MWP

Environmental Report

Tomsallagh 110kV Substation and grid connection

WXD Energy Limited

April 2024

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1. Introduction

WXD Energy Limited, a Special Purpose Vehicle Company (SPV) of Statkraft Ireland Ltd (the Applicant) is proposing to apply to An Bord Pleanála for permission to construct a 110 kilovolt (kV) air insulated switchgear substation with overhead loop-in electrical connection ("proposed development") in the townland of Tomsallagh, Co. Wexford. The purpose of the proposed 110kV substation is to facilitate connection of the permitted Tomsallagh Solar Farms to the National Grid.

Malachy Walsh and Partners (MWP) has prepared this Environmental Report, on behalf of the applicant, to accompany the planning application to An Bord Pleanála. The report provides an appraisal of the environmental effects of the proposed development.

2. Site Location and Context

The proposed development site is located in within the townland of Tomsallagh, Co. Wexford. **Figure 1** and **Figure 2** illustrates the geographical location the proposed development site.

The site is situated in a rural lightly populated area approximately 5km south of Ferns village and 4.5km northeast of Enniscorthy town and approx. 0.2km to the west of the M11 (Gorey to Enniscorty motorway) which connects Wexford and Dublin.

The western side of the site adjoins a local rural road (L6065-1) and there is a mature hedgerow and trees along this roadside boundary.

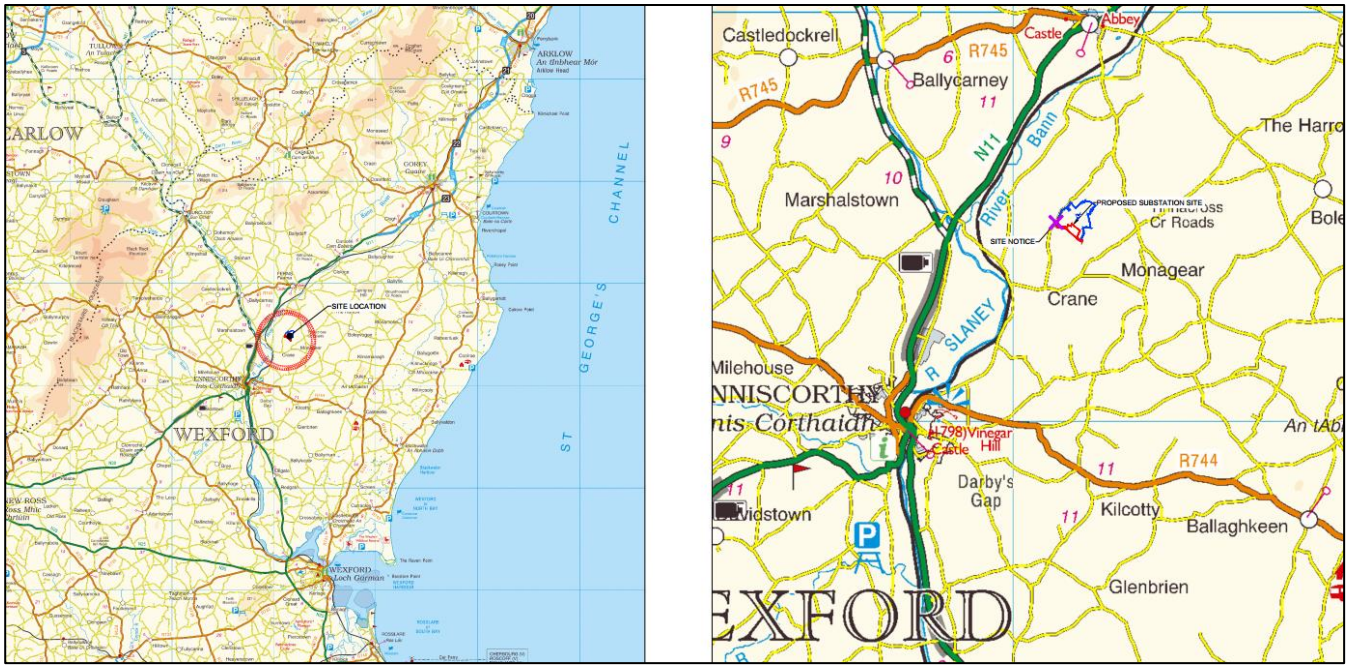
There are a number of residential dwellings located adjacent to the west of the site including 3 no. houses situated at the western corner of the site in proximity to the proposed site entrance along with a number of dwellings located further west of the site on the opposite side of the local public road. There are also a dwelling to the north and south of the site at a more removed distance.

The gradient of the site is described as generally flat to slightly undulating topography which falls in an easterly direction steadily towards the Tinnacross stream.

The site is located within the footprint of the permitted but not yet construction Tomsallagh Solar farm (Wexford Co Co Planning Ref: 2071275) (ABP-PL26.300427). The proposed development site currently comprises greenfield agricultural lands which are bound on all sides by existing hedgerows and agricultural lands. Overhead power lines currently run along the northern and eastern boundaries.

The immediate surrounding landscape predominately comprises agricultural grasslands and dispersed one-off housing.

Figure 1 Site Location



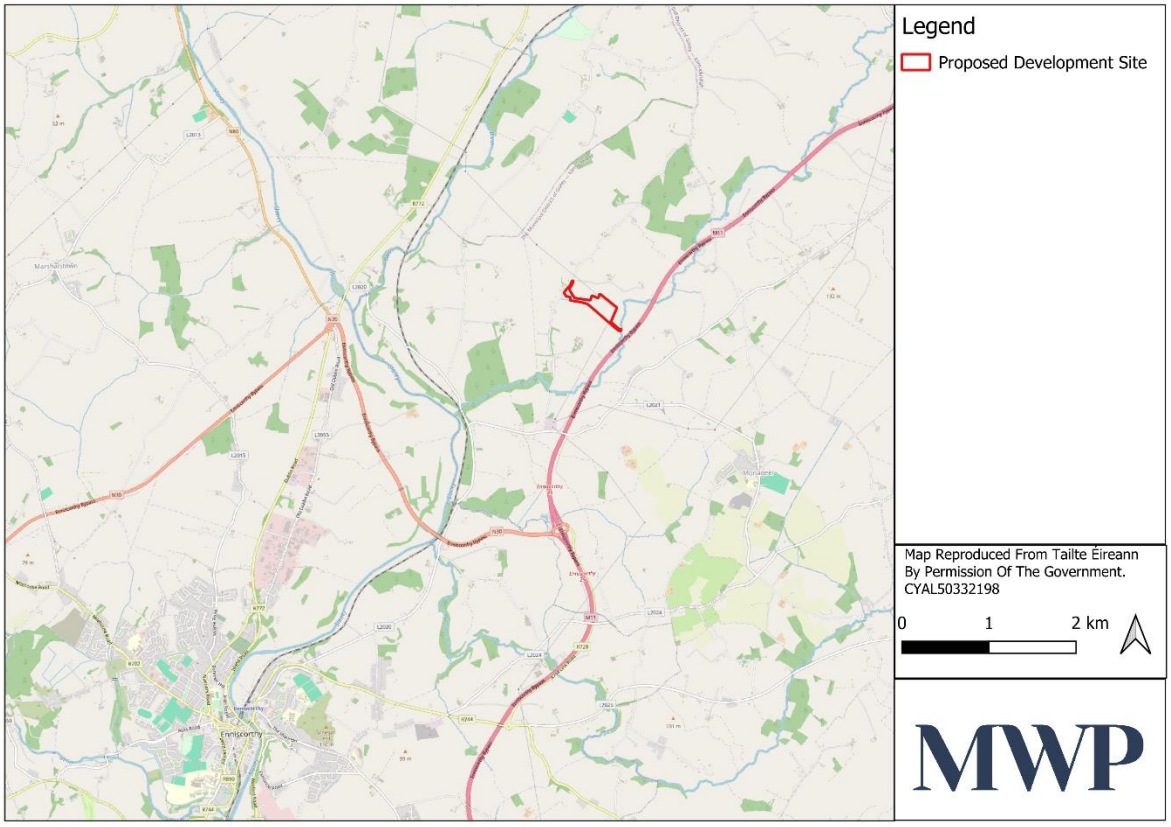
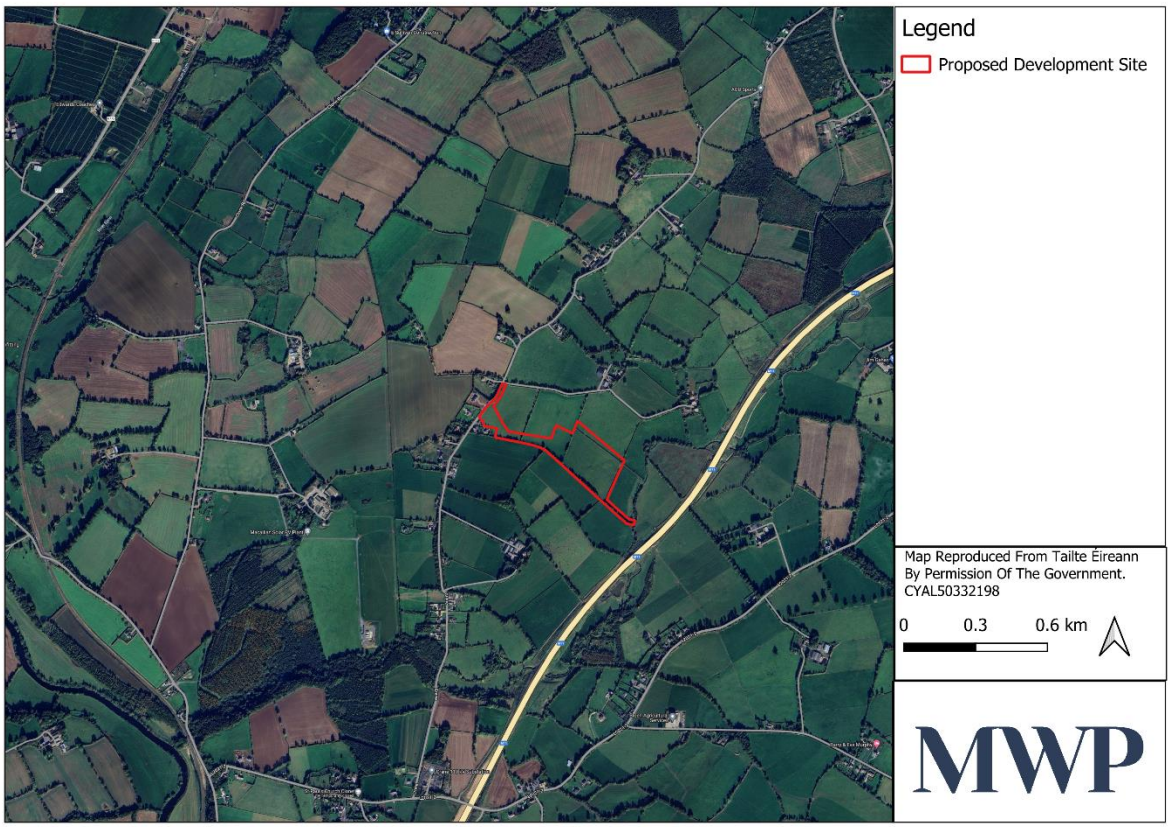


Figure 2 Site Context



3. Project Background

The Applicant is proposing a 110kV AIS substation and loop-in grid connection to the existing Crane-Lodgewood OHL.

The AIS substation (the Proposed SS) will facilitate the connection of nearby solar developments to the local electricity network. The 110kV AIS substation is required to support, the supply of electricity from these renewable energy projects. Details of the solar energy projects which will connect to the proposed substation are included below:

- Permission for a solar photovoltaic (PV) energy development with a total site area of 36ha, to include ground mounted solar panel, underground cabling and ducting, 11 inverters, electricity control buildings and associated hardstand areas, perimeter fencing, closed circuit television (CCTV) cameras, site entrance upgrades, site access tracks, landscaping and all associated development works. A planning application was submitted to Wexford County Council (WCC) and granted planning consent in November 2017 (Planning Ref: 20172175 and ABP-300427).
- Permission for a solar PV energy development with a total site area of 24ha, to include ground mounted solar panels, an onsite substation, underground cabling, inverters, battery storage modules, access tracks, fencings, associated cabling, ducting and ancillary infrastructure. A planning application was submitted to WCC in January 2018 and granted planning consent in December 2018 (Planning reference ABP-301329).

As part of the planning application (ABP-301329), information was included for an onsite substation and tail fed grid connection to Crane 110kV Substation c.1.5km to the south of the granted solar farm. However, due to capacity constraints since the planning was granted this substation is no longer an option. Therefore a new alternative connection to the national is required. Therefore, planning permission is now being sought for the proposed 110 kV AIS substation and overhead loop in connection to facilitate the export of electrical energy from the granted solar farm to the national grid.

4. Characteristics and Scale of the Proposed Development

The proposed development for which permission is being sought is as follows:

- A 110 kilovolt (kV) Air Insulated Switchgear (AIS) loop-in substation with associated compound, including control and operational buildings, electrical plant, equipment, cabling, lighting, CCTV, lightening masts, drainage infrastructure, security palisade fencing, and all associated and ancillary works necessary to facilitate the development.
- Erection of 2 no. overhead line end masts (c. 20m high) and 2 no. lattice gantries (c. 16m high) and associated overhead cabling to enable a loop-in/loop-out grid connection to the existing Crane-Lodgewood 110 kV overhead line (OHL).
- New entrance and access road from the L-6065-1 local public road.

4.1 Development Boundary

Figure 3 shows the proposed development site boundary. The area within this boundary is approximately 7.7ha.

Figure 4 shows the proposed development footprint and illustrates the positions of the proposed plant and infrastructure within the development boundary. The overall development footprint within the site boundary is approximately 2.3ha. See also Planning Drawing No 23849-MWP-00-00-DR-C-5102.

Figure 3 Development Site Boundary (Red line Planning Boundary)

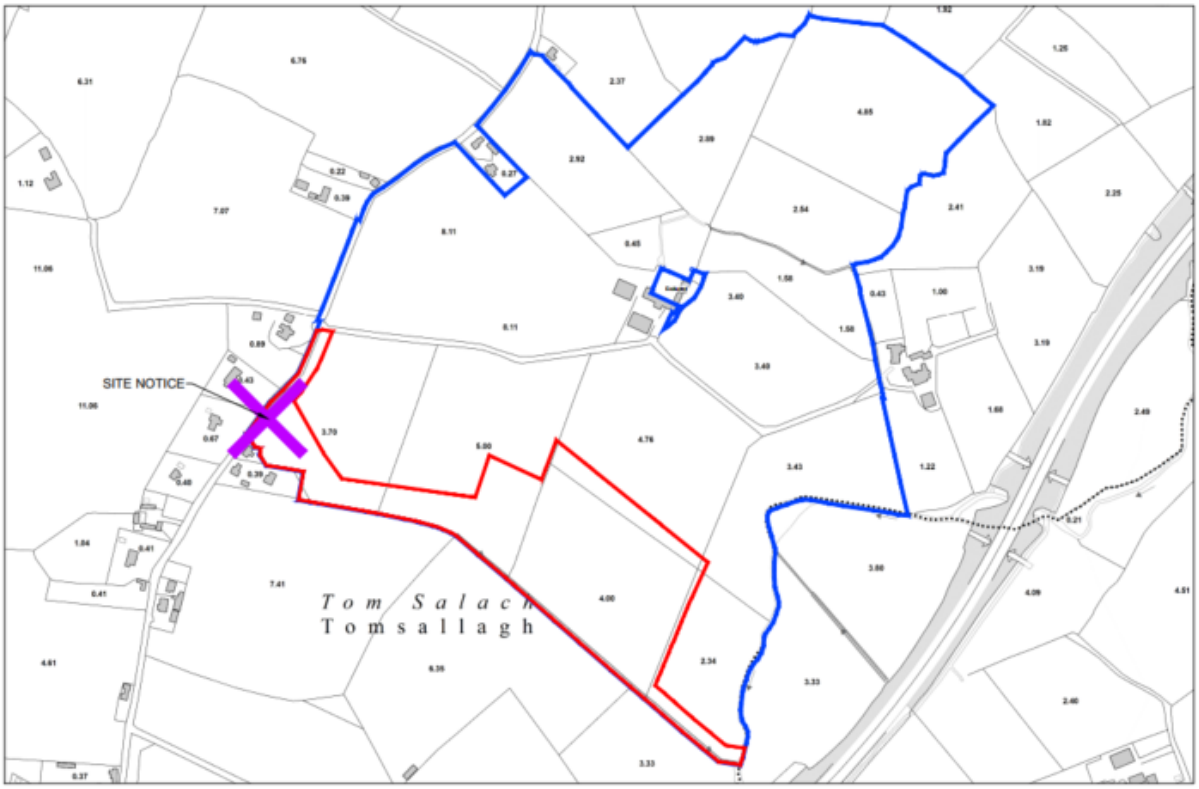
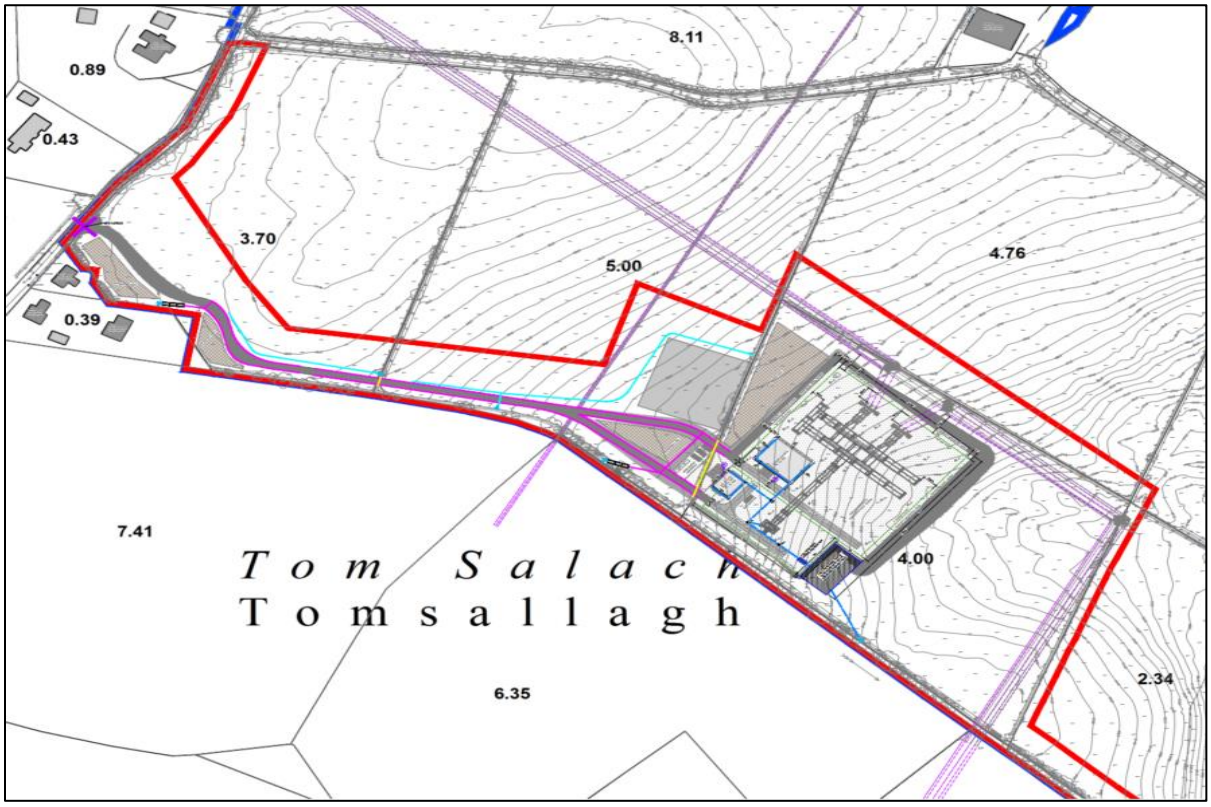


Figure 4 Proposed Development Layout



4.2 Proposed 110kV Substation Compound

Figure 5 shows the proposed substation development footprint and illustrates the positions of the proposed plant and infrastructure. See also Planning Drawing No 23849-MWP-00-00-DR-C-5102. It will include the electrical components necessary to consolidate the electrical energy generated by the associated solar farms and export the electricity to the national grid. The construction and exact layout of electrical equipment in the on-site electrical substation will be to EirGrid/ESB Network specifications.

The overall proposed 110kV substation compound will occupy an area of approximately 1.3ha divided into two adjoining sections: an EirGrid section (c9262m^2 in area) and an IPP (Independent Power Producer) section (c3467 m^2 in area), each of which are enclosed within a 2.6m high palisade fence. An additional outer concrete post and rail fence (1.4m in height) will be installed around the perimeter of the EirGrid compound.

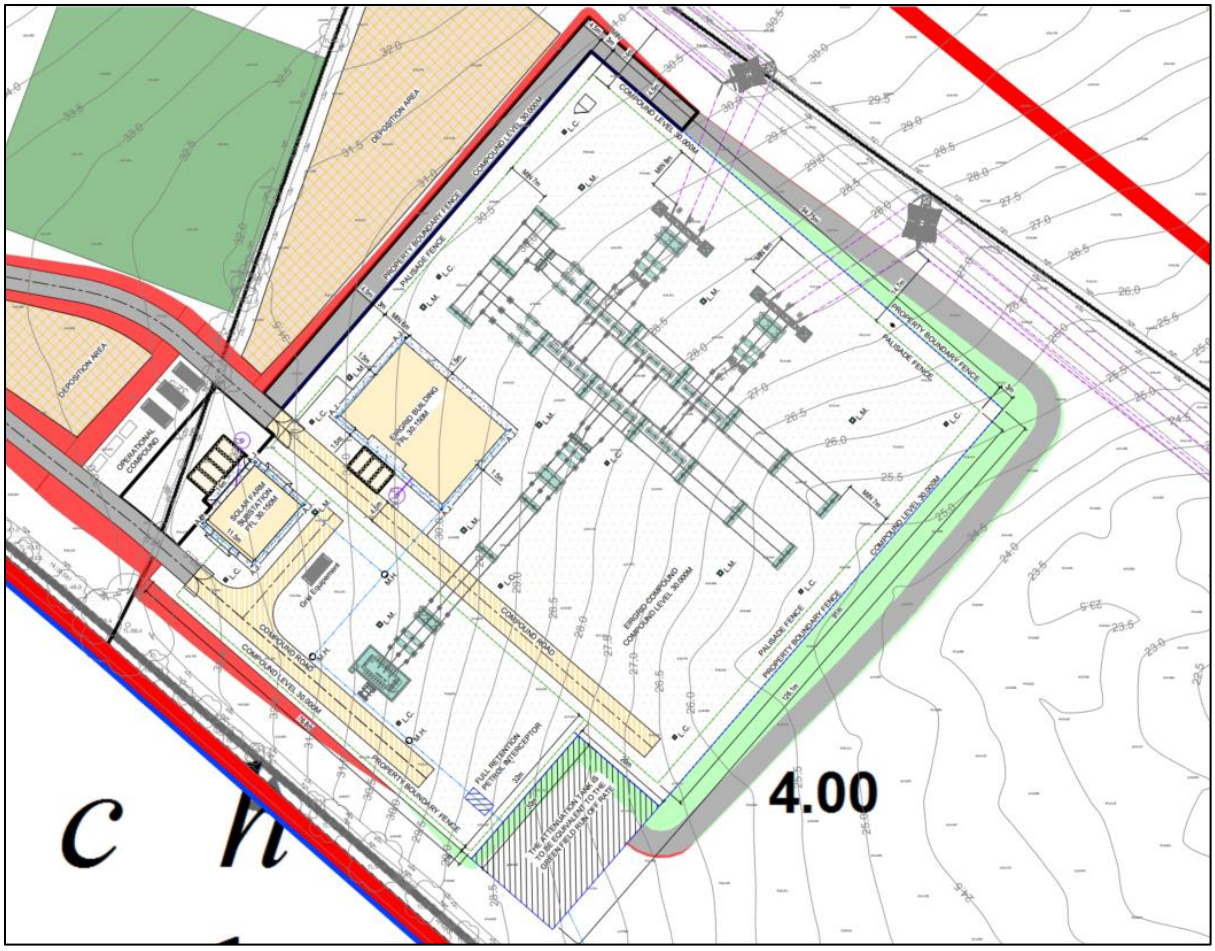
Each compound will contain a control building and an outdoor electrical yard including electrical equipment such as electrical pylons, over and underground ducting & cables, busbars, disconnects, breakers, sealing ends, lightning and lighting masts. The IPP section will also contain one grid transformer within a bunded enclosure with back up emergency diesel generator and tank.

The EirGrid control building will be c440.2m^2 in area and contain a control room, battery room, generator room, meeting room, welfare facilities and workshop/store. The IPP control building will be c160.2m^{2}in area and contain a control room, switchgear room, welfare facilities and store room. Both buildings will be a block built single storey building approximately 5.85m in height, with pitched roof and an external blockwork and plastered finish.

Parking will be provided within the compound area adjacent to each of the buildings.

There will be a very small water requirement for toilet flushing and hand washing and therefore it is proposed to harvest water from the roofs of the buildings. The discharge from the sanitary facilities within each building will go to separate wastewater holding tanks located within the substation compound where the effluent will be temporarily stored and removed at regular intervals by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

Figure 5 Substation Compound



4.2.1 Operations Welfare and Material Storage Units

The proposed operations welfare and storage units will comprise 3 No. steel containers. These units as seen in Figure 6 will provide essential amenities including changing, drying and storage facilities for the IPP maintenance and operative personnel when on-site and will also be used for material storage including oils, lubricants and other hazardous liquids. The units will have a built-in spill containment sump to prevent any liquid spills from escaping the container.

A dedicated waste storage area will be provided adjacent to the welfare and material storage units.

Figure 6 Typical Welfare / Storage Unit

4.2.2 Fencing, CCTV, Lighting

It is proposed to enclose and separate each compound with 2.6m high galvanised palisade (EirGrid Specification fencing coloured green) security fences/gates. The access/security gates will remain locked except when being visited for maintenance.

A 1.4m high property fence consisting of post and rail fencing is proposed around the overall perimeter of the EirGrid compound.

A CCTV system will be operational internally and externally around the development for security.

Site lighting will comprise standard, single down lights positioned around the substation compound and mounted to the substation building and will be motion activated by vehicles or personnel that enter the site. The lighting units will be hooded to minimise light impacts/ spillage.

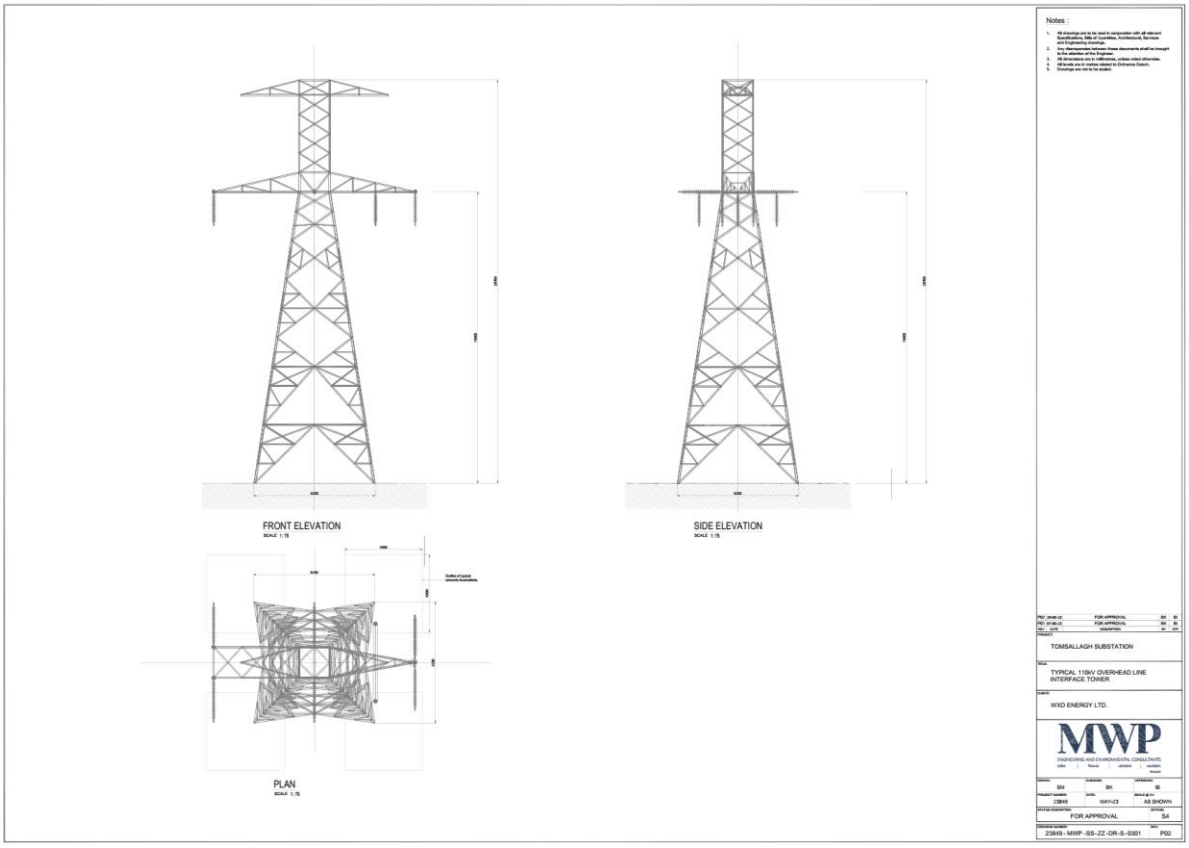
4.2.3 Landscaping

It is proposed that screening berms will be constructed along the southern side of new access road near the site entrance and along the western boundary of the substation compound. It is proposed that where feasible any suitable existing hedgerows that will be removed to accommodate the development will be replanted (translocated) on these earthen berms along with new planting using native tree species to increase screening from external areas.

4.3 Overhead Loop-in Grid Connection

The design for the proposed loop in grid connection to the existing Crane-Lodgewood 110kv OHL will require two new OHL interface towers (c 20m high) which will be constructed under the existing OHL. The existing OHL conductor will be terminated at these two lattice towers as seen in Figure 7 in order to facilitate the OHL loop-in connection to the proposed 110kV Tomsallagh substation, with the new connection looped through to the Tomsallagh 110kV substation via a set of terminal towers (c. 16m high) located within the substation compound.

Figure 7 110kV Overhead Line Interface Tower

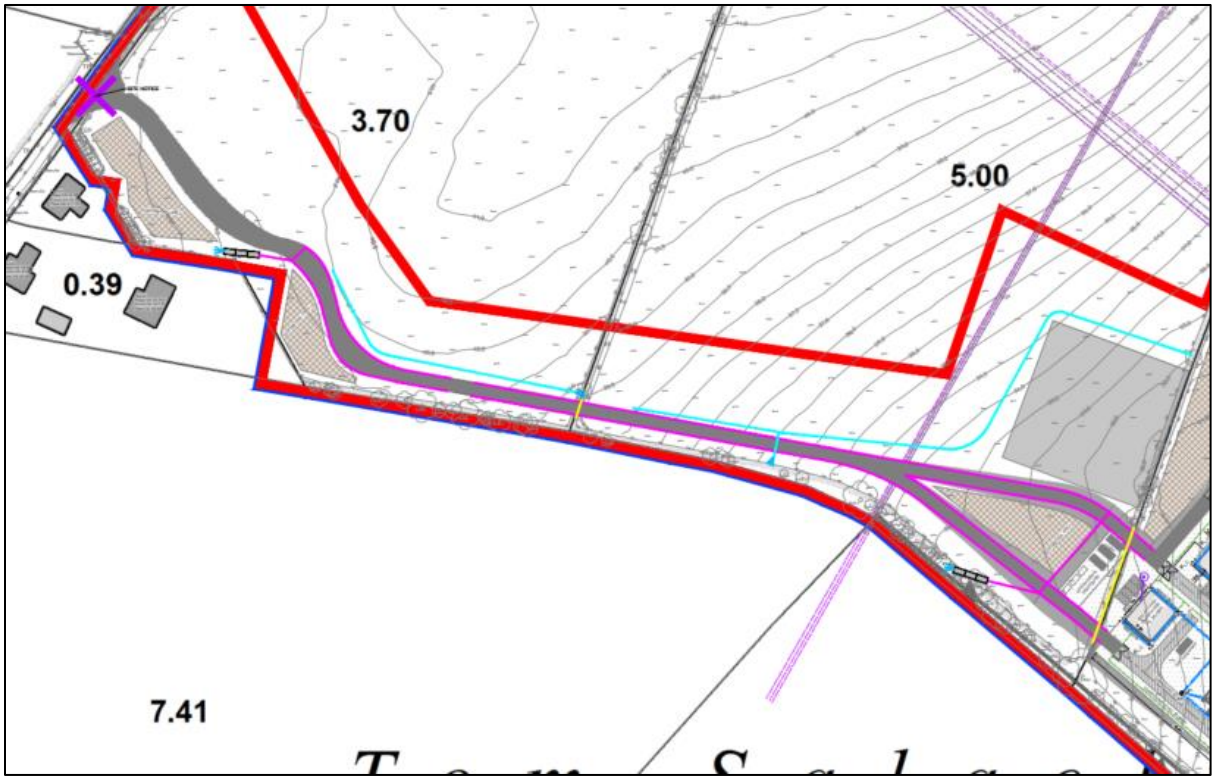


4.4 Access

It is proposed to construct a new site entrance to the proposed development site from the L-6065-1. The creation of the new site entrance will require the removal of existing hedgerow (approximately 75m) but no mature trees in this area. The entrance will be suitably splayed with entrance gates set back from carraigeway. A 4m to 6m wide compacted access track will extend from the entrance to the substation compound. The track will include a geotextile base and filter membrane and 200mm of Clause 804 sub-base.

Limited removal of some sections of existing internal field boundary hedgerows (c 70m) will also be required to accommodate the access road to the substation.

Figure 8 Site Entrance and Access Road



4.5 Traffic Volumes

The proposed substation will not have a significant operational traffic phase. Once operational, the development will for the most part be monitored remotely with only occasional trips generated by maintenance and monitoring personnel.

4.6 Drainage

A site-specific drainage system has been designed to replicate predevelopment greenfield surface water runoff conditions at the proposed development lands.

Two separate drainage networks are proposed to be implemented. One will serve the new access road and the other to collect run-off from the main substation compound.

The proposed drainage system along the new access road will comprise an overground drainage system. It is proposed that run-off from the proposed new access road will be collected by roadside v-drains installed along both sides the roadway to convey run-off to settlement ponds before finally discharging by overland flow to the existing field drain along the southern boundary. Check dams will be installed at regular intervals, based on gradient, along the roadside v-drains to provide flow attenuation, slow down runoff to promote settlement and to reduce scour and erosion of the drains.

At the substation compound, it is proposed that surface water runoff from the roofs of the substation buildings, and hard-surfaced areas within the electrical yard, including areas where a risk of a contaminant leak or spill may be present (such as the transformer bund), will be collected in a series of filter drains, roof guttering and downpipes and routed to an underground gravity drainage network. All runoff collected in the stormwater sewer network will pass through an oil/petrol Interceptor prior to discharging to an attenuation unit on the south-east side of the substation compound. The attenuation unit will provide attenuation of the increased volumes of surface water runoff generated from the hard surfaces of the development when compared to the current greenfield condition. The attenuated surface water runoff is then proposed to overflow at a controlled rate equal to the greenfield runoff rate to an existing vegetated land drain on the southeastern side of the compound. Access to the attenuation unit will be facilitated by a new service road which will traverse around the perimeter of the EirGrid substation compound.

It is also proposed to install clean water cut-off drains around the perimeter of the development areas to intercept surface water run-off from catchments uphill of the proposed development works. The cut-off drains will collect and divert the collected runoff around site infrastructure to prevent it entering the site and potentially coming in contact with site runoff containing suspended solids. Details of the proposed drainage system is provided in Drawing No. 23849-MWP-00-00-DR-C-5106.

4.7 Temporary Facilities

During the construction phase, it will be necessary to provide temporary facilities for construction operatives. A temporary site compound of approximately 2500m^2 will be located within the proposed development boundary.

The temporary compound will have a hard-standing surface and will be used for construction phase car parking, a secure storage area for construction materials, waste materials and also contain temporary site accommodation units to provide welfare facilities for site personnel. Facilities will include offices, meeting rooms, a canteen and a drying room.

A bunded containment area will be provided within the construction compounds for the storage of lubricants, oils and site generators etc. A designated lined concrete wash-out area will be installed within the temporary compound to facilitate washing of concrete mixer chutes only. Washing of concrete mixer barrels will not be permitted.

A self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the Contractor on a regular basis and will be removed from the site on completion of the construction phase. The temporary construction compound will be removed on completion of the substation construction phase.

4.8 Construction Overview

The project involves the following works:

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Site preparation, construction of site access road and installation of drainage systems.
- Bulk earthworks for formation of substation compound base.
- Substation compound base and equipment foundations.
- Cable trenching and cable laying.
- Construction of control building and installation of equipment within compound.
- Complete site works: security fencing, gates, signage, lighting.
- Reinstatement of temporary construction compound.
- Demobilise offices and tidy up site.

4.9 Construction Duration

The construction of the proposed substation is estimated to be completed over a period of 14-18 months.

4.10 Construction Hours

Construction activities will gradually phase out from pre-construction followed by commissioning and testing of the substation and equipment. It is anticipated that the construction of the Proposed Development will be completed during normal construction hours, i.e., 07.00 and 19.00 Monday to Friday and 08.00 to 14.00 on Saturday. This excludes public holidays, emergency work provisions and other working periods which would be agreed in writing with the Planning Authority.

4.11 Construction Environmental Management Plan (CEMP)

An outline CEMP has been prepared in order to manage the construction process. Refer to Appendix A of this document. The CEMP will be a 'live' document under ownership of the Applicant and managed by the Principal Contractor once appointed up to and throughout the period of construction.

Prior to commencement of construction works, the contractor will draw up detailed Method Statements which will be informed by the oCEMP, environmental protection measures included within the planning application, and the guidance documents and best practice measures to be implemented in full during the construction phase.

4.12 Health and Safety

The Proposed Development will not be a Seveso/COMAH facility. The only substance stored on site controlled under Seveso/COMAH will be diesel for a single back-up generator (tank capacity $1m^3$) and the transformers (tank capacity $36m^3$) and the amounts proposed do not exceed the relevant thresholds of the Seveso directive.

4.13 Fire Risk

Fire risk assessments undertaken at other similar substations indicate these facilities would be considered a Low fire risk. While the risks associated with a fire involving electrical equipment cannot be completely eliminated, the level of monitoring and controls proposed for this facility provide a level of safety that reduces the potential for the outbreak of a fire to a level that would be considered to be as low as reasonably practicable. In the event of an electrical anomaly within the compound, the control systems will provide measures to reduce the chance of fire ignition. Should a fire develop within the compound, the limited combustibility of the structure and its contents would reduce the risk of fire spread to adjacent units, surrounding vegetation or adjacent properties.

4.14 Use of Natural Resources

4.14.1 Land

The development will require land take of circa 2.3ha. Construction of the facility will require excavation and removal of topsoil and subsoils within the site across the extent of the development footprint. The removal of some mature vegetation and hedgerows will be required to facilitate the development. It is proposed however that where feasible any suitable existing hedgerows that will be removed to accommodate the development will be replanted (translocated) on the earthen berms to be constructed along the new access road and along the western boundary of the substation compound along with new planting using native tree species.

The temporary construction compound will require a temporary land take of approximately 0.25ha. This area will be reinstated and made available for the installation of permitted solar panels once the construction works have been completed.

It has been calculated that there will be approximately 12,000m³ of material excavated during the construction of the proposed development. It is anticipated that all soils, subsoils and stone generated from excavation works will be retained on site within the development boundary and reused in bunding, landscaping and reinstatement of the temporary construction compound. Excavated material will also be used to create screening berms along the access road and along the western boundary of the substation compound.

