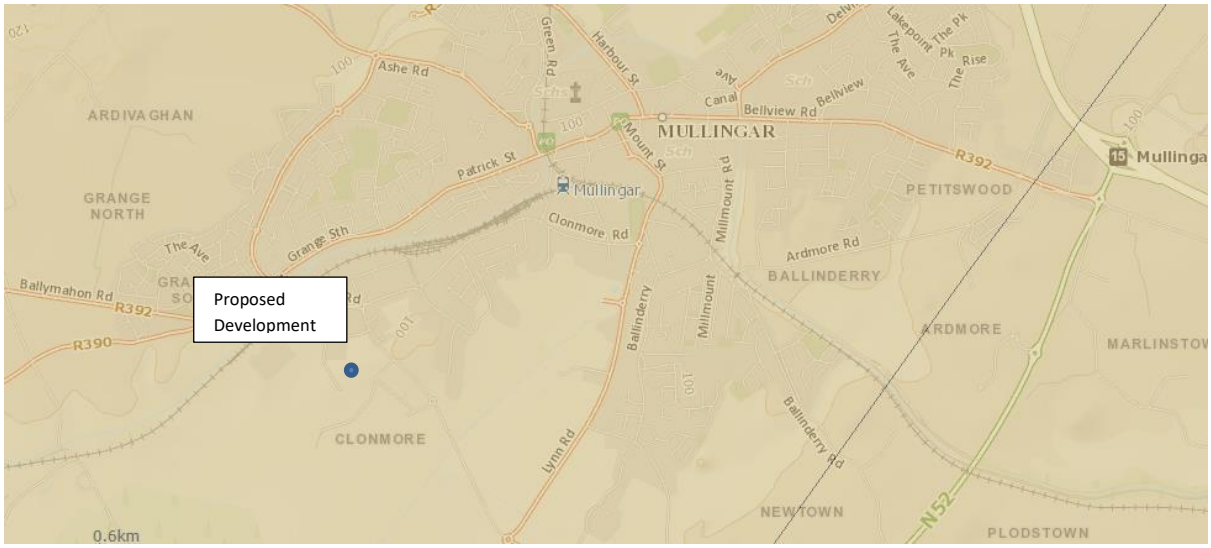


Figure 2: Subsoil Classification (Source GSI Maps)



Parent Material	TLs
Subsoil Category	Till derived chiefly from limestone
Subsoil Description	Limestone till (Carboniferous)

Figure 3: Aquifer Vulnerability Classification (Source GSI Maps)



Aquifer Category	LI
Category Description	Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
Area (sq km)	17,808.41

Hydrogeology (Groundwater)

The groundwater body (IE_SH_G_240) in which the proposed site is located with a catchment of poorly productive bedrock within the Shannon River basin district. The surface catchment of this particular area is located in the Clara Groundwater body. There are no groundwater drinking water protection areas in the vicinity of the site.