Any excess spoil not suitable and/or required for reuse on site will be removed offsite to a suitable authorised waste facility.

4.14.2 Aggregate

Natural aggregate materials required for construction of the proposed development will mainly consist of higher grade materials not available to be won on site, eg stone material for roads and foundations, and concrete for the construction of the hardstanding areas. Concrete and additional aggregate material required for construction will be sourced from authorised facilities.

4.14.3 Water

Potable water will be required for the construction employees (20 to 25 personnel). The average requirement is estimated at approximately 50 litres per person per day which equates to 1,000 to 1,2500 litres per day during peak construction. It is proposed to import all water to the site during the construction phase.

There will a minimal water requirement during the operational phase. A rainwater harvesting system including filtration and UV-sterilisation systems is proposed to provide the water required at the 110kV substation compound and the IPP welfare units. This system will allow for rainwater to be re-used in toilets/sinks. Potable water demand will be minimal and will be satisfied by an imported bottled water supply.

4.15 Production of Waste

4.15.1 Domestic Waste-water Effluent

During the construction period, wastewater production is estimated to be 1,000-1,500 litres per day. Wastewater from welfare facilities at the temporary construction compounds will drain to integrated wastewater holding tanks associated with the toilet units.

During the operational phase, although primarily controlled remotely, maintenance personnel will visit the substation building on a regular basis. The daily average wastewater production during the operational phase is estimated from the average number of workers on site, which is expected to be 1-2 workers, resulting in a typical wastewater production rate of 100 litres per day. The wastewater generated during the operational phase will be managed by a holding tank for each building which is of twin-hull design and fitted with an alarm to indicate levels and when it is due for empty. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

4.15.2 General Wastes

Construction phase waste may consist of surplus hardcore, stone, concrete, ducting, electrical wiring, spare steel reinforcement, metal off-cuts shuttering timber, plastic waste, packaging, and unused oil, diesel. This waste will be stored in the construction compound and collected at intervals and taken off site to be reused, recycled and disposed of in accordance with best practice procedures. All waste to be taken off-site will be collected an approved contractor and recycled or disposed at an approved facility.

Domestic refuse waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compounds and disposed of at a licensed landfill facility.

The types of wastes to be generated will be similar to established construction waste streams and will not require unusual or new treatment options.

The operational aspect of the proposed development would produce a minimal amount of waste. Wastes arising from the general operation and maintenance would principally include residual lubricating oils, cooling oils, packaging from spare parts and any interceptor silts and oils. The containment and disposal of residual waste oils and interceptor sludges will be carried out by an approved contractor. Such operations will be carried out in accordance with the Waste Management (Hazardous Waste) Regulations, 1998. The remaining wastes will all be removed from site and reused, recycled or disposed of in an authorised facility in accordance with best practice.

Waste volumes will not be significant or require new permitted treatment, storage and disposal facilities as there is sufficient capacity at existing licensed disposal or recycling facilities.

Table 1 outlines some known waste facilities which are approved to accept the potential waste streams to be generated and which could potentially be utilised.

Table 1 Sample of Authorised Waste Facilities

EWC Code	Waste Type/Stream	Facility	Location
13 02 08*	Waste oils	M & T Plant Hire Ltd	Ballyeden Davidstown Enniscorthy Co Wexford
		Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
		J Ryan Ltd	Stringfield Ballywilliam Enniscorthy Co. Wexford
13 05 06* 13 05 07* 13 05 08*	Oil interceptors	Kelly Drain Maintenance Services Ltd	Drummin Farm Drummin East Delgany Co. Wicklow
		J Ryan Ltd	Stringfield Ballywilliam Enniscorthy Co. Wexford
17 01 01	Concrete	Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
		Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
17 01 07	C&D waste	Drumderry Aggregate Ltd.	Curralane, Ferns, Co. Wexford
		C&D Recycling Kavanagh Ltd	Coolgreaney, Gorey, Co. Wexford
		Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
17 02 01	Wood	Ire-Wel Pallets, Magmore, Wells, Gorey, Co. Wexford.	Magmore, Wells, Gorey, Co. Wexford.
		Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
17 02 03	Plastic	Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
		Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
17 03 01*	Bituminous mixtures containing coal tar	McGuire Plant Hire Limited	33 Burrells Walk College Park Callan Road Co Kilkenny
		M McGuire Ltd	Dublin Road Thomastown Co. Kilkenny
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
17 04 07	Mixed Metal	Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
		Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford

EWC Code	Waste Type/Stream	Facility	Location
17 04 11	Cables	Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
17 05 03*	Soil and stones containing hazardous substances	M McGuire Ltd	Dublin Road Thomastown Co. Kilkenny
17 05 04	Soil and stones	C&D Recycling Kavanagh Ltd	Coolgreaney, Gorey, Co. Wexford
		Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
		Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
		Murray Waste Recycling Ltd	Coolatore Ferns Enniscorthy Co Wexford
17 06 04	Insulation materials	Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	Ardinagh Construction & Waste Limited	Ardinagh, Taghmon, Co. Wexford
		Molloy Metals Recycling Limited	Tomgarrow Ballycarney Enniscorthy Co. Wexford
20 01 01	Paper and cardboard	WCDA Recycling	Kerlogue Industrial Estate, Rosslare Road, Wexford
		Murray Waste Recycling Ltd	Coolatore Ferns Enniscorthy Co Wexford
		J Ryan Ltd	Stringfield Ballywilliam Enniscorthy Co. Wexford
20 03 01	Domestic waste	Murray Waste Recycling Ltd	Coolatore Ferns Enniscorthy Co Wexford
		Kollect on Demand Ltd	Confederation House, Waterford Industrial Park, Cork Road, Waterford
		Glon Recycling and Resource Management Limited	Lough Dan Roundwood Co Wicklow
20 03 04	Domestic Wastewater	Bio Grease Solutions Ltd.	Burrow Ballyellis Gorey Co. Wexford
		M & T Plant Hire Ltd	Ballyeden Davidstown Enniscorthy Co Wexford

*Hazardous waste

4.16 Potential Emission

Potential emissions and nuisance likely to be generated by the project are summarised in **Table 2** below.

Table 2 Likely Emissions

Project Phase	Aspect	Potential Emission/Nuisance
Construction	Air	The main emissions to atmosphere during the construction stage of the project is from fugitive dust associated with the following activities: • Groundworks associated with excavation and construction of the project infrastructure. • Transportation and unloading of crushed stone and soils around the site; • Vehicular movement over potentially hard dusty surfaces such as freshly excavated roads and/or temporary access tracks The movement of machinery, construction vehicles and the use of generators during the construction phase will also generate exhaust fumes containing predominantly carbon dioxide (CO_2), sulphur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter (PM10).
	Noise	Traffic flows, excavation works, mechanical machinery and electrical equipment typically used for construction projects would generate noise emissions.
	Water	Surface water runoff and discharges from construction working areas are likely during construction. Potential pollution sources could arise as a result of soil erosion or from oil/ fuel or chemical storage and use. During construction the site drainage will discharge to settlement ponds and diffused outfalls which will disperse the flow across vegetation. Silt curtains will be installed along existing field drain where construction works are proposed within 10m of their banks.
	Traffic	The additional traffic, especially HGVs associated with the construction phase, has the potential to cause nuisance to those using the local road networks
Operational	Air	No significant air emissions would be produced during operation. The diesel back-up generator would only operate in an emergency situation over a short time period.
	Noise	Noise emissions from substation plant.
	Water	No water emissions associated with site operations. Surface water run-off from the substation will be captured and managed by the drainage system.
	Traffic	The substation will be monitored remotely with only occasional trips generated by maintenance and monitoring personnel.

5. Planning

5.1 Legislative Context

The applicant engaged with An Bord Pleanála under Section 182E of the Planning and Development Act 2000 (as amended) to determine if the Proposed Development would be considered strategic infrastructure development (SID) under the definition contained in Section 182A of the Planning and Development Act 2000:

182A.-(1) Where a person (hereafter referred to in this section as the 'undertaker') intends to carry out development comprising or for the purposes of electricity transmission, (hereafter referred to in this section and section 182B as 'proposed development'), the undertaker shall prepare, or cause to be prepared, an application for approval of the development under section 182B and shall apply to the Board for such approval accordingly.

(9) In this section 'transmission', in relation to electricity, shall be construed in accordance with section 2(1) of the Electricity Regulation Act 1999 but, for the purposes of this section, the foregoing expression in relation to electricity, shall be construed as meaning the transport of electricity by means of—

(a) a high voltage line where the voltage would be 110 kilovolts or more, or

(b) an interconnector, whether ownership of the interconnector will be vested in the undertaker or not.

The definition of electricity transmission in section 2(1) of the Electricity Regulation Act 1999 has been provided as: "*Transmission", in relation to electricity, means the transport of electricity by means of a transmission system, that is to say, a system which consists, wholly or mainly, of high voltage lines and electrical plant and which is used for conveying electricity from a generation station to a substation, from one generating station to another, from one substation to another or from any interconnector or to final customers but shall not include any such lines which the Board may, from time to time, with the approval of the Commission, specify as being part of the distribution system but shall include any interconnector owned by the Board".*

5.1.1 SID Determination

A SID determination meeting was held with the Board on 9th January 2024 between representatives of the Board and representatives of the applicant and MWP. The Board invited the applicant to outline the nature of the proposed development with MWP (on behalf of the applicant) providing an overview of the proposed development and its layout. The Board's representatives stated the preliminary opinion that the Proposed Development would comprise SID, with particular regard to section 182A(9) of the Planning and Development Act 2000, as amended.

5.2 Relevant Planning History

Planning applications of relevance to the assessment of the proposed development are outlined below. **Table 3** sets out the planning history for the application and **Table 4** identifies other recent and new planning applications in the area:

Table 3: Relevant Planning History

Planning Ref.	Applicant	Description	Location	Planning Authority Decision
Wexford CoCo Ref: 20172175 ABP Reference: 300427-17	JMB Solar	Permission for development to consist of : a 10 year permission for the construction of a solar PV energy development comprising installation of solar photovoltaic (PV) panels on ground mounted frames/ support structures within existing field boundaries; underground cabling and ducting; 11 no. Inverter/ transformer stations; 11 no. Hv cabins; 2 no. Electricity control buildings with associated hard standing area; 1 no. Communications cabin; site perimeter stock-proof security fencing (c.36 ha); CCTV security cameras; upgrade of existing agricultural site entrance located to the north of the site for construction and operational access; site access tracks; landscaping and all associated site development works. A temporary construction compound will also be provided	Tomsallagh, Tinnacross Ferns, Co.Wexford	Wexford CoCo Approve with Conditions 17/11/2017 ABP decision- Approve with conditions 10/10/2018
Wexford CoCo Ref: 20180055 ABP Ref: 30139-18	WXD ENERGY LTD	Permission for Development Consisting of aq 10-Year Permission for the Construction of a Solar PV Energy Development within a Total Site Area of up to 24 Hectares, To Include One Single Storey Electrical Substation Building, Electrical Transformer/ Inverter Station Modules, Battery Storage Modules, Solar PV Panels Ground Mounted on Steel Support Structures, Access Roads, Fencing and Associated Electrical Cabling, Ducting and Ancillary Infrastructure.	Tomsallagh, Tinnacross Ferns, Co.Wexford	Wexford CoCo Refused 09/03/2018 ABP decision- Approve with conditions 11/12/2018
Wexford CoCo Ref: 20230009 ABP Ref: 316163-23	WXD ENERGY LTD	Permission for development which will consist of permission for a period of 10 years to construct and complete a solar PV development with a total site area of circa 38.6 hectares, to include PV panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras, 4 no. transformer stations, 2 no. weather stations, access gates and all associated works. Access will be gained from the existing farmyard entrance and a temporary access track which were consented as part of the original Tomsallagh Solar Farm application (PL Ref: 20180055,	Tomsallagh, Tinnacross Ferns, Co.Wexford	Wexford CoCo Refused 03/03/2023 ABP decision- Under Consideration as of (21/03/2024)

Planning Ref.	Applicant	Description	Location	Planning Authority Decision
		ABP Ref No.301329-18) off the Clone Road to the east of the site. The solar farm would be operational for 40 years. A Natura Impact Statement will be submitted to the planning authority with the application.		

Table 4: Other New/Recent Planning History in the Area

Planning Ref.	Applicant	Description	Location	Planning Authority Decision
Wexford CoCo Ref: 20171680	RENEWABLE ENERGY SYSTEMS LTD	Permission for the development of a temporary (27 years) ground mounted solar panel photovoltaic (PV) farm to generate renewable electricity on a 10.4 ha site, comprising solar arrays, energy storage, associated electrical infrastructure, fencing, access improvements and ecologically beneficial landscape works	Killabeg, Tinnacross, Co. Wexford	Wexford CoCo Granted with conditions 14/02/2018
Wexford CoCo Ref: 20190441	RENEWABLE ENERGY SYSTEMS (RES) LTD	Permission to amend the design of the approved development (planning ref: 20171680) which comprises consent for the development of a temporary (25 years) ground mounted solar panel photovoltaic (PV) farm to generate renewable electricity on a 10.4ha site, comprising solar arrays, associated electrical infrastructures, fencing, access improvements and ecologically beneficial landscape works at Killabeg, Tinnacross, Co Wexford subject to 15 conditions. Permission is also sought to amend the lifespan of the consented development from 25 years to 35 years. Amendments proposed are: no changes to red line boundary and reduction in CCTV cameras from 16 to 11; solar panel height increase from 2.3 to 2.5, angle span amended from 20-30 degrees to 10-40 degrees. Panel layout slightly reconfigured; western perimeter fence removal to link with consented solar farm (ref: 20171127). Fence change from mesh to deer fencing (cond.14); access track increase of 17.5m2; replace combined energy storage area and temporary compound area (5,500m2), with 3,075m2 energy storage area and 3,000 m2 temporary compound, removal of grid connection substation and 3 energy containers. Replace three solar farm substations with two slightly larger substations. Overall increase in ground disturbance at the construction stage of 766.5m2. Overall decrease in land take for the duration of the operational stage of 2,233.5m2.	Killabeg, Tinnacross, Co. Wexford	Wexford CoCo Granted with conditions 14/02/2020

Planning Ref.	Applicant	Description	Location	Planning Authority Decision
Wexford CoCo Ref: 20200691	Renewable Energy Systems Limited	Permission to amend the design of the approved development (Planning references 20171680 and 20190441) which comprises consent for the development of a temporary (25 years) ground mounted solar photo-voltaic (PV) farm to generate renewable electricity on a 10.4 hectare site. Comprising solar arrays, associated electrical infrastructure, fencing, access improvements and ecologically beneficial landscape works subject to the planning conditions. Amendments proposed are: Changes to the energy storage area comprising: decrease in size of the energy storage area by 246m2; addition of 1.5m gravel strip surrounding the outside of the energy storage area; alterations to the layout within the energy storage area; additional grid connection infrastructure and grid compliance equipment; increase in area (3.9m2 increase) and height (1.1m increase) of substation building; removal of welfare container; removal of 1 auxiliary transformer, reduction in height of fencing around the energy storage area from 3.0m to maximum of 2.6m; Increase in internal site track by 36m2; Addition of new temporary construction compound area (1584m2) to be removed after construction; No changes to red line boundary, perimeter fence, solar panel layout, perimeter CCTV points or any other parts of the development.	Killabeg, Tinnacross, Co. Wexford	Wexford CoCo Granted with conditions 21/08/2020
Wexford CoCo Ref: 20211112	Renewable Energy Systems Limited	Permission to amend the design of the approved development (Planning references 20171680, 20190441 and 20200691) which comprises consent for the development of a temporary (25 years) ground mounted solar photovoltaic (PV) farm to generate renewable electricity on a 10.4 hectare site, comprising solar arrays, associated electrical infrastructure, fencing, access improvements and ecologically beneficial landscape works. Amendments proposed are: Slight increase in swept area of access track south of site entrance and into energy storage area; Changes to the energy storage area comprising: removal of 2 battery enclosures and associated power conversion system and transformer; minor alterations to the equipment layout within the energy storage area; system transformers extended to allow for additional ancillary equipment; use of asphalt at the hardstanding area; minor alterations to the substation building including a reduction in roof	Killabeg, Tinnacross, Co. Wexford	Wexford CoCo Granted with conditions 03/09/2021

Planning Ref.	Applicant	Description	Location	Planning Authority Decision
		height, a small communications antennae and works access lighting to front and rear; an additional pedestrian gate to the southwest; No changes to red line boundary, perimeter fence, solar panel layout, perimeter CCTV points or any other parts of the development.		

5.3 Policy Context

Policies of relevance to the proposed development are outlined below:

5.3.1 European Policy

5.3.1.1 The Renewable Energy Directive

The Renewable Energy Directive 2009/28/EC committed Member States to setting their own targets within a context of an overarching EU target of producing 20% of its energy from renewable sources by 2030. This has been revised to ensure a target of at least 27% is met by 2030. This target will be fulfilled through individual Members States' contributions guided by the need to deliver collectively for the EU. The proposed development is required to facilitate the schemes identified within Section 3, connecting these renewables to the grid, contributing towards Ireland's goals, and supporting the permanent supply and utilisation of the future site.

5.3.1.2 Climate and Energy Framework 2030

The 2030 Framework proposes new targets and measures to make the EU's economy and energy system more competitive, secure and sustainable. Promoting self-sufficient schemes are in in line with EU directives. Actions required across all sectors include increased energy efficiency and renewable energy. Key targets include:

- At least 40% cuts in GHG emissions (from 1990 levels);
- At least 32% share for renewable energy; and
- At least 32.5% improvement in energy efficiency.

The Framework demonstrates the importance of associated grid infrastructure. The proposed development, therefore, is to be seen as compliant, in its requirement to facilitate and support the proposed solar developments. Without it, the benefits of these renewable developments cannot be realised.

5.3.1.3 Energy Roadmap 2050

The Energy Roadmap 2050 was published in 2012, examining the challenges faced while delivering the EU's decarbonisation objective by 2050, whilst simultaneously ensuring security of energy supply. The Roadmap demonstrates that low-carbon goals are economically feasible, outlining required structural changes. "One challenge is the need for flexible resources in the power system as the contribution of intermittent renewable generation increases". The Roadmap acknowledges that improved infrastructure and energy storage will alleviate

demand on the Grid. The proposed development has been brought forward in recognition of this, to enable the potential of the identified solar development to be fully utilised and to ensure successful connection to the Grid.

5.3.1.4 REPowerEU Plan

On 18 May 2022, the Commission published the REPowerEU plan, which sets out a series of measures to rapidly reduce EU's dependence on Russian fossil fuels well before 2030 by accelerating the clean energy transition. The REPowerEU plan is based on three pillars: saving energy, producing clean energy and diversifying the EU's energy supplies. As part of its scaling up of renewable energy in power generation, industry, buildings and transport, the Commission proposes to increase the target in the directive to 45% by 2030, thereby increasing the targets set out in the current Renewable Energy Directive This would bring the total renewable energy generation capacities to 1236 GW by 2030, in comparison to 1067 GW by 2030 envisaged under the 2021 proposal. The Plan acknowledges that solar is one of the fastest technologies to roll out. That is why the Commission sets the REPowerEU target of over 320 GW of solar photovoltaic newly installed by 2025 and almost 600 GW by 2030. The proposed development has been brought forward in recognition of this, to enable the potential of the identified solar development to be fully utilised and to ensure successful connection to the Grid.

5.3.2 National Planning Policy

5.3.2.1 National Planning Framework

The NPF outlines Ireland's climate change strategy which seeks to transition to a low carbon economy by utilizing renewable sources of energy to reduce the reliance on fossil fuels. The NPF includes both a vision and strategy for renewable energy and carbon reduction which is underpinned by a series of National Policy Objectives. These objectives are aligned with the Government's ten-year National Investment Plan.

One of the key goals of the NPF (National Strategic Outcome 8) is that of Transition to a Low Carbon and Climate Resilient Society. It acknowledged that Ireland's energy policy is focused on the pillars of sustainability, security of supply and competitiveness. It states: "*In the energy sector, transition to a low carbon economy from renewable sources of energy is an integral part of Ireland's climate change strategy and renewable energies are a means of reducing our reliance on fossil fuels.*" It is an action under NSO 8 to "reinforce the distribution and transmission network to facilitate planned growth and distribution of a more renewables focused source of energy across the major demand centres".

Solar energy is identified as one of four areas of renewable energy potential. Consequently, the principle of the proposed development is supported by the overarching planning framework in the Country and the proposed development both acts as and supports sustainable development and renewable energy targets for the immediate and wider environs in facilitating the utilisation of existing/upcoming solar developments.

The various policies in the NPF are structured under National Policy Objectives (NPOs). The key NPOs of relevance to this project are:

- ***NPO 21*** *- Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability.*
- ***NPO 23*** *- Facilitate the development of the rural economy through supporting a sustainable and economically efficient agricultural and food sector, together with forestry, fishing and aquaculture,*

energy and extractive industries, the bio-economy and diversification into alternative on-farm and off-farm activities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism.

- *NPO 54 - Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.*
- *NPO 55 - Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.*

5.3.2.2 National Development Plan 2021-2030

The NDP clarifies that "In the electricity sector, major elements of capital expenditure requirements over 2021 - 2030 will come from the private sector in the area of grid scale electricity generation and storage" and recognises that the reliability of electricity supplies will be strengthened through investment in the electricity transmission and distribution grid. Ireland aims to cut greenhouse emissions by 51% by 2030. Current electricity generation is strongly reliant on fossil fuels. It is imperative, therefore, that schemes that can facilitate cleaner energy generation on the grid are accommodated, as clarified in Chapter 13 of the NDP, with the Proposed Development required to secure and support such, in connecting to the identified proposed and already consented/approved solar developments. "Significant expansion and strengthening of the electricity transmission and distribution grid onshore and offshore, including transmission cables and substations, to link renewable electricity generation" is identified as a 'Strategic Investment Priority'. The NDP explicitly states that "Ensuring security of electricity supply will also require investment in grid infrastructure, interconnection and storage". Consequently, the principle of the proposed development is supported by the overarching planning framework for Ireland in providing Grid connections and securing supply for solar energy developments.

5.3.2.3 Irelands National Energy and Climate Plan 2021 – 2030 (NECP)

The NECP was prepared in accordance with Regulation (EU) 2018/1999, to collectively deliver a 30% reduction in GHG emissions, from 2005 levels, by 2030. In it is confirmed Ireland's commitment to energy resilience. The aim of this Plan is to set Ireland on a path to become one of the leading countries tackling climate change. It states, "Ireland's objectives are to maintain and, where necessary, facilitate the enhancement of resilience of the gas and electricity networks". Relevant key objectives identified in the plan include:

- Increase electricity generated from renewable sources to 70%.
- Support efforts to increase indigenous renewable sources in the energy mix, including wind, solar and bioenergy.
- Facilitate infrastructure projects, including private sector commercial projects, which enhance Ireland's security of supply and are in keeping with Ireland's overall climate and energy objectives.

The NECP recognises that "as Ireland transitions itself to a low carbon economy, the gas and electricity networks must be planned and developed to make the transition as smooth as possible". Harnessing and utilising Ireland's renewable energy resources will play a key role in the transition towards a sustainable, secure and competitive energy system. The proposed development complies with the NECP and will wholly support the supply of solar powered energy onto the National Grid.

5.3.2.4 Climate Action Plan 2024

The Climate Action Plan 2024 (CAP24) is the third annual update to Ireland's Climate Action Plan 2019. This plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings.

The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. One of the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030. In order for this to be achieved the plan recognises the need to develop the onshore grid to support renewable energy targets.

Section '12.1.4 Measures to meet the Challenge 'In line with transposing the revised Renewable Energy Directive, which entered into force in November 2023, ensure that the permit-granting procedure, the planning, construction and operation of renewable energy plants, the connection of such plants to the grid, the related grid itself, and storage assets are presumed as being in the overriding public interest'.

5.3.2.5 Policy Statement on Energy Security in Ireland to 2030

In November 2023, the Government published a Policy Statement on Energy Security in Ireland to 2030 which outlined the key challenges to ensuring security of electricity supply such as having adequate electricity generation capacity, storage, grid infrastructure, interconnection and system services to meet both average and peak demand. It identifies the critical need to maintain security of supply throughout the transition to the target of up-to 80% of electricity consumption from renewable sources. It highlights the need for significant investment in additional flexible conventional electricity generation, electricity grid infrastructure, interconnection and storage in order to ensure security of electricity supply. It states also that the "majority of renewable energy generated by 2030 will be from wind and solar". The proposed development complies with this policy in the provision of grid connection for renewable solar developments.

5.3.2.6 EirGrid Development Strategy 2020 – 2025

The objective of this strategy is shaped by two key factors, tackling climate change and transforming the electricity sector. It is underpinned by the requirement for transforming the electricity sector towards sustainability and decarbonisation. Delivering this will require a "significant transformation" of the Grid to allow it to perform reliably and to facilitate the penetration of renewables. It reiterates, throughout, the need for renewable energy provision and distribution. EirGrid determines the "need to connect up to 10,000 megawatts of additional renewable generation to the electricity system". Innovative, yet proven technology, such as the proposed development will help deliver on this, in the face of continuing growing demand.

5.3.3 Regional Planning Policy

5.3.3.1 Regional Spatial and Economic Strategy for the Southern Region (RSES)

The Southern Regional Assembly is responsible for the preparation and implementation of a Regional Spatial and Economic Strategy (RSES) for the Southern Region. The RSES for the Southern Region came into effect on 31st January 2020 and the primary aim of the RSES is to implement Project Ireland 2040 - the National Planning Framework. Furthermore, the Southern Regional Assembly supports the implementation of the Irish Government's Climate Action Plan.

The RSES sets out the following Regional Policy Objectives (RPO's) on renewable energy:

- RPO 87 - Low Carbon Energy Future The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture.
- RPO 219 - New Energy Infrastructure It is an objective to support the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.
- RPO 221 - Renewable Energy Generation and Transmission Network

a. Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network;

b. The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported;

c. The RSES supports the Southern Region as a Carbon Neutral Energy Region.

5.3.3.2 South East Region's Bio-Energy Implementation Plan 2013 to 2020

The South East Region's Bio-Energy Implementation Plan sets out a target of 7.3% contribution of bioenergy to total final consumption in the South-East Region by 2020. Individual sectoral targets for heat (8.5%), electricity (2.9%) and transport (8.2%) are established, with the emphasis on bioenergy consumption for heating and transport purposes. A second high growth scenario of 9.9% of bioenergy contribution to total final consumption is recommended to reflect the potential of the bioenergy sector within the South-East Region should further bioenergy incentives be introduced.

5.3.3.3 Southern Region Waste Management Plan 2015-2021

The Waste Management Plan (WMP) contains policies and measures to improve the way wastes are managed in the Region, while also introducing new steps to help realise the full potential of waste as a resource. The Plan focuses on prevention, recycling and recovery and generation of energy from materials and residual wastes. By doing so the Plan seeks to reduce the role of landfilling in favour of higher value recovery options.

The Plan contains three strategic targets in the areas of prevention, recycling and landfilling. A number of measures are set out to achieve these targets including: to grow the biological treatment sector, in particular composting and anaerobic digestion, by supporting the development of new facilities.

5.3.4 Local Planning Policy

Wexford Local Economic and Community Plan 2016-2021

The Local Economic and Community Plan (LECP) is centered on six high level goals to enhance economic, social and community development in the county over a six year period. A number of specific objectives are identified under each of the six high level goals and indicators are outlined to measure the success of each specific objective.

Specific objectives of the Strategy include:

• promote sustainable energy usage in business (develop up to four new or existing renewable energy related businesses);

• promote energy conservation programmes to SMEs in an attempt to cut down on resource wastage and costs;

• conduct a series of funded workshops in schools on the themes of biodiversity, energy, recycling, etc;

• provide quality designed energy efficiency housing;

support up to 20 community centres to upgrade or improve energy efficiency;

• increase overall energy efficiency at Irish Water Facilities; and

• reduce the County Council's emissions of greenhouse gases.

Climate Change Adaptation Strategy 2019-2024

A number of adaptation actions are identified in the Strategy to enhance the capacity of Wexford County Council to adjust climate change impacts and to identify priority climate risks. Key objectives have been identified that set out the compilation of the adaptation actions including a reduction in Wexford County Council energy related CO^2 emissions; an increase of renewable energy from council operations; and social housing to increase energy efficiency. The Climate action Adaption Strategy also includes to prioritise key theme to integrate climate action considerations into land use planning policy.

Wexford County Development Plan 2022-2028

The Wexford County Development Plan (CDP) was adopted on the 25th of July 2022, and sets the overall strategy for planning and sustainable development within the administration boundaries for County Wexford. Wexford is rich in available renewable energy sources including wind, solar energy, hydropower, geothermal energy and biomass. This Strategy seeks to put in place a framework to ensure that the County can maximise its significant renewable energy resource, to provide a degree of certainty to future investors and local communities and to inform and guide the planning process for future renewable energy development. The Plan recognises that increased levels of renewable generation will require very substantial new infrastructure, including wind and solar farms, grid reinforcement, storage developments and interconnection.

CDP Chapter 9 Infrastructure Strategy

Objectives

PT01: To facilitate the provision of and improvements to energy networks in principle, provided that it can be demonstrated that: • The development is required in order to facilitate the provision or retention of significant economic or social infrastructure. • The route proposed has been identified with due consideration for social, environmental and cultural impacts. • The design is such that will achieve least environmental impact consistent

with not incurring excessive cost. • Where impacts are inevitable mitigation features have been included. • Proposals for energy infrastructure should be assessed in accordance with the requirements of Article 6 of the Habitats Directive.

PT02: To support, subject to the objectives of this section and Volume 10 Energy Strategy, connecting infrastructure for the integration of low carbon and renewable energy generation projects including community scaled projects with power transmission infrastructure.

PT04: To support the upgrade of existing and development of new electricity substations in locations that do not have a significant negative impact on nearby residents and are subject to landscaping screening.

CDP Vol 10 Energy Strategy

Objectives

ES01: To facilitate the development of solar PV developments in the area open for consideration as shown on Map 6 subject to the renewable energy target set for the County, the proper planning and sustainable development of the area and the Development Management standards set out below.

ES02: To consider applications for community-based solar developments of an appropriate scale subject to normal planning and environmental criteria. It is the policy of the Council to support and facilitate renewable energy proposals that bring about a direct socio-economic benefit to the local community. The Council will engage with local communities and stakeholders in energy and encourage developers to work with local communities to identify how they can invest in/gain from significant renewable energy development.*

**In order to meet the 2030 renewable energy targets and the required level of emissions reduction, the Climate Action Plan 2019 includes a target to meet 15% of electricity demand by renewable sources contracted under Corporate Power 34 Purchase Agreements (PPAs). Corporate PPAs allow corporates to lock in a fixed energy price, eliminating exposure to volatile energy prices. The Climate Action Plan 2019 also requires closer working with community and enterprise by Obligated Energy Suppliers to ensure wider community gain. The first RESS auction, which is expected to open for applications by mid 2020, will include a suite of measures for community participation.*

ES03: Facilitate, where appropriate, small scale solar energy development projects in urban areas, industrial estates, business parks and small community-based proposals, subject to compliance with normal planning and environmental criteria and the development management standards.

5.3.5 Policy Commentary

5.3.5.1 Development Principle

The principle of development is deemed acceptable given that the basis for this grid connection arises from the need to connect the permitted Tomsallagh Solar farm to the national grid. The grid connection will be notably shorter than the previously considered route (Wexford CoCo Planning Reference: 20171275, An Bord Pleanála Planning Reference ABP-300427-17). The proposed grid connection will reduce the level of disruption to be public, reduce the amount of materials required to deliver the project, and it better facilitates the delivery of renewable energy.

The Climate Action Plan, 2023 sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, one of the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030. It is recognised that this will require very substantial new infrastructure including wind and solar farms, grid reinforcement, storage development and interconnection. The proposed development will facilitate the construction of the consented Tomsallagh Solar Farm, and when the solar farm is operational, renewable energy will be exported to the national grid via the proposed grid connection. The project contributes to the overarching aims of the Climate Action Plan.

Transitioning to a low carbon and climate resilient society is a National Strategic Outcome of the National Planning Framework. Reflecting this, National Policy Objective 55 will seek to "promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050." It is therefore recognised that the transition to a low carbon energy future requires a shift from predominately fossil fuels to predominately renewable energy sources.

At a regional level, the recently adopted Regional Spatial & Economic Strategy for the Southern Region, 2020 supports the delivery of the NPF and implementation of the Climate Action Plan. Objective (RPO 216) supports the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.

At a local level, the Wexford County Development Plan, 2022 is supportive of facilitating the development of solar PV developments (ES-01). The proposed development and related works are enabling works for the already permitted solar farm development and should not therefore be considered new energy development for the purposes of assessing suitability within this area.

The visual impact of the proposed grid connection and revised substation is assessed in further detail under the relevant environmental factors of the environmental assessment below. The principle of a solar farm has already been accepted and it follows that the principle of any development required to enable the permitted development should also be acceptable in principle subject to an assessment under any other relevant criteria, as covered in the Environmental Assessment below and Natura Impact Statement.

Overall, the proposed development and associated work is in compliance with the strategic objectives of the national, regional and local policy on renewable energy.

5.3.5.2 Procedural

It should be noted that matters relating specifically to the impact of the consented solar farm have been fully assessed and decided upon by the Board under permitted case: ABP-300427-17. The merits of the proposed development and related works must therefore be considered in their own right. Notwithstanding this, the cumulative assessments in this report takes account of the permitted aspects of the solar farm and all other elements.

6. Environmental Impact Assessment (EIA)

6.1 Legal Requirement for EIA

1. EIA comes from EU environmental policy. The initial Directive of 1985 and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011. Directive 2011/92/EU has been amended in 2014 by Directive 2014/52/EU. Together these comprise the EIA Directive.

2. The EIA Directive requires that public and private projects that are likely to have significant effects on the environment be made subject to an assessment prior to development consent being given. Screening for EIA requires consideration whether the project is likely to have significant effects on the environment.

3. Article 2(1) of the Directive makes specific reference to Article 4 for the definition of those projects which must undergo an assessment of their effects.

4. Article 4 distinguishes between two categories of projects.

- Article 4(1) requires that projects listed in Annex I of the Directive must always be subject to EIA.
- Article 4(2) requires that projects listed in Annex II of the Directive must be subject to EIA if it is determined, either by case-by-case examination or on the basis of thresholds and criteria set by the Member State, that they are likely to have significant effects on the environment.

5. Therefore, in order for a project to be subjected to an assessment of its environmental effects, in accordance with the procedural requirements of the EIA Directive it must be:

(i) A project of a type listed in Annex I ; or

(ii) A project of a type listed in Annex II which either meets thresholds or criteria set by the Member State; or

(iii) A project of a type listed in Annex II which is under the threshold, but following case by case examination, is likely to have significant effects on the environment.

6. In Ireland, a number of pieces of legislation have been used to implement the EU Directive, but for the majority of projects in Ireland it is the Planning and Development Acts 2000 (as amended) (the "Planning Acts"), Planning and Development Regulations 2001 (as amended), and European Communities (Environmental Impact Assessment) Regulations 1989 (as amended) that are the key legal instruments at present.

7. EIA provisions in relation to planning consents are currently contained in the Planning Acts, (Part X) and in Part 10 of the Planning and Development Regulations, 2001, as amended. Schedule 5 Part 1 and 2 of the Planning and Development Regulations 2001 (as amended) set out the prescribed classes of development requiring EIA in accordance with Article 4 of the EIA Directive2014/52/EU.

8. Schedule 5 Part 1 of the Planning and Development Regulations 2001 (as amended) set out projects which require a mandatory EIA.

9. Schedule 5 Part 2 of the regulations lists other types of development for which an EIA is required when certain thresholds and criteria are met.

10. Article 92 of the Planning and Development Regulations 2001 (as amended) interprets "sub-threshold development" as development of a type set out in Schedule 5 which does not exceed a quantity, area or other limit specified in that Schedule in respect of the relevant class of development.

6.2 EIA Screening Methodology

To determine if an EIA is required, this EIA screening exercise firstly assesses the development for Mandatory EIA to determine whether the Project is a class set out in Annex I or II of the Directive. These Annexes have been broadly transposed into Schedule 5 (Part 1 and 2) of the Planning and Development Regulations 2001, as amended, with national thresholds included for many of the Annex II classes.

Where no mandatory requirement is concluded, screening advances to Sub-Threshold Development Assessment, to determine the likelihood of the project having significant effects on the environment. Criteria are included in Annex III of the EIA Directive (transposed into Irish Law in Schedule 7 of the Planning and Development Regulations 2001, as amended).

Regard was had to the following guidance documentation when carrying out the screening exercise:

- Department of Housing, Planning and Local Government (August 2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;
- Department of the Environment, Heritage and Local Government (August 2003), Environmental Impact Assessment (EIA) Guidelines for Consent Authorities regarding Sub-threshold Development;
- Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports;
- European Commission (2017) Environmental Impact Assessment of Projects. Guidance on Screening.
- European Commission (2015) Interpretation of definitions of project categories of Annex I and II of the EIA Directive;

6.3 Screening for Mandatory EIA

The development for which planning permission is being sought is 110kV substation with OHL loop in connection to an existing 110kV line. The development is to facilitate the connection of the consented Tomsallagh Solar Farm and consented Tomsallagh Solar Farm extension to the national grid.

The following considers the proposed development in combination with all of the combined project elements to determine whether there is a mandatory requirement for EIA.

Project Element	Development specified under Schedule 5 Planning and Development Regulations 2001(as amended)	Appraisal
Substation	N/A	The EIA Directive and Schedule 5 of the Planning and Development Regulations 2001 (as amended) do not refer to substations as being a development for which environmental impact assessment is required.
Access Road	Part 2 10(dd) All private roads which would exceed 2000m in length	The proposed development includes 546m of new private road to facilitate access to the substation development. This element of the project is therefore under the threshold criteria for mandatory EIA.
Overhead Electrical Cables	Part 1 20. Construction of overhead electrical power lines with a voltage of 220 kilovolts or more and a length of more than 15 kilometres Part 2 3(b) Industrial installations for carrying gas, steam and hot water with a potential heat output of 300 megawatts or more, or transmission of electrical energy by overhead cables not included in Part 1 of this Schedule, where the voltage would be 200 kilovolts or more.	The proposed development includes two short sections of overhead 110kV electrical cabling (each c30m) between the proposed substation and the existing 110Kv Crane OHL. This element of the project therefore does not classify as prescribed development for mandatory EIA.
Hedgerow Removal and land recontouring	S.I. 383 of 2023, amends Part 2 of Schedule 5 of the Regulations, by inserting 'Projects for the restructuring of rural landholdings' as follows : "(a) Projects for the restructuring of rural land holdings, undertaken as part of a wider proposed development, and not as an agricultural activity that must comply with the European Communities (Environmental Impact Assessment)(Agriculture) Regulations 2011, where the length of field boundary to be removed is above 4 kilometres, or where re-contouring is above 5 hectares, or where the area of lands to be restructured by removal of field boundaries is above 50 hectares."	The proposed development includes the removal of c145m of hedgerow to facilitate access to the substation development. Also the overall development would involve the recontouring of c2.3ha of agricultural land. This element of the project is therefore under the threshold criteria for mandatory EIA.
Solar Farms	N/A	The EIA Directive and Schedule 5 of the Planning and Development Regulations 2001 (as amended) do not refer to Solar energy developments as being a development for which environmental impact assessment is required.
Changes or extensions of authorised projects	Paragraph 13 (a) "Any change or extension of development already authorised, executed or in the process of being executed (not being	The proposed development is located within the footprint of the consented Tomsallagh Solar Farm (Planning References 20171275 and ABP 300427-17). Applying the Schedule 2 13(a)(i) criteria, the proposed

Project Element	Development specified under Schedule 5 Planning and Development Regulations 2001(as amended)	Appraisal
	a change or extension referred to in Part 1), which would: – (i) Result in the development being of a class listed in Part I or paragraphs 1 to 12 of Part 2 of this schedule, and (ii) Result in an increase in size greater than 25%, or an amount equal to 50% of the appropriate threshold whichever is the greater.	change, would not result in any additional type of development being of a class listed in any other part of the schedules requiring it to be subject to mandatory EIA. Applying the Schedule 2 13 (a)(ii) criteria the proposed change, would not involve any increase above that of any applicable threshold

6.4 Sub-Threshold EIA Screening

Sub-threshold development is defined at Part 10 Section 92 in the Planning and Development Regulations 2001 (as amended) as "development of a type set out in Part 2 of Schedule 5 which does not equal or exceed, as the case may be, a quantity, area or other limit specified in that Schedule in respect of the relevant class of development".

The proposed substation, is not of a description or type listed in any of the project categories in Annex I and II of the EIA Directive or their equivalents in Irish legislation (Planning and Development Regulations 2001 (as amended), Schedule 5, Parts 1 and 2) and is thus not of a prescribed class of development listed in the Regulations requiring mandatory EIA or mandatory EIA screening in accordance with Annex III of the Directive.

The proposed overhead electrical grid connection cable, may be regarded as a class of activity within Part 1 and Part 2 of the regulations but falls substantially below any of the applicable threshold criteria, namely for both voltage and length.

The proposed new access road, may be regarded as a class of activity within Part 2 of the regulations but falls significantly below the applicable thresholds for which an EIA is mandatory.

The removal of hedgerows to facilitate the development may be regarded as a class of activity within Part 2 of the regulations but falls significantly below the applicable thresholds for which an EIA is mandatory.

Conclusion: The proposed substation development is not considered to have a mandatory requirement for an EIA. Elements of the proposed development however may be regarded as a class of activity within Part 1 and Part 2 of the regulations but falls below any of the thresholds for which an EIA is mandatory.

Consequently, for robustness the proposed development is to be assessed as a sub-threshold development using the criteria set out in Schedule 7 of the Planning and Development Regulations 2001 (as amended).

6.5 Review Against Schedule 7 Criteria

Schedule 7 of the Planning and Development Regulations 2001 (as amended) provides a list of criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an EIA. The criteria is grouped under three broad headings:

- Characteristics of proposed development;
- Location of proposed development; and
- Types and characteristics of potential impacts

The appraisal against the criteria included in Schedule 7 is set out in Table 5 below.

- The information and outcome of the following assessments have been taken into consideration in the screening assessment.
- Tomsallagh Solar Photovoltaic (PV) Energy Development Ecological Impact Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development AA Screening Report (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Noise Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Hydrology / Flood Risk Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Traffic and Transport Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Archaeological & Built Heritage Assessment Report (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Outline Construction Environmental Management Plan (CEMP) Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh Solar Photovoltaic (PV) Energy Development Landscape and Visual Impact Assessment (LVIA) Assessment (Tom Philips + Associates, Wexford County Council **Planning Reference 20171275**)
- Tomsallagh 110kV Substation with overhead loop-in electrical connection Environmental Appraisals included in Section 7 of this Document.
- MWP AA Screening Report (Document No 24255-6004)
- MWP Environmental Assessments included in Section 8 of this Document.

Table 5 Schedule 7 Criteria assessment

1. Characteristics of Proposed Development The characteristics of proposed development, in particular—		Appraisal
(a)	the size and design of the whole project;	The footprint of the proposed substation including access road and overhead electrical cable is located on a circa 2.3ha site within agricultural lands. Overall the proposed project elements are not considered significant in nature in terms of size, form or scale.
(b)	cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment;	The proposed substation is located within the footprint of the consented Tomsallagh solar farm developments and is to facilitate the connection of the solar farm to the national grid. The consented Solar Farm developments were not development for which EIA was required.
(c)	the nature of any associated demolition works	No demolition works are proposed to facilitate any aspect of the proposed development or overall whole project.
(d)	the use of natural resources, in particular land, soil, water and biodiversity;	The proposed development will not require the extensive use of natural resources. The land take associated with the proposed development is approximately 2.3ha of mainly agricultural lands. Biodiversity studies do not indicate the likelihood of any significant loss of valuable ecological habitat, protected plant or animal species associated with the proposed project elements. There will be some loss of hedgerow and trees for the proposed site entrance and along the substation access road. There is a minimal water requirement associated with the development. Importation of stone and aggregate material resources (locally sourced) will be required for construction of substation development. The use of natural rock and aggregate material resources associated with the development is unlikely to affect overall regional resources and would not cause unusual, significant or adverse effects of a type that would, in itself, require an EIA. Other than the land-take, the operational development will not require the use of natural resources.
(e)	the production of waste;	During construction of the proposed development it is anticipated that all soils, subsoils and stone generated from excavation works associated with the construction phase will be retained on site within the development boundary and reused in landscaping and reinstatement of the temporary construction compound. Other construction phase wastes associated with

1. Characteristics of Proposed Development The characteristics of proposed development, in particular—		Appraisal
		the proposed development may consist of surplus hardcore, stone, concrete, ducting, electrical wiring, spare steel reinforcement, metal off-cuts shuttering timber, plastic waste, packaging, unused oil, diesel and domestic refuse waste generated by contractors. The types of wastes to be generated will be similar to established construction waste streams and will not require unusual or new treatment options. The operational aspect of the proposed development would produce a minimal amount of waste. Wastes arising from the general operation and maintenance would principally include residual lubricating oils, cooling oils, packaging from spare parts, any interceptor silts and oils and sanitary wastewaters. All wastes will all be removed from site and reused, recycled or disposed of in an authorised facility in accordance with best practice. It is considered that the production of any waste associated with the proposed development, as described above, would not cause unusual, significant, or adverse effects of a type that would require an EIA.
(f)	pollution and nuisances;	Likely potential pollution and nuisances associated with construction works are as follows: • Disturbance for road users due to additional HVG movements on the local road network. The works however will be temporary and short term and appropriate traffic control and management systems will be in place to minimise traffic disruption and danger to road users. • There is some potential for water quality impacts to occur from run-off from excavated areas and temporary on-site storage of construction materials and fuels. Any such impact would be very localised, short-term and reversible. Proposed surface water drainage and control systems will ensure significant risk of water quality impact during construction does not occur. • Excavation activities and construction vehicles and plant will generate minor emissions of pollutants to the atmosphere. Pollutant emissions to the atmosphere would be short-term temporary in nature and would unlikely result in quantifiable or lasting negative effects on air quality. • Excavation activities and construction vehicles and plant will generate noise. Noise effects would be localised and short-term temporary in nature. Best management practices will ensure noise emissions are controlled to within acceptable levels. Likely pollution and nuisances associated with operational works are limited and would mainly be noise emissions from site plant associated with the substation (via transformer noise), This noise nuisance has been assessed as part of the Noise assessment and is not considered a significant impact.

1. Characteristics of Proposed Development The characteristics of proposed development, in particular—		Appraisal
(g)	the risk of major accidents, and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge;	The risk of major accidents and/or disasters during the construction and operational phase from the overall project is low given the nature and type of site activities. Overall, the nature of the construction works for each development element is standard and not particularly complex. The proposed project will be constructed in accordance with the Safety and Health at Work Act 2005 and any subsequent regulations or amendments and with the requirements of the Health and Welfare at Work (Construction) Regulations, (SI 291 of 2013), any subsequent amendments and any other relevant Health and Safety legislation to ensure that the construction areas, site environs and public roads remain safe for all users. The project is not considered to be particularly vulnerable or at risk in terms of disasters such as landslides or flooding. The OPW flood map has been consulted and it has identified that the site is outside of Flood Zones A and B as defined in the Flood Risk Management Guidelines and accordingly the proposed development use is appropriate. The risk of an increase in downstream flooding is low due to the small percentage increase in run-off contributing to the catchments as a result of the proposed development and the drainage design to ensure that run-off will replicate predevelopment greenfield surface water runoff conditions at the proposed development lands.
(h)	the risks to human health (for example, due to water contamination or air pollution).	None of the elements of the project involve any hazardous activity or emissions posing a significant risk to the human environment and will not give rise to adverse risks to human health. During the operational phase, there will be no emissions from the site that could impact on human health.

2. Location of Proposed Development: The environmental sensitivity of geographical areas likely to be affected by the proposed development, with particular regard to		Appraisal
(a)	the existing and approved land use	The proposed development is to be sited within the footprint of the consented Tomsallagh solar farm. The development lands are located in a rural, agricultural setting where the predominant land use is pastoral farmland. There are a number of residential dwellings located adjacent to the western boundary including 3 no. houses situated at the western corner of the site in proximity to the proposed site access along with a number of dwellings located further west of the site on the opposite side of the local public road. The surrounding areas predominately comprises agricultural grasslands.
(b)	the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground	The proposed development will not significantly impact the relative abundance, availability, quality and regenerative capacity of natural resources. There are no areas on or around the location of the proposed development or its underground which contain important, high quality or scarce natural resources which could be affected by the proposal. There are no statutory landscape, heritage or ecological designations within or in the immediate proximity to the Site. All imported materials will be sourced from licensed suppliers. The proposed development does not involve use or destruction of natural resources, such that there would be a significant threat to their regenerative capacity
(c)	the absorption capacity of the natural environment, paying particular attention to the following areas:	
(i)	wetlands, riparian areas, river mouths;	N/A. None of the proposed development elements are located at or near wetlands, riparian areas, river mouths
(ii)	coastal zones and the marine environment	N/A. None of the proposed development elements are located at or near coastal or marine environment.
(iii)	mountain and forest parks	N/A None of the proposed development elements are directly located in a forest or mountainous area. There are forestry and upland areas in the greater region, but none will be affected by the development.
(iv)	nature parks and reserves	N/A None of the development elements are not located within or adjacent to a nature reserve or park
(v)	areas classified or protected under legislation, including Natura 2000 areas	The proposed development is not located within any Natura 2000 sites. The nearest protected areas, Slaney River Valley SAC is situated approximately 2.1km southwest of the proposed development site. Tinnacross stream which

2. Location of Proposed Development: The environmental sensitivity of geographical areas likely to be affected by the proposed development, with particular regard to		Appraisal
	designated pursuant to the Habitats Directive and the Birds Directive	is located adjacent to the proposed site is approximately c200m southeast of the proposed 110kV Substation. The Tinnacross stream drains to River Slaney which is a part of the Slaney River Valley SAC. An AA Screening has been prepared and it has been concluded that any element of the proposed project, alone and/or in-combination with other plans and projects, will not adversely effect the integrity of any Natura 2000 sites.
(vi)	areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure.	N/A- None of relevance to the characteristics of the proposed project.
(vii)	densely populated areas	The proposed development is situated in a rural lightly populated area. The nearest densely populated areas close to the development site is Enniscorthy town and Ferns village approximately 4.5km northeast and 5km south respectively.
(viii)	landscapes and sites of historical, cultural or archaeological significance.	No landscapes/sites of historical cultural or archaeological significance will be affected by the proposed development site. The closest archaeological feature recorded is **Excavation- miscellaneous** (**WX020-081----**) located approximately 120m to the east of the proposed site. The nearest architectural heritage site is **Tomsallagh House (Reg. No. 15702031)** located approximately 1.04km north of the proposed site.

3. Types and characteristics of potential impacts:		Appraisal
(a)	the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected)	The extent of any impact during the construction or operational phase of the proposed development will be local in character. Construction activities are not of a sufficient magnitude, nature or duration and are not likely to give rise to significant effects. During the operational phase any impacts again would be localised.
(b)	the nature of the impact	<u>Population and Human Health</u> The substation development is expected to have a slight, localised, and temporary negative effect on the receiving environment during the construction phase. This is associated with noise, road traffic and dust. However, it is not anticipated that there will be any significant, negative effects to human health during the construction phase. The substation is in a rural area where there is sparse residential development. Best practice measures, which are outlined in the CEMP will be implemented during the construction phase. During the operational phase, the proposed project will not give rise to significant effects on sensitive receptors. There will be no emissions to air generated during the operational phase. Any noise emissions would not exceed EPA limits at the nearest noise sensitive receptors. There would be no significant traffic generated during the operational phase. <u>Biodiversity</u> There will be no loss of sensitive ecological habitat. The construction phase of the proposed development has the potential however to cause disturbance to the fauna in the surrounding area, mainly due to increased human activity and noise. It is anticipated that mobile species, such as mammals and birds, will temporarily leave the vicinity of the site during construction works. There is some potential for water quality impacts to occur from run-off from excavated areas and temporary on-site storage of construction materials and fuels However the risk of potential significant affects to aquatic habitats is unlikely. No in-stream works are proposed and the proposed development works are set back from the Tinnacross Stream by >100 meters. Standard best management practices and the proposed drainage controls will ensure significant risk of water quality impact during construction do not occur. An AA screening however confirms no significant impact on the Natura 2000 site network will occur from the proposed works.

3. Types and characteristics of potential impacts:	Appraisal
	<u>Water</u> There is some potential for water quality impacts to occur from run-off from excavated areas and temporary on-site storage of construction materials and fuels. Any such impact would be very localised, short-term and reversible. Standard best management practices and the proposed drainage controls will ensure significant risk of water quality impact during construction do not occur. There are no operational water discharges, therefore impacts to water quality will be negligible. <u>Land and Soils</u> During the construction phase of the proposed development, activities will include excavation and earthworks. Potential effects include (in the absence of adequate management) weathering and erosion of the surface soils, increased siltation or pollutants from the construction processes, and accidental spills and runoff. Best practice measures and environmental guidelines defined in the CEMP will be adhered to reduce the likelihood of potential impacts on soil quality. Therefore, no significant impacts are anticipated. During the operational phase of the proposed development, the primary potential impact to lands soils and geology relate to a failure or accidental spill of fuel which is stored and used on site for the transformer. The transformer will be bunded, therefore, significant effects from accidental spills to the land and soils environmental are unlikely to occur. <u>Air and Climate</u> The main air quality impacts will be associated with dust generation during site preparation and construction works. The implementation of best management practices, however, will minimise the generation of dust during the construction phase. With the adoption of these best practice measures, it is anticipated that the dust produced would not cause a significant effect on the environment. The operational phase will not give rise to air emissions. <u>Noise and Vibration</u> The construction phase of the proposed development has the potential to cause noise nuisance. Impacts from the construction phase will depend on the number and type of equipment employed during the works. Noise limits and control measures outlined within the noise management section of the CEMP will be adhered to. With these measures in place, no significant effects on sensitive receptors are anticipated during the construction phase. During the operational phase the proposed development will not be a significant noise source; therefore, significant

3. Types and characteristics of potential impacts:		Appraisal
		noise effects are unlikely to occur. A noise assessment has been produced which assessed this impact and concluded that the proposed development (alone and in-combination with other developments) will not exceed the EPA noise limit criteria at the nearest sensitive receptors. <u>Landscape and Visual</u> The landscape and visual effects arising from the introduction of the proposed development would be localised, and limited in both scale and extent, and would not result in any substantial adverse change to the landscape character of the general area. The proposed development will result in a limited visual impact on overall landscape character and visual amenity and would be in keeping with other similar existing and permitted developments within this landscape and would not introduce any activities which are otherwise unusual to the area.. The proposed development will not impact on views from protected features or sensitive receptors and is considered an appropriate scale for the existing landscape. <u>Cultural Heritage</u> No archaeological features has been identified within the proposed development site. A few archaeological and architectural sites have been identified in the wider area, none of which will be impacted by the proposed development. <u>Material Assets</u> Given the scale and nature of the proposed development, no likely significant impacts are anticipated on utilities as a result of the proposed development.
(c)	the transboundary nature of the impact	N/A There will be no potential for transboundary impacts from any element of the proposed development.
(d)	the intensity and complexity of the impact	The majority of the impacts are associated with the construction phase of the proposed development e.g., noise nuisance, traffic nuisance, machinery on site, surface water runoff, dust. However, the construction phase impacts are common and not of a complex nature with standardised construction methods utilised. With the implementation of appropriate best practice measures as outlined in the CEMP, it is not anticipated that potential

3. Types and characteristics of potential impacts:		Appraisal
		impacts from the construction of the proposed development will be intense or complex. Therefore, significant effects to the existing environment during the construction phase are not anticipated. Operational phase impacts are not deemed to be intense or complex. Noise emissions are the only impact of potential significance during the operational phase. A previously noise assessment has assessed this impact and concluded that the proposed substation (alone and in-combination with other developments) will not exceed the EPA noise limit criteria at the nearest sensitive receptors.
(e)	the probability of the impact	The proposed development is expected to have a slight, localised, and temporary negative effect on the receiving environment during the construction phase. Notwithstanding the limited impacts, mitigation measures will be provided to safeguard natural resources and sensitive receptors from any impact on the relative abundance, availability, quality and regenerative capacity. Mitigation measures within the Environmental Report have been transposed to the CEMP and will be implemented by the appointed Contractor(s). The CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary to ensure that the measures implemented are effective. Noise emissions during the operational phase are likely but would be within EPA noise limit criteria and not result in significant effects on the nearest noise sensitive receptors. It is considered the likelihood of significant impacts on the receiving environment is low and no long-term impacts are anticipated as a result of the proposed development.
(f)	the expected onset, duration, frequency and reversibility of the impact,	The potential impacts associated with the construction phase are temporary and minimal. With the implementation of standard best practice measures any potential impact is not considered to pose any significant risk, and the nature of the impact is considered short-term temporary and reversible. Operational noise will be long term but is within acceptable guidelines and would not significantly affect the surrounding local environment.
(g)	the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the	The proposed development is located within the footprint of the consented Tomsallagh solar farm development and is to facilitate the connection of the solar farm to the national grid. The consented Solar Farm developments were not development for which EIA was required and considered unlikely to result in significant environmental effects.

3. Types and characteristics of potential impacts:	Appraisal
Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment,	The potential for cumulative impacts in respect of the proposed 110kV Tomsallagh Substation development, and the consented Tomsallagh solar farm and Tomsallagh Solar Farm Extension, mainly relates to the construction phase. These impacts encompass noise, water, air, and traffic. There will be no significant cumulative water quality impacts associated with the construction of the proposed substation development in combination with the solar farm developments. Any potential impacts arising during construction will be avoided through the implementation of the site-specific drainage system and adherence to construction best practices. As a result, any potential impacts on water quality are expected to be negligible. None of the developments are present within any Natura 2000 sites. No direct hydrological connection to any Natura 2000 sites is proposed for both 110kV Tomsallagh substation development, and the solar farm developments, which will reduce the potential for water quality impacts to any Natura 2000 sites. The only potential route for water quality impact within a Natura 2000 site is through an indirect hydrological connection via the Tinnacross Stream, which eventually joins the Slaney River Valley SAC. The parallel works of both the Tomsallagh Substation and Grid Connection and the solar farm developments may pose a risk of generating disturbances due to an increase in traffic movements during the construction phase, potentially leading to road safety concerns and soiling of the roads. However, these impacts will be localised and temporary. Traffic management measures will be implemented to minimise disruptions, including strategically scheduling construction activities and coordinating deliveries to reduce traffic congestion. Therefore , the proposed Tomsallagh substation and grid connection, in combination with the Tomsallagh solar farm developments are not expected to have a significant cumulative traffic impacts during the construction phase. No operational phase traffic impact is expected for both developments. Cumulative noise emissions during the construction and operational phase of the Tomsallagh Substation and grid connection, and Tomsallagh solar farms are expected but are within the acceptable guidelines, posing no significant cumulative impacts on nearby noise-sensitive receptors. Similarly, there is a likelihood of dust generation during construction of Tomsallagh Substation and grid connection, and the Tomsallagh solar farms, from the activities such as machinery operation, excavation. These will be mitigated

3. Types and characteristics of potential impacts:		Appraisal
		through the implementation of best practices, and implementation of measures proposed in CEMP ensuring that any cumulative effects on air quality are insignificant. No cumulative dust impacts are expected during the operational phase of both developments. Overall, while there is potential for cumulative impacts during the construction phase of Tomsallagh Substation and grid connection, and the Tomsallagh solar farm developments, the implementation of mitigation measures ensures that any significant adverse cumulative impacts are unlikely.
(h)	the possibility of effectively reducing the impact.	The proposed development is not anticipated to result in any significant effects on the existing environment. However, where temporary, negative and transient impacts are likely to occur all impacts can be effectively managed through standard best practice measures A CEMP has been prepared in accordance with recommended best practice (CIRIA Environmental Handbook for Building and Civil Engineering Projects: Part 2 Construction). The CEMP will be implemented by the appointed Contractor(s). The CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary to ensure that the measures implemented are effective. In addition, the mitigation measures outlined in the Environmental report submitted with the consented solar farm at Tomsallagh along with the conditions attached to permission granted by the Board will ensure that potential risks are minimised from that development.

7. Appropriate Assessment

A Screening for Appropriate Assessment report have been completed for the proposed development and accompany the planning application. The screening report has concluded, that the proposed 110kV Substation development and grid connection will not adversely affect (either directly or indirectly) the integrity of any Natura 2000 site, either alone or in combination with other plans or projects. Refer to MWP Document No.24255-6004.

8. Environmental Appraisal

The following subsections provide an environmental appraisal of the proposed development.

8.1 Lands, Soils, Geology, Hydrology and Hydrogeology

8.1.1 Receiving Environment

8.1.1.1 Land and Soil

The proposed development site is currently agricultural grassland, mainly used for grazing.

The land cover at the site has been mapped using information from CORINE landcover available on the Environmental Protection Agency's (EPAs) online mapping system (see **Figure 9**). The site is classified as ''Pastures (231) ''– *comprising dense predominantly graminoid grass cover of floral composition.*

Geological Survey of Ireland (GSI) online mapping system (www.GSI.ie) notes that soils at the proposed development site are categorised predominantly as till derived from Palaeozoic shales with alluvial deposits mapped along the eastern site boundary associated with the Tinnacross Stream. Teagasc Soils mapping notes the predominant soil type at the the site is ''*AminDW- Deep well drained (mainly acidic in nature)*'' changing to ''*AminPD- Mineral poorly drained (mainly acidic in nature)'* in the eastern (lower) section of the proposed development, *and with a thin band of " AlluvMIN mineral alluvium"* along the south eastern sit boundary adjacent to the Tinnacross Stream. **Figure 10** below details the Teagasc soil types as shown on the GSI online mapping system.

The quaternary geomorphology of the area comprises features such as streamlined bedrock and meltwater channels identified adjacent to the site. (See **Figure 11** below)

Figure 9 Corine Land Cover Map

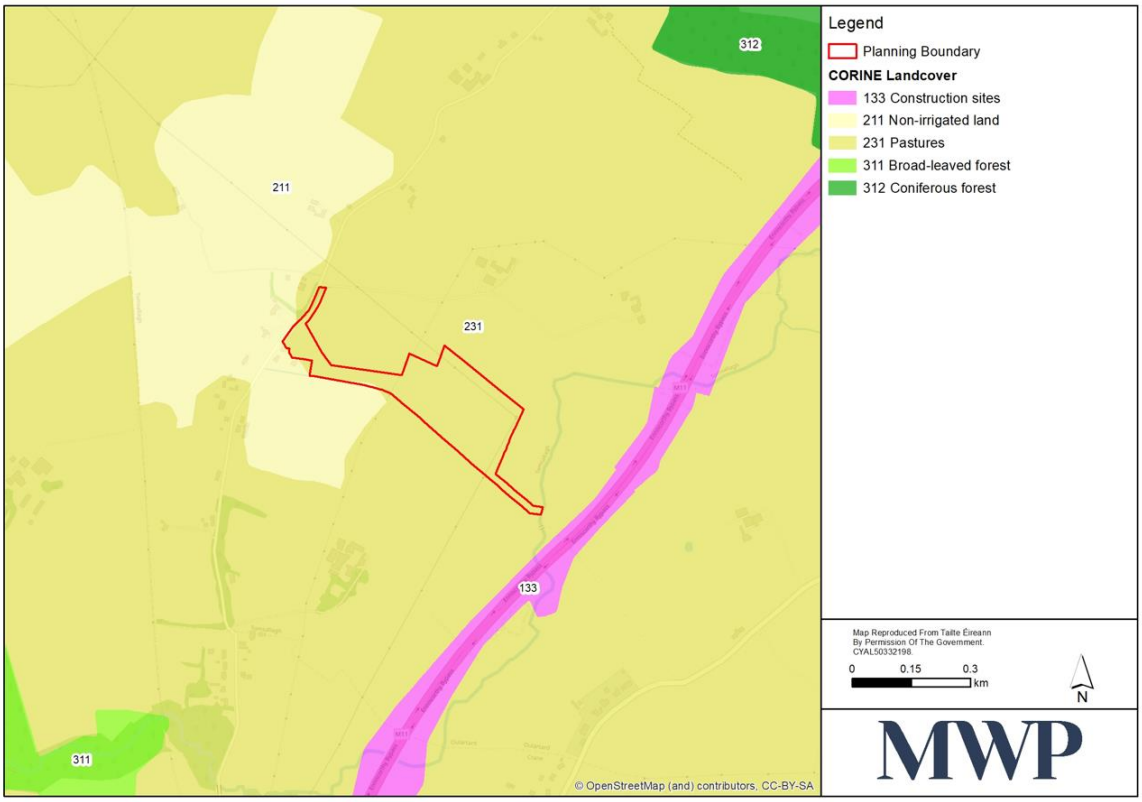


Figure 10 EPA Soils Map of Proposed Development

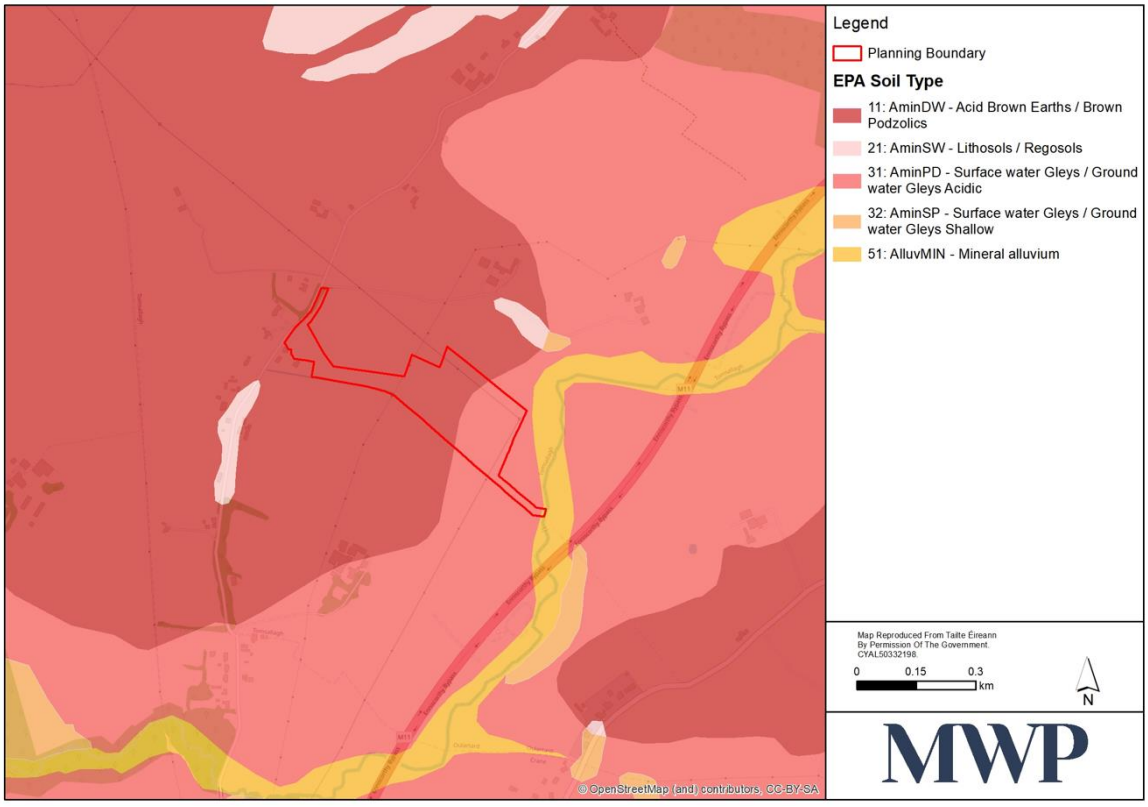
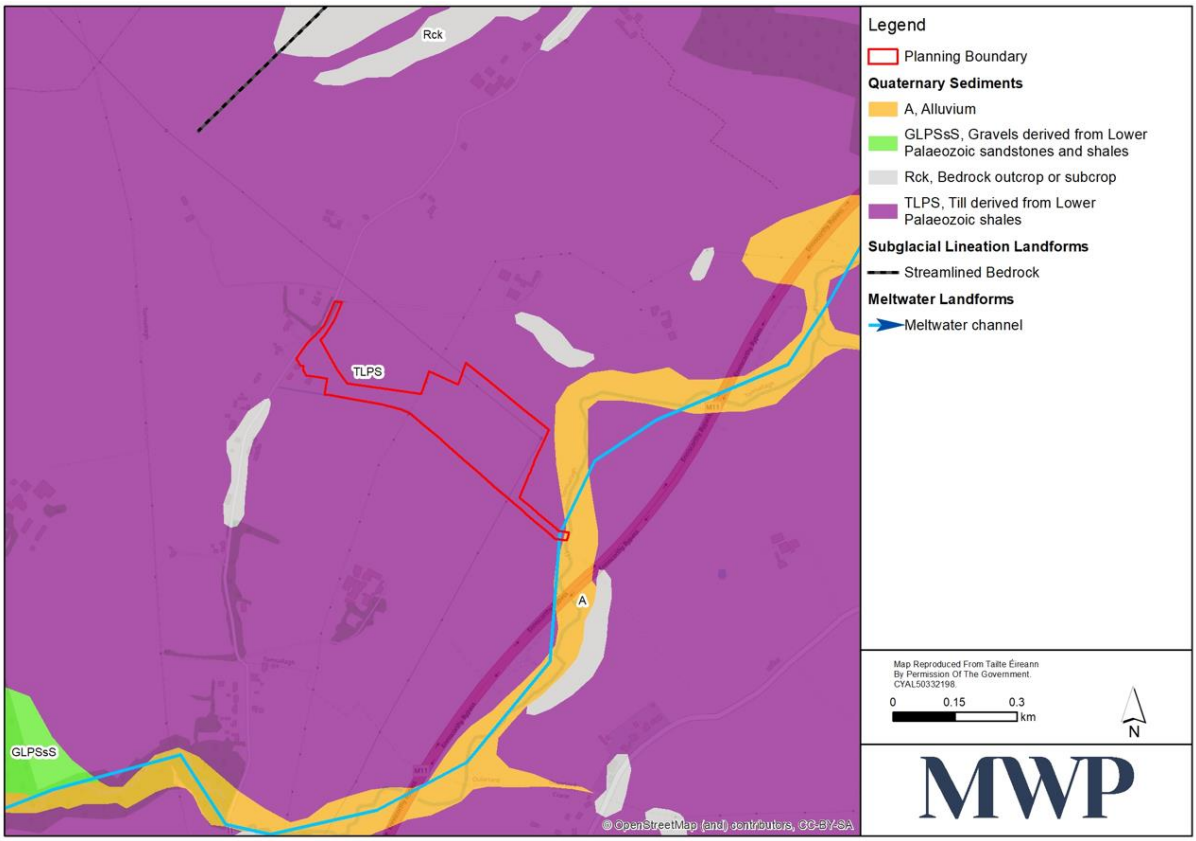


Figure 11 Quaternary Sediments and Geomorphology Map



8.1.1.2 Geology

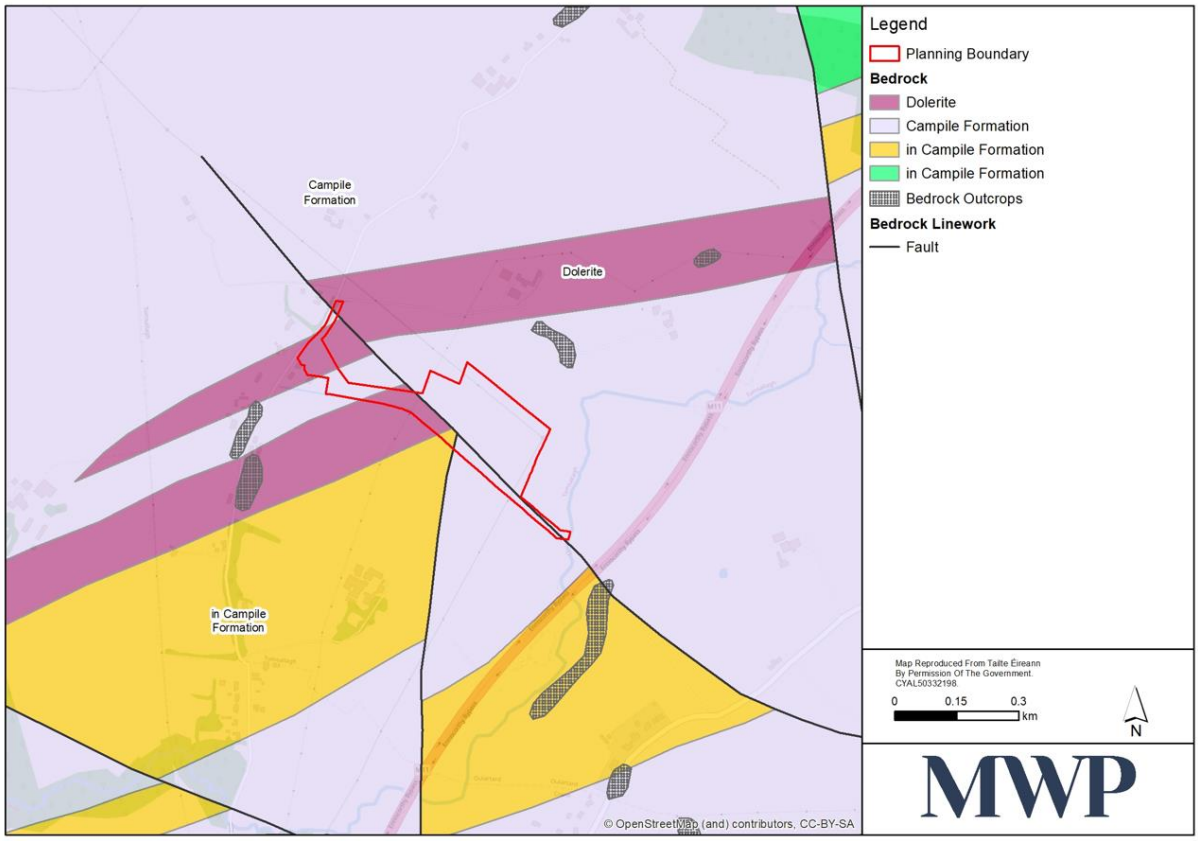
The site is underlain mostly by the Ordovician rocks of the Campile formation, consisting of rhyolitic volcanics, grey & brown slates. Two bands of Dolerite, a Tertiary rock, cross the northwestern portion of the proposed development site. A fault is shown to cross the proposed development site from the north-west to the south-east.

Bedrock formations underlying the site and immediately adjacent to the site are shown in **Figure 12** and described from literature as follows:

- **Campile Formation (OCCAMP):** These Ordovician rocks are described as pale coloured rhyolites and rhyolitic tuffs or agglomerates in grey and brown slaty mudstones with occasional andesitic tuffs or agglomerates
- **Dolerite (Slieve Gullion Complex) (LTDOLE):** These Tertiary rocks are made up of a number of alternating dolerite (Do) and granophyre (Gr) "layers" and some highly altered Newry Granodiorite.

There are no recorded Geological Heritage sites observed within and the wider area surrounding the site.

Figure 12 Regional Geology Map of the Proposed Development



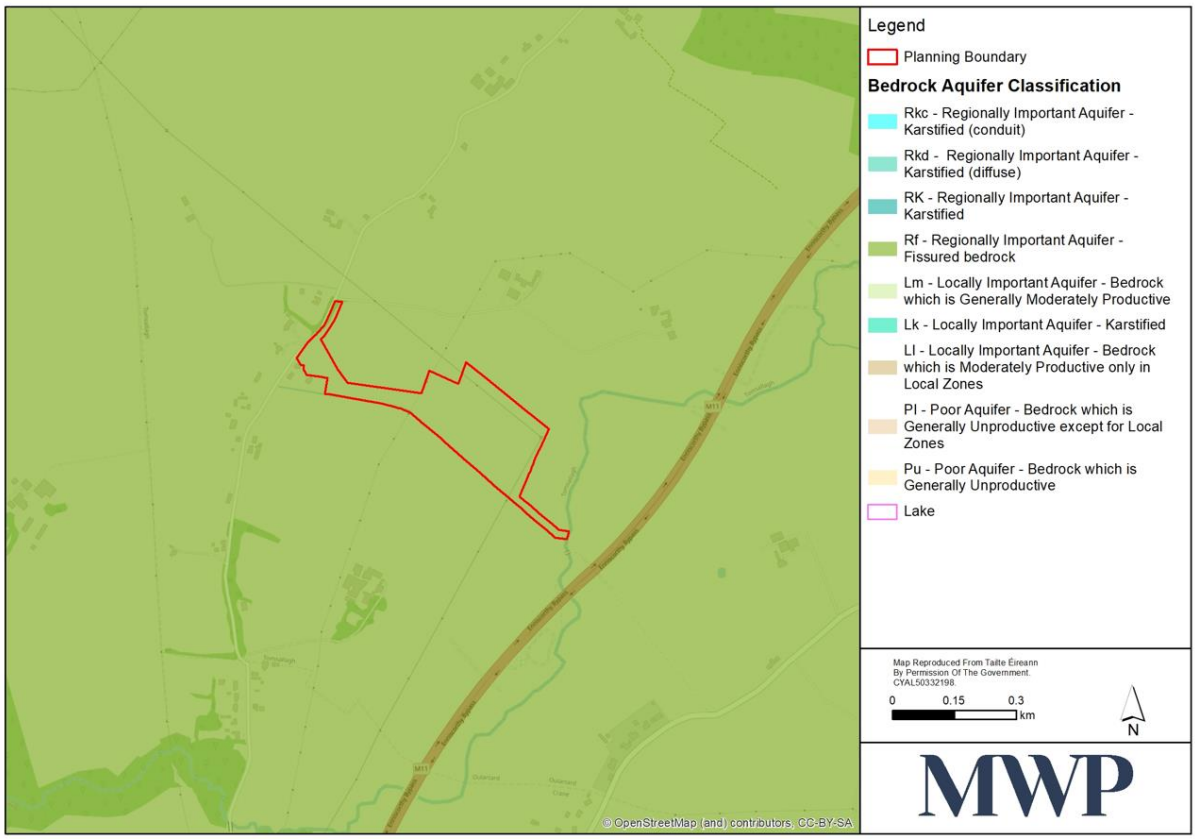
8.1.1.3 Hydrogeology

The groundwater body identified at the proposed development site is Enniscorthy (IE_SE_G_061). The Ground Waterbody WFD status (2016-2021) is classified as having ''Good'' status and is described as ''At risk'' in the risk category of WFD as per EPA maps.

According to the Geological Survey of Ireland online mapping (GSI) Bedrock Aquifer, the site is underlain by a '*Regionally Important Aquifer - Fissured bedrock*' as shown in **Figure 13** below.