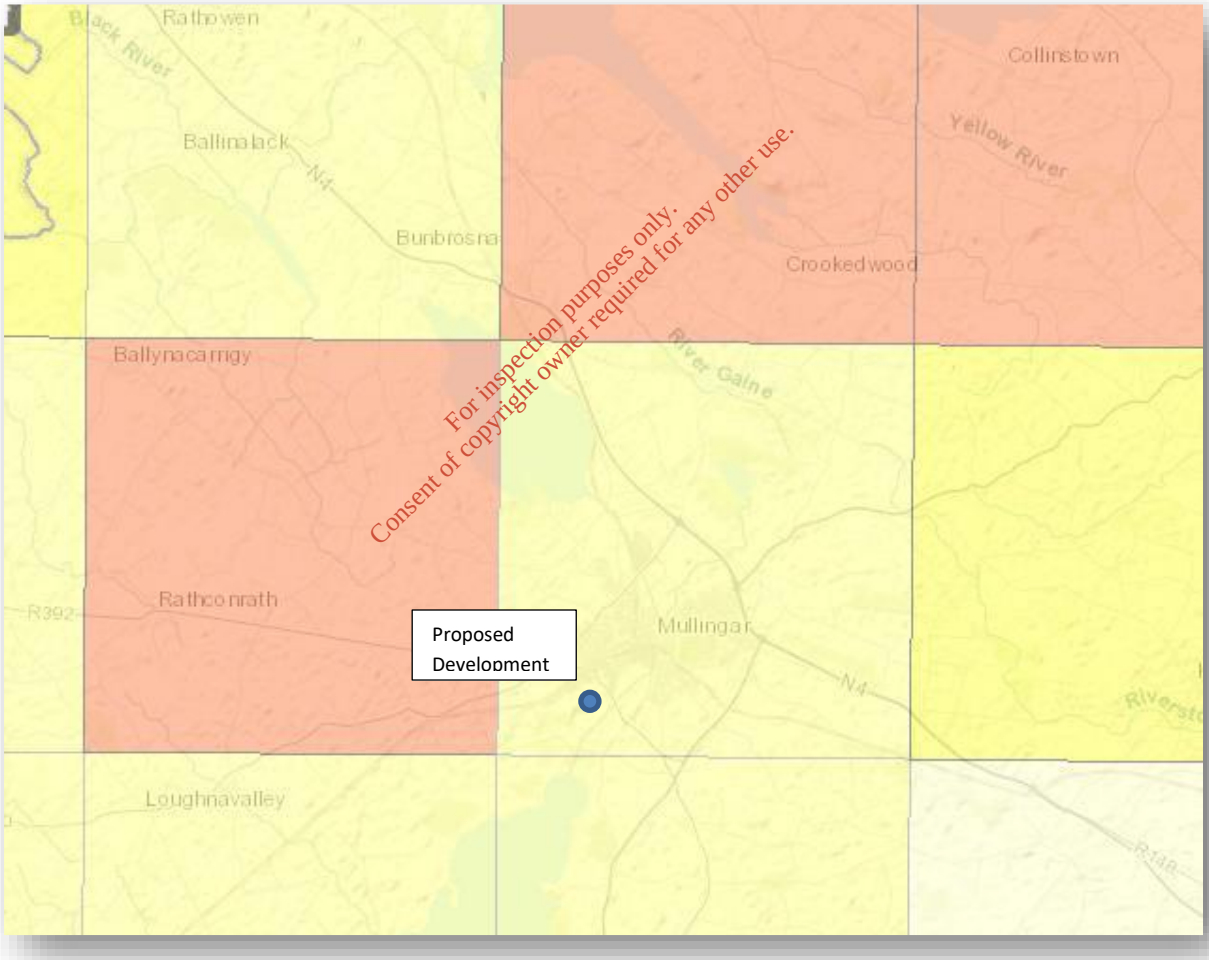
Figure 4: Groundwater Catchment Area (Source GSI Maps)

Flood Risk

According to the Office of Public Works (OPW) flood maps, no flood has been recorded at the subject site since records began.

Radon

Radon is a radioactive gas which is naturally produced in the ground from uranium present in small quantities in all rocks and soils. Radon gas rises through porous layers of soil and rock and when it reaches air it disperses into the atmosphere. It can seep into buildings through cracks in the floor, wall slab joints, pipe fittings and drains. When radon enters an enclosed space, it can accumulate to very high levels, which potentially could put people at risk of lung cancer depending on how much radon they have been exposed to and for how long.



The installation is located in a low radon area in which <1% of the homes in the area are estimated to have a radon level above the reference level by the Radiological Protection Institute of Ireland. The development as it is currently or any proposed changes to the process will not have any impact on radon levels in in the community.

Groundwater Abstractions

Examination of Ordnance Survey maps and a site walkover were undertaken to assess any shallow groundwater abstraction sources such as wells or springs within close proximity to the site. There are no public supplies or source protection zones within 10km of the site. Use of groundwater wells for livestock water supply in the area is unknown.

Groundwater will not be used in the installation and there are no proposals to commence abstracting groundwater for use in the process.

Groundwater Discharges

There are no proposed discharges to ground from any process or storm water collected at the installation. It is proposed that sewage will be discharged to the combined foul and storm water network operated by Irish Water in the industrial estate. Storm waters will be released to surface water after they are confirmed uncontaminated by analysis.

Potential Impacts

The potential impacts of the proposed project are detailed below under the construction and operational phases.

Construction phases

The DAHRRGA consultation sunmitted as part of the planning application *(ref. 6.3 Volume III-Appendix 1.3)* expressed concern regarding water contamination, eutrophication, and sedimentation arising from construction work, and also any accidental hydrocarbon/other chemical spills which may impact on Lough Ennell, part of *Lough Ennell SAC/SPA/NHA*. A summary of mitigation measures have been included below and also under Chapter 4 on Biodiversity of the EIAR (ref. 6.3 Volume II).