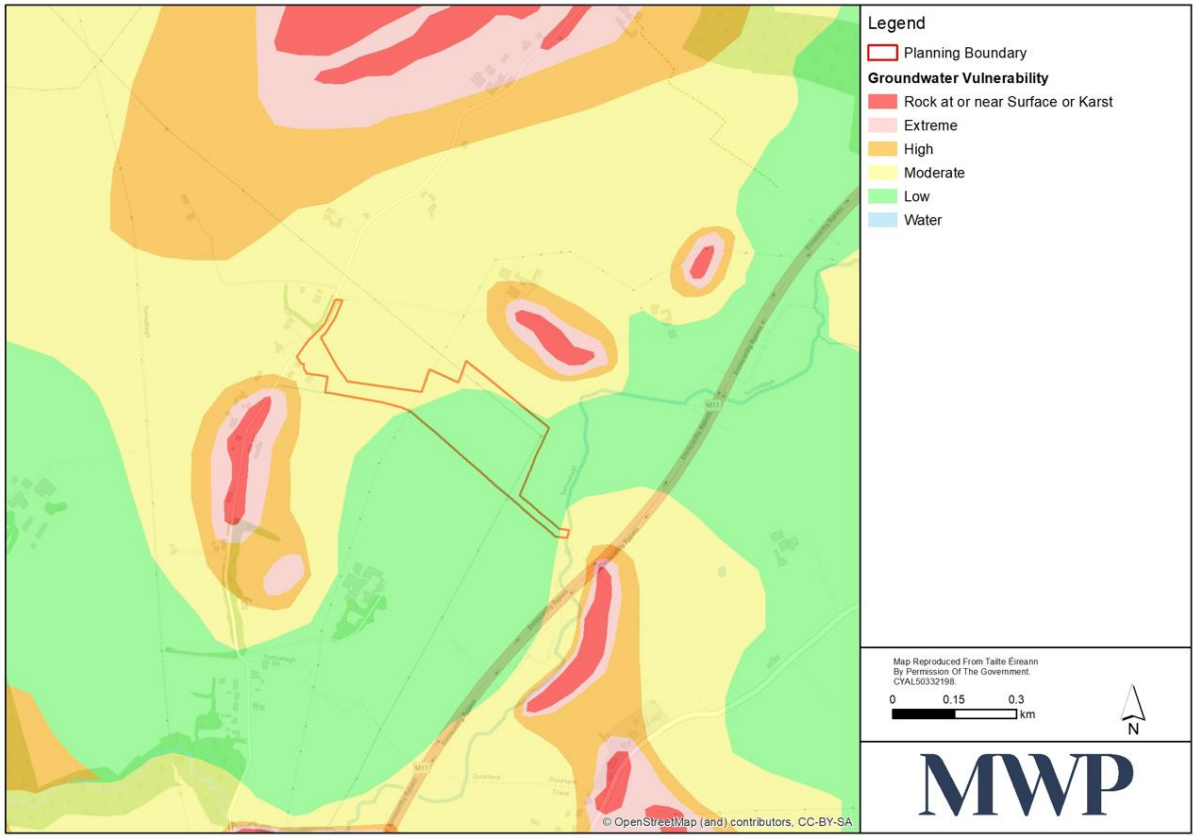
The aquifer bedrock resource found within and immediately adjacent to the site are described as *Rf- regionally important fissured bedrock aquifer*. The closest recorded groundwater abstraction well (2913NWW010, 1km east of the site) is noted as having excellent yields (> 400m³/d).

Figure 13 Bedrock Aquifer Classification Map



Groundwater vulnerability in the region is mapped as varying from low to moderate (as shown in Figure 14) with soil permeability noted as low (, indicating that the chance of groundwater potentially migrating to the underlying bedrock, either as a result of the thickness of the overburden or the permeability of the overburden, is low.

Figure 14 Groundwater Vulnerability Classification Map



8.1.1.4 Hydrology

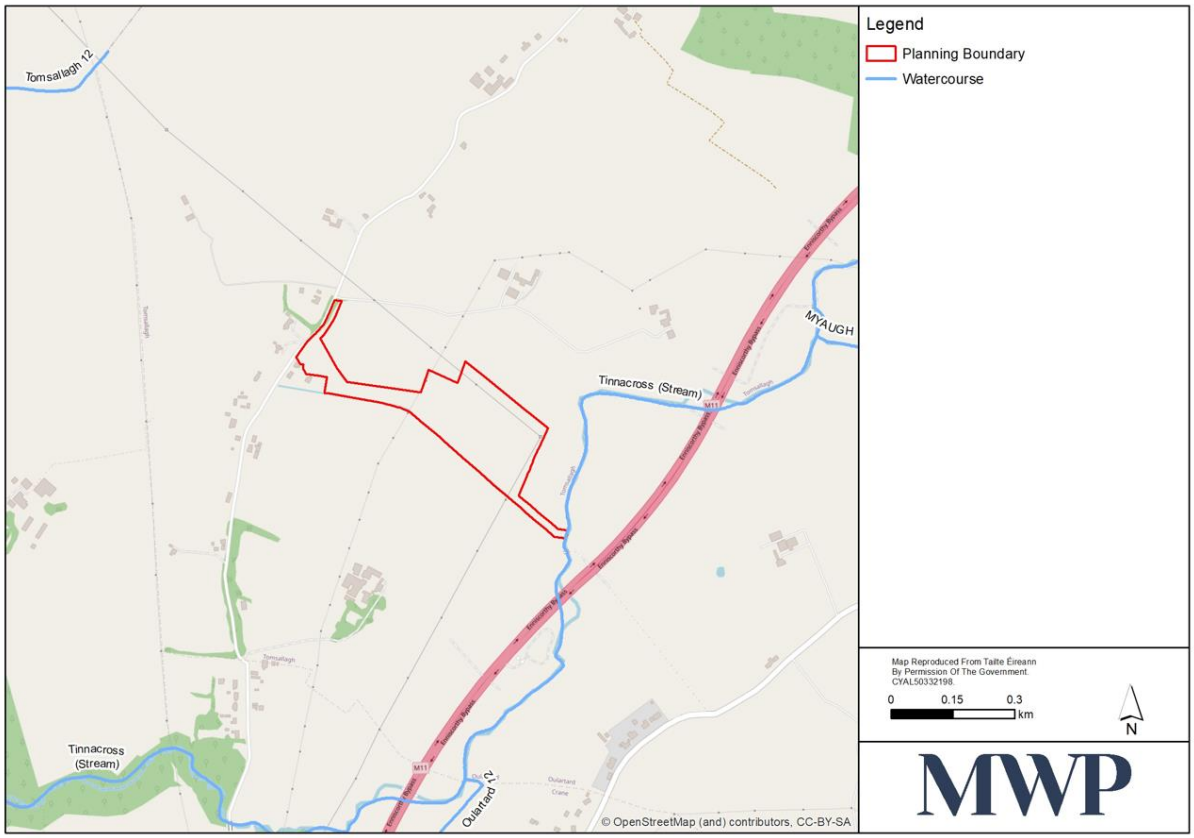
The proposed development site is located within the Water Frame Directive (WFD) 12_ Slaney & Wexford Harbour Catchment and Slaney_SC_080 Sub Catchment. The WFD river sub basin is Tinnacross Stream _020.

The nearest mapped watercourse to the proposed development is the Tinnacross Stream, which follows the south eastern boundary of the proposed development site flowing from north to south. The Tinnacross Stream joins the River Slaney approximately 2km southwest of the site. See **Figure 15**. The Tinnacross Stream and River Slaney are classified as having a moderate and good WFD status (2016-2021) respectively. The Tinnacross Stream is considered 'at risk' and the River Slaney is considered "Not at Risk" under the WFD.

The River Slaney (IE_SE_12S022300) flows in a generally southerly direction and discharges into the sea at Wexford Harbour, approximately 23.5km southeast of the proposed site.

Natural surface water/overland flow is generally to the southeast . There is a drainage ditch adjacent to the western boundary of the proposed development and a culverted field drain which discharges to a drainage ditch to the south east of the proposed substation location. Both drainage ditches flow into the Tinnacross Stream.

Figure 15 Hydrology of the Proposed Development



8.1.1.5 Flood Risk

The prospective risk associated with flooding sources has been established by the review of Office of Public Works (OPW) Flood maps and a study of the site-specific Flood Risk Assessment (FRA) done by Hydro-Environmental Services for the adjacent permitted Tomsallagh Solar Farm, Co. Wexford (Wexford County Council Planning Reference 20171275, An Bord Pleanála Planning Reference ABP-300427-17 within the same catchment area.

According to the information available on Flood Zone Maps (on DHLGH 'MyPlan' Portal) the proposed development site does not fall within a flood zone. .

The Tinnacross Stream which forms a short section of the eastern boundary is shown in the National Indicative Fluvial Mapping (NIFM) - present day flood extents (floodinfo.ie) as having an Annual Exceedance Probability (AEP) of 1 (or 100 to 1) - medium probability, however no infrastructure is proposed in this area.

A review of the available sources of flooding suggests that there are no instances of historic flooding on site.

8.1.2 Potential Impacts

8.1.2.1 Land

The project will require a temporary land take of approximately 2.55 hectares during the construction phase and a permanent land take of circa 2.3ha once operational. The land take is small and is not considered significant.

8.1.2.2 Soils and Geology

The construction of the proposed development will result in the removal of soil and a portion of subsoil in parts of the proposed development site in order to facilitate the construction of the new access roads, compounds, and drainage systems. It is anticipated that the proposed development site works, and excavation proposals will not be deep enough to impact the underlying bedrock geology during the construction phase.

Topsoils and subsoils stripping is required. It is estimated that approximately 12,000m^3 of material is to be excavated. It is proposed that all excavated soils will be reused for site reinstatement.

Temporary storage of soil will be carefully managed in such a way as to prevent potential negative impact on the receiving environment and the soil material will be stored away from any surface water drains. It will be necessary to designate areas within the site where stockpiles will be established in order to facilitate the efficient transfer of material within the site.

During the operational phase, maintenance checks will be undertaken to ensure any oils, fuels or chemicals stored onsite are done so in line with relevant guidance, and within bunded areas where necessary.

There are no likely significant impacts on the land and soils environment associated with the proposed development.

8.1.2.3 Hydrology and Hydrogeology

There is potential for water (surface water and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to surface water or groundwater quality for the duration of the construction if contaminated water is allowed to enter surface waters or percolate to the aquifer.

The following potential direct impacts could result from the construction activities for the proposed development:

- Inappropriate layout of the infrastructure could result in obstructions to the overland flows on site.
- Poorly constructed drainage could lead to blockages and consequent flooding and concentration of surface water flows.

Possible potential indirect impacts on surface water and or groundwater quality during construction activities include:

- Mobilization of silt in the surface water run- off, during extreme rainfall events during construction activities.
- Improper management of excavated material and suspended solids could lead to contamination of the surface water, and potentially impact the flora and fauna along with associated aquatic habitats.
- Increased suspended particles from poor traffic vehicle management and maintenance can also contribute to surface and groundwater pollution.
- Inadequate storage capacity for fuels and oils can also be a contributing factor.
- Irregular maintenance and monitoring of roadside drains and temporary site access drains may result in silt breakouts caused by drain obstruction.

During the operational phase of the Proposed Development site there is limited potential for site activities to impact on the geological and hydrogeological environment of the area. The following potential direct impacts could result from the operational phase activities for the proposed development:

- Failure or accidental spill of fuel/oils which is stored and used on site for the transformer.
- Increase in run-off from a storm event, due to the change in land use.

A site-specific drainage system is designed to mimic predevelopment greenfield surface water runoff conditions on the projected construction site. There will only be a slight increase in the impermeable conditions as a result of the proposed 110kV substation compound, as the majority of the storm water will drain naturally into the ground.

The only run off generated during the operational phase will be collected from the roof of the control building and the transformer area of 110kV substation compound into the proposed underground piped drainage network and system of trapped gullies and will be directed into the surface water collection network which includes a Full Retention Petrol Interceptor prior to discharging to the nearby land drain via an attenuation system.

It is anticipated that there would be no significant impact during the operational phase due to the proposed drainage designs and mitigation measures for the proposed development.

8.1.2.4 Flood Risk

A review of the flood risk assessment report for the permitted adjacent solar development (Planning Ref ABP-300427-17), as well as the OPW flood maps, determined that the proposed development will not increase the risk of flooding on the site and will have no negative impact. The project infrastructure will be located in areas mapped as Flood Zone C. There is no development planned in Flood Zone A or Flood Zone B.

The access track will be of a permeable construction however there will be a slight increase in the area of impermeable surfaces across the site, resulting in a slight increase in surface water run-off rates. This change in flow volumes is addressed with embedded mitigation in the form of a site-specific drainage system that provides sufficient storage capacity to limit run-off from the developed catchment to that equivalent to pre-development greenfield run-off rates. It is therefore considered that there is no likely significant impact on flooding as a result of the proposed development.

8.1.2.5 Cumulative Impacts of the Project

The proposed development, in conjunction with the permitted Tomsallagh solar farm, are not anticipated to have any significant cumulative impacts on land and soil.

During the construction phase, there is a potential for temporary effects on water quality resulting from the combined activities of the solar farm construction works in combination with the proposed 110kV substation development. This is due to their proximity and shared drainage catchment. Construction activities such as excavation, land clearing, and material usage can lead to sediment runoff and potential water pollution.

To mitigate potential water quality impacts, site-specific drainage systems has been designed for each development, and construction best practices will be implemented. These measures aim to minimize the impact on water quality, and the overall effect is considered to be negligible.

During the operational phase the proposed 110kV substation is not anticipated to have cumulative impacts on water quality in combination with Tomsallagh solar farm. Measures such as a site-specific drainage system, and compliance with environmental regulations ensure the protection of water resources during operational phase of the proposed project.

Considering the above information, it is concluded that the proposed substation will not have cumulative impacts on land and soil and hydrology in relation to the solar farm.

8.1.3 Mitigation

8.1.3.1 Drainage

A site-specific drainage system has been designed taking account of the following:

- Continuation of flows of natural flow paths through existing drains.
- Check dams will be installed in all v-drains.
- Silt and runoff will be prevented from entering ground water, surface water drains or water courses using appropriate means. These include the temporary installation of silt fences, cut off drains, silt traps and drainage to vegetated areas where appropriate.
- Additional silt fencing and emergency spill kits will be kept on site for use in emergencies.

8.1.3.2 Sediment Control

- Prior to any construction activity, the site will be inspected for areas that would be prone to siltation of nearby watercourses. Where necessary, existing pollution prevention measures (check dams and silt ponds) will be maintained / upgraded to ensure optimum standard of water running into streams from the drainage adjacent to access road. Drainage, silt fences and settlement ponds will be installed where new development components are proposed. Additional silt fencing and emergency spill kits will be kept on site for use in emergencies.
- All erosion control and retention facilities will be regularly maintained during the construction phase. The treatment approach described below will reduce significantly any potential increase in surface water run-off as a result of the facility development.
- Prior to and during construction works, operations will be monitored by a competent member of the construction team on a regular basis to check if working appropriately.

8.1.3.3 Dewatering

Any ground water/surface water that may enter building foundations will be removed and treated and disposed of appropriately, in accordance with best practice. Any dewatering (if/where required) will adhere to the following measures:

- Ground water/surface water will not be pumped directly into drains/watercourses.
- Ground water/surface water which has become silted within the building foundations will be pumped to the surface water drainage system/sediment ponds.

- In the case of heavy siltation, water will be tankered off site for disposal at an authorised waste facility or pumped to a portable onsite settlement tank for treatment.

8.1.4 Monitoring

8.1.4.1 Construction Phase

- The Environmental Manager will check the cross-drain pipes, dirty water drains and outlets, settlement ponds, interceptor drains and silt fences daily for any damage or blockages. Any damage or blockages will be repaired or cleared promptly.
- Weather forecasts will be monitored during the construction phase. The 24 hours advance meteorological forecasting service from Met Éireann will be used.
- A surface water monitoring schedule, drawn up prior to construction, and agreed with the planning authority will be followed.

8.1.4.2 Operational Phase

A site-specific drainage system has been designed which will cater for the additional run off and reduce the velocities of flow. The maintenance of the development will incorporate effective maintenance of the drainage system. The maintenance regime will include inspecting the following:

- Drains, cross-drains and pipes for any blockages
- Outfalls to existing field drains and watercourse
- Existing roadside swales and gullies for any obstructions

All equipment with the potential for oil spillage will be bunded. Provision of spill kit facilities and training of operatives in use of same.

8.1.5 Conclusion

Whilst the proposed development necessitates the stripping of topsoil and subsoil, with the mitigating measures in place, it is likely to have a little negative impact on the overall receiving environment of land, soils, and geology. Likewise with consideration of the site-specific drainage and mitigation measures to address the slight increase in the possible run off from the site area during constructional and operational phase, it is unlikely to have a significant impact on the hydrological and hydrogeological regimes of the area.

8.2 Biodiversity

8.2.1 Receiving Environment

8.2.1.1 Habitats and Flora

Baseline habitat and flora survey was carried out as part of the MWP multi-disciplinary ecological walkover survey (January) and was undertaken within outside of the optimum flora survey period. The habitat surveys had regard to '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al.*, 2011) and '*A Guide to Habitats in Ireland*' (Fossitt, J. A., 2000). Habitats within the study area were categorised to Level 3 according to Fossitt (2000).

The proposed substation is situated in an area characterized as improved agricultural grassland (GA1). This type of grassland habitat is extensively altered, typically lacking in diverse species, and is primarily dominated by common agricultural plants such as Rye-grass *(Lolium spp.*), White Clover (*Trifolium repens*), Daisy *(Bellis perennis*), Common Mouse Ear (*Cerastium fontanum)*, Creeping Buttercup (*Ranunculus repens)* and Common Chickweed (*Stellaria media*).

A stretch of approximately 370 meters separates the proposed substation site from the local road (L6065-1) to the west and is characterized by Improved Agricultural Grassland (GA1) and Hedgerows (WL1). In this Improved Agricultural Grassland area (GA1), a new access track to the substation will be established. The hedgerows (WL1) identified in the study area are primarily associated with improved agricultural fields (GA1). These hedgerows (WL1) predominantly consist of native species, including abundant varieties such as Whitethorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*), Gorse (*Ulex europaeus*), Bramble (*Rubus fruticosus* agg.), and Ivy (Hedera helix), with occasional occurrences of Oak (*Quercus robur*), Holly (*Ilex aquifolium*), and Beech (*Fagus sylvatica*).

Along the northwest of site boundary Treeline (WL2) is present. A mature treeline (WL2) is comprised of non-native Beech (*Fagus sylvatica*) and native Ash (*Fraxinus excelsior*), Oak (*Quercus robur),* Whitethorn (*Crategus monogyna).* Along the southwest of site boundary Earth bank (BL2) with Treeline (WL2) is present. Treeline (WL2) is compromised of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior)* and Whitethorn (*Crategus monogyna).* Pile of discarded stones (Stonework BL1) was also recorded on southwestern side of proposed site.

Two Drainage ditches (FW4) were recorded, one Drainage ditch (FW4) is following the southwest boundary and another one is located at northeastern part, 30m outside site boundary. Both Drainage Ditches are discharging into the Tinnacross Stream, Lowland River (FW2).

Northwestern part of site boundary is existing local road known as Crane and number of residential houses, located along this road which are classified as Buildings and artificial surfaces (BL3).

No Annex I habitats listed under the EU Habitats Directive are present within the study site and the dominant habitats present, Improved agricultural grassland (GA1) is of low ecological value, locally important due to its ongoing intensive farming management plus limited floral diversity and local diversity potential. Hedgerows (WL1) present within development site boundary are considered of high value, locally important due to its importance to local biodiversity. Treelines (WL2) although contain some non-native species due to overall tree maturity, semi natural state and value to local biodiversity the treelines present within proposed development site boundary are considered of high value, locally important.

There are no records for rare and protected plant species within the proposed development site and none were recorded during the ecological walkover surveys. and no rare or protected flora species were encountered during the ecological field surveys conducted at the site.

8.2.1.2 Non-native Invasive Species

Documented records from the NBDC of high/medium impact invasive/non-native species of flora listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) exist within the hectads T04 encompassing the study area. The nearest two records to the proposed works site are Cherry Laurel (*Prunus laurocerasus*) approx. 700m to the north of proposed site and Rhododendron (*Rhododendron ponticum*) approx. 1.5km to the southwest of the proposed substation site. Please see **Table 6** below with all non-native-invasive species of flora previously recorded in hectad T04.

Table 6: Non-native Invasive Flora recorded in hectad T04

Species Common Name	Scientific name	Impact	Closest Species Record to Development Site
Giant Rhubarb	*Gunnera tinctoria*	High	Approx. 9.8km NE
Indian Balsam	*Impatiens glandulifera*	High	Approx. 3.9km S
Cherry Laurel	*Prunus laurocerasus*	High	Approx. 700m N
Japanese Knotweed	*Fallopia japonica*	High	Widely spread through hectad
Rhododendron	*Rhododendron ponticum*	High	Approx 1.5km SW
Butterfly-bush	*Buddleja davidii*	Medium	Approx. 3.8km N
Sycamore	*Acer pseudoplatanus*	Medium	Widely spread through hectad
Three-cornered Garlic	*Allium triquetrum*	Medium	Few records in Hectad T04. Closest to the site in Hectad S94 approx. 1.8km SW.
Traveller's-joy	*Clematis vitalba*	Medium	Approx. 3.8km N
Turkey Oak	*Quercus cerris*	Medium	Approx. 4.8km N
American Skunk Cabbage	*Lysichiton americanus*	Medium	Approx. 3.8km N

No invasive species listed on Invasive species of Ireland were found within the development site. No species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (species of which it is offence to disperse, spread or otherwise cause to grow in any place) were found within the development site.

8.2.1.3 Mammals

Evidence of terrestrial mammals were recorded during the site walkover in the form of mammal trails, snuffer holes and mammal site through the proposed site (see **Figure 16**). Two mammal species; European rabbit *(Oryctolagus cuniculus*) and Badger (*Meles meles*) were confirmed to occur at/in vicinity of the site during the walkover on 18/01/2024. During walkover also one mammal site was recorded, Rabbit burrows were identified underneath hedgerow northeast of the site. No other mammal sites were identified including Badger (*Meles*

meles) setts. Rabbit, which is classified as invasive species and Badger are considered likely to have a widespread distribution across the site and in nearby areas.

There was no evidence of Otter (*Lutra lutra)* being present on the proposed site during walkover. Notwithstanding, otters are probable inhabitants of the Tinnacross Stream, primarily because of its proximity to the Slaney River Valley Special Protection Area (SPA), where otters are a key conservation focus within the designated site.

Five additional mammal species, namely Irish Hare (*Lepus timidus),* Irish Stoat (Mustella erminea Hibernica), Hedgehog (Erinaceus europaeus), Fox (*Vulpes vulpes)* and Pine Marten (Martes martes), have been historically documented within hectad T04. It is probable that these species inhabit the site, excluding the Pine Marten, which may not be present due to its specific foraging requirements. The site offers suitable foraging habitats, including hedgerows, improved agricultural grassland. While conducting a site walkover, a pile of discarded stones (Stonework-BL1) was documented. This stone structure has the potential to serve as suitable nesting habitat for the Irish Stoat, especially considering the presence of nearby rabbit burrows, which are a preferred prey of the Irish Stoat. However, no signs of breeding or other indications of Irish Stoat activity were observed.

The field boundaries on the site provide adequate cover and food resources for various terrestrial mammal species. Similar habitats are also found in the broader landscape beyond the site boundary.

Otters are considered to be 'Near Threatened' in Ireland at present (see Marnell et al 2009) and are protected by Habitats Directive Annex II and IV. Other species previously recorded in hectad T04 are considered to be of 'Least of Concern' in Ireland at present (see Marnell et al 2009). All species apart from Fox are protected under the Wildlife Acts (1976-2010).

Figure 16 Mammal activity recorded during walkover. Badger snuffle holes (top left), mammal track (top right) and rabbit burrow (bottom)

Previous records shown there were a few mammals invasive species detected within T04 include House mouse (*Mus musculus*), American Mink (*Mustela vison*), Brown rat (*Rattus norvegicus*), Great White-toothed Shrew (*Crocidura russula*) and European rabbit *(Oryctolagus cuniculus*).

8.2.1.4 Birds

In total 13 bird species were recorded during the site walkover. Two species recorded are BoCCI red-listed and one species is BoCCI amber-listed. Please see **Table 7** with bird species and their conservation status.

Table 7: Bird species recorded during ecological walkover

Species name	Scientific name	BoCCI status
Blackbird	*Turdus merula*	Green-listed
Blue Tit	*Cyanistes caeruleus*	Green-listed
Chaffinch	*Fringilla coelebs*	Green-listed
Great Tit	*Parus major*	Green-listed
Hooded Crow	*Corvus cornix*	Green-listed
Pied Wagtail	*Motacilla alba yarellii*	Green-listed
Rook	*Corvus frugilegus*	Green-listed
Robin	*Erithacus rubecula*	Green-listed
Redwing	*Turdus iliacus*	Red-listed
Snipe	*Gallinago gallinago*	Red-listed
Starling	*Sturnus vulgaris*	Amber-listed

Species name	Scientific name	BoCCI status
Woodpigeon	*Columba palumbus*	Green-listed
Wren	*Troglodytes troglodytes*	Green-listed

No wintering wildfowl and waders were identified during the site walkover, indicating that the habitats within the site boundaries do not meet the specific requirements for these species.

A total 27 bird species were previously recorded within 2km grid -square (T04C) surrounding the proposed site. This includes two Red listed species Grey Wagtail (*Motacilla cinerea*), Yellowhammer (*Embrezia citronella*) and three Amber listed species Barn Swallow (*Hirundo rustica*), Common Linnet (*Carduelis cannabina*) and Skylark (*Alauda arvensis*).

While yellowhammer might utilize the proposed site's habitat, it is not considered optimal for this species as it favors species-rich grasslands, offering better foraging grounds for this seed-eating bird. Approximately 115 meters to the east of the proposed site, the Tinnacross stream features some suitable habitat for Grey Wagtails. The previously recorded, Amber-listed species are highly likely to be present at the proposed site, given the suitable habitat it offers for these species.

Five Annex I bird species documented in hectad T04 include the Golden Plover (*Pluvialis apricaria*), Kingfisher (*Alcedo atthis*), Merlin (*Falco columbarius*), Short-eared Owl (*Asio flammeus*), and Whooper Swan *(Cygnus cygnus*). The Tinnacross stream could qualify as suitable habitat for the Kingfisher, but the improved agricultural grassland at the proposed site is not particularly appealing or suitable for the Golden Plover, Merlin, and Whooper Swan. As for the Short-eared Owl, being a rare winter visitor, it would likely prefer more suitable habitat within the vicinity.

Habitats of proposed development site, especially hedgerows contain suitable foraging, commuting, nesting and perching habitats for terrestrial bird species in general, although the improved agricultural grassland is of limited value for most species. Similar habitats are also present in the wider landscape. Most bird species are protected under the Irish Wildlife Acts (1976 – 2012), where it is an offence to hunt, interfere with or destroy their breeding or resting places (unless under statutory licence/permission).

8.2.1.5 Bats

There are number of mature trees at the site which could provide roosting opportunities for small number of bats, however there are no suitable structures on the site that could provide roosting opportunities for bats. The hedgerows and treelines on the site provide suitable foraging habitats for bats, however open fields are considered to be of low suitability for bats, which favour linear vegetated features for commuting and foraging.

The bat suitability index rating for proposed development site is 32.67 out of 100, it is considered to be low value for bats in general. The suitability index is highest for the Brown long-eared bat (*Plecotus auritus*) species(suitable index 55). See Table 8 below with suitability index for individual bat species recorded within 2km square grid T04C.

Table 8 Suitability index for each bat species found in 2km grid square T04C

Species Common Name	Scientific name	Suitability Index
Brown long-eared bat	*Plecotus auritus*	55
Whiskered bat	*Myotis mystacinus*	42
Common Pipistrelle	*Pipistrellus pipistrellus*	40
Leisler's bat	*Nyctalus leisleri*	39
Natterer's bat	*Myotis nattereri*	39
Daubenton's bat	*Myotis daubentonii*	36
Soprano pipistrelle	*Pipistrellus pygmaeus*	36
Nathusius' pipistrelle	*Pipistrellus nathusii*	7

These bat species are likely to occur on the site at least from time to time, however there are no woodland habitats on the site which would be particularly attractive to Whiskered bat or Brown Long-eared bat.

Known colony roost in Leskinfere Church, Clogh in hectad T04 was identified during the desktop study using National Biodiversity map viewer online. Leskinfere church is identified as pNHA, site of National importance. Brown long-eared bats generally forages within 2km of the roost site, proposed site is too far from Leskinfere church to be within foraging range of this colony roost.

The field surveys indicated that the hedgerows and treelines found across the site are considered 'moderate' suitable for bat foraging and commuting, as they provide connectivity and abundant foraging habitat. Treeline at northwestern of site boundary was assessed to have 'moderate' potential roost features. The majority of trees along the current treeline are covered with ivy, providing a promising roosting feature for bats. Additionally, a number of trees exhibit either crevices or cavity holes, offering alternative potential roosting sites. Please see **Figure 17** for potential bat roosting features identified during walkover.

Figure 17 Potential bat roost features identified within trees in treeline

8.2.1.6 Amphibians, Reptiles and Invertebrates

Common frog was recorded in the hectad T04, through online database search. Common frog was not observed during field surveys. The Brown Snail *(Zenobiella subrufescens*) was recorded in 1975 within hectad T04. Brown Snail is assigned vulnerable status in IUCN. Proposed site habitat is not suitable for this species as brown Snail is old woodland relict species. It is considered that the proposed development does not intrude upon any habitats of importance to marsh fritillary. NBDC shows record of butterflies and moth, beetles, bees and other terrestrial invertebrates.

No amphibians, reptiles or invertebrates were recorded during walkover.

8.2.1.7 Designated Site

A review of the Natura 2000 sites known as European sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated under the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC) was carried out respectively.

There are no SAC and SPA located within the proposed development site. The closest SAC is identified approximately 900m to the southwest of proposed site, see Table 9.

Table 9 Designated sites within 15km buffer zone

Designated Site	Site Code	Distance from subject site
Slaney River Valley SAC	000781	Approx. 900m
Wexford Harbour and Slobs SPA	004076	Approx. 7.2 km

8.2.2 Potential Impacts

8.2.2.1 Construction Phase

The construction phase of the proposed development is considered to have the most potential for impacts to biodiversity. See Table 10 below for potential impacts.

Table 10 Potential construction phase impacts of the proposed development

Construction Phase Effect	Construction Phase Source
Indirect surface or groundwater quality effects	Sediment/pollutant laden run-off may arise from exposed areas during groundworks and excavations, from material storage areas or from construction vehicles/plant. Leaching of fuels/oils, cementitious material etc to groundwater in the event of accidental spillage. Use of chemical herbicides, including in proximity to drainage features.
Habitat loss and alteration	Construction of temporary site compounds, vegetation clearance, excavation and construction works including proposed substation and underground grid connection, movement of plant and machinery, storage of construction materials and spoil, ancillary site development works, landscaping and installation of services.

Construction Phase Effect	Construction Phase Source
	Treatment/management of invasive species including potential use of chemical herbicides, risk of dust. Risk of spreading/introduction of invasive species within the site associated with construction activity.
Direct species disturbance/ displacement	Increased human presence. Noise/vibration/lighting associated with construction works and human activity.
Indirect species disturbance/displacement	Potential impacts on prey biomass. Loss/alteration of foraging, commuting or other required habitat. Loss/alteration of breeding/resting habitat. Physical disturbance (injury/mortality). Potential spread of IAPS.

8.2.2.1.1 Designated sites

A Screening for Appropriate Assessment report (AASR) has been completed for the proposed development and accompany the planning application. The AASR has concluded that the proposed development will not adversely affect (either directly or indirectly) the integrity of any Natura 2000 site, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.

8.2.2.1.2 Water quality

The existing drainage network within the development site and the network of drains in the surrounding area create the potential for an indirect hydrological connection between the site and the Slaney River Valley SAC through the Tinnacross Stream. The Tinnacross Stream is located approx. 230 m from proposed works area of the site. The reach of the Tinnacross Stream near the proposed development site is ca. 1.5 km upstream of the Slaney River Valley SAC.

During the construction phase of the proposed development, the risk of adverse impacts on water quality due to soil erosion caused by activities such as excavation, material storage and use of machinery has been considered. Loose soil can be mobilised by rainfall and overland flow and can result in siltation of the aquatic environment. The use and storage of fuel, oils, lubricants, and other substances pose a risk of accidental contamination of water. The use of concrete and other cementitious materials, as well as the use of chemicals, can also affect water quality. The proposed substation compound within the development site is set back from the Tinnacross Stream by >100 meters by a field of grass to the southeast. The lower end of this field is not managed and features a dense sward of grass (see Plate 1 below). There is a drainage ditch along the northern boundary of this field to the southeast but this drain is separated by a hedgerow whose base is at a level above the field. Therefore the mechanism for transfer of surface water from the proposed development site to the Tinnacross Stream is via the field to the southeast of the proposed substation compound. Taking account of attenuation provided by grass cover, low/medium gradient and intervening distance, the risk of contamination of the Tinnacross Stream is negligible, even in the event that the solar array is undergoing construction or in place at the time of construction of the proposed substation.

Therefore, pollution of the Tinnacross Stream due to construction activities is highly unlikely to result in adverse effects on aquatic ecology or in the Slaney River SAC downstream. In additional, the project design has taken into account best practices for protecting water quality. These measures will be adhered to throughout the construction phase of the proposed development to minimize any impacts on the water environment.

Plate 1 Lower end of field adjacent to the Tinnacross Stream.

8.2.2.1.3 Habitats and Flora

No Annex I habitats listed under the EU Habitats Directive are present within the study site.

The proposed project will result in some loss of semi-natural habitats of high value of local importance such as hedgerows (WL1), treelines (WL2), and improved agricultural grassland (G1), which is low value habitat of local importance. This loss is considered to be a slight to moderate negative impact.

No high-impact alien invasive plant species (e.g. Japanese Knotweed) are present on the proposed substation site.

Anticipated habitat disturbance is projected to be minimal, confined to the construction activities within the works footprint. Potential additional impacts may arise from encroachment in work areas or material storage.

The construction along the proposed grid connection presents a potential risk of introducing invasive species to the area, particularly where vegetation clearance will be necessary. This introduction of invasive species can have adverse effects on water quality and habitats, as it may require the use of chemical herbicides to control their spread. However, the project has taken into account best practice construction measures to address and mitigate the spread of invasive species.

The mitigation measures below will avoid or reduce the potential for significant negative effects habitats and flora during the construction stage.

8.2.2.1.4 Fauna

During the construction phase of the proposed development, there is a potential for direct /indirect disturbance and displacement of fauna in the surrounding areas. This is mainly due to vegetation clearance, lighting, and human activity, which will be limited to the development footprint of the proposed substation and grid connection.

Vibrations caused by construction activities can disturb roosting bats and may lead them to abandon their roosting sites in the vicinity of the proposed development. No observations of bat species were documented during the walkover, as it was conducted in January during daylight hours, and no specific bat surveys were undertaken.

However mature trees along the Treeline, located in northwest of site boundary, were considered to have good suitability for bat roosting. Artificial lighting during construction can disrupt natural behaviours of nocturnal animals, like bats, leading them to avoid well-lit areas, which may alter their flight paths and foraging patterns. The substation will have some lighting during operation stage but it is location is adequately separated from these trees to result in any significant avoidance impacts.

As identified in the Desktop study, the Slaney River Valley Special Area of Conservation (SAC) is home to a semi-terrestrial qualifying species, the Otter, which may face potential disturbance impacts due to the proposed development site. While the Tinnacross Stream to the east of the site offers suitable habitat for this species, the drainage ditches within the development site are not deemed appropriate. The construction phase of the proposed substation poses a potential risk of disturbance to Otters, primarily through the movement of workers and vehicles on site. Notably, there are no tracks or planned developments in the immediate vicinity of the Tinnacross Stream.

Considering Otters are predominantly nocturnal, they are likely to be active during periods when noise and activity levels at the development site are low. Research indicates that Otters can exhibit tolerance to human-related disturbance, as documented by studies such as Bailey and Rochford (2006), Sleeman et al. (2006), and Sleeman & Moore (2005). Consequently, significant disturbance impacts on Otters in the Tinnacross Stream within the Slaney River Valley SAC and the proposed Natural Heritage Area (pNHA) are not expected.

Evidence of Badger, mammal species of local importance, was recorded during the site walkover. Badger snuffle holes were observed within site boundary. No other mammal species of local importance were recorded during walkover. For mammal species, disturbance effects from noise during the construction phase are not expected to extend beyond the limit of the construction site. It is anticipated that mobile species, such as mammals and birds, will temporarily leave the vicinity of the site during construction works.

The mitigation measures below will avoid or reduce the potential for negative effects on fauna during the construction stage.

8.2.2.1.5 Birds

Considering the presence of improved agricultural grassland habitat on the site, it is essential to contemplate the ex-situ impacts on wintering birds from Wexford Harbour and Slobs Special Protection Area (SPA). Although wintering wildfowl and waders are typically associated with coastal and intertidal areas, certain species such as Golden Plover, Whooper Swan, and Greenland White-fronted Geese may utilize inland agricultural lands for feeding and roosting. These species generally favour open grassland areas, stubble/ploughed fields, or root crops near significant wet habitats, such as floodplains and wetlands.

The proposed development site features improved agricultural grassland that could potentially attract wintering waterbirds for foraging. However, the enclosed nature of the fields on the site makes them less enticing for these species. The nearest wetland habitat is situated in the Slaney River, approximately 7 kilometers from the proposed site, specifically at Wexford Harbour and Slobs SPA (I-WeBS subsite 00398, Edermine Bridge to River Urrin Enniscorthy). During the site visit in January, no birds of special conservation interest in the SPA were observed on-site.

8.2.2.2 Operational Phase

No significant disturbance or displacement impacts are expected to birds, terrestrial mammals, amphibians or reptiles during the operational phase of the project. Once the construction phase ceases, any species temporarily displaced during construction works are expected to utilise the habitats in the immediate vicinity of the development within a short period of time. There may be some minimal disturbance/displacement of fauna due to increased human activity, noise and lighting associated with maintenance. Any disturbance/displacement impacts are expected to decrease with increasing distance and are expected to be negligible outside the immediate environs of the proposed substation.

Artificial Light at Night (ALAN) may significantly change the natural behaviour of bats in relation to roosting, commuting and feeding by avoiding habitats lit up by ALAN. Behavioural changes of bats as a result of increased light levels may result in a loss of foraging grounds and nocturnal/seasonal commuting routes through avoidance effects (BCT, 2018; BCIreland, 2010). Such changes in behaviour may in turn significantly affect local bat populations. Nocturnal flying insects such as moths can be attracted away from their natural habitat towards artificial light sources indirectly impacting bats through impacts on prey resource (BCIreland, 2010).

There is limited potential for spread of IAPS during the operational stage.

The impacts on water quality during operational phase are not expected. Following construction, the amount of on-site traffic and excavation works will be negligible and there will be no particular risk of sediment runoff. Silt ponds and silt fences constructed for water quality protection will remain in place.

It is not envisaged that there will not be any direct or indirect effects to the water quality of the area arising from the operational phase of the proposed substation and grid connection.

Overall, with the implementation of mitigation measures any impacts arising during the operational phase will be mitigated.

8.2.2.3 Potential Cumulative Impacts

The proposed development is situated in a rural agricultural area to the south of Ferns in County Wexford. As part of this Environmental report, various documents have been examined, including an AA screening report supporting the Appropriate Assessment process. Additionally, a review of permitted planning applications in the vicinity has been conducted, encompassing several approved local solar farm projects. There are ten granted applications for either Solar farm or amending design of existing solar farm. See Table 11 below.