The main risks to groundwater associated with construction include;

- Storage and stock piling of top soil
  Foundation works will involve the excavation of soil from the site. Soil and groundwater samples will be taken prior to the commencement of project works. Contamination of the site is not expected given the previous use of the site for agriculture. In the unlikely event that any contaminated material is found, it shall be removed for treatment by a suitably permitted waste contractor.The stock piling of excavated soil and unprotected soil may result in increased silt run off to local drains.

- Use of diesel generators and other chemicals during civils work

  Diesel used for generators/ mobile lighting etc. can cause a risk when filling/ during use if leaking. All chemicals/ fuels should be notified to site management prior to use on-site.

- Laying of concrete foundations

Concrete can provide a significant risk to water bodies due to its high alkalinity.

Operational Phases

The most significant risk to groundwater in the site is from accidental spills. Significant controls have been implemented as part of the project design to prevent groundwater contamination. Further details can be reviewed below on mitigation and control measures.

Flood Risk

According to the Office of Public Works (OPW) flood maps, no flood has been recorded at the subject site or in the immediate surrounding area since records began.

Firewater Retention

The primary risk to water stems from an emergency situation such as an accidental spill or loss of control on site (e.g. fire). Significant controls have been added to the design plan in order to cope with any potential emergency. Further details of these mitigation measures can be found in section 5.4.2.2 below.

Mitigation and Monitoring

Construction Phase

Lough Ennell SAC/SPA /NHA will be protected from any potential adverse effects from the proposed development by the implementation of robust policies and procedures to cover all potential impacts during construction and operation. A summary of the controls to be introduced are included below;

A Construction Plan is to be generated in line with Inland Fisheries Guidelines on Protection of Fisheries during construction works[1] and CIRIA Guidelines, Good Practice On-site. It will be compiled before site works begins and will include an overview of environmental requirements of the project;

- Environmental responsibilities to form part of contract negotiations
- Site management including environmental responsibilities to be clearly stipulated as part of contract negotiations
- All contractors to be informed of site rules and requirements in relation to environmental protection measures
- Relevant signage put up through the site, illustrating environmental areas of concern
- Structured site layout, completed in line with CIRIA, Good Practice Guidelines
- Reporting procedures to be put in place
- Security measures to be put in place

[1] http://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html

- Waste management facilities to be put in place
- Daily checks to be completed on local drains, stock piles, overall house-keeping etc.
- Emergency response procedures to be put in place for spills etc. to include notification procedures for regulatory authorities
- All chemicals/ fuels to be used on-site should be approved for use, be appropriately bunded (where possible in an enclosed bund to prevent rainwater entry), hold minimum quantities and have a relevant safety data sheet.
- Regular site audits and checks implemented by Soltec site management
- No concrete wash-out on site
- Specified areas for refuelling with relevant controls for groundwater
- Spill trays to be used under all diesel generators
- Notification & Approval of chemicals and fuels before being brought on-site
- Bunding and Safety Data Sheets to be available for all chemicals and fuels on-site
- Spill procedure and kit to be maintained on site
- Stockpiling and storage on-site is to be kept to a minimum
- Samples of soil and groundwater to be taken for analysis before removal off-site

Operational Phase

The '*Civil Engineering Methodology Report*' (ref. 6.3 Vol III- Appendix 6.1, ORS Civils Report) outlines in detail the water pollution prevention aspects of the project which have potential to reach *Lough Ennell SAC/SPA/NHA*, and mitigation measures to prevent impacts causing water contamination, eutrophication, and sedimentation arising from construction work, and also any accidental hydrocarbon/other chemical spills.

An extract from the ORS report is as follows:
"Soltec will at all times ensure that the surrounding environment will not be polluted by its activities. In order to prevent and ensure the risk of contamination is minimised, Soltec has proposed numerous measures which comply and in certain instances exceed best available technology as prescribed by the Environmental Protection Agency.

In the unlikely event that there was a spillage, incident or accident at the facility, the proposed system will ensure that none of the materials will be discharged to ground or local surface water systems.