Table 11 Granted projects near the proposed development

Reference no.	Applicant	Proposed Development	Decision	Grant Date
20231025	Solas Eireann Development, Tincurry	Solar farm	Granted	16/12/2016
20160595	Power Capital Renewable Energy Ltd, Ballycarney	Solar farm	Granted	20/07/2016
20171127	Renewable Energy Ltd, Killabeg, Tinnacross	Solar farm	Conditional	11/10/2017
20171680	Renewable Energy Systems Ltd, Killabeg, Tinnacross	Solar farm	Conditional	14/02/2018

Reference no.	Applicant	Proposed Development	Decision	Grant Date
20171275	JBM Solar Developments Ltd, Tomsallagh	Solar farm	Conditional	10/10/2018
20190440	Renewable Energy Systems (Res) Ltd, Killabeg, Tinnacross	Permission to amend the design of the approved solar farm.	Conditional	14/02/2020
20190441	Renewable Energy Systems (Res) Ltd, Killabeg, Tinnacross	Permission to amend the design of the approved solar farm.	Conditional	14/02/2020
20200691	Renewable Energy Systems Limited, Killabeg, Tinnacross	Permission to amend the design of the approved solar farm.	Conditional	21/08/2020
20201080	Renewable Energy Systems Limited, Killabeg, Tinnacross	Solar farm	Conditional	03/02/2021
20211112	Renewable Energy Systems Limited, Killabeg, Tinnacross	Permission to amend the design of the approved solar farm.	Conditional	03/09/2021

Similar to the present proposal, the earthworks associated with the other planned substations and solar farms are minimal, and the potential risk to watercourses is deemed very low. This risk is even lower than the standard practices like ploughing and other intensive farming activities for agricultural purposes. Consequently, no cumulative impacts on watercourses or designated sites are anticipated from this proposed development when considered in conjunction with nearby permitted and proposed developments, including those mentioned earlier.

8.2.3 Mitigation

8.2.3.1 Habitats and Flora

- Movement of construction plant/construction vehicles is to be restricted as much as is practicably possible to within the extent of works footprint within the development site boundary.
- In the unlikely event that protected flora species are found actively using the site during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist.
- The project ecologist will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated. For example, if there is a risk of contaminated surface water entering a drain, and measures are not in place to block the pathways to the Tinnacross stream, then the project ecologist can stop the work until prescribed measures to prevent such a risk have been implemented.
- Spraying of vegetation using pesticides (herbicides, fungicides and insecticides) will not be permitted at any stage of development.

8.2.3.2 Mammals

- In accordance with NRA Guidance, pre-construction mammal surveys will be undertaken to identify evidence of protected mammals (e.g. in particular otter holts and badger setts) within the works areas associated with the Proposed Development.
- The surveys will be undertaken to ensure that such protected species have not taken up residence within or close to the development footprint.
- Should breeding or resting places be recorded in the pre-construction surveys a site-specific mitigation plan shall be prepared prior to the commencement of works.
- Construction work will not take place at night unless in exceptional circumstances to reduce potential disturbance to fauna.
- Mammal access to development site will be facilitated through the provision of mammal access gates which will be located at regular intervals (every 100m) along the perimeter of fence. The access gates will be designed with accordance with standard guidelines for the provision of mammal access (e.g NRA 2008, DMRB 1997)
- It is not anticipated that any protected mammal breeding/resting places will be encountered as part of the proposed project based on the findings of the extensive surveys undertaken. However, should any breeding/ resting places be encountered during the pre-construction surveys, NPWS will be informed and they will be subject to exclusion procedures as outlined in the TII/NRA guidelines (2006).
- In the unlikely event that protected fauna species are found actively using the site during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist.

8.2.3.2.1.1 Badger and badger setts

The CEMP sets out measures in relation to minimise any adverse ecological impacts on badgers and badger setts. The following measures will be applied:

- The pre-construction survey should be undertaken no more than 10-12 months in advance of construction commencement.
- The survey should be supplemented by an additional survey immediately prior to site works commencing if a sufficient time period has elapsed since the pre-construction survey.
- Any mitigations required for badgers will be carried out under license from NPWS and using NRA Guidelines (2005) (now TII) where applicable, Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.

8.2.3.2.1.2 Otter

The NPWS Threat Response Plan 2009 – 2011 sets out measures to minimise any adverse ecological impacts on Otter.

- The pre-construction survey should be undertaken 2 weeks prior to commencing during the period of suitable weather, when otters signs are visible.

- No use of heavy machinery and use smaller work parties, where otters are known to be sheltering (informed by survey)
- Where possible large mature trees within the river corridor should be retained

8.2.3.2.1.3 Bats

In order to reduce the ecological disturbance of light spillage the mitigation measures for bats will follow:

1. Immediately prior to felling, trees should be inspected for the presence of bats and/or other Bat activity by a suitably qualified Bat ecologist during daylight hours and night-time using a Bat detector. This survey should be carried out from dusk through the night until dawn to ensure Bats do not re-enter the tree.
2. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
3. Lighting will be positioned and directed so that it does not to unnecessarily intrude on adjacent ecological receptors. There will be no directional lighting focused towards the boundary habitats respectively and cowling and focusing lights downwards will minimise light spillage
4. Any lighting introduced to the development site will follow guidance in the documents:
    - Bats and lighting: Overview of current evidence and mitigation guidance (Stone, 2013);
    - Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25 (Kelleher & Marnell, 2006); and
    - Bats & Lighting. Guidance Notes for: Planners, engineers, architects and developers (BCI, 2010).

8.2.3.3 Birds

- Removal of hedgerows will be conducted where possible outside the general bird breeding season which runs from the 1st of March to the 31st of August inclusive, in accordance with Section 40 of the Wildlife Acts.

8.2.4 Conclusion

The proposed site is considered to have local ecological importance from an ecological perspective as it has limited areas of semi-natural habitat and is not of special importance for any high conservation priority species or habitats. Slight disturbance impacts will occur during the construction and operation phases which cannot be avoided, and these will have a slight negative effect on the relevant receptors at a local level during construction phase.

No significant impact on designated sites, habitats, flora and fauna have been identified as a result of proposed development.

With the implementation of the avoidance and mitigation measures outlined herein, the overall ecological impact of the proposed project is considered to be a slight, negative effect at a local level.

8.3 Roads, Traffic and Transportation

8.3.1 Road Networks and Site Access

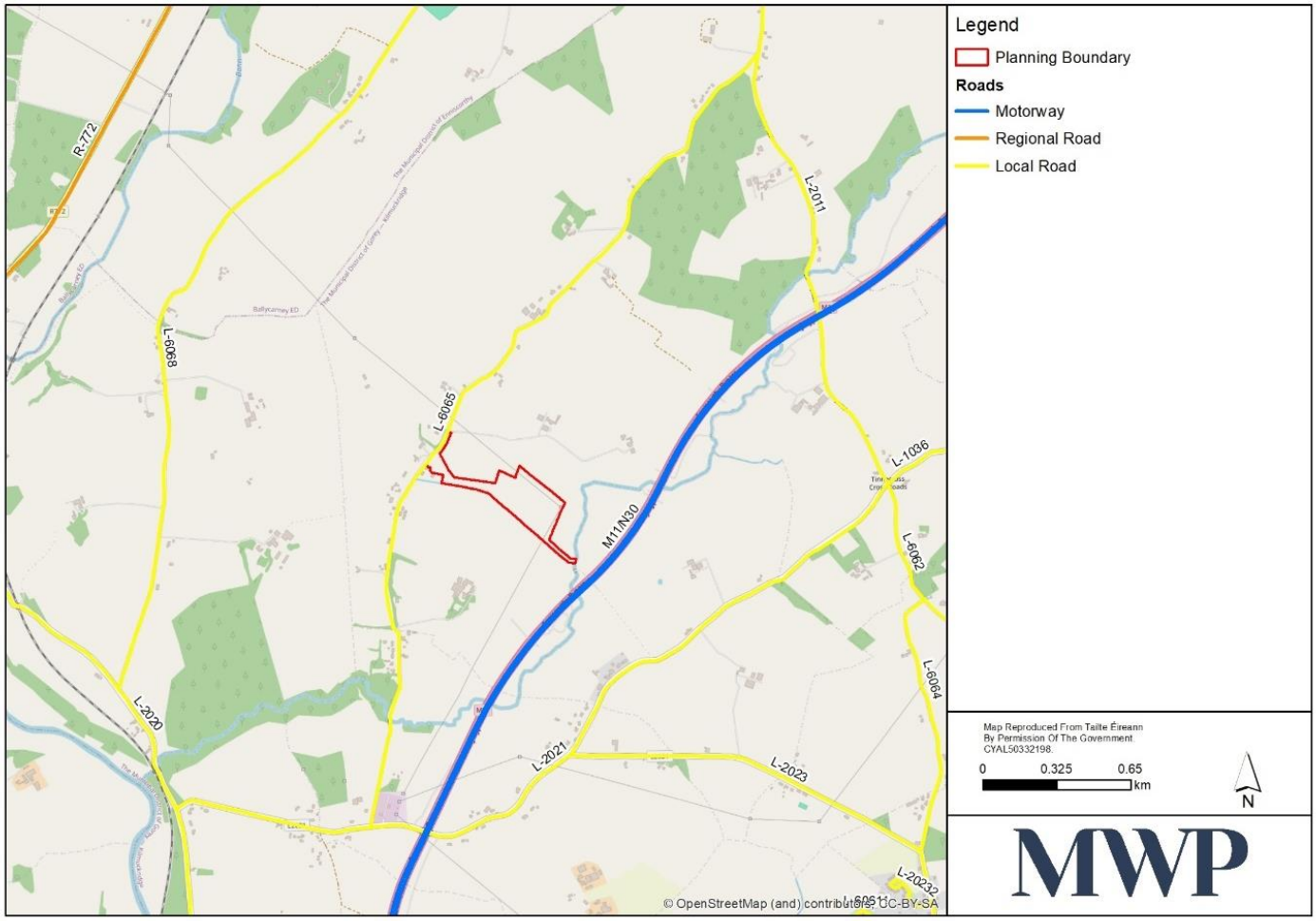
The existing road network in the vicinity of the development site is shown in **Figure 18**.

There is an existing local road (L6065-1) to the west of the development lands that runs northwards from the L2021 local road to the L2011 local road. The M11 motorway (Gorey to Enniscorty motorway) is approx. 0.2km to the east of the site.

The L6065-1 is a local rural road approximately 4 metres wide with a number of passing points along its route.

Access to the proposed development site will be via a new entrance from the local public road (L6065-1).

Figure 18 Local Road Network



8.3.2 Baseline Daily Traffic Volumes

A 12 hour traffic survey was undertaken on Wednesday 13th December 2023 by IDASQ on the L6065-1 in the vicinity of the proposed site entrance to establish existing traffic levels on the road. A summary of the results are provided in Table 12 below. Total two-way traffic movement of 122 was recorded on the day within the 12 hour period. The L6065-1 road therefore presently carries very low volumes of traffic.

Table 12 L6065-1 Local Road Traffic Flows

	Northbound (A => B)							Southbound (B => A)						
TIME	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**TOT**	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**TOT**
7am-8am	0	0	1	0	0	0	1	0	3	1	0	0	0	4
8am-9am	0	3	1	2	0	0	6	0	4	1	0	0	0	5
9am-10am	0	3	0	0	0	0	3	0	6	0	0	0	0	6
10am-11am	0	4	0	0	0	0	4	0	6	0	0	0	1	7
11am-12pm	0	4	1	0	1	0	6	0	1	1	0	0	0	2
12pm-1pm	0	0	1	0	1	0	2	0	1	0	0	0	0	1
1pm-2pm	0	5	1	0	0	0	6	0	3	1	1	0	0	5
2pm-3pm	0	3	0	0	0	0	3	0	6	0	2	0	0	8
3pm-4pm	0	6	0	0	0	0	6	0	4	0	1	0	0	5
4pm-5pm	0	9	0	1	0	0	10	0	9	0	0	0	0	9
5pm-6pm	0	4	1	1	0	0	6	0	5	0	0	0	0	5
6pm-7pm	0	7	1	0	0	0	8	0	2	2	0	0	0	4
12 TOTAL	0	48	7	4	2	0	61	0	50	6	4	0	1	61

8.3.3 Annual Average Daily Traffic (AADT)

The traffic survey data set out in Table 12 was expanded in accordance with Transport Infrastructure Ireland (TTI) guidance document *Project Appraisal Guidance Unit 16.2 – Expansion Factors for Short Period Traffic Counts (NRA, August 2012)* to derive 24 hour flow, weekly average daily traffic (WADT) and annual average daily traffic (AADT). Table 13 below outlines the factors used to expand the survey data.

Table 13 Calculated 24 hour flow, WADT, AADT

			Factor	Calculated Two Way Traffic
Short Period Traffic Survey to 24 hour	Proportion of daily traffic flow	7am-7pm	0.756	161
Weekly Average Daily Traffic	Day of Week	Wednesday	0.97	156
Annual Average Daily Traffic	Month of Year	December	1.04	167

8.3.4 Speed Survey

Traffic speeds were also recorded as part of the 12 hour traffic survey undertaken on Wednesday 13th December 2023 by IDASQ on the L6065-1 in the vicinity of the proposed site entrance. A summary of the survey results are presented in Table 14 below. The survey indicates that vehicle speeds were significantly below the applicable 80km/h speed limit.

Table 14 Speed Survey Results

Speed Survey	KPH
Cumulative 85% Speed	56.8
Cumulative Minimum Speed	19.06
Cumulative Maximum Speed	66.67
Cumulative Average Speed	45.35

8.3.5 Proposed Development Traffic Generation

8.3.5.1 Construction Phase

The construction works will lead to additional construction related traffic on the existing public road network over the duration of the construction works. This construction related traffic includes:

- Heavy Good Vehicles (HGV's) transporting materials to the site, including compound making materials (aggregate fill and stone), concrete (ready mix), building materials, drainage/ducting materials, cabling, electrical components and, fencing materials.
- HGV's transporting plant including assist crane and conventional earthworks machinery such as excavators, dumper trucks, rollers etc.
- HGV's transporting transformers, switchgear, and other ancillary electrical components.
- Fuel trucks transporting fuel (for plant) to the site compound during the works.
- Light goods vehicles (LGVs) such as cars, 4x4s and vans used by the workers and supervisory staff involved in the construction works.

There will be a number of deliveries considered as abnormal loads. These large loads will primarily consist of transformer equipment and crane required for off-loading and installation of equipment. All abnormal load deliveries will be carefully planned and detailed in full in a Traffic Management Plan (TMP) which will be agreed with the relevant Local Authorities before deliveries as to minimise the impact to the public.

Based on similar works at other sites, peak heavy vehicle traffic volumes generated by the delivery of construction materials could be up to 30 heavy vehicles per day, both to and from the site. This peak traffic volumes would occur for circa two months during the importation of stone, aggregate and concrete materials for site formation

and foundation works. Highest peak hour heavy vehicle traffic volumes would be in the order of up to eight heavy vehicles, both to and from the site.

The expected peak staff would be up to 25 personnel, which would generate approximately 25 car and van trips, both to and from the site each working day. Construction staff would arrive on-site prior to 7am and depart after 6pm and as such are not expected to have any impact on morning and evening peak hour traffic on the local road network in the vicinity of the site.

Table 15 provides a breakdown of the anticipated peak daily traffic volumes.

Table 15 Peak Daily Traffic Volumes

Traffic	Peak Daily Volume
Heavy Grade Vehicles (HGVs)	30 (60 movements)
Site Personnel	25 (50 movements)
Total Increase	55 (110 movements)

8.3.5.2 Operational Phase

Once operational, the development will for the most part be monitored remotely with only occasional trips generated by maintenance and monitoring personnel.

8.3.6 Potential Impacts

8.3.6.1 Construction Phase

The development will undoubtedly give rise to additional HGV traffic generation on the on the local road network in the vicinity of the development site, in particular the L6065-1 during the construction phase only.

Without appropriate mitigation measures, the construction works have the potential to lead to a negative impact on the local road network including:

- Delay and disruption to road users;
- Road safety issues, should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads.

8.3.6.2 Operational Phase

Once operational, the development will for the most part be monitored remotely with only occasional trips generated by maintenance and monitoring personnel. This would generate a relatively low volume of vehicles, including occasional heavy vehicles.

Therefore, there will be negligible operational stage traffic impacts associated with the proposed development. On the basis of the EPA Guidelines, the proposed operational phase would have imperceptible to not significant traffic effects.

8.3.6.3 Cumulative Effects

Subject to planning permission, it is probable that construction works for the permitted Tomsallagh Solar Farm development and the proposed development could be carried out in parallel. Therefore, the parallel works of both the substation development and Tomsallagh solar farm pose a risk of generating disturbances due to increases in traffic movements on the L6065-1/ L2021-1/ L2011 during the construction phase, as well as the possibility of road safety concerns and increased soiling on the roads.

To minimise traffic nuisance associated with the construction works traffic management measures will be implemented. To further minimise traffic impacts, construction activities will be strategically scheduled. Works at the proposed substation that require heavy deliveries will be prioritised during periods of lower traffic flow for the solar farm development. This scheduling approach aims to reduce the likelihood of heavy traffic loads and congestion occurring simultaneously on the local road network.

An outline Traffic Management Plan (TMP) has been prepared (See CEMP). This plan aims to minimise short-term disruptions and ensure the safety of local residents. With these measures in place, the proposed substation development and solar farm are not expected to have significant cumulative impacts on traffic during the construction phase.

8.3.7 Mitigation

8.3.7.1 Construction Phase

8.3.7.1.1 General

To mitigate the potential impacts of traffic associated with the proposed development, a detailed Traffic Management Plan will be prepared prior to commencement of construction.

The Traffic Management Plan (TMP) will align to adhere to the proposed design and management of traffic measures for ensuring safety and compliance with the industrial standards including the following requirements:

- The TMP will address construction traffic, road safety signage, and phasing.
- In advance of the site access point, adequate signage as per Traffic Signs Manual shall be installed advising of the presence of a ‘site access ahead’ and ‘construction traffic ahead’, to make road users

aware of a possible hazard. The above signage shall be removed following completion of the construction phase.
- All construction parking and compounds will be provided within the site confines.
- Public roads shall be kept free of mud, dust, spillages and debris from the construction site, construction plant or haulage vehicles. Any necessary measures shall be put in place at the site entry/exit point.
- A specialist road washing and cleaning vehicle will be used regularly each day to maintain public roads, as appropriate.

8.3.7.1.2 Road Pavement

Heavy vehicle traffic volumes generated by the proposed development construction could result in damage to existing road pavements on local roads, including at vehicle turning, accelerating, and decelerating locations. Road pavements would be regularly monitored and reinstated in accordance with the requirements of Wexford County Council.

8.3.7.1.3 Construction Schedule

In order to avoid any form of a significant cumulative impact of the generated site traffic and to minimise disruptions and congestion caused by heavy traffic loads, the construction of the various project elements shall be strategically scheduled and completed in a phased approach to minimise the traffic impact on the surrounding road network. Details of the construction phasing and it's individual timelines will be confirmed and outlined by the contractor and agreed upon by the Council prior to the commencement of construction.

8.3.7.2 Operational Phase

During the operational phase, there will be periodic maintenance on site. This would generate a relatively low volume of vehicles, including occasional heavy vehicles.
On the basis of the EPA Guidelines, the proposed operational phase would have imperceptible to not significant traffic effects.

8.3.8 Conclusion

The construction of the proposed development will lead to additional construction traffic, including HGV's, during the construction phase. By adopting the mitigation measures proposed above, it is envisaged that any negative impact construction related traffic will have on the local road network will be 'temporary' to 'short-term' in duration, and not significant.

There will be no significant operational stage traffic impacts associated with the proposed development. Once operational, the substation development will for the most part be monitoring remotely with only occasional trips generated by maintenance and monitoring personnel. There are no operational phase traffic impacts associated with the proposed grid connection.

8.4 Air Quality and Climate

8.4.1 Receiving Environment

The proposed development is located within a rural area that is characterised by agricultural grazing fields. The area surrounding the proposed development site is sparsely populated although there are several detached dwellings located along the local road network to the west of the site and there are no large industrial sources of pollution. The minor influences on air quality in the area include traffic utilising the local road networks, traffic on the M11, located 250m to the east of the proposed development site, agricultural activities and domestic emissions from fuel combustion.

The Environmental Protection Agency's (EPAs) Air Quality Index for Health (AQIH) is comprised of 6 regions as follows: Dublin, Cork, Large Towns (>15,000), Small Towns (5,000 – 15,000), Rural East and Rural West. The AQIH is calculated on an hourly basis using representative sampling from each region. Each region is ranked 1 – 10, with 1 being 'Good' and 10 being 'Very Poor' based on the worst-case pollutant in that region.

The site lies in Rural East which is identified as having good air quality as per EPA maps.

8.4.2 Potential Impacts

8.4.2.1 Construction Phase

The construction works will involve a number of activities including soil disturbance, excavations, and use of construction plant and traffic including trucks transporting material to and within the site.

Potential air quality impacts during the construction phase can occur from uncontrolled or fugitive dust emissions and Particulate Material (PM), including PM10 emissions (particulate material with diameter of less than 10 µm). This may take place during excavation works required to facilitate the access road, site compound formation, foundations for the substation building and equipment, and drainage systems other services and infrastructure.

Fugitive emissions of dust and PM may also be generated from truck movements and from other machinery such as excavators and dump-trucks. The handling of aggregates and other similar sized materials can also generate quantities of dust, particularly in dry weather conditions.

The movement and operation of machinery, construction vehicles and the use of plant equipment during the construction phase would also generate emissions of Sulphur Dioxide (SO_2), Nitrogen Oxides (NOx), Particulate Matter (PM) and Carbon Monoxide (CO).

The following section describes the potential impacts on local air quality and sensitive nearby receptors resulting from works associated with the construction phase of the proposed development.

8.4.2.2 Dust Emissions

Due to the nature of works to be carried out, the generation of airborne dust will be an air pollutant of concern during the construction phase of the Project. Dust generation is associated with materials handling and excavation, site grading and similar activities resulting in the disruption of the existing land surface. Vehicles travelling on unpaved areas can also cause airborne dust.

Construction dust has the potential to cause local impacts through dust nuisance at the nearest residential properties and also to sensitive ecosystems.

There are no statutory limits for deposition of dusts and industry guidelines are typically employed to determine any impact. The TA Luft (German Government 'Technical Instructions on Air Quality') states a guideline of 350 mg/m_2/day for the deposition of non-hazardous dusts.

The National Roads Authority (NRA) has published guidance for assessing dust impacts from road construction ('Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes'). Table 14 provides a list of distances which dust could be expected to result in a nuisance from construction sites for impacts such as soiling, PM10 and vegetation effects. These distances present the potential for dust impact with standard mitigation in place. This has been used to determine the potential impacts from the proposed construction site operations.

Table 16 Assessment Criteria for the impact of dust from construction with standard mitigation in place

SOURCE		Potential distance for significant effects (Distance from source)		
Scale	Description	Soiling	PM_{10}	Vegetation
Major	Large construction sites, with high use of haul roads	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul roads	50m	15m	15m
Minor	Minor construction sites, with limited use of haul roads.	25m	10m	10m

(Source: National Roads Authority (NRA) Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes)

Considering the scale of the development footprint (2.3 ha) and quantity of machinery involved, the proposed construction works can conservatively be characterised as a moderate construction site. Applying the NRA criteria in Table 16, the construction works could therefore result in soiling effects which have the potential to occur up to 50m from the source, with PM10 deposition and vegetation effects occurring up to 15m from the source.

The works likely to generate the greatest dust potential will be excavations works for the new access road and regrading works required to facilitate the substation compound formation.

A cluster of three residential receptors are located at the western corner of the proposed development boundary, in the vicinity of the proposed site entrance and approximately 300m to the north west of the proposed substation, with an additional three residential receptors within 50m on the far side of the local road. Existing boundary vegetation will afford screening and reduce dispersion of dust.

Overall, the potential for uncontrolled dust emissions during the construction phase is largely related to local wind conditions (speed and direction), coupled with the frequency and duration of rainfall. Re-suspension of dust by the wind may occur from road surfaces and other exposed surfaces, particularly during dry weather conditions. The wind speed will also affect the dilution rate of exhaust emissions from trucks and machinery being used during this phase. Damp weather conditions substantially reduce the potential for dust and PM10 emissions from roads and other exposed surfaces.

In accordance with best construction practices, dust control measures will form an integral part of the Site Development Management Programme. The measures include maintenance of the entrance and access road and restrictions on truck and operation of machinery. No significant adverse impact, in terms of a community nuisance at nearby residences and other buildings and sites near the site, is likely to occur, following the effective implementation of a Dust Control Management Plan to control and reduce dust and PM10 emissions.

Dust impacts will be temporary and occur mainly during site excavation work. Once the excavation works are completed construction of the outer fabric of the new buildings and structures generates low quantities of emissions.

8.4.2.3 Construction Traffic, Plant and Machinery

Plant and machinery such as generators, excavators, construction vehicles etc. will be required at various stages of the construction works. Although the operation of machinery and plant equipment will also generate emissions of nitrogen oxides (NOx), sulphur dioxide (SO_2) and carbon Monoxide (CO), given their scale and the length of operation time, the impacts of emissions from these units will be negligible. Overall the impact on local air quality from the trucks and machinery exhausts during the construction phase will be temporary with no significant impacts.

The Institute of Air Quality Management document Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate. Therefore, the impact on climate is considered to be imperceptible and short-term.

8.4.2.4 Operational Phase Impacts

Once the proposed development is operational there will be no significant direct emissions to the atmosphere. The substation does not produce emissions as there is no combustion process. The development will mostly be monitored remotely. Maintenance of the proposed development will be minimal, comprising of maintenance of drainage features and the replacement of damaged electrical components (rare), servicing visits to ensure that all electrical infrastructure is working properly. Emissions from maintenance will be minimal and no impact from dust, PM10 or vegetation effects on sensitive receptors is envisaged.

The use of the emergency back-up diesel generator would only be in the event of a loss of power and would be a very rare occurrence. The infrequent use would not give rise to significant air quality impacts.

While the risks associated with a fire involving electrical equipment cannot be completely eliminated, the risk to the local environment and wildlife habitat are considered low. The remote and onsite monitoring systems will reduce the likelihood of a fire occurring within the facility. In the event of a fire ignition within the facility, the fireproof construction and limited combustibility of the onsite structures will restrict the growth and development of a fire to the structure of origin and reduce the risk of fire spread to adjacent equipment, surrounding vegetation or adjacent properties.

The overall risk of fire ignition within the compound is considered low therefore the likelihood of the resulting release of toxic smoke or other harmful by products of a fire in an industrial electrical facility is also considered as low.

8.4.2.5 Cumulative Impacts of the Proposed Project

During the construction of the proposed development, there may be minor cumulative impacts on local air quality in the vicinity in combination with the construction of the consented Tomsallagh solar farm. Activities such as material transportation, excavations, and vegetation removal can contribute to short-term and limited impacts on air quality. However, these impacts would be minor and confined to the specific construction area. The proposed developemnt and adjoining solar farm are located in a rural setting with no significant sources of pollutants nearby, and considering that the major construction works of will be short-term and localised, any in combinations effect from construction on local air quality, such as dust generation and emissions, would unlikely to be significant. Furthermore, the mitigation measures that are presented in CEMP will be implemented to avoid any significant adverse impact on air quality.

During the operational phase neither development would generate air emission that would adversely affect air quality.

Planning Reg. Ref. 18.720 (ABP-302681-18) provided for the development of 357,000sq.m of solar panels, equating to up to 50MW Maximum Export Capacity (MEC) (Tomsallagh Solar Farm). The proposed 110kV substation development will result in c 12% of the solar modules being removed from the permitted solar energy site. This however would not result in a significant negative impact in the projected overall MEC and subsequent CO2 off set from the permitted solar energy project. This is due to technological advancements and increased efficiencies in solar PV technology (that is the module ratings are higher now than they were at the time since the planning application was approved), therefore the proposed development will not impact on the overall MEC which was referred to under the consented Tomsallagh Solar Farm application.

8.4.3 Mitigation

Potential air quality impacts during the construction phase can occur from uncontrolled or fugitive dust emissions and Particulate Material (PM), including PM_{10} emissions (particulate material with diameter of less than 10 µm).

Construction phase generated dust can be minimised by the following measures:

- The use of water as a dust suppressant, e.g. a water bowser to spray access road and compound hardcore areas during any extended dry periods when fugitive dust emissions could potentially arise;
- Public roads will be inspected regularly for cleanliness and cleaned as necessary;
- Control of vehicle speeds passing over access road within the site;
- Where necessary, site stockpiling of materials will be designed and laid out to minimise exposure to wind;
- Regular site inspections should take place to examine dust measures and their effectiveness.

Construction traffic emissions can be reduced using the following measures:

- Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently;
- Implementation of the Traffic Management Plan to minimise congestion; and
- All site vehicles and machinery to be switched off when not in use - no idling.

8.4.4 Conclusion

While there is a low risk of dust soiling and human health impacts associated with the proposed construction works, best practice dust mitigation measures will be implemented to ensure there are no impacts at nearby sensitive receptors. When the dust mitigation measures are implemented, construction air quality impacts are not considered to be significant.

No significant sources of emissions to air are expected during the operational phase of the Proposed Development, with emissions limited to those associated with the maintenance vehicles. Therefore, operational air quality impacts are not considered to be significant.

8.5 Noise and Vibration

A Noise Impact Assessment has been carried out, a copy of which is contained in **Appendix B** of this document. For ease of reference, a summary has been provided below.

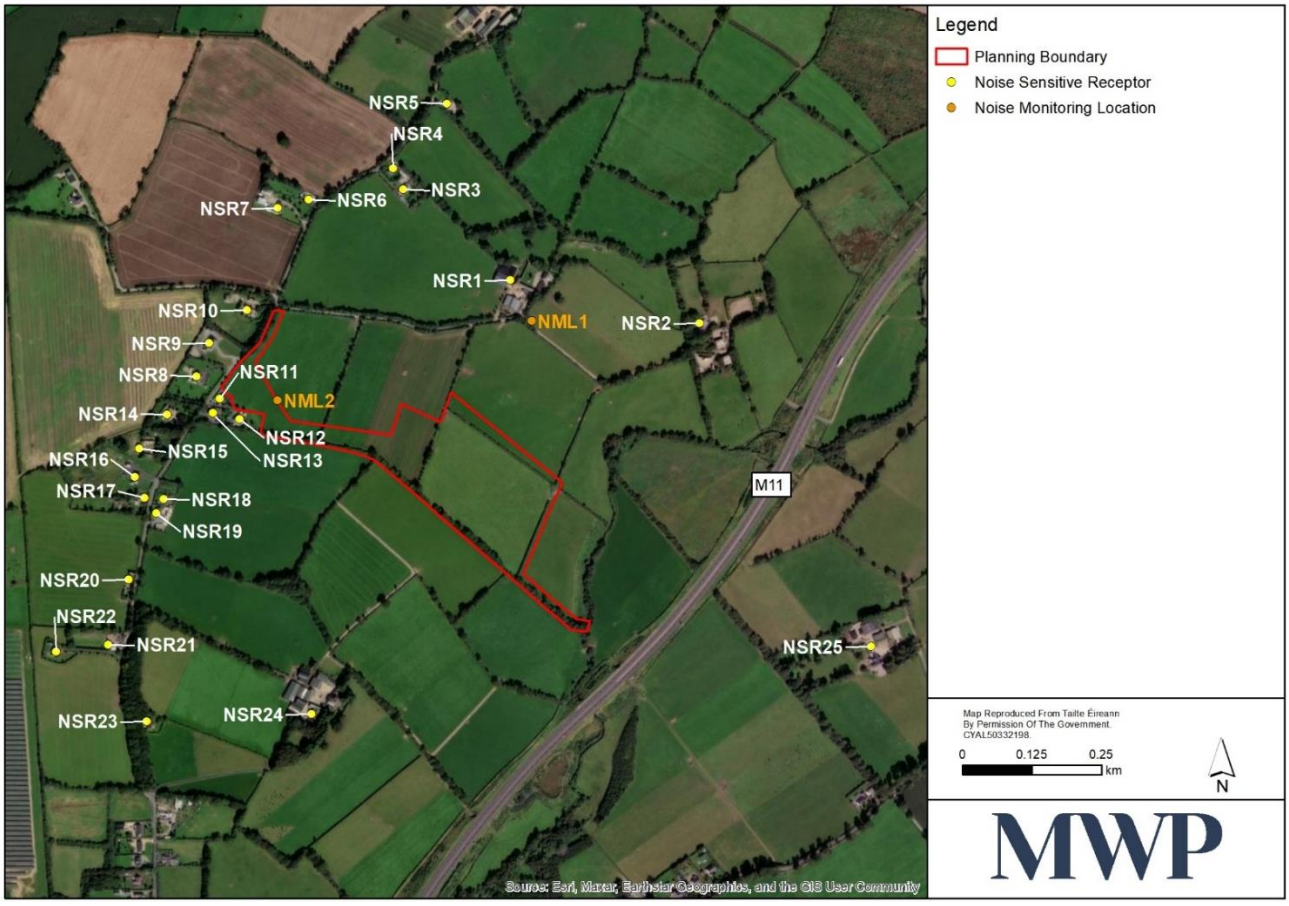
8.5.1 Receiving Environment

A baseline environmental noise survey was undertaken in the vicinity of the proposed substation and temporary construction compound to quantify the existing noise environment at the nearest noise-sensitive locations that may be affected by the proposed development. The existing levels of noise were recorded using background sound monitoring equipment at representative locations to the nearest sensitive receptors. (See **Table 17 and 18**).

8.5.1.1 Noise Sensitive Receptors

The noise sensitive receptors (NSRs), shown in **Figure 19**, are the closest residential properties to the proposed development and were identified through review of the proposed development site layout design. The noise monitoring locations (NMLs) chosen to represent the noise sensitive receptors are shown in **Figure 19** (NML1 represents NSR1 to NSR7 and NML2 is representative of NSR8 to NSR24). The selection of noise monitoring locations (NMLs) was supplemented by reviewing aerial images of the study area and other online sources of information (e.g. Google Earth) and verified on the ground.

Figure 19 Noise Monitoring Locations



The noise monitoring locations illustrated in **Figure 19** can be considered representative of the ambient noise environment of the closest NSRs which may be impacted by the proposed development.

At NML1, the main continuous noise was a low sound of the motorway M11 which is approximately 500m southeast of the monitoring point. Other contributing noise during the daytime period was rustling of trees and birds chirping. There were occasionally cows mooing in farmyard recorded also.

The evening period noise consisted of low noise from the M11 as well as rustling of trees. Other noise noted were low sound dogs occasionally barking at distance.

During the night-time period, NML1 was generally quiet except for occasional traffic noted along and rustling of trees.

At NML2, during the daytime noise readings, there was occasionally a low noise of farm machinery in one of the distant fields from monitoring location. There were also cars passing on local road closest to the monitoring point occasionally. Noise from the M11 was less prevalent at this monitoring location. Other noise contributions at this location included rustling of trees birds chirping and occasionally cows mooing in nearby fields.

The evening and night-time periods were generally quiet at NML2, with cars occasionally passing on the local road which contributed to the soundscape. At this noise monitoring location, noise from cars intermittently using the M11 motorway were not noticeable.

Table 17 NML1 Baseline Noise Results

NML1	Time and Date	L_{Aeq} 15min dB	L_{A90} 15min dB
Daytime	24/01/24 13:15	44	37
	24/01/24 17:20	46	41
	24/01/24 17:47	47	44
Average		**46**	**41**
Evening	24/01/24 19:07	44	40
Night	24/01/24 23:01	39	31
	24/01/24 23:18	38	31
Average		**39**	**31**

Table 18 NML2 Baseline Noise Results

NML2	Time and Date	L_{Aeq} 15min dB	L_{A90} 15min dB
Daytime	24/01/24 13:46	38	34
	24/01/24 14:16	38	35
	24/01/24 14:32	39	36
Average		**38**	**35**
Evening	24/01/24 19:26	42	39
Night	24/01/24 23:36	34	30
	24/01/24 23:52	34	29
Average		**34**	**30**

8.5.2 Potential Impacts

8.5.2.1 Construction Phase Noise

This section presents the predicted noise levels associated with the construction of various elements of the proposed development. The main noise elements of the construction phase consist of the following:

- 110kV Substation works
- Access Track Works
- Grid Connection works
- Construction Traffic Noise

The main noise sources associated with the proposed development include heavy machinery and support equipment used to construct the various elements. For the purpose of assessing the likely construction phase impacts, the construction phase has been separated into separate categories as described in the following sections.

The noise levels described in the following sections for the various construction phases are indicative only and are based on theoretical worst-case assumptions in order to demonstrate that it will be possible to undertake the works without significant noise effects. By their nature the works are temporary and will only potentially impact on a small number of receptors at any one time. In reality, construction noise levels will be lower than those presented.

The associated noise levels have been sourced from BS 5228 Noise and Vibration from open and construction sites, totalled, and extrapolated to the nearest NSR. The resultant noise level is then compared against the relevant noise threshold. The result is a theoretical worst case, as it assumes all machinery will be operating simultaneously which will not be the case and accounts for attenuation due to distance only. In reality there will be further noise attenuation due to atmospheric absorption, ground absorption, and landform screening. Therefore, the noise levels presented herein are an overestimate.

8.5.2.2 Substation Construction Noise

It is expected that the overall installation and construction phase for the proposed development will have a 14-18 month duration. A variety of items of plant will be in use for the purposes of site preparation, construction of the compound, substation and other site works. There will be vehicular movements to and from the proposed development that will make use of existing roads. Assumed construction hours are weekdays 07:00 – 19:00hrs and 08:00 to 14:00hrs on Saturday. Due to the nature of these activities, there is potential for generation of noise.

Table 19 presents the predicted noise levels from a number of plant items required during the construction phase of the substation at the closest residential location i.e., the property approximately 280m north of the substation, NSR1. The plant and machinery shown in Table 19 is typical of plant commonly used in substation construction activities and can provide an accurate assessment of construction noise emissions. Noise levels from the equipment identified above have been sourced from BS5228 Noise Database for Noise and Vibration Control on Construction and Open Site 1& 2: 2014+A1.

Table 19 Plant and Machinery and associated noise levels typically used in substation construction

Plant and Machinery	Sound Pressure Level @10m dB(A)	Predicted Sound Pressure Level @ 280 m Leq dB(A)
Telescopic Handler	71	57
Mobile Crane	70	
30-50T Excavator	79	
15-30T Excavator	78	
12T Roller	80	
Dump truck	78	
Tractor & Trailer	79	
15-20T Rubber Tired Excavator	68	
3-10T mini digger	69	
Diesel Generator	61	
Total	**86**	

The resultant theoretical worst-case noise emission level at the nearest receptor, NSR1, is 59dB(A). This is below the construction noise thresholds of 65dB(A) for daytime. Working hours at the site during the construction phase will be limited to 07:00 to 19:00 Monday to Friday and 08:00 to 14:00 Saturday, therefore no construction noise is anticipated for evening and night-time hours. There will be no intrusive works on Sundays or Public Holidays.

NSR1 is belonging to an involved landowner in the proposed development. The next nearest receptor to the proposed substation construction area, NSR12, is located approximately 360m to the west. Noise levels from substation construction are predicted to be 55dB(A) at NSR12 and is also below the construction noise thresholds of 65dB(A) for daytime.

8.5.2.3 Access Track

The proposed access track will be routed through an existing field, located to the west and adjacent to the proposed development substation.

Dwellings in proximity to the access track route, will experience elevated noise levels from the excavation and road surfacing machinery during the period it takes to pass the receptor enroute to the substation. Given the very short time frame, the temporary and minor nature of the works and machinery (back-hoe loader, dump truck and road re-surfacing plant) in combination with the low number of receptors impacted at any one time, the potential impact is not considered significant. Noise emissions are already elevated on the adjacent road due to passing traffic.

8.5.2.4 Grid Connection

The grid connection works are considered minor scale and consist of connecting the substation via an overhead loop in connection to existing electricity lines. Construction works noise will not be significant for these works and are adequate distance noise sensitive receptors, therefore no significant noise impacts are expected from these works.

8.5.2.5 Construction Traffic

During the construction works there will be deliveries of building materials to the site, and removal of excavated material off-site will be made. The volume of traffic generated by the transportation requirements will be minimal.

Construction traffic will include:

- HGVs importing construction materials including concrete and piping
- HGVs exporting waste/spoil materials
- HGVs delivering plant and fuel
- Traffic associated with on-site construction personal

Construction site traffic will use the existing roads surrounding proposed development. The relatively low volume of additional traffic will be temporary and intermittent over the construction phase and will not be discernible from existing daytime traffic volumes on local roads surrounding the development.

8.5.2.6 Operational Phase

There is no statutory Irish guidance relating to the maximum permissible noise level that may be generated during the operational phase of the proposed facility.

The Environmental Protection Agency (EPA) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Environmental Protection Agency, 2016) provides noise guidance to operator's subject to IPPC or waste licences. While the proposed development does not fall under the remit of the EPA, the EPA's NG4 guidelines are considered the most appropriate noise assessment criteria as they follow best practice principles. Hence, the proposed development is appraised against the EPA's NG4 guidelines. As the baseline monitoring determined that the area be designated under the 'All other Areas Category' criteria, the limits 55dB Daytime, 50dB Evening, 45dB Night-time, will be used to assess whether there is a potentially significant effect.

8.5.2.7 Noise Associated with Substations

There are several ways in which noise can be generated from electricity infrastructure. Continuously radiated noise is the most noticeable to neighbours and this is associated primarily with transformers. This is acknowledged in the 2016 EirGrid research report (EirGrid Evidence Based Environmental Studies Study 8: Noise. Literature review and evidence based filed study on the noise effects of high voltage transmission development) on noise from electrical infrastructure which states:

there is strong evidence that the only relevant noise sources are the power transformers and associated cooling systems.

Transformers typically generate a low frequency humming noise, the extent of which depends on the transformer type and the level of noise attenuation at the substation. Generally, modern transformers are manufactured with a specified and guaranteed emission level. Improvements in the manufacture of transformers have reduced the associated level of noise emissions and hence modern transformers are typically quieter than equivalent capacity older transformers.

An Air Insulated Switchgear (AIS) substation, such as the one proposed, is where the electrical equipment infrastructure is primarily installed outdoors, with the use of natural air as an insultation between circuits.

The proposed development is a 110kV kV Air Insulated Switchgear (AIS) substation. The components of which consist of a compound containing outdoor Air Insulated Switchgear (AIS) equipment comprising busbars, line bays, grid transformers and associated bays, house transformers and control building.

The sound power levels for a typical 110kV substation is in the order of 93dB(A). For the purpose of this assessment, 93dB(A) is used as the sound power level output for the 110 kV substation in the noise model, refer to Figure 19.

8.5.2.8 Operational Noise Prediction Methodology

The noise predictions were undertaken using noise prediction software, specifically Bruel & Kjaer's software (iNoise 2024.1). The software calculations are based on ISO 9613, Attenuation of sound during propagation outdoors, Part 2, General Method of Calculation. The ISO 9613-2 model can take account of the following factors that influence sound propagation outdoors:

- Geometric divergence
- Air absorption
- Reflecting obstacles
- Screening
- Vegetation; and
- Ground reflections

The following inputs in Table 20 were used to inform the noise prediction software.

Table 20 Model Input Data

Item	Description
Noise Source Locations	Planning Drawings
House Locations	Aerial Imagery
Acoustic Emission	Estimate
Source Height	2m
Landform	Generally flat (no landform barriers)
Ground Factor	0.8 Note 1
Receptor Height	1.5m bungalows and 4m at two story residential receptors
Wind Direction	Downwind
Relative Humidity	70%
Temperature	10^{o}C

Note 1: Ground Factor is a value between 0 and 1, where 0 represents hard/ reflective surfaces and 1, represents soft absorbent surfaces.

8.5.2.9 Operational Noise Prediction Results and Discussion

The noise model, shown in **Figure 20**, shows the predicted noise levels from the 110 kV substation proposed development in operation, at the noise sensitive receptors (NSRs). **Table 21** shows the predicted noise levels at the NSRs from the 110kV substation in relation to the operational noise targets.

Table 21 Operational Noise Levels and Operational Noise Targets

NSR	Location	Predicted Noise Levels dB (A) Day/Evening/Night	Daytime Operational Noise Target, LAeq dB (A)	Evening Operational Noise Target, LAeq dB (A)	Night-time Operational Noise Target, LAeq dB (A)
NSR1	Refer Figure 19	27	55	50	45
NSR2	Refer Figure 19	24	55	50	45
NSR3	Refer Figure 19	24	55	50	45
NSR4	Refer Figure 19	23	55	50	45
NSR5	Refer Figure 19	21	55	50	45
NSR6	Refer Figure 19	23	55	50	45
NSR7	Refer Figure 19	22	55	50	45
NSR8	Refer Figure 19	25	55	50	45
NSR9	Refer Figure 19	24	55	50	45
NSR10	Refer Figure 19	25	55	50	45
NSR11	Refer Figure 19	26	55	50	45
NSR12	Refer Figure 19	28	55	50	45
NSR13	Refer Figure 19	26	55	50	45
NSR14	Refer Figure 19	25	55	50	45
NSR15	Refer Figure 19	24	55	50	45
NSR16	Refer Figure 19	24	55	50	45
NSR17	Refer Figure 19	24	55	50	45
NSR18	Refer Figure 19	25	55	50	45
NSR19	Refer Figure 19	25	55	50	45
NSR20	Refer Figure 19	23	55	50	45
NSR21	Refer Figure 19	22	55	50	45
NSR22	Refer Figure 19	22	55	50	45
NSR23	Refer Figure 19	22	55	50	45
NSR24	Refer Figure 19	27	55	50	45
NSR25	Refer Figure 19	20	55	50	45

Figure 20 Noise Model

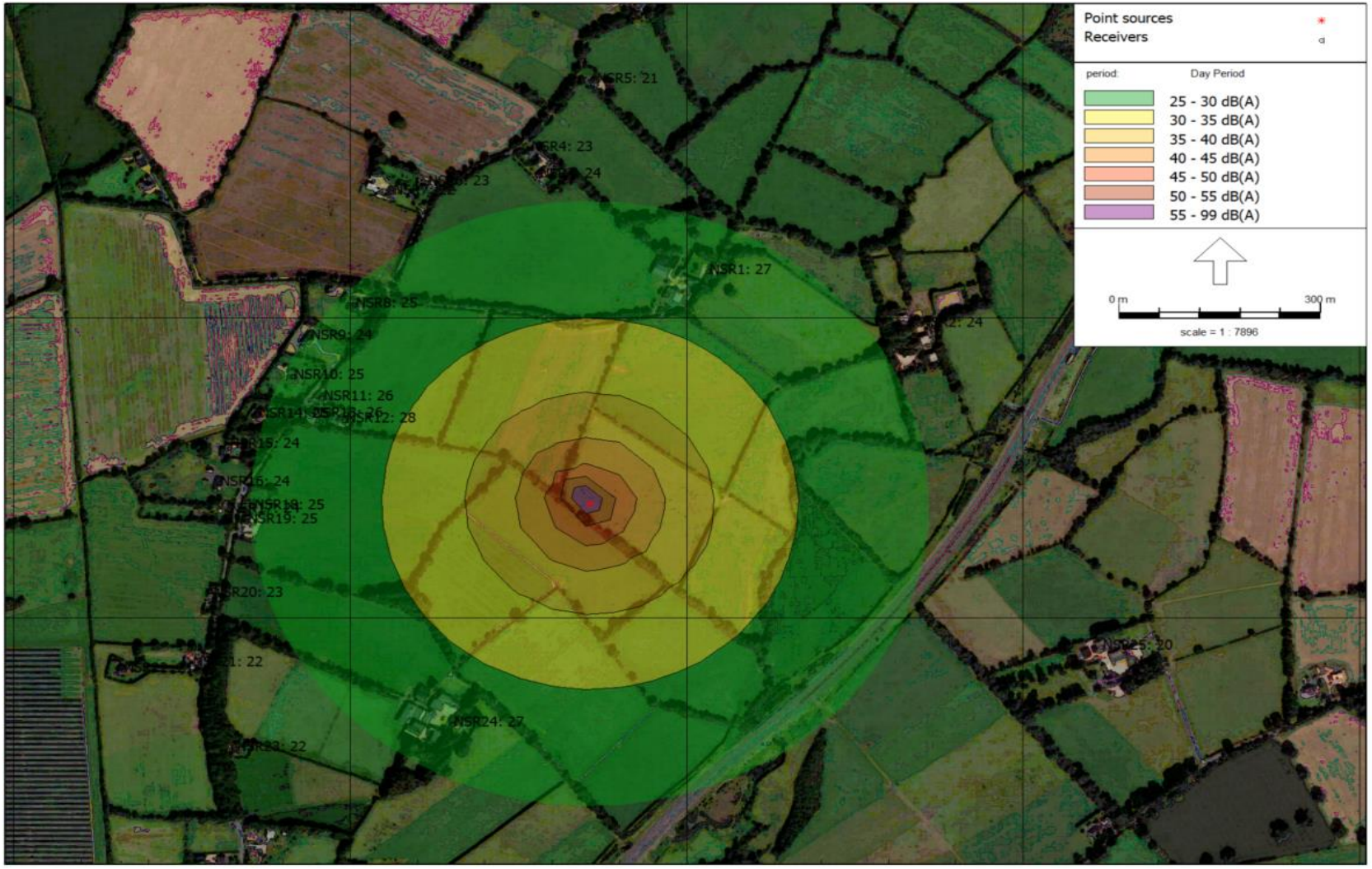


Figure 20 and Table 21 show that the predicted noise emissions at the nearest sensitive receptor, NSR1, is 27 dB (A) which is below operational noise targets when the 110 kV substation is operating. The highest predicted noise emissions arise at NSR12 where the predicted noise emissions from the proposed 110 kV substation is 28 dB (A).

Noise emissions at the other receptors further away from the substation, dissipate further due to distance and will therefore be less than the highest predicted noise level at NSR1 and NSR12, refer to Figure 20 and Table 19.

Overall, the noise model demonstrates that noise emissions from the proposed development are not predicted to exceed the noise limit targets set to prevent significant operation noise impacts at the nearest noise sensitive receptors.

It is likely, that in reality, noise levels will be lower than predicted due to the conservative assumptions used in the prediction methodology.

8.5.2.10 Operational Phase Traffic Noise

There will be a low number of workers required during the operational phase. There will also be occasional traffic coming to site for maintenance and deliveries.

Additional traffic during the operational phase will not increase by the order of 25%, which is required for a 1 dB increase. Significant noise impacts as a result of increased traffic during the operational phase are therefore not anticipated.

8.5.3 Cumulative Impacts

8.5.3.1 Construction Phase Cumulative Impacts

The access road to the new proposed substation would be constructed in advance of any construction works for the substation and the solar farm. Therefore there is no likelihood of in combination or cumulative noise effects from this element of the project predicted.

It is probable however that the proposed development will be constructed in parallel with the adjoining permitted development, Tomsallagh Solar Farm project (Wexford County Council Planning Ref 20171275, An Bord Pleanála Planning Reference ABP-300427-17).

TMS Environmental carried out a noise assessment for the Tomsallagh Solar Farm Project (TMS, 2017) which concluded that noise levels are not predicted to exceed 65 dB (A) at the site boundary. For the purposes of the cumulative assessment, it is assumed that 65 dB (A) will be the worst case noise level at site boundary from solar farm works.

The highest level of construction noise from the proposed development substation works was predicted to be 57 dB (A) at NSR1. The cumulative noise at NSR1 would therefore be 66 dB (A) which exceeds the adopted construction noise criteria of 65 dB (A). The likelihood however of all machinery from construction works of both projects operating simultaneously is low. Therefore a noise level in excess of 65 dB(A) is not anticipated at the site boundary solar farm works. It is also worth noting that NSR1 is an involved landowner in the proposed development.

The next nearest receptor to the proposed substation construction area, NSR12, is located approximately 360m to the west. Noise levels from substation construction are predicted to be 55dB (A). Taking account of the solar farm construction works and predicated noise levels being 65dB(A), the cumulative construction noise levels are predicted to be 65dB (A) if all elements of construction works for both solar and substation developments are ongoing simultaneously. Therefore the adopted construction noise limits of 65dB(A) are not exceeded at this receptor.

The Tomsallagh Solar Farm Extension (Wexford County Council Planning Ref 20180055 and An Bord Pleanála Ref 301329-18) is approximately 750m north east of the proposed development substation. There is adequate distance between the proposed substation development to conclude that there will be no cumulative noise impacts which would exceed the adopted construction noise limit of 65 dB (A).

The cumulative construction works noise levels from the above projects are not predicted to exceed 65 dB (A) at the nearest non-involved NSR (NSR12) and therefore no significant cumulative impacts are predicted.

8.5.3.2 Operational Phase Cumulative Impacts

For the permitted Tomsallagh Solar Farm (Wexford County Council Planning Ref 20171275 An Bord Pleanála Planning Reference ABP-300427-17), the TMS Environmental noise report predicted operational noise levels to be between 23 and 31 dB (A) at the nearest sensitive receptors.

The highest operational noise at any NSR from the proposed development substation is predicted to be 28 dB (A).

In a worst case scenario, the combined cumulative noise of both the solar and substation operating together is therefore predicted to be 33 dB (A) at the nearest sensitive receptor, which is well below the operational noise targets for this assessment (55 dB for daytime, 50 dB for evening and 45 dB night-time).

The Tomsallagh Solar Farm Extension (Wexford County Council Planning Ref 20180055 and An Bord Pleanála Ref 301329-18) is approximately 750m north east of the proposed development substation which is sufficient distance for there to be no cumulative noise impacts, in combination with the proposed development substation.

There are therefore no significant cumulative impacts predicted during the operational phase of the proposed development.

8.5.4 Mitigation

8.5.4.1 Construction Phase

No specific construction phase mitigation measures are required as the construction noise thresholds are predicted not to be exceeded. However, construction works will be carried out in accordance with best practice and in line with recommendations contained within BS 5228-1:2009+A1:2014.

To mitigate against the impacts of noise on the local community during construction, the following measures are proposed:

- A pre-construction commitment to managing nuisance noise will be agreed through notification and consultation with affected parties, if deemed necessary.
- Working hours at the site during the construction phase will be limited to 07.00 to 19.00 Monday to Friday and 08.00 to 14.00 Saturday. No intrusive works on Sundays or public holidays.
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and

1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006).

The main control measures will be control of noise at source using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General).
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution).
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment).
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment); and,
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).

In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plant start-up will be sequential rather than all together.
- Internal access tracks to be well maintained.
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations and
- Drop heights for materials such as gravels will be minimised whenever practicable

8.5.4.2 Operational Phase

The results demonstrate that the proposed Tomsallagh 110 kV substation will not exceed the noise limit criteria, refer to Table 21, at the nearest sensitive receptors. Therefore, no mitigation measures are required.

8.5.5 Conclusion

There will be noise emissions associated with the construction phase, but these will be temporary and of short duration and not considered to be significant. The predicted noise emissions based on the representative machinery typical for this scale of project are expected not to exceed the recommended noise thresholds typically adopted for construction projects in Ireland.

Once operational the predicted noise emissions do not exceed the noise limit criteria adopted for this project which are based on EPA guidance.

8.6 Landscape and Visuals

8.6.1 Existing Environment

Located in central Co. Wexford within the townland of Tomsallagh, the proposed development site comprises greenfield agricultural lands bound on all sides by existing hedgerows and agricultural lands.

The development site lies within the permitted but not yet constructed Tomsallagh solar energy development which has planning permission for the construction of a solar PV energy development. A landscape and visual impact assessment was completed by Macroworks for the permitted solar farm which concluded that no significant landscape and visual impacts would arise from the solar development.

The nearest populated areas are the settlements of Enniscorthy town approximately 4.5km southwest from the proposed site and Ferns town approximately 5km north of the proposed development.

The landscape in the wider area comprises of mix of agricultural land with some small pockets of woodland/forestry.

The rural landscape is not considered particularly rare or distinctive. Recreation value is generally low, and instances of rural tranquility occur only in certain parts of the study area.

8.6.1.1 Landscape Character and Values

A Landscape Character Assessment is incorporated in the current Wexford County Development Plan (CDP) 2022 - 2028, identifying areas of common character called Landscape character units (LCU). The LCU for the proposed development site and surrounding landscape is defined as **"Lowlands"**. This is described in CDP 2022-2028 as *"generally made up of gently undulating lands and relates to extensive areas of the county".*

Within the CDP each LCU has been assigned a landscape sensitivity rating, described as *"a measure of the ability of the landscape to accommodate change or intervention without suffering unacceptable effects to its character and value".* The landscape sensitivity rating for the lowland areas is defined as **Low-moderate**.

The landscape for the proposed development site is defined in the Wexford County Development Plan 2022-2028 as "Stronger Rural Areas". This is described in CDP 2022-2028 as *"According to the Guidelines in these areas population levels are generally stable within a well-developed town and village structure and in the wider rural areas around them. This stability is supported by a traditionally strong agricultural economic base and the level of individual housing development activity in these areas tends to be relatively low and confined to certain areas".*

"*Much of the county is designated as either 'Areas under Strong Urban Influence' or 'Stronger Rural Areas'. Some of these areas have experienced more rapid growth and are reaching their carrying capacity in terms of both ability to accommodate further effluent treatment systems, visual amenity and ability to accommodate traffic movement on narrow roads".*

There are no specific landscape attributes at the proposed development site which afford it a high sensitivity rating. The lands are similar in nature to other lands in the area and have no striking features. The Application Site is not afforded any protection under statutory or local landscape designations.

A review of the CDP 2022-2028 indicates that the plan does not designate specific routes but notes that scenic routes may fall into a number of categories:

- Routes through Upland, Coastal, River Valley and Distinctive Landscapes.

- Trails such as the Eurovelo, Norman Way, Greenways and Wexford Walking Trails where sightseeing visitors are more likely to be concentrated along these routes. Other scenic views include might include:
- Views to the sea and views towards land from the sea and rivers in locations which may host tourism or amenity/journeys arrivals by boat.
- Planned views and vistas such as those associated with planned settlement and heritage properties and gardens.

The proposed development site does not fall under visually sensitive area and there are no scenic route close to the proposed development lands.

8.6.1.2 Landscape Objective Context and Designations

Wexford County Development Plan 2022-2028, Section 11.10.2, sets out the relevant planning objectives with regards to landscape protection. The relevant policy objectives associated with this proposal are:

Objective L01 - To have regard to the Landscape Character Unit and their assigned Landscape Sensitivity, the Draft Landscape and Landscape Assessment-Guidelines for Planning Authorities (2000) and any updated versions of these guidelines published during the lifetime of the Plan, and any National Landscape Character Assessment prepared when assessing planning applications or when carrying out local authority own development.

Objective L04 - To require all developments to be appropriately be sited, designed and landscaped having regard to their setting in the landscape, ensure that any potential adverse visual impacts are minimised and that natural features and characteristics of the site are retained.

Objective L05 - To ensure that developments are not unduly visually obtrusive in the landscape, in particular, in or adjacent to the Upland, River Valley, Coastal or Distinctive Landscape Character Units.

Green Infrastructure Objective GI01 - To ensure the protection, enhancement and maintenance of the natural environment and recognise the economic, social, environmental, biodiversity and physical value of green spaces through the integration of Green Infrastructure planning and development in the planning process. Planning applications for development must demonstrate compliance with the following requirements:

a) The integration of Sustainable Drainage Systems (SuDS) and nature-based solutions into the overall site concept and layout;

b) The retention and enhancement of landscape connections such as trees, hedgerow and water features that provide habitats for species and allow movement between areas as much as possible. This is particularly important for development in rural areas and one-off housing. Such connectivity both within and to features outside the site should be demonstrated in the application. In the event that it is not possible to retain landscape connections, and in order to ensure that there is no net loss of biodiversity, proposals to mitigate and compensate/provide for new connectivity shall be detailed;

c) To demonstrate, where applicable, the downstream impacts of significant landscape modifications and proposals to mitigate and compensate for same;

d) To design the footprint of the development to avoid impacts on areas of high biodiversity value;

e) Avoid building on flood plains. Incorporate these features into the design and use them as flood prevention and water management features;

f) Ensure that adjacent designated sites are not impacted by the proposed development. This is particularly important for developments adjacent to wetlands;

g) Landscaping plans shall use species appropriate to the physical and environmental conditions of the site including soil conditions, availability of space and aspect. These plans should use a high diversity of native trees, incorporating a variety of sizes and age classes to improve visual and structural diversity. New hedging and hedge reinforcement in rural areas must comprise native species. Landscaping plans must also incorporate the principles of the 'Pollinator Friendly Planting Code – Professional Planting Recommendations' of the All-Ireland Pollinator Plan 2015 – 2020 and any updated version of this code; WCDP 2022 - 2028 Landscape and Green Infrastructure

h) Avoid culverting unless absolutely necessary and unavoidable;

i) Creation of open drainage ditches instead of underground pipes where appropriate as these provide additional habitats and a water source for wetland species;

j) Ensure that invasive species are not used in terrestrial or aquatic planting schemes; and

k) Reduction of hard, impermeable surface to a minimum and to consider the use of green roofs.

The design of the proposed development would not contravene any of the above objectives.

8.6.1.3 Tourism

There are no tourist attractions pertaining specifically to the site of the proposed development. There are however a number of recreational and cultural amenities in the wider area. The closest tourist attraction in the wider area is Ferns castle, approximately 4.9km to the north of the proposed site. Ferns Historic Trail in Ferns Town is approximately 5km to the north of the proposed development.

Other tourist attractions in the area includes Enniscorthy Sli na Slainte Trail, Wexford cycle hub loop, and Enniscorthy River Slaney Trail approximately 6.1km to the southwest of the proposed development. Other tourist attractions in Enniscorthy town includes Vinegar hill, which is approximately 6.3km to the southwest, Enniscorthy Castle is approximately 6.2km to the southwest, and The National 1798 Rebellion Centre, approximately 6.7km to the southwest of the proposed development.

8.6.2 Potential Impacts

Some changes in the character of the host landscape will occur locally due to the presence of the Proposed Development as a new landscape element. The proposed development will result in an increase of light industrial landscape character within the area. The change in landscape character is greatest in its immediate and nearby surroundings of the proposed development boundary.

However, the proposed development is confined to field boundaries with existing hedgerows and mature tree lines confining this change in landscape character to the proposed development's immediate surrounds without significantly extending landscape effects into the wider area. Landscape effects will therefore reduce quickly with increasing distance from the proposed development boundary.

The proposed development includes an electricity substation with lightning and end masts being the most visible element associated with this type of development, however is in keeping with the existing Crane-Lodgewood 110kV OHL.

It is considered that

the magnitude of any change would not constitute an unacceptable or detrimental effect on the local landscape character for the reasons outlined as follows:

- The proposed development would not materially conflict or contravene any policy objectives set out for the landscape character area.
- The magnitude of any change would be restricted to the immediate vicinity and would not impart any significant notable change or loss of character to the local area as the proposed development will be in keeping with other similar permitted developments within this landscape and would not introduce any activities which are otherwise unusual to the area.
- There will be no loss of protected ecological habitat.
- The proposed development site would not impart a major change to the overall visual character of this area. The visual environment of the site and its surrounding context is generally enclosed, and due to the relatively low lying setting available views to the site are generally limited to its immediate context.
- The tallest structures are 2 no. overhead line end masts (c. 20m high) and 2 no. lattice gantries (c. 16m high, however these are not unusual in the area and any visibility of the site beyond its immediate context reduces due to a combination of distance and intervening landscape feature and vegetation. Figure 21 below is a view of the proposed development site from the M11 which includes existing masts of an equivalent size which do not stand out in the existing environment.
- The Site does not lie within any designated sensitive landscapes or in the direction of any 'key scenic views'.

Overall the design and layout of the proposed substation development is considered appropriate for the receiving landscape and the proposed development would not adversely affect the visual amenities of the surrounding area to any significant extent.

Figure 21 View of the Proposed Site from M11 with Existing Overhead Line Infrastructure

8.6.2.1 Cumulative Impacts of the Proposed Project

The landscape and visual impact for the permitted Tomsallagh solar farm, as per the LVIA, is judged to be moderate slight. The proposed Tomsallagh 110kV substation and access road is expected to have localised landscape and visual impact. The design of the substation ensures that valuable habitat will not be lost, and the proposed structures and site layout can be accommodated within the existing landscape. It will not affect views from protected features or sensitive receptors, and the scale is deemed appropriate for the existing landscape.

Cumulatively it is considered these combined development would have a minor impact on the landscape character and visual amenity. The addition of these elements to the Tomsallagh solar farm would not result in any significant adverse changes to the overall landscape character of the area. The grid connection lattice towers will be new tall features in the area but would not be unusual in the receiving landscape.

8.6.3 Mitigation

The primary avoidance measure that will be utilised in this case is the placement of the proposed substation towards the south of the permitted Tomsallagh solar farm. This ensures that the substation is buffered from the surrounding roads and residences. The permitted Tomsallagh solar farm itself is located in a robust and contained rural area that benefits from both terrain and hedgerow screening. This ensures that the development is not highly visible in the surrounding landscape. The existing hedgerow boundaries surrounding the site will be preserved to aid in visual screening and to maintain the existing field pattern. Soils excavated as part of the development will be placed around the site and planted with a mixture of native species to reinforce screening.

8.6.4 Conclusion

The landscape and visual effects arising from the proposed development would be localised, and limited in both scale and extent, and would not result in any substantial adverse change to the landscape character of the general area.

The Development is expected to offer a restricted visual impact on overall landscape character and visual amenity. The Development will not impact on views from protected features or sensitive receptors and is considered an appropriate scale for the existing landscape.

8.7 Archaeology and Cultural Heritage

This section describes the likely effects on archaeology and cultural heritage resulting from the construction and operation of the proposed development.

8.7.1 Background - Previous Archaeological Impact Assessment for Tomsallagh Solar Farm

An Archaeological Impact Assessment (AIA) of the proposed development lands and surrounding area was previously completed by Irish Archaeology Consultancy (IAC) Ltd in 2017, on behalf of JBM Solar Developments Ltd as part of a planning application for the solar farm at Tomsallagh, Co. Wexford **(Planning Ref Wexford CoCo Ref: 20180055/ABP Ref: 30139-18)**. A copy of the report is provided in **Appendix C.** The information and outcome of the Solar farm AIA has been taken into consideration in the preparation of the archaeology assessment for the current proposed development.

The key points following a review of this report are as follows:

- No recorded archaeological monuments within the footprint of the solar farm and proposed substation were found.
- No previously unrecorded sites of archaeological potential were noted during the full field inspection.
- Three sites were recorded within 500m of the site. All three sites were subject to archaeological excavation in advance of M11 Road scheme.
- The closest is formed by an early Neolithic pit (WX020-081), located c. 165m southeast of the solar farm site and 120m east of the current proposed substation site.
- No protected structures were recorded within the immediate environs of the solar farm and proposed substation. The closest identified was Tomsallagh house, situated 460m to the north-northwest of the solar farm (RPS WCC1122, NIAH 15702031) and 1.02km north of the current proposed substation.
- No areas or sites of archaeological potential were noted in the Historic cartographic resource.
- At the centre of the solar farm, but not within the proposed development area, is the remains of a Victorian farmyard and a house. The house has been replaced with a modern farmyard.
- The only archaeological investigations to be carried out within the immediate landscape related to the works associated with M11 road scheme.

8.7.2 Receiving Environment

8.7.2.1 Cartographic Review

A review of historic maps shows the application site depicted as pastureland in both the 6-inch and 25-inch historic OS map editions (heritage maps.ie). The field layout of the development site on the 6-inch map shows the area along the southern boundary separated into a number of smaller fields while the layout on the later 25-inch map is reflective of the present day arrangement.

Figure 22 Historic 6" View of the Proposed Development Site Setting (in Blue)

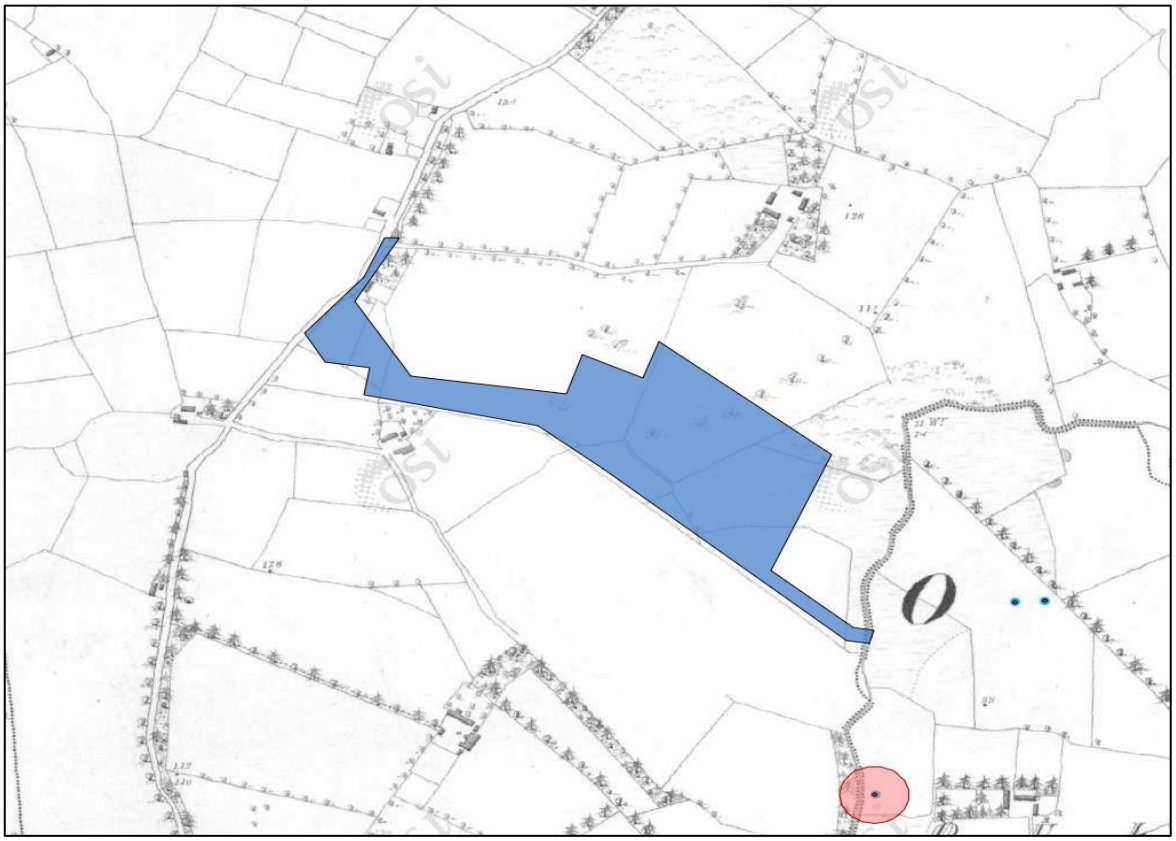
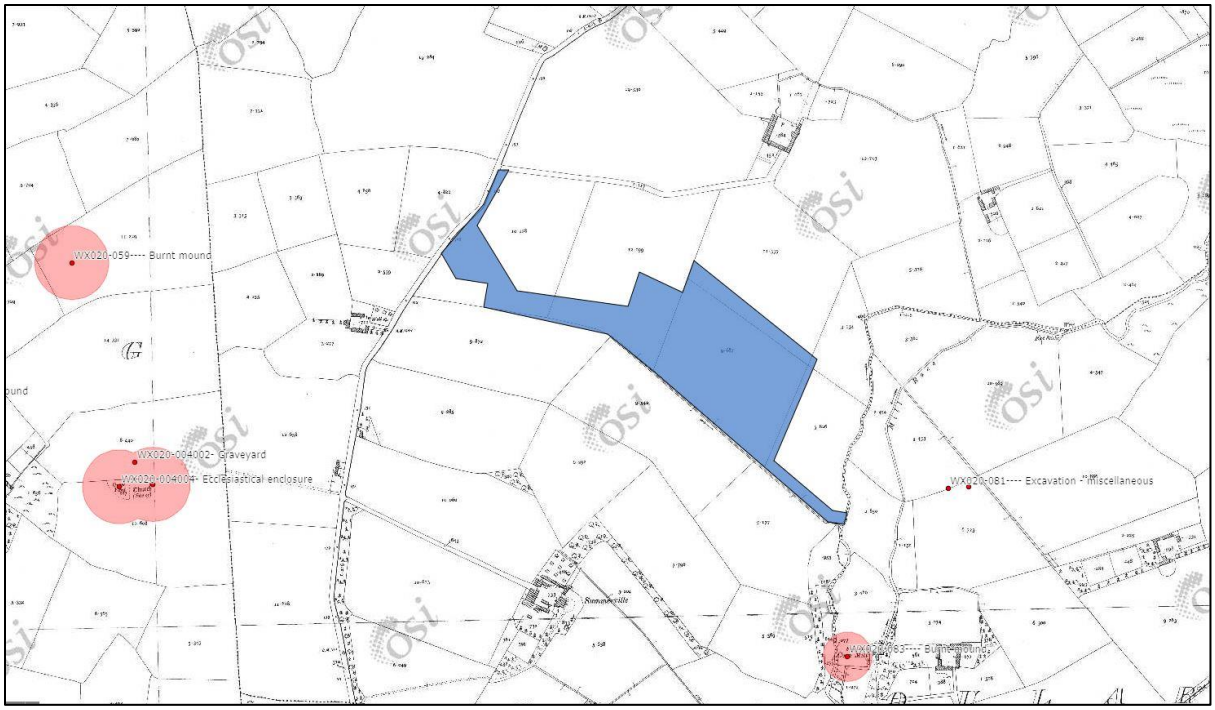


Figure 23 Historic 25" View of the Proposed Development Site Setting (in blue)



8.7.2.2 Archaeological Excavations

Examination of the database of licenced archaeological excavations undertaken in Ireland (www.excavations.ie and heritagemaps.ie) record that no archaeological excavations have been previously undertaken within the proposed application site. Although in the area close to the proposed site, archaeological excavations were undertaken.

8.7.2.3 Archaeological Records and Designations

Examination of the National Monuments Service Online Sites & Monuments Records (SMR) database revealed that there is no known archaeological asset in the proposed development site. There are a number of known archaeological assets in the surrounding area of the proposed development site. Recorded national monuments within 1km of the application site are listed in Table 22 below.

Table 22 Archaeological Features in the vicinity of the Proposed Site

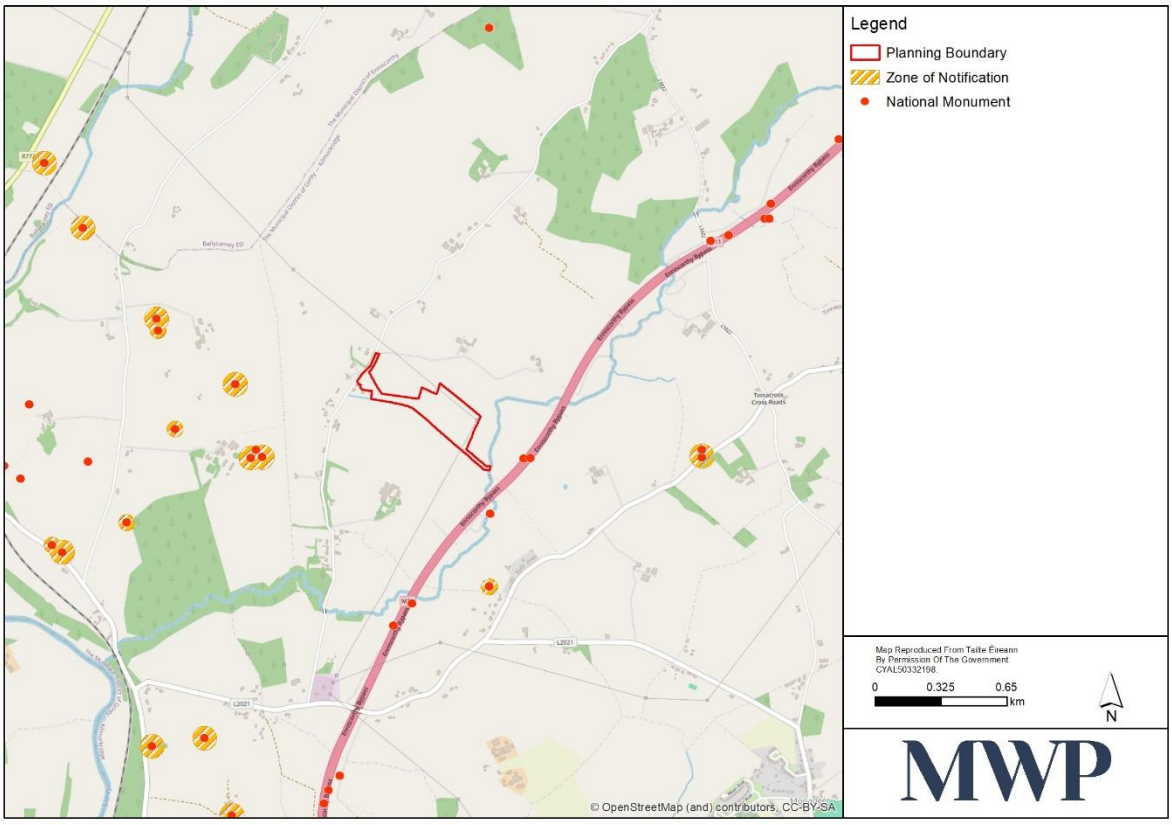
SMR Reference	Class	ASI Description	Townland	ITM Coordinates	Distance from the application site
WX020-081----	Excavation - miscellaneous	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and resolved by A. Mulcahy as Oulartard 1 (E4350) during the testing stage (Hardy et al. 2010, 70). It is situated on a W-facing slope with a N-S stream c. 200m to the W. This is a single pit (dims 0.9m x 0.8m; D 0.1m) filled with a black silty clay with frequent charcoal and moderate stone inclusions. A sample provided a C14 date of Cal. BC 3748-3532, providing an Early Neolithic date. The pit (WX020-082----) c. 35m to the E is completely unconnected with this feature. (Mulcahy 2011; 2013)	OULARTARD	701783 E 644508 N	c 120m East
WX020-083----	Burnt mound	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and set aside for resolution as Oulartard 3 (Hardy et al. 2010, 70). It is situated in the valley of a NE-SW stream with a N-S section c. 20m to the W. It was partially excavated (E4260) by C. Hardy as several spreads of burnt mound material (dims 5.4m x 3m; max. T 0.32m) that extended beyond the excavated area to the W, but there was no evidence of a trough or other features. (Hardy 2011; 2013)	OULARTARD	701620 E 644235 N	c 210m South
WX020-082----	Excavation - miscellaneous	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and resolved by A. Mulcahy as Oulartard 2 (E4349) during the testing stage (Hardy et al. 2010, 70). It is situated on a W-facing slope with a N-S stream c. 150m to the W. This is a single pit (dims 1.28m x 1.2m; D 0.15m) with a lower fill of black silty clay with frequent charcoal and burnt stone inclusions. A sample from this provided a C14 date of Cal. AD 445-624. The pit (WX020-081----) c. 35m to the W is completely unconnected with this feature. (Mulcahy 2011; 2013)	OULARTARD	701817 E 644510 N	c 220m East

SMR Reference	Class	ASI Description	Townland	ITM Coordinates	Distance from the application site
WX020-004003	Font	There is local knowledge that what is called a font from Killabeg church (WX020-004001-) that was taken to the County Wexford Museum in Enniscorthy (WX020-031015-).	KILLABEG	700493 E 644514 N	c340m west
WX020-004001	Church	Described as the site of a church within a circular graveyard (diam. c. 90-100m) on the 1839 ed. of the OS 6-inch map and as the site of a church on the 1940 ed. of the map. It is situated at the crest of a gentle S-facing slope. The remains of the church (int. dims. 15m E–W; 6m N–S) appear as grass-covered walls (Wth c. 1.5m; H 0.5-0.8m) on the S side of an E-W field bank. The bank (Wth 6–8m; H 0.3m) of a circular ecclesiastical enclosure (diam. 83m E-W) survives SW–N–E forming a D-shaped enclosure (dim. 59m N-S) on the N side of the field bank. There is a record from the 1940s of one visible headstone (SMR file) but there is no evidence of burial in the 1980s. There is local knowledge that what is called a font was taken to the County Wexford Museum in Enniscorthy. The above description is derived from the published 'Archaeological Inventory of County Wexford' (Dublin: Stationery Office, 1996). In certain instances the entries have been revised and updated in the light of recent research.	KILLABEG	700493 E 644514 N	c 340m west
WX020-004002	Graveyard	Described as the site of a church within a circular graveyard (diam. c. 90-100m) on the 1839 ed. of the OS 6-inch map and as the site of a church on the 1924 ed. of the map. There is a record from the 1940s of one visible headstone (SMR file) but there is no evidence of burial in the 1980s.	KILLABEG	700463 E 644550 N	c 370m West
WX020-004004	Ecclesiastical enclosure	Described as the site of a church within a circular graveyard (diam. c. 90-100m) on the 1839 ed. of the OS 6-inch map and as the site of a church on the 1924 ed. of the map. It is situated at the crest of a gentle S-facing slope. The remains of the church (WX020-004001-) are on the S side of an E-W field bank. The bank (Wth 6–8m; H 0.3m) of a circular ecclesiastical enclosure (diam. 83m E-W) survives SW–N–E forming a D-shaped enclosure (dim. 59m N-S) on the N side of the field bank.	KILLABEG	700438 E 644510 N	c 410m West
WX020-059----	Burnt mound	Situated on a SW-facing slope of a slight NE-SW ridge. An oval area (dims. 22m N–S; 8m E–W) of burnt and cracked stones is visible when the field is ploughed. The above description is derived from the published 'Archaeological Inventory of County Wexford' (Dublin: Stationery Office, 1996). In certain instances the entries have been revised and updated in the light of recent research.	KILLABEG	700361 E 644873 N	c 560m Northwest

SMR Reference	Class	ASI Description	Townland	ITM Coordinates	Distance from the application site
WX020-063----	Burnt mound	Located in a hollow on a W-facing slope. A circular area of burnt and cracked stones (diam. 13m) is visible around a slight prominence when the area is ploughed. The above description is derived from the published 'Archaeological Inventory of County Wexford' (Dublin: Stationery Office, 1996). In certain instances the entries have been revised and updated in the light of recent research.	OULARTARD	701614 E 643876 N	c 570m South
WX020-089----	Burnt mound	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and set aside for resolution as Crane 1 (Hardy et al. 2010, 72). It is situated on a level landscape with an E-W section of a NE-SW stream c. 30m to the N. Full excavation (E4257) by C. Hardy recorded a spread of burnt and broken stone (dims 3.3m x 2.3m; T 0.3m), but no other features were recorded except a NW-SE post-medieval ditch that is marked on the 1924 ed. of the OS 6-inch map. This produced the only artefacts, including the handle of a black-glazed vessel. (Hull 2011; Hardy 2013)	CRANE	701233 E 643794 N	c 810m South
WX020-058----	Burnt mound	Situated on a slight SW-facing slope. An area of dark earth and burnt stone is known locally to be visible when ploughed. The above description is derived from the published 'Archaeological Inventory of County Wexford' (Dublin: Stationery Office, 1996). In certain instances the entries have been revised and updated in the light of recent research.	KILLABEG	700064 E 644653 N	c 890m West
WX020-136----	Pit	Located towards the bottom of a N-facing slope and c. 80m SE of a meandering E-W stream. Archaeological monitoring of topsoil removal (E004791) during the construction phase of the M11 Gorey to Enniscorthy motorway in October 2016 identified a single pit (dims 1.7m E-W; 1.5m N-S; max. D 0.65m) which was fully resolved with the same licence. It had three fills, the lowest of which included charcoal which proved to be entirely oak. No artefacts were recovered but a fragment of the charcoal produced a C14 date of 3893-3661 cal. BC, placing it firmly in the early Neolithic. (Coughlan 2018)	CRANE	701142 E 643685 N	c 990, to the south - southwest

The closest national monuments to the site is recorded as **Excavation - miscellaneous** (**WX020-081----**) located approximately 120m to the east of the proposed development site (See **Figure 24**).