Soltec does not intend to utilise groundwater for its process operations at the facility. The sites emissions will be controlled during the operational phase by an Industrial Emissions (IE) Licence as issued by the EPA which will include limits for ground water and soil monitoring.

Soltec has operated at its current location in Zone A of Mullingar Business Park since 1994 without any incidents that would give rise to groundwater or soil contamination. The Industrial Emissions Licence stipulates Emission Limit Values (ELV's) for groundwater monitoring from specifically designed and permanently installed groundwater wells. Soil sampling is also required under the IE licence for the existing site. All samples analysed as part of this routine monitoring were returned below the limits of detection for all compounds used by Soltec.

Control measures incorporated into the design for the protection of groundwater include;

- All materials on site will be stored as per IE licence requirements and in line with the EPA guidance for Storage and Transfer of Materials for Scheduled Activities;
- All solvent storage areas will be appropriately bunded to provide secondary containment
- These storage areas will be certified and integrity tested in line with IE licence requirements;
- All production and process areas from the site entry to storage of chemicals will be hardstand to prevent contamination of groundwater in the event of a spill.
- The delivery yard has been designed as a bund which leads to one of 2 large underground tanks
- Procedures will be in place for spill notification, management and control of waters on storm water lines;
- Emergency spill kits and emergency response procedures will be developed and personnel will be trained in their existence and execution;
- All spent liquid wastes will be stored in the dedicated bunded waste stores with regular disposal to ensure there is no large-scale bulk storage;
- Spillage materials for localised spills will be established inside the facility buildings and outside at areas where spills are more likely to occur;
- Loading and unloading operations will be supervised and located on hardstanding ground in the event of spillage;
- The drainage network will be fitted with a penstock valve to prevent discharge to surface water and collection of material in the event of spillage;
- The installation will operate under an IE licence which is subject to the rigorous controls applied by the EPA;
- The site will operate to an environmental management system, such as ISO 14001.
- All technicians will be fully trained in operations and activities at the installation and also in Emergency Response procedures.

Flood Risk

No mitigation is necessary as the site has never flooded.

Emergency response & Firewater retention

Reference 6.3, Vol II chapter 6 – Surface water for details on firewater retention and emergency response.

Proposed Sampling Strategy for the Baseline Report

In line with the European Commission's interpretation of the requirement of a Baseline report available at http://ec.europa.eu/environment/industry/stationary/ied/faq.htm#ch2_1, a baseline report will be completed in line with Item 3 below for new installations. It is therefore requested that the licence is issued with a condition for the submission of the baseline report prior to starting operations. The latter is requested to ensure the timely processing of the licence application and as ownership of the site is still in progress which is in turn preventing the sampling of soil and groundwaters.

"The exact timing of when a baseline report is required varies according to the type of installation concerned. In this context three categories of installations must be distinguished:

1. *Existing installations permitted under Directive 2008/1/EC concerning integrated pollution prevention and control (IPPC) – Article 22(2) of the IED makes clear that a baseline report is required for such installations before a permit is updated for the first time after 7 January 2013. However, given that Article 82(1) sets out the deadline of 7 January 2014 for the implementation of Article 22 to such installations, this provision is only effectively applicable to permit updates from that later date.*
2. *Existing installations not covered by the IPPC Directive (newly prescribed activities in Annex I) – As for installations under point i) above, the IED makes clear that a baseline report is required for such installations before a permit is updated for the first time after 7 January 2013. However, given the deadline of 7 July 2015 for implementation of Article 22 of the IED for such installations as set out in Article 82(1), effectively this provision is only applicable to permit updates from that later date.*
3. *For new installations the baseline report is required before starting operation."*

Following the transfer of ownership from the IDA to Soltec Ireland Ltd., the following stand-alone Baseline Report will be generated to include;

- Details of Site Investigation
- Sampling and Monitoring Strategy-screening for hazardous substances for groundwater to include;
- VOC & semi- VOC screening
- Total & Dissolved Metals
- pH, temperature, conductivity, DO, alkalinity,
- TOC,
- Ammonia, Chloride, fluoride, Sulphate, Nitrate, Nitrite, Total Oxidisable Nitrogen, Total Phosphorus, Ortho-P, Sodium
- Extractable Hydrocarbons, Gasoline Range Hydrocarbons, Gasoline range organics
- Total & Faecal Coliforms

Data will then be reviewed against the conceptual site model and a report submitted for approval by the EPA prior to start up.