Figure 24 Recorded National Monuments in proximity to the development site.



8.7.2.4 Protected Structures

National Museum of Ireland Finds Database on the Record of Protected Structures Database was reviewed online (hertiagemaps.ie) and Historic environment viewer reveals that there is no Protected Structure recorded within 1km radius of the application site. The closest protected structures to the site are mentioned in the Table 23 and shown in Figure 25.

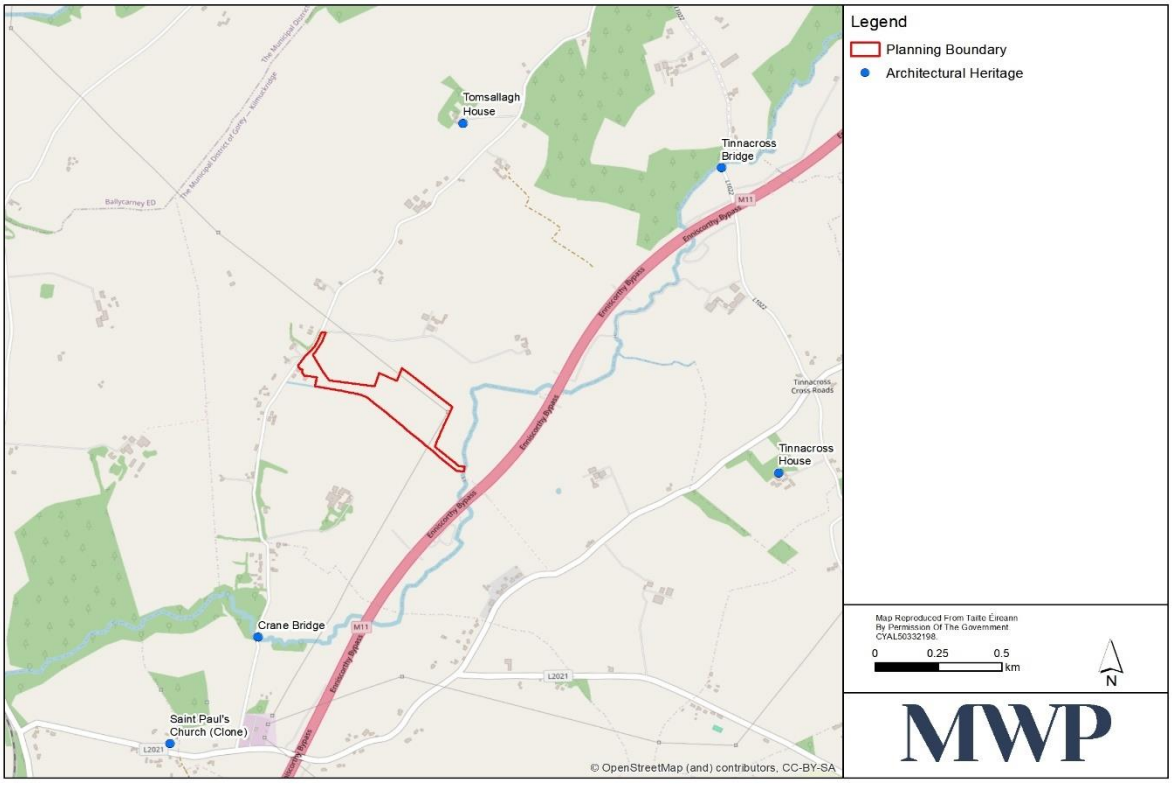
Of these structures, two were cited in the Wexford County Development Plan 2022-2028, while the remaining two were identified through the online Historic Environment Viewer database.

Table 23 Protected Structures near the Proposed Site

WCC Ref No	Name	Address	NIAH Rating	Distance from the proposed development site
WCC1122	Tomsallagh House : farm house	Tomsallagh	15702031	Approximately 1.04km to the north
n/a	Crane Bridge : bridge	Crane	15702033	Approximately 1.05km to the south-southwest
WCC1121	Tinnacross House : farm house	Tinnacross	15702035	Approximately 1.24km to the east

WCC Ref No	Name	Address	NIAH Rating	Distance from the proposed development site
n/a	Tinnacross Bridge : bridge	Tinnacross	15702034	Approximately 1.46km to the northeast
WCC1124	Saint Paul's Church (Clone)	Solsborough, Enniscorthy	15702016	Approximately 1.57km to the southwest

Figure 25 Protected Structures near the Proposed Site



8.7.3 Potential Impacts

Following consultation of the available and relevant datasets and historic documentary and cartographic sources, there are no known archaeological, architectural or cultural heritage assets within the application boundary of the proposed development lands. Therefore, the proposed project will have no direct impact on the recorded archaeological heritage resource of the area.

Although, due to the extent of archaeological features within the wider area, previously unknown archaeological sites and features could still remain below ground across the site that could be impacted by ground disturbances.

8.7.3.1 Cumulative Impacts of the Project

No Archaeological features has been identified at the proposed substation site. A few archaeological sites have been identified in the wider area but will not be impacted by the proposed development.

For the Tomsallagh Solar farm, the full field inspection was undertaken for the site included lands of the proposed development. No archaeological monuments, previously unrecorded archaeological features and previous excavations were discovered on the site.

However, considering the ground disturbances associated with the solar farm and the current proposed substation, if appropriate mitigation measures are not implemented, there could be some disturbance to the previously unrecorded features that may survive underneath the ground level.

8.7.4 Mitigation/Recommendations

It is recommended that that all ground disturbances across the proposed development areas be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works the Department of Culture, Heritage and the Gaeltacht will be informed immediately and a buffer zone of at least 20m will be established around the archaeological site.

8.7.5 Conclusion

There are no direct impacts expected, to the recorded archaeological resources within 1km radius during the construction phase.

There is a possibility that there could be some ground disturbance to the previously unrecorded archaeological features from construction work and construction traffic related of the proposed development. All ground disturbances across the site should monitored by a suitably qualified archaeologist.

Appendix A

Construction Environmental Management Plan

MWP

Construction Environmental Management Plan (CEMP)

Tomsallagh 110kV Substation and Grid Connection

WXD Energy Limited

April 2024

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
24255	6002	A	05/04/2024	AOC/ZH	AOC	CF	**FINAL**

MWP, Engineering and Environmental Consultants
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Contents

Appendix 1

Environmental Management Plans:

EMP 1: Management of Excavation Works

EMP 2: Surface Water Runoff Control (Sediment and Erosion Control)

EMP 3: Fuel and Oils Management

EMP 4: Management of Concrete

EMP 5: Ecological Management Plan (Protection of Habitats and Fauna)

EMP 6: Invasive Species Management Plan

EMP 7: Construction Waste Management

EMP 7: Construction Traffic Management

EMP 8: Management of Archaeology

EMP 9: Construction Noise Management

EMP 10: Construction Dust Management

EMP 11: Emergency Response Plan

EMP 12: Site Environmental Training and Awareness

EMP 13: Monitoring and Auditing Procedure

EMP 14: Environmental Accidents, Incidents and Corrective Actions

EMP 15: Environmental Complaints

1. Introduction

This Construction and Environmental Management Plan (CEMP) has been prepared by Malachy Walsh and Partners (MWP) on behalf of WXD Energy Limited, a Special Purpose Vehicle Company (SPV) of Statkraft Ireland Ltd (the applicant) to accompany the submission of a planning application to Wexford County Council for the proposed construction of a 110 kilovolt (kV) air insulated switchgear (AIS) substation with overhead line (OHL) loop-in electrical connection in the townland of Tomsallagh, Ferns, Co. Wexford (the proposed development).

This CEMP has been developed specifically for this project and outlines construction practices and environmental management measures which will be implemented during the construction phase, in order to ensure that the project is constructed in accordance with best practice, with the minimum impact on the surrounding environment.

1.1 CEMP Purpose and Objectives

The purpose of a CEMP is to outline how the Appointed Contractor(s) will implement a site construction management system to meet the specified requirements which include contractual, regulatory and statutory requirements, environmental mitigation measures and planning conditions.

The principal objective of this CEMP is to avoid, minimise and control adverse environmental impacts associated with all aspects of the construction of the proposed development. In essence, this CEMP is intended to provide the Appointed Contractors with a practical guide to ensure compliance by all parties with any Planning and Environmental requirements. The CEMP achieves this by providing the environmental management framework to be adhered to during the construction phase of the proposal. It outlines the work practices, construction management procedures, management responsibilities, mitigation measures and monitoring proposals that are required to be adhered to, in order to complete the proposed development, in an appropriate environmental manner.

All site personnel will be required to be familiar with the plan's requirements as related to their role on site.

This CEMP will form the basis for the Appointed Contractors CEMP. Following planning consent, the elements outlined in this report shall be further expanded upon by the Contractor into a full Contractor CEMP. The Contractors CEMP will set out the Contractor's approach to managing environmental issues associated with the construction phase of the proposed development, outline the roles and responsibilities of those appointed on the site for the construction of the project and provide a documented account to the implementation of the environmental commitments set out in the Environmental Report associated with the proposed development (MWP report reference 24255-6001 Environmental Report), any measures stipulated in the planning conditions, and updated or new supplementary environmental reports made available to the Appointed Contractor as necessary. The CEMP remains at all times a live document, subject to amendment including the revision and addition of content throughout the works.

While this version of the CEMP provides a benchmark for good practice, where avoidance or further minimisation of risks to the environment can be demonstrated through use of alternative methods or improvements to current practices, the Contractor will implement these wherever possible.

2. Project Overview

WXD Energy Limited, a Special Purpose Vehicle Company (SPV) of Statkraft Ireland Ltd (the Applicant) is proposing to apply to An Bord Pleanála for permission to construct a 110 kilovolt (kV) air insulated switchgear (AIS) substation with overhead line (OHL) loop-in electrical connection ("proposed development") in the townland of Tomsallagh, Co. Wexford.

The proposed development (**Figure 1**) for which permission is being sought is as follows:

- A 110kV AIS loop-in substation with associated compound, including control and operational buildings, electrical plant, equipment, cabling, lighting, CCTV, lightening masts, drainage infrastructure, security palisade fencing, and all associated and ancillary works necessary to facilitate the development.
- Erection of 2 no. overhead line end masts (c. 20m high) and 2 no. lattice gantries (c. 16m high) and associated overhead cabling to enable a loop-in/loop-out grid connection to the existing Crane-Lodgewood 110 kV OHL.
- New entrance and access road from the L-6065-1 local public road.

Figure 1: Proposed Development Layout

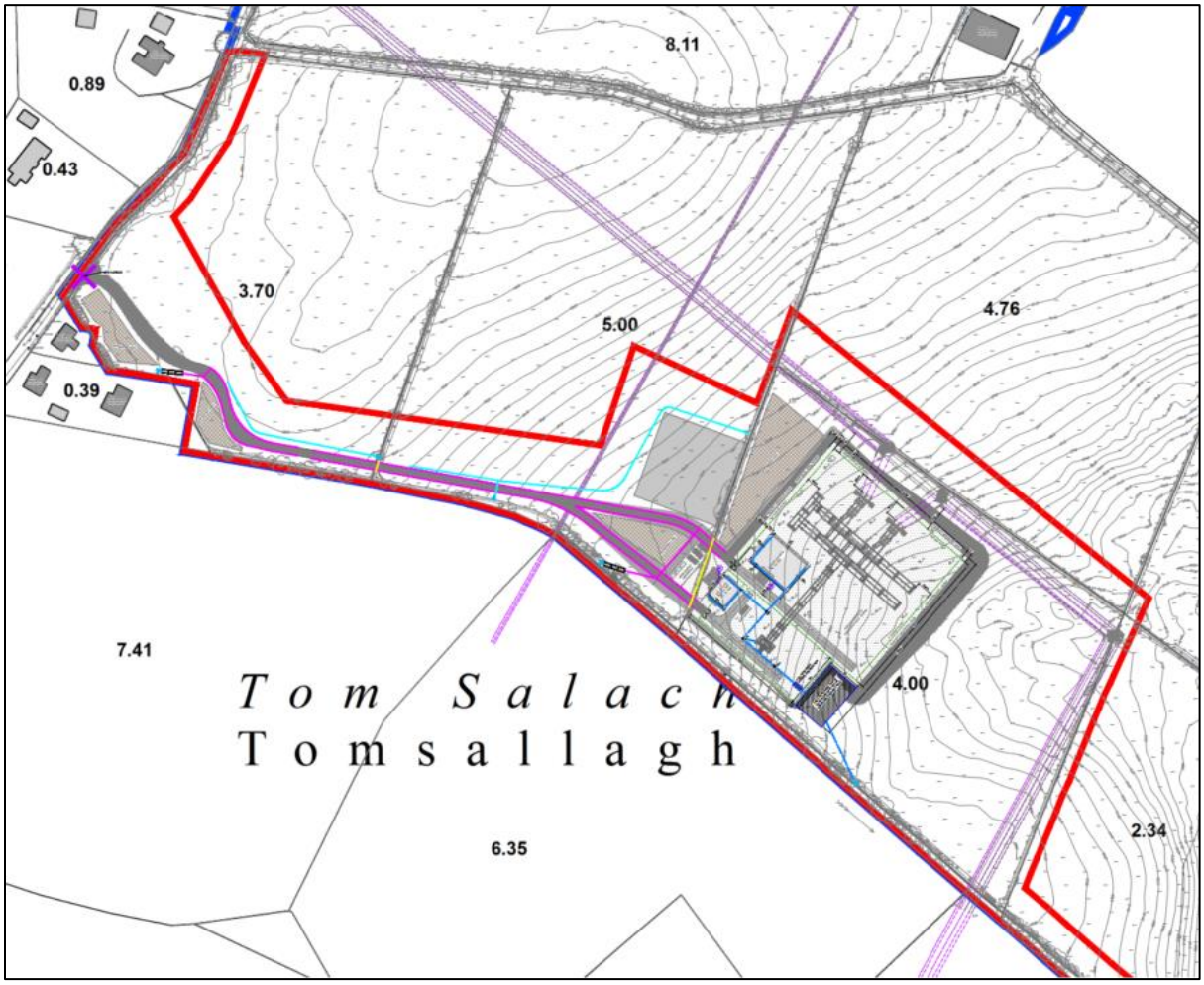
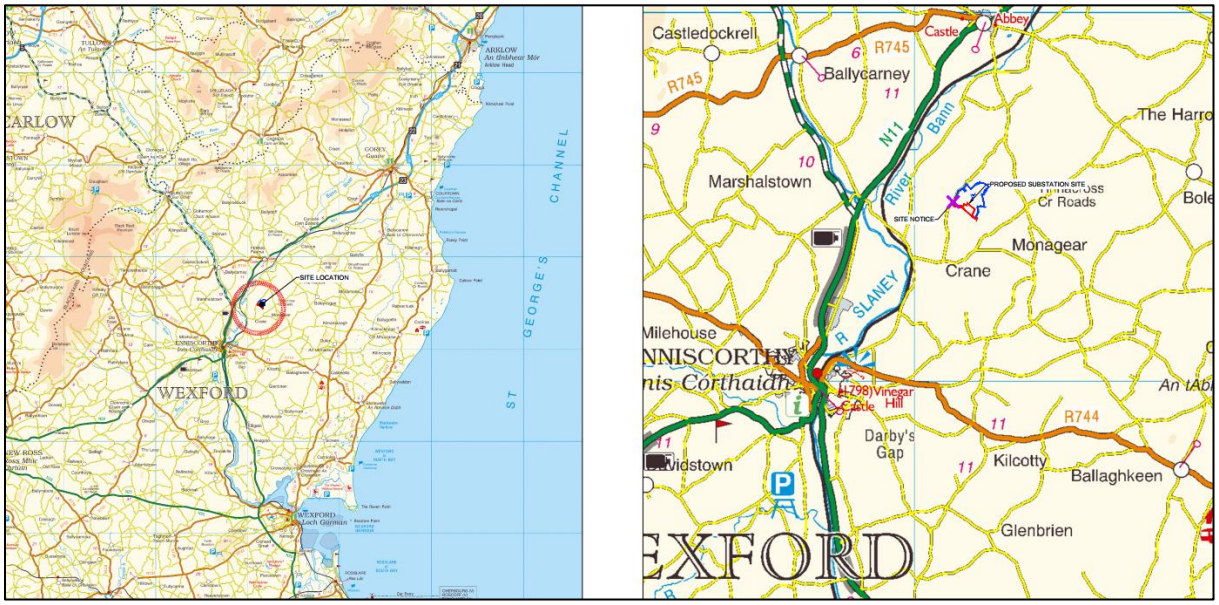


Figure 2, Figure 3 and **Figure 4** illustrates the geographical location of the proposed development.

Figure 2: Proposed Site Location



The purpose of the proposed development is to provide the necessary infrastructure to support the permanent power supply for nearby solar projects. The proposed development is located within the footprint of one such project, Tomsallagh Solar Farm (Wexford Co. Co. Planning Ref:20171275) (ABP-300427).

Figure 3: Proposed Development Site

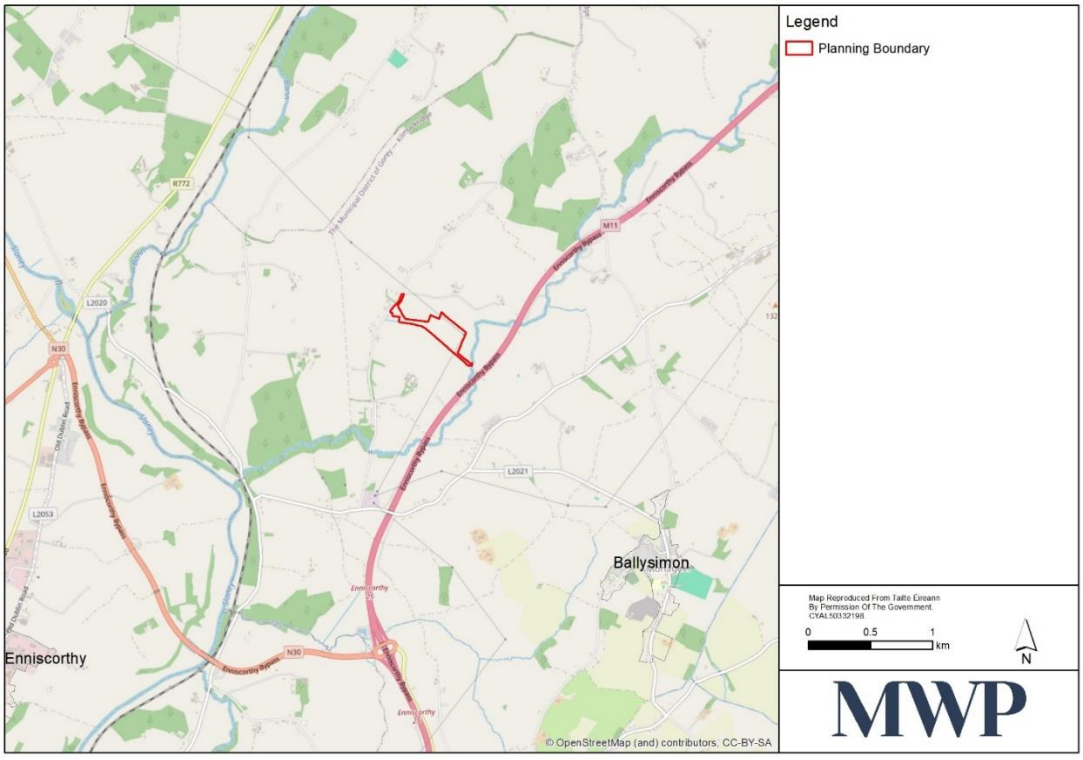


Figure 4: Aerial View Proposed Development Site

2.1 110kV Substation Compound

The footprint of the proposed onsite electrical substation covers an area of approximately 1.3ha in size. It will contain control buildings, MV switchgear building and the electrical substation components necessary to consolidate the electrical energy generated by the associated solar farms and export the electricity to the national grid.. The construction and exact layout of electrical equipment in the onsite electrical substation will be to EirGrid/ESB Network specifications. The substation will be surrounded by an approximate 2.6m high steel palisade fence and internal fences will also segregate different areas within the main substation compound. A 1.4m post and rail fence will encompass the outer perimeter boundary of the substation compound.

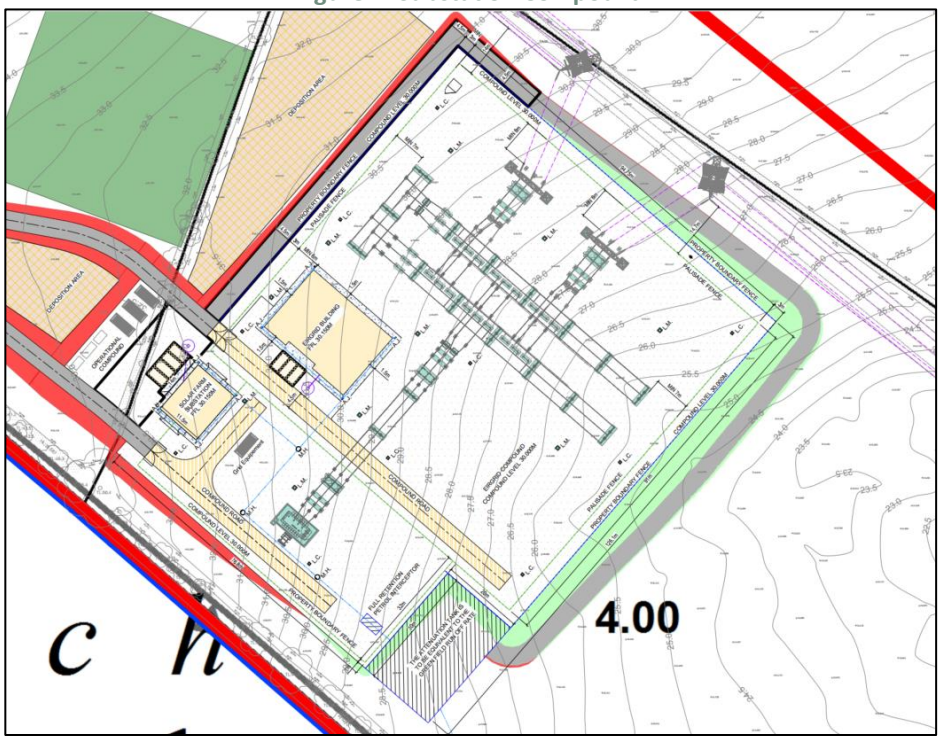
The proposed substation (**Figure 5**) includes an EirGrid compound and an Independent Power Producer (IPP) compound. Each compound will contain a control building and an outdoor electrical yard including electrical equipment such as electrical pylons, over and underground ducting & cables, busbars, disconnects, breakers, sealing ends, lightning and lighting masts. The IPP section will also contain one grid transformer within bunded enclosure with back up diesel generator and tank.

The EirGrid control building will be c. 440.2sqm in floor area and contain a control room, 5.8m in height, battery room, generator room, meeting room, welfare facilities and workshop/store and will be approximately. The IPP control building will be c. 160.2sqm in floor area and contain a control room, switchgear room, welfare facilities and storeroom and will be approximately 5.8m in height. Both buildings will be a block built single storey building with pitched roof and an external blockwork and plastered finish.

Parking will be provided within the compound area adjacent to each of the buildings.

There will be a very small water requirement for toilet flushing and hand washing and therefore it is proposed to harvest water from the roofs of the buildings. The discharge from the sanitary facilities within each building will go to separate wastewater holding tanks located within the substation compound where the effluent will be temporarily stored and removed at regular intervals by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

Figure 1: Substation Compound



2.2 Overhead Loop-in Grid Connection

The design for the new proposed loop in grid connection to the existing Crane-Lodgewood 110kV OHL will require two new OHL interface towers which will be constructed under the existing OHL. 110kV substation will connect to the existing 110kV overhead line between Crane and Lodgewood, which traverses the site. This will require the installation of two new loop-in lattice towers (c 20m high) within the existing Crane to Lodgewood 110kV OHL. The existing OHL conductor will be terminated at these two lattice towers in order to facilitate the OHL loop-in grid connection to the proposed 110kV Tomsallagh substation, with the new connection looped through to the Tomsallagh 110kV substation via a set of terminal towers (c. 16m high) located within the substation compound.

3. Construction Works

3.1 110kV Substation

Key elements of the civil works and activities associated with the construction phase of the substation development are as follows and are discussed in the following subsections:

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Site preparation and temporary construction access track.
- Site drainage systems.
- Bulk earthworks for formation of substation compound base.
- Substation compound base and equipment foundations.
- Construct of control building and install equipment within compound.
- Complete site works: lighting, security fencing, gates, signage.
- Reinstatement of drainage system.
- Demobilise offices and tidy up site.

3.2 Overhead Loop-In Grid Connection

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Installation of 2 No. OHL end mast structures (c. 20m high) under the existing Crane- Lodgewood 110kV OHL.
- Installation of 2 No. lattice gantries (c. 16m high).
- Aggregate placement, grading and compaction for new access track.

3.3 Schedule of Construction Works

The proposed programme for the construction works will be approximately 14 to 18 months from initial enablement works through to commissioning. It is expected that the civil works will take approximately 4 to 6 months, with a further 6 months estimated for cable installation, jointing and testing, reinstatement and landscaping. Construction works associated with the substation will be carried out in parallel and will take approximately 14 to 18 months.

3.4 Working Hours and Personnel

Construction activities will gradually phase out from pre-construction followed by commissioning and testing of the substation and equipment. It is expected that the number of construction workers required throughout the duration of the construction phase will peak at approximately 25 persons (peak during construction). It is anticipated that the construction of the Proposed Development will be completed during normal construction hours, i.e., 07.00 and 19.00 Monday to Friday and 08.00 to 14.00 on Saturday, excluding public holidays. Emergency works and other working periods outside these hours will be agreed in writing with the planning authority.

3.5 Construction Methodology - Substation

3.5.1 Pre-Construction Activities

Before works commences a number of preparatory activities will be carried out.

All statutory consents and licences required to commence onsite construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. It will be the responsibility of the Appointed Contractor to ensure all consents and licences required are in place prior to the start of construction.

The following key works will be undertaken as part of the site preparation and pre-development activities:

3.5.1.1 Pre-Commencement Surveys

Prior to any commencement of any physical works, pre-commencement works may be required which may include:

- Demarcation works and benchmarks on site will be established.
- Ground investigations.
- Ecology surveys
- Noise surveys.

3.5.2 Enabling Works

Enabling works may include:

- Site establishment including the erection of signage and information boards for the general public, site employees and trucks transporting materials to/from the site
- Site clearance works.
- Construction of temporary site drainage including the installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any runoff during the works.
- Bulk earthworks including excavation and removal of topsoil/soil.
- Infilling of material for internal access road, site compound and laydown area.
- Landscaping.

3.5.2.1 Site Clearance Works

The site preparation phase for the proposed development will involve site clearance, excavations and levelling of the site to the necessary base level for construction, surveying and setting out for structures and any rerouting of services/connections to services. A combination of bulldozer, excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

The proposed development is anticipated to require excavation works estimated to be in the order of approximately 12,000m³, however, excavated spoil will be reused for filling and reinstatement purposes, reducing the volume of offsite import and/or disposal.

Any excess spoil not suitable and/or required for reuse on site will be removed offsite for appropriate reuse, recovery and/or disposal as reused.

3.5.2.2 Temporary Construction Compound

A construction compound of approximately 2,500m² will be located within the Proposed Development boundary.

A layer of granular material will be spread and lightly compacted within the compound to provide hardstanding for site offices and storage containers. Areas of the compound may be used as vehicle hardstanding. The compound will be built using a similar technique to the access roads.

The temporary compound will have a hard-standing surface and will be used for construction phase car parking, a secure storage area for construction materials, waste materials and also contain temporary site accommodation units to provide welfare facilities for site personnel. Facilities will include offices, meeting rooms, a canteen and a drying room.

A bunded containment area will be provided within the construction compounds for the storage of lubricants, oils and site generators etc.

A designated lined concrete wash-out area will be installed within the temporary compound to facilitate washing of concrete mixer chutes only. Washing of concrete mixer barrels will not be permitted.

The temporary construction compound will be removed on completion of the substation construction phase.

3.5.2.3 Site Entrance and Access Tracks

It is proposed to construct a new site entrance to the proposed development site from the L-6065-1. The creation of the new site entrance will require the removal of existing hedgerow (approximately 75m) but no mature trees in this area. The entrance will be suitably splayed with entrance gates set back from carriageway. A 4.5m wide compacted access track will extend from the entrance to the substation compound. The track will include a geotextile base and filter membrane and 200mm of Clause 804 sub-base.

Limited removal of some sections of existing internal field boundary hedgerows (approximately 70m) will also be required to accommodate the access road to the substation.

3.5.3 Site Drainage System

Fundamental to any construction project, is the need to keep water clean and manage all other runoff and water from construction in an appropriate manner. A site drainage system will be constructed on the site so as to attenuate runoff, guard against soil erosion and safeguard downstream water quality.

The proposed drainage system along the new access road will comprise an overground drainage system. It is proposed that runoff from the proposed new access road will be collected by roadside v-drains installed along both sides the roadway to convey runoff to settlement ponds before finally discharging by overland flow to the existing field drain along the southern boundary. Check dams will be installed at regular intervals, based on gradient, along the roadside v-drains to provide flow attenuation, slow down runoff to promote settlement and to reduce scour and erosion of the drains.

It is also proposed to install clean water cut-off drains around the perimeter of the development areas to intercept surface water runoff from catchments uphill of the proposed development works. The cut-off drains will collect and divert the collected runoff around site infrastructure to prevent it entering the site and potentially coming in contact with site runoff containing suspended solids.

Measures addressed in the drainage design include:

- Check dams will be placed at regular intervals, based on slope gradient, along all drains to slow down runoff and to encourage settlement and to reduce scour and ditch erosion.

- Consideration will be given to the use of check dams constructed in accordance with best practice utilising clean stone at points along the drainage channel during the construction phase to further mitigate against any sediment escaping to nearby watercourses.
- Low gradient drains will be provided. These reduce the velocity of flow in the drains, thus reducing soil and subsoil erosion and reducing hydraulic loading to watercourses.
- Where possible existing drains will remain untouched.
- Regular buffered outfalls that consist of numerous small drains off the main drain which end by fanning out into the surrounding vegetation by tapering drains. The drain will contain hardcore material to entrap suspended sediment.
- Drains carrying construction site runoff will be diverted into settlement ponds, which will promote sediment deposition and reduce hydraulic loading by slowing flow velocities allowing sediment to settle. Settlement ponds have been designed in the form of a three stage tiered pond system. These will be maintained by the contractor(s) to the satisfaction of Inland Fisheries Ireland for the entire construction period.
- Flow from the settlement ponds will enter the sediment traps where runoff will be cleaned further by a series of graded gravel filters. Silt traps will require regular inspection and cleaning and removed material will be disposed of at an appropriate location.
- Outfalls from silt traps will discharge at regular intervals to mimic the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points. The drainage ditches will flow onto the existing ground by fanning out onto the surrounding vegetation via tapering drains.
- The access roads will be graded so that all runoff is directed to the dirty water drains.
- No disturbance will be permitted to the natural vegetative buffer. They can be fenced where necessary.

Best practice and practical experience on other similar projects suggests that in addition to the above outlined drainage plans there are additional site based decisions and plans that can only be made in the field. In relation to decisions that are made on site it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures outlined above and to ensure protection of all watercourses.

3.5.4 Substation Compound

3.5.4.1 Site Regrading and Formation Works

The substation compound formation operations will be achieved through a combination of excavation, fill placement, and compaction to develop the proposed grade levels.

The area of the compound will be marked out using ranging rods or wooden posts and the top soil stripped and removed to a temporary storage area for later use in landscaping.

Perimeter drains will be installed to collect surface water runoff from the substation compound which will include the installation of check dams, silt traps and level spreaders to cater for surface runoff.

A combination of bulldozer, excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects. The use of a rock breaker and/or explosives is not proposed.

There are no anticipated contaminated materials on site, however in the event of suspected contamination, a suitable temporary storage area will be established and appropriate mitigation measures determined depending on the nature of contamination. Suspected materials will be tested and classified to and disposal to a suitably licences facility.

Once the cutting is formed and all soil removed from the area, imported gravel will be placed and compacted over the area of the compound. The compound will be brought up to the agreed formation level and fill material imported and graded to the correct level as per the detail design. Fill materials will generally be placed in layers and uniformly compacted to the satisfaction of the Engineer before the next layer is applied. The material should be compacted in accordance with Table 6/4 of with Transport Infrastructure Ireland 600 Series Earthworks Specification CC-SPW-00600.

3.5.4.2 Hardstanding

The majority of the compound will be finished with granular material. Concrete bases or plinths will be required at specified locations throughout the site to facilitate the installation of the control building, transformer, transformer bund, high voltage and low voltage equipment, lighting and ancillary equipment. Equipment plinths and building bases will be marked out, excavated down to the level indicated by the designer and appropriately shuttered and constructed using in-situ reinforced concrete or precast concrete. Provision will be made in each plinth for ducting and earth connection.

Following the construction of the equipment plinths, an earth mat will typically be installed in the compound. This will be connected to earth rings around each plinth and foundation and connected to the earth protection system as per the electrical protection design. Earth electrodes will be typically buried at a depth of approximately 0.6m to 1m below finished ground level and will be offset from structures by approximately 1m.

3.5.4.3 Building/Equipment Installation

The blockwork walls for the control building will be built up from the footings to damp-proof course (DPC) level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors.

The blockwork will then be raised to wall plate level and the gables and internal partition walls formed. Scaffold will be erected around the outside of the two buildings for this operation. The roof slabs will be lifted into position using an adequately sized mobile crane. The construction and components of the control building will be to ESB Networks specifications. The timber roof trusses at each building will then be lifted into position using a telescopic loader or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.

Transformers and switchgear units etc will be lifted into place using a suitably sized crane or telehandler. Any lifting operations will adhere to a specific lift plan, issued by the contractor responsible for the installation. Switchgear, electrical cabinets and control equipment will be lifted directly onto support plinths and bolted down if necessary. The installation of major electrical equipment such as transformers, switchgear etc. will typically be followed by small control equipment, lighting, low voltage electrical and communications cabling, earth installations. Following installation of electrical equipment, cable jointing and terminations will be carried out followed by testing and commissioning works.

3.5.4.4 Security Fencing

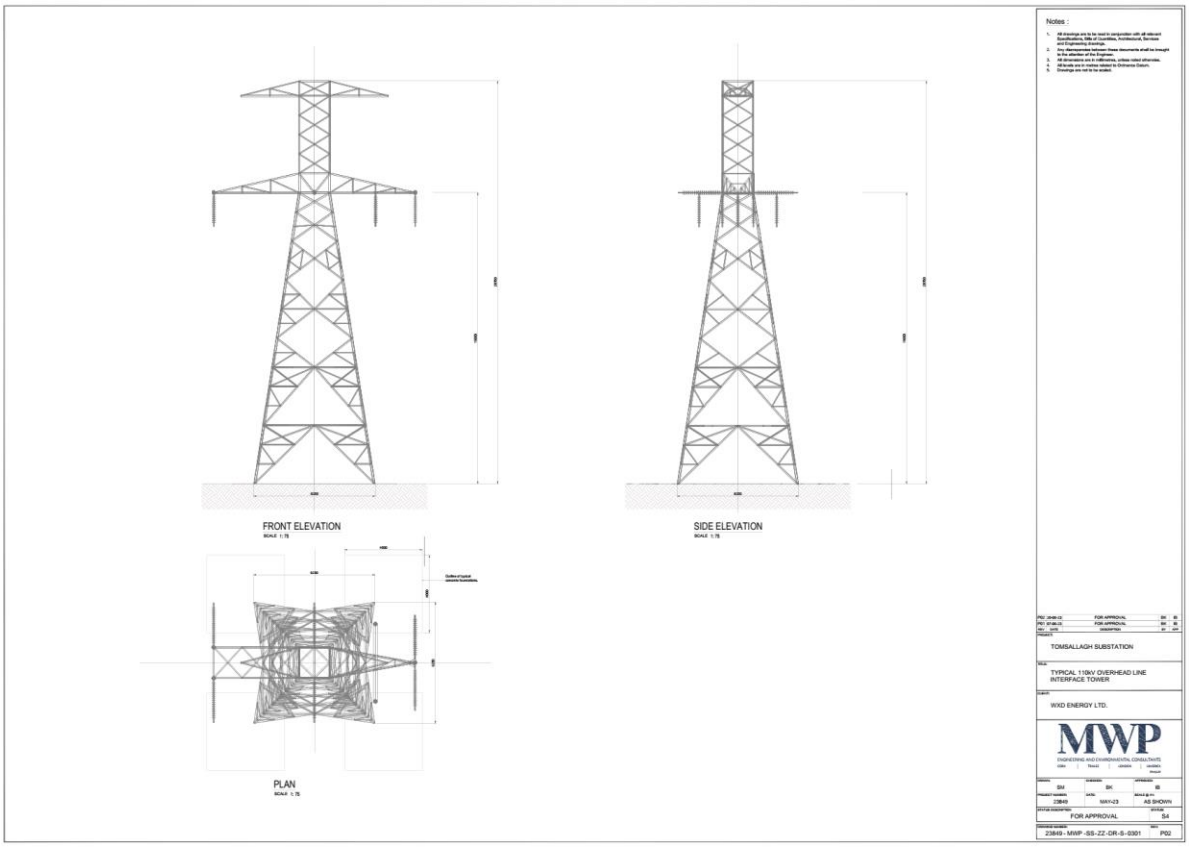
Installation of palisade fencing and stock proof fencing to perimeter of the substation compound.

3.6 Construction Methodology - Grid Connection

The design for the proposed loop in grid connection to the existing Crane-Lodgewood 110kV OHL will require two new OHL interface towers/end masts (see **Figure 6** for typical arrangement) which will be constructed under the existing OHL. The existing OHL conductor will be terminated at these two lattice towers to facilitate the grid connection to the proposed 110kV Tomsallagh substation, with the new connection looped through to the Tomsallagh 110kV substation via a set of terminal towers (c. 16m high) located within the substation compound.

The existing OHL will be terminated and new towers erected that will create two new OHL circuits. The new interface end masts locations are to be selected based on ground surveys, ground profiles, allowable angles and ruling span checks. A foundation is excavated for each tower location and the placement of excavation material is temporarily stored in designated deposition areas. Any excess excavated material can be utilised as fill material where suitable. Reinforcing bars are placed into each excavation and the body of each tower assembled adjacent to the excavation. Concrete is poured directly into each excavation and allowed to cure until a preformed metal panel is set in place. The foundations are then backfilled. At this stage the existing OHL is de-energized and construction of the two towers take place. An earth mat is laid and is a requirement for the electrical connection of the tower. A temporary hardstand area is made available for the use of a crane to guide and position each section of the towers together. Once all sections of the towers are bolted securely the conductor can be centred and installed. All other associated equipment such as down dropper conductors and shackles are positioned before the electrical circuit can be tested in both directions to confirm OHL is re-energised.

Figure 6: 110kV Overhead Line Interface Tower



3.7 Other Elements of the Construction Phase

3.7.1 Water Requirement/Water Supply

There will be a very small water requirement for toilet flushing and hand washing and therefore it is proposed to harvest water from the roofs of the buildings.

3.7.2 Wastewater Treatment/Effluent Disposal

The discharge from the sanitary facilities within each building will go to separate wastewater holding tanks located within the substation compound where the effluent will be temporarily stored and removed at regular intervals by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

3.7.3 Waste Management

Construction phase waste may consist of surplus hardcore, stone, concrete, ducting, electrical wiring, spare steel reinforcement, metal off-cuts shuttering timber, plastic waste, packaging, and unused oil, diesel. This waste will be stored in the construction compound and collected at intervals and taken off site to be reused, recycled and disposed of in accordance with best practice procedures. All waste products (general waste, plastic, timber, etc.) arising during the construction phase will be managed and disposed of in accordance with the provisions of the Waste Management Act 1996 and associated amendments and regulations, and a Waste Management Plan (WMP) will be prepared by the Appointed Contractor prior to the commencement of construction. All waste material will be disposed of at a fully licensed facility.

3.7.4 Fuel Storage and Management

All plant will be refuelled on site e.g. excavators, dumpers etc, while rigid and articulated vehicles will be filled off site as would all site vehicles (jeeps, cars and vans). A fuel management plan will be developed in relevance to the site, and the specific plant and equipment required for construction. The plan outlined will have regard to the following elements:

- Mobile bowsers, tanks and drums will be stored in a secure, impermeable storage area, away from drains and open water.
- Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores.
- The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Ancillary equipment such as hoses, pipes will be contained within the bund.
- Taps, nozzles or valves will be fitted with a lock system.
- Fuel and oil stores, including tanks and drums, will be regularly inspected for leaks and signs of damage.
- Only designated trained operators will be authorised to refuel plant on site.
- Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and/or booms) shall be held onsite in order to facilitate response to accidental spills. Spill response materials shall also be stored on all construction vehicles.

- Procedures and contingency plans will be set up to deal with an emergency accidents or spills. including availability of specialist 24/7 spill contractor in case of major incident.

3.7.5 Reinstatement of Temporary Construction Compound

Once all construction works are complete, the temporary construction compound areas will be reinstated with excavated soil and either seeded out with native species, allowed to vegetate. This work will be carried out in line with any relevant measures outlined in the planning application, CEMP and planning conditions.

3.7.6 Method Statements

The appointed Contractor will provide method statements to carry out the works and risk assessments based on the outline method of works, procedures and the environmental requirements set out in this CEMP.

The following will be considered during the detailed planning of the works phase:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA) in particular.
- Method statement for management of surface water to prevent runoff of silt or any other pollutant from the site to watercourses.
- C532 Control of water pollution from construction sites: guidance for consultants and contractors (Masters-Williams et al, 2001).
- SP156 Control of water pollution from construction sites – guide to good practice (Murnane et al, 2002).
- Requirements for the protection of fisheries habitat during construction and development works at river sites developed by the ERFB.
- Proper storage and bunding of any oils/hydrocarbons.
- Noise management measures.

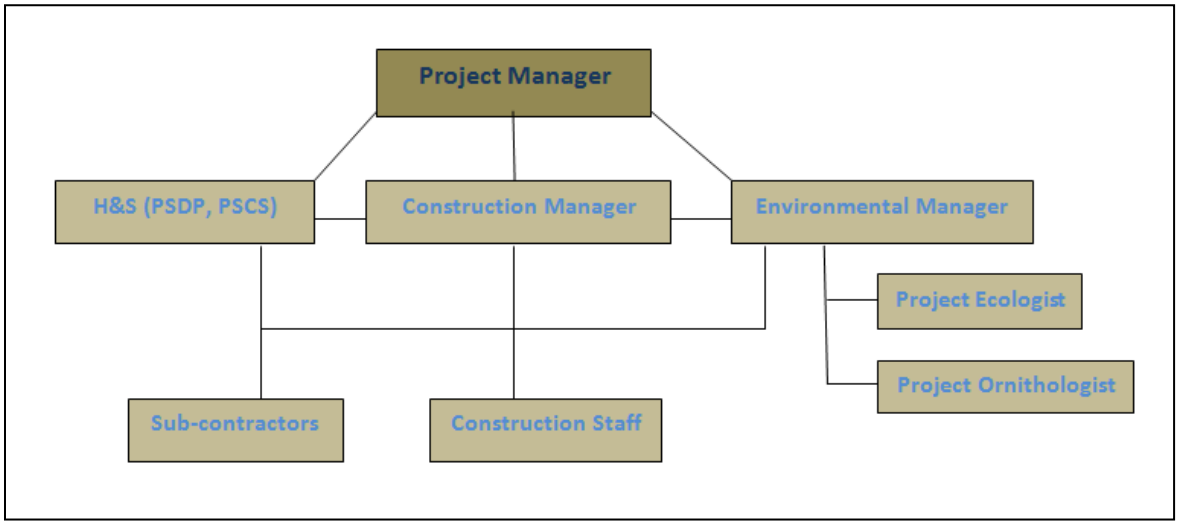
4. Organisational Structure, Duties and Responsibilities

The Appointed Contracted will be required to comply with all safety, health and welfare legislation and regulations. The Appointed Contract will also be appointed as Project Supervisor for the Construction Stage (PSCS) on the project in accordance with the Safety, Health and Welfare at Work (Construction) Regulations.

The PSCS will maintain contact with the Project Supervisor Design Process (PSDP) throughout the construction phase to communicate any health and safety related issues. The PSDP will prepare a written safety file appropriate to the characteristics of the project, containing relevant health and safety information, to be taken into account during any subsequent construction work following completion of the project.

4.1 Onsite Organisational Structure and Responsibility

The organisational structure for the Appointed Contractor's Project Team is included below. This structure will be defined by the Contractor and will include the names of the assigned personnel with the appropriate responsibility and reporting structure reflected.



4.2 Duties and Responsibilities

The general role of key people onsite implementing the CEMP will be.

- Project Manager - liaises with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project team.
- Construction Manager - liaises with the Environmental Manager when preparing site works where there is a risk of environmental damage and manages the construction personnel and general works.
- Design Engineer - undertakes and certifies the Design and supervises the standard of works, including geotechnical aspects.
- Environmental Manager - ensures that the CEMP is developed, implemented and maintained. The Environmental Manager's tasks at the construction site are described in the subsequent sections.

Other roles are outlined as follows.

- Health and Safety (PSDP and PSCS).
- Project Ecologist (as required by the Environmental Manager)
- Project Archaeologist (as required by the Environmental Manager).
- Geotechnical Engineer (as required by Design Engineer).

The roles and responsibilities outlined below are indicative and will be updated by the Appointed Contractor. Details of the personnel and their responsibilities must be added to the CEMP. The CEMP shall typically place environmental responsibilities on the key roles within the proposed development as set out below.

4.2.1 Project Manager

(To be updated upon appointment of Contractor/finalisation of CEMP)

Name: _____

A Project Manager (PM) is to be appointed on behalf of the main Contractor to manage and oversee the entire project. The PM is responsible for:

- Overall accountability for compliant environmental management operations during the works.
- Implementing of the CEMP.
- Implementing the Health and Safety Plan.
- Identify the environmental training needs of personnel under their control and arrange appropriate training programmes and ensure records are being maintained.
- Management of the construction project.
- Liaison with the client/developer.
- Liaison with the Project Team.
- Ensure timely notification of environmental incidents.
- Responsible for any corrective actions required as a result of the incident e.g., an investigative report, formulation of alternative construction methods or environmental sampling.
- Ensure that the relevant environmental management plans/procedures are revised and updated as necessary.
- Assigning duties and responsibilities in relation to the CEMP.
- Production of construction schedule.
- Materials procurement.
- Maintaining a site project diary.

4.2.2 Construction Manager

(To be updated upon appointment of Contractor/finalisation of CEMP)

Name: _____

The Construction Manager manages all the works to construct the facility, on behalf of the main contractor. The Construction Manager reports to the PM. In relation to the CEMP, the Construction Manager is responsible for:

4.2.2.1 Site-Specific Method Statements

- Liaising with the Environmental Manager in preparing and updating site-specific method statements for all works activities where there is a risk of environmental damage, by incorporating relevant environmental control measures and referring to relevant environmental control measure sheets.
- Liaising with the Environmental Manager where third party agreement is required in relation to site-specific method statements, environmental control measures and/or environmental control measure sheets.

4.2.2.2 General

- Being aware of all project environmental commitments and requirements.
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the PM to the Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required.
- Programming and planning of excavation works and communicating this schedule to the Environmental Manager.
- Ensuring that adequate resources are provided to design and install any environmental interventions.
- Liaising with the Design Engineer and providing information on environmental management to the Design Engineer during the course of the construction phase.
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project staff.
- Ensuring that the Environmental Manager performs regular and frequent environmental site inspections.

4.2.3 Design Engineer

(To be updated upon appointment of Contractor/finalisation of CEMP)

Name: _____

The Design Engineer is appointed by the Contractor for the works.

The Design Engineer reports to the PM and is responsible for:

- Design of the works.

- Review and approval of relevant elements of the method statements – assist the Construction Manager with the overall review.
- Oversee geotechnical aspects of the works (a geotechnical engineer may be used where required).
- Participating in third party consultations.
- Liaising with third parties through the Environmental Manager.

4.2.4 Environmental Manager

(To be updated upon appointment of Contractor/finalisation of CEMP)

Name: _____

The Environmental Manager is appointed by the Contractor and reports to the PM.

The Environmental Manager is responsible for:

4.2.4.1 General

- Ensuring works are carried out in accordance with the project environmental commitments and requirements.
- Provide information on environmental management to the Design Engineer during the course of the construction phase.
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project staff.
- Overseeing, ensuring coordination and playing a lead role in third party consultations to fulfil best environmental management practice requirements.
- Develop and Implement the environmental procedures of the CEMP.
- Review and update the CEMP in line with all relevant guidelines, updated environmental legislation and planning consent conditions. Communicate all requirements and updates to the Project Team.
- Liaising with the client/developer in relation to environmental issues.
- Auditing the construction works from an environmental viewpoint.
- Ensure environmental records are maintained throughout the construction period.

4.2.4.2 Site-Specific Method Statements

- Liaising with the Construction Manager in preparing site-specific method statements for all works activities where there is a risk of environmental damage. These site-specific method statements should incorporate relevant environmental control measures and take account of relevant environmental control measure sheets.
- Liaising with the Construction Manager in reviewing and updating site-specific method statements for all works activities where environmental control measures and environmental control sheets have been altered.

- Liaising with the Construction Manager where third party agreement is required in relation to site-specific method statements, environmental control measures and/or environmental control measure sheets.

4.2.4.3 Licensing

- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licences, certificates, planning permissions, etc.
- Bringing to the attention of the Project, Design and Construction Team any timing and legal constraints that may be imposed on the carrying out of certain tasks.

4.2.4.4 Waste Management Documentation

- Development of waste documentation system including details on the waste transportation agents, person(s) responsible for the recovery and disposal of wastes, destinations of waste, waste classification, tonnages and waste certificates. Holding copies of all permits and licences provided by waste contractors.
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc., have appropriate authorisation.
- Gathering and holding documentation with the respect to waste disposal.

4.2.4.5 Specialist Environmental Contractors

- Identifying the need and requirements for specialist environmental contractors (including ecologists, waste contractors and spill clean-up specialists) before commencement of the project.
- Ensuring that the specialist environmental contractors are competent and have sufficient expertise to co-ordinate and manage environmental issues.
- Co-ordinating the activities of all specialists' environmental contractors on environmental matters.

4.2.4.6 Environmental Incidents/Spillages

- Prepare and be in readiness to implement an emergency response plan.
- Support any investigations of incidents related to potential environmental damage, ensure corrective actions are taken and ensure future preventative measures are put in place.

4.2.4.7 Environmental Monitoring and Inspections

- Develop and implement a programme of regular environmental inspections, monitoring, recording and reporting in accordance with procedures set out in the CEMP.
- Carrying out and document inspections of works to ensure that work is being carried out in accordance with the environmental control measures and relevant site-specific method statements, etc.
- Appending copies of the inspection reports to the CEMP.
- Liaising with the Construction Manager to organise any repairs or maintenance required following the daily inspection of the site.

4.2.5 Other Roles

4.2.5.1 Health and Safety Personnel

(To be updated upon appointment of Contractor/finalisation of CEMP)

The Health and Safety personnel for the construction project are appointed by the Contractor in line with the Construction Regulations:

- Responsible for safety induction of all staff and personnel on site.
- Implementing the Health and Safety Plan.
- Auditing and updating the Health & Safety Plan.
- All other required legal duties.

4.2.5.2 Environmental Specialists

- Review and input to the Contractors CEMP relating to biodiversity measures and mitigation.
- Attend site as required to monitor the protection of assets in accordance with the requirements of relevant legislation, the biodiversity aspect of the project and mitigation measures outlined within, planning conditions, the construction contract and the CEMP.
- Identify potential risks to wildlife and develop suitable control measures.
- Provide status reports and updates to the Environmental Manager.
- Provide advice about ecological and environmental and issues during the construction of the proposed development including advice on protected species, pollution, surface water management, material management, air quality and noise.

4.2.5.3 Site Personnel

The site personnel appointed by the Contractor are responsible for:

- Adhering to the relevant environmental control measures and relevant site-specific method statements.
- Adhering to the Health and Safety Plan.
- Reporting immediately to the Environmental Manager and Construction Manager any incidents where there has been a breach of agreed procedures including:
    - A spillage of a potentially environmentally harmful substance.
    - An unauthorised discharge to ground, water or air, damage to a protected habitat, etc.

4.3 Contacts

4.3.1 Main Safety Contacts

Position Title:	Name:	Phone:	Email:
The Client			
PSDP			
PSCS			

4.3.2 Main Contractor Contacts

Position Title:	Name:	Phone:	Email:
Project Manager			
Construction Manager*			
Environmental Manager*			
Safety (PSCS)*			
Safety Officers*			
Site Emergency Number*			
Project Ecologist			
Project Archaeologist			
Overall Project PSDP			
Project Liaison Officer			

4.3.3 Third Party Contacts

Organisation:	Position:	Location:	Phone:	Email Address:
Inland Fisheries Ireland	Senior Environmental Officer		+353 (0)1 8842 600	@fisheriesireland.ie
National Parks and Wildlife Service	District Conservation Officer		(076) 100 2625	@ahg.gov.ie
Environmental Protection Agency		EPA Headquarters	053 916 0600	
Local Authority		Wexford County Council	(053) 919 6000	
Department of Arts, Heritage and the Government	District Conservation Officer			
Health and Safety Authority			1890 289 389	wcu@hsa.ie
Emergency Services			999	
Other, as appropriate.				

5. Environmental Commitments

5.1 Environmental Management Plans (EMP)

A number of environmental management plans (EMP) have been prepared for managing the impacts of construction activities associated with the development. See **Table 2** below and refer to **Appendix 1**. These plans are to be implemented by the Project Manager and/or Appointed Contractor as relevant.

Table 2: Plans for Managing Impacts of Construction Activities

Ref:	Procedure:
EMP-1	Management of Excavations
EMP-2	Surface Water Runoff Control
EMP-3	Fuels and Oils Management
EMP-4	Management of Concrete
EMP-5	Protection of Habitats and Fauna (Ecological Management)
EMP-6	Waste Management
EMP-7	Traffic Management
EMP-8	Management of Archaeology
EMP-9	Construction Noise
EMP-10	Dust Management
EMP-11	Emergency Response Plan
EMP-12	Site Environmental Training and Awareness
EMP-13	Monitoring and Auditing
EMP-14	Environmental Accidents, Incidents and Corrective Actions
EMP-15	Environmental Complaints

5.2 Environmental Monitoring Schedule

A preliminary monitoring schedule is provided below (**Table 3**) and will be finalised pending appointment of the Contractor. The Appointed Contractor's developed daily site checklists must have the following information included at a minimum:

Table 3: Preliminary Monitoring Schedule

Aspect	Monitoring Required	Frequency	Note	Responsibility
Water	Sediment & Erosion Controls (Drainage Performance)	Daily during the construction phase as well as during and after significant rainfall events	Refer to Table 4	Environmental Manager
Water	Fuel & Oil Storage inspection	Daily	Refer to Table 4	Environmental Manager
Ecology	Material and Waste Storage	Daily	Refer to Table 4	Environmental Manager
Water	Water quality monitoring	As Required	Minimum parameters: pH, Suspended Solids, metals, nitrates, phosphates	Environmental Manager
Water	Concrete Pours	As Required	To be scheduled with pours	Environmental Manager

The Environmental Manager will monitor the construction activities on a day-to-day basis. The duties will include completing the required checklists (sample checklist included below) and coordinating with the relevant personnel (e.g. Project Ecologist, and the Design Engineer as required) ensuring all environmental monitoring is carried out.

The daily site checklists will have the following information included at a minimum:

Table 4: Site Checklist

Area of Inspection	Environmental Hazards
• Silt filters	• Missing filters • Blocked filters - build up of sediment & peat
• Roadside drains	• Damage • Silt build-up • Blockages in the pipes conveying the runoff to the settlement pond drains
• Silt fences and Drainage systems	• Damage • Silt build-up • Blockages in the pipes conveying runoff
• Site road	• Unacceptable level of sediment/silt on the road surface • Presence of waste
• Site compound – storage area	• Damage • Untidiness

• Site compound – waste collection area	• Damage • Untidiness • Full skips
Area of Inspection	**Environmental Hazards**
• Site compound – oil storage area	• Damage to containers or ancillary equipment • Leakages • Unlocked storage container
• Wastewater facilities	• Holding tank requiring emptying
• Concrete chute washout area	• Damages • Leakages • Unacceptable level of concrete washings
• Site Entrance	• Unacceptable level of sediment/silt on the road surface • Presence of waste

5.3 Environmental Performance Indicators

The Appointed Contractor will outline the key performance indicators for the site in gauging successful site management in the prevention of pollution and the protection of the environment.

Environmental performance indicators will at a minimum include:

- Number of environmental accidents logged.
- Number of environmental incidents logged.
- Breach of procedure and corrective actions.
- Number of environmental complaints received.
- Results of monthly water quality monitoring.
- Results of noise and vibration monitoring.
- Results of site audits.

The performance indicators will be finalised by the Appointed Contractor and communicated to all relevant personnel and sub-contractors. The review periods for analysing site performance indicators must also be specified.

5.4 Response Procedure

In the event of an environmental incident, or breach of procedure, or where a complaint is received, the contributing factors are to be investigated and remedial action taken as necessary. The Appointed Contractor will ensure that the following respond actions will take place:

- Respond to the incident promptly ensuring the immediate safety of personnel, plant and environment as a priority.

- Isolate the source of the incident/breach/emission.
- Notify the PM of any incident, breach of procedure and/or complaint received, and details must be recorded in the incident/complaint register.
- The PM will notify and liaise with the appropriate site personnel where required, e.g., Environmental Manager.
- If necessary, the PM will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- PM will conduct/co-ordinate an investigation to determine the potential influence that could have led to the non-compliance.
- The details of the incident will be recorded on an incident/complaints form which is to record information such as the cause, extent, actions and remedial measures used to follow the incident/complaint. The form will also include any recommendations made to avoid reoccurrence of the incident.
- Identify and execute measures to minimise the effects of the incident.
- Carry out environmental monitoring as required.
- Identify and implement measures to avoid reoccurrence.

5.5 Corrective and Preventative Action

Corrective action requests will be issued to ensure that prompt action is agreed and committed to, with a view to the effective resolution of any deviations from the CEMP requirements or any environmental issues.

6. Summary

This CEMP provides the information which will be contained in the Contractor-developed CEMP at the construction stage of the project. The requirement on the Appointed Contractor to update these details has been explained, and there is a particular requirement for an update to the roles and responsibilities of those appointed on the site for the construction of the project. The CEMP is a live document and will be improved upon as the project progresses as appropriate.

Appendix 1
Environmental Management Plans

EMP-1	Management of Excavations
EMP-2	Surface Water Runoff Control
EMP-3	Fuels and Oils Management
EMP-4	Management of Concrete
EMP-5	Ecological Management/Protection of Habitats and Fauna
EMP-6	Waste Management
EMP-7	Traffic Management
EMP-8	Management of Archaeology
EMP-9	Construction Noise
EMP-10	Dust Management
EMP-11	Emergency Response Plan
EMP-12	Site Environmental Training and Awareness
EMP-13	Monitoring and Auditing
EMP-14	Environmental Accidents, Incidents and Corrective Actions
EMP-15	Environmental Complaints

EMP 1: Management of Excavation Works

Purpose
To describe measures for the management of all excavations and excavated soil and rock on the site.

Procedure

General

- Machinery will not operate directly on excavated/stockpiled soils.
- Drainage will be constructed in parallel with the substation facility and OHLs. This approach will be used in combination with the installation of other drainage protection measures in advance of construction, such as the installation of silt fencing or other waterway protection measures.
- Within excavations and around excavations, pore water pressure will be kept low by avoiding loading the soil/subsoil and giving careful attention to the existing drainage and how structures could affect it.
- All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Where appropriate and necessary, cuts and excavations will be protected against ingress of water or erosion by the use of field drains around the excavation works. Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.
- Plant and materials will be stored in approved locations only (such as the proposed site compounds) and will not be positioned or trafficked in a manner that would surcharge existing or newly formed slopes.
- All site excavations and construction should be supervised by a suitably experienced engineer. The Appointed Contractor's method statements for each element of work should be reviewed and approved by the engineer prior to site operations.
- The existing network of drainage within the site should be utilised whenever possible.
- Excavated topsoil and subsoil will be stored onsite for reuse or removed offsite to an appropriate facility. Temporary stockpiles of soils will not be permitted within 50m of any watercourse.

Management and Storage of Excavated Materials and Soil Management

- It is anticipated that all soils and stone generated from excavation works will be retained on site within the development boundary and reused where possible. Excavated material will used to construct screening berms along the access road and along the western boundary of the substation compound.
- Storage of excessive material will be avoided. Site management should include the checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability on a regular basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations.
- Temporary storage of soil will be carefully managed in such a way as to prevent potential negative impact on the receiving environment and the soil material will be stored away from any surface water drains. It will be necessary to designate areas within the site where stockpiles will be established in order to facilitate the efficient transfer of material within the site.
- In order to minimise the impact of the Proposed Development on local geology, where possible, excavated material will be reused on site and imported material including fill and hard standing will be obtained from local sources.

- Materials required for construction should be handled and stored in a manner which reduces unnecessary handling. Gravel and any other quarry materials should be imported from local quarries where possible and stored neatly in segregated areas.
- No permanent waste or stockpiles will be left onsite, other than those materials required for designed landscaping and construction generally.
- Excavated material that is not suitable for onsite reusewill be removed from site by the appropriate permitted contractors and taken to an authorised facility.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation.
- A traffic management plan will bn developed as part of the Appointed Contractor's CEMP. This is to manage and control vehicular movement onsite. Measures include the scheduling and covering of HGVs during construction to minimise HGV movements onsite which will reduce the impact of soil compaction and erosion. Unscheduled vehicles will not have access to the site.

Monitoring

This is to be detailed in the Appointed Contractor's Method Statements.

Responsibility

- The Environmental Manager will monitor the excavation areas and associated drainage.
- The Project Manager will oversee the phasing of the excavation, stockpiling and machinery movement across the site.
- Construction personnel will be informed of the measures to prevent pollution of water courses.
- The Design Engineer, Geotechnical Engineer and Sub-contractors will have responsibilities as appropriate.
- All responsibilities will be finalised by the Appointed Contractor.

Details of excavating materials will be finalised by Appointed Contractor

EMP 2: Surface Water Runoff Control (Sediment and Erosion Control)

Purpose

To describe measures for the management of all surface water and runoff on the site, for the protection of watercourses and in particular, sediment and erosion control.

Procedure

Drainage, Erosion and Sediment Control

- Implement erosion control to prevent runoff flowing across exposed ground and become polluted by sediments.
- Instream works are not required at any watercourse crossing.
- There will be no tracking of machinery within watercourses.
- There will be no storage of material/equipment or overnight parking of machinery inside the 15m buffer zone to the watercourse.
- Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the 15m buffer zone boundary.
- Drainage channels and streams will be clearly identified on site and shown on method statements and site plans.
- During the construction activities there will be a requirement for diverting rainwater away from the construction areas, into nearby drainage channels and streams.
- Visual inspections of roads and wheel washing at site entry/exit points will be undertaken to prevent the accumulation of dirt.
- Silt traps will be placed across the works boundary in any areas adjacent to watercourses to avoid siltation of watercourses. These will be maintained and cleaned regularly throughout the construction phase.
- Intercept and divert clean water runoff away from construction site runoff to avoid cross-contamination of clean water with soiled water.
- Implement sediment control to slow down runoff allowing suspended sediments to settle in situ particularly on roads.
- The access track will be of a permeable construction however there will be a slight increase in the area of impermeable surfaces across the site, resulting in a slight increase in surface water run-off rates. This change in flow volumes is addressed with embedded mitigation in the form of a site-specific drainage system that provides sufficient storage capacity to limit run-off from the developed catchment to that equivalent to pre-development greenfield run-off rates.
- Implement the erosion and sediment controls before starting site clearance works.
- Minimise area of exposed ground by maintaining existing vegetation that would otherwise be subject to erosion in the vicinity of the compound and keeping excavated areas to a minimum.
- Delay clearing of soil until before construction begins rather than stripping the entire site months in advance particularly during road construction.
- Avoid working near drains during or after prolonged rainfall or an intense rainfall event and cease work entirely near drains when it is evident that pollution is occurring.
- Implement sediment control measures that includes for the prevention of runoff from adjacent intact ground that is for the separation of clean and ‘dirty’ water.

- Provide recommendations for public road cleaning where needed particularly in the vicinity of drains.
- Prior to any construction activity, the site will be inspected for areas that would be prone to siltation of nearby watercourses. Where necessary, existing pollution prevention measures (check dams and silt ponds) will be maintained/upgraded to ensure optimum standard of water running into streams from the drainage adjacent to access road. Drainage, silt fences and settlement ponds will be installed where new development components are proposed. Additional silt fencing and emergency spill kits will be kept on site for use in emergencies.
- All erosion control and retention facilities will be regularly maintained during the construction phase.
- Prior to and during construction works, operations will be monitored by a competent member of the construction team on a regular basis to check if working appropriately.
- The treatment approach described below will reduce significantly any potential increase in surface water runoff as a result of the facility development.

Drains

- Maintenance of any existing vegetative land drains in order to keep them vegetated.
- Continuation of flows by natural flow paths via existing drains before entering the watercourse, providing further retention and treatment of discharges.
- Existing land drains will be utilised at the site for drainage. Maintenance of the existing vegetative land drains will ensure they stay vegetated.
- Pollution prevention measures (vegetation in drains, check dams and silt ponds) will be implemented, maintained, monitored and upgraded as required to ensure optimum standard of water running into the Tinnacross stream from the land drainage system.
- Where the drains have a gradient greater than 2.5%, check dams will be installed in the drains.
- Where each land drain exits the proposed development a double silt trap will be placed. Each silt trap will be made up of a stone or straw dam combined with a silt fence.
- Additional silt fencing and emergency spill kits will be kept on site for use in emergencies.

Dewatering

Any ground water/surface water that may enter building foundations will be removed and treated and disposed of appropriately, in accordance with best practice. Any dewatering (if/where required) will adhere to the following measures:

- Ground water/surface water will not be pumped directly into roadside drains/watercourses.
- Ground water/surface water which has become silted within the building footings will be pumped to the surface water drainage system/sediment ponds.
- In the case of heavy siltation, water will be tankered off site for disposal at an authorised waste facility or pumped to a portable onsite settlement tank for treatment.

Monitoring

- The Environmental Manager will carry out daily inspections of cross-drain pipes, dirty water drains and outlets, settlement ponds, interceptor drains and silt fences for any damage or blockages. Any damage or blockages will be repaired or cleared promptly.
- As detailed above, weather forecasts will be monitored during the construction phase. The 24 hour advance meteorological forecasting service from Met Éireann will be used.

- A surface water monitoring schedule will be developed prior to construction and agreed with the planning authority. Suspended solids monitoring will be undertaken on a weekly basis and ad-hoc if required (rainfall event for example), while monthly monitoring of pH, metals, nitrates and phosphates will also take place.

Responsibility

The Environmental Manager is responsible for ensuring that appropriate water pollution prevention measures are implemented and monitored in accordance with relevant standards. Where standards are exceeded, an investigation must be carried out in conjunction with the Construction Manager, and further samples must be taken to verify that the situation has returned to normal.

Spill kits will be readily available in vulnerable locations and that booms for watercourses are long enough and have adequate anchorage.

The Construction Manager (or a designate) is responsible for ensuring the spill kits are adequately stocked and maintained.

Details and Responsibilities for sediment and erosion control to be finalised by Appointed Contractor

EMP 3: Fuel and Oils Management

Purpose

Construction machinery and associated equipment will be the principal sources of pollutants such as oil, lubricants, fuel and hydrocarbons. The purpose of this plan is to describe measures for the management of all fuel and oils onsite for the protection of natural resources (soils and groundwater) from any spills.

Procedure

Construction Machinery and Vehicles

- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- Refuelling will be carried out using 110% capacity double bunded mobile bowsers. The refuelling bowser will be operated by trained personnel. The bowser will have spill containment equipment which the operators will be fully trained in using.
- No servicing or repair of plant, machinery or vehicles should be undertaken onsite and the mechanical soundness of construction machinery will be checked prior to the commencement of construction works.
- All plant used on the site will be regularly maintained. An up-to-date service record will be required from the main contractor.
- Contractors supplying concrete and gravel to the site will be contractually required to supply their products using roadworthy vehicles.

Accidental Spills/Contaminated Runoff

- Good site practice [CIRIA 32 (2001)] is applied to ensure no fuels, oils, other substances or contaminated runoff are stored in a manner on site in which they may spill and enter the ground, particularly when the initial top layer is excavated. Dedicated, bunded storage areas will be used for all fuels or hazardous substances. Spill kits will be maintained on site.
- An emergency response plan will be developed and include measures to be taken in the event of spills and leaks.
- Spill kit stations will be established at a number of key locations (including site vehicles) and will be regularly checked and restocked as required.
- Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits. the nearby water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility.
- The Environmental Manager will be immediately informed of the oil leak/spill and will assess the cause and the management of the clean-up of the leak or spill. They will inspect nearby drains for the presence of oil and initiate the clean-up if necessary.
- Correct action in the event of a leak or spill will be facilitated by training all vehicle/machinery operators in the use of the spill kits and the correct containment and cleaning up of oil spills or leaks. This training will be provided by the Environmental Manager at site induction.

- In the event of a major oil spill, a company who provide a rapid response emergency service for major fuel spills will be immediately called for assistance, their contact details will be kept in the site office and in the spill, kits kept in site vehicles and machinery.

Drainage and Sediment Control:

- Construction pollutants such as oil or fuel will be stored in secure bunded impermeable construction compounds away from drains and open water and inspected regularly for leaks or signs of damage.
- To help prevent the contamination of the ground and groundwater, contaminated materials (oils, fuels, chemicals etc.) will be used and stored in an appropriate manner as outlined in the relevant guidance, i.e. CIRIA (2001) and DMRB Volume 11 (1994).

Temporary Construction Compound:

- Designate a bunded storage area at the contractor's compound(s) and away from open ground and surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Drainage within the temporary site compound will be directed to an oil interceptor to prevent pollution if any spillage occurs.
- The compound will be in place for the duration of the construction phase.

Responsibilities

The Construction Manager and Environmental Manager are responsible for ensuring fuel and oils are managed in line with this procedure and that spill kits are readily available in vulnerable locations.

The Construction Manager is responsible for ensuring the spill kits are adequately stocked and maintained and should inform the Environmental Manager if items have been used. The Appointed Contractor, in updating the CEMP, must designate personnel to the tasks relating to fuels and oil, as outlined.

References

Best Practice Guidelines BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).

EMP 4: Management of Concrete

Purpose

The purpose of this plan is to describe measures for the management of concrete onsite for the protection of natural resources from any spillages.

Procedure

Supervision of Concrete Pours

- To reduce the potential for cementitious material entering watercourses, concrete pours will be supervised by the Construction Manager, a suitably qualified Engineer and/or the Environmental Manager.
- The Construction Manager will ensure that the area of the pour is completely drained of water before a pour commences.
- Pours will not take place during forecasted heavy rainfall.
- Incidental rainfall from light showers during the period of a pour is typically absorbed into the concrete matrix but heavier showers can result in some run off from the top surface of the concrete pour. If runoff is encountered the supervisor in charge will block the outflow from the drains to retain or treat the runoff until the pH is neutral before discharge to the drainage network.
- In the event of a spillage on site, the Environmental Manager will temporarily block the dirty water drains in the immediate area and monitor the pH levels of the water and if necessary, will adjust the pH levels using CO_2 entrainment. Any spillage will be cleared immediately and deposited in a designated chute wash down area.
- Temporary storage of cement bound granular mixtures will be on hardcore areas. Cement products are hazardous and should always be stored in a COSHH store or similar (shipping container), and only be in the open when in use. If cement products are temporarily located in the open, then they will be located within an impermeable bunded area and covered to prevent contact with rainwater. This will prevent direct drainage of cement storage areas to surface waters.

Concrete Water

- To reduce the volume of washout, concrete chutes will be washed down at a designated chute wash down area in the site compound. The wash down area will consist of a suitably sized polythene lined bunded area.

Responsibilities

- The Construction Manager and Environmental Manager will supervise all concrete pours.
- The Environmental Manager is responsible for ensuring that appropriate water pollution prevention measures are put in place and that water sampling is carried out. Where standards are exceeded, an investigation will be carried out and remedial actions taken where required. Validation sampling of remedial actions may also be required to verify that the situation has returned to normal.

EMP 5: Ecological Management Plan (Protection of Habitats and Fauna)

Purpose

The proposed development is located within 15km of the following designated sites:

- Slaney River Valley SAC.
- Wexford Harbour and Slobs SPA.

These sites are designated for the protection of Qualifying Interest (QI) aquatic habitats/species and Special Conservation Interest (SCI) bird species which are sensitive to water pollution and disturbance.

The purpose of this plan is to describe measures for the management and protection of habitats and fauna on the Site.

Procedure

- Ensuring implementation of ecological protection measures outlined below.
- Advising on re-vegetation onsite.
- Monitoring of success of revegetation.

Environmental Manager/Ecological Clerk of Works

- Periodic routine inspections of construction activity will be carried out by the Environmental Manager/ Ecological Clerk of Works (ECoW) to be employed by the Appointed Contractor to ensure all controls to prevent environmental impact are in place.
- A suitably qualified ecologist will supervise vegetation clearance to ensure ecological/environmental mitigation measures described in the CEMP are implemented in full.
- The Environmental Manager/Ecological Clerk of Works will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated. For example, if there is a risk of contaminated surface water entering a drain, and measures are not in place to block the pathways to the Slaney River, then the project ecologist can stop the work until prescribed measures to prevent such a risk have been implemented.
- Spraying of vegetation using pesticides (herbicides, fungicides and insecticides) will not be permitted at any stage of development.

Ecological Protection Measures

General Habitats

- The extent of construction works area within the site is to be clearly marked out such that the construction zone, including extent of access for all construction plant and machinery, site compound and materials storage areas, is defined and is clearly visible to all contractor staff and machine operators.
- Movement of construction plant/construction vehicles is to be restricted as much as is practicably possible to within the extent of works footprint within the development site boundary.
- Acknowledging that works required for development are exempt from conditions stipulated in the Wildlife Acts, removal of hedgerows will be conducted where possible outside the general bird breeding season which runs from the 1st of March to the 31st of August inclusive, in accordance with Section 40 of the Wildlife Acts.
- Habitat disturbance to fauna will be limited by controlling the movement of maintenance vehicles. Construction vehicles will not encroach onto habitats beyond the proposed development footprint.

- Construction work will not take place at night unless in exceptional circumstances to reduce potential disturbance to fauna.
- Mammal access to development site will be facilitated through the provision of mammal access gates which will be located at regular intervals (every 100m) along the perimeter of fence.
- The access gates will be designed with accordance with standard guidelines for the provision of mammal access (e.g NRA 2008, DMRB 1997).
- It is not anticipated that any protected mammal breeding/resting places will be encountered as part of the proposed project based on the findings of the extensive surveys undertaken. However, should any breeding/ resting places be encountered during the pre-construction surveys, NPWS will be informed and they will be subject to exclusion procedures as outlined in the TII/NRA guidelines (2006).
- In the unlikely event that protected fauna species are found actively using the site during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist.
- In the unlikely event that protected faunal species are found actively using the site for breeding/roosting during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified specialist.
- The project ecologist will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated. For example, if there is a risk of contaminated surface water entering a drain, and measures are not in place to block the pathways to the Tinnacross stream, then the project ecologist can stop the work until prescribed measures to prevent such a risk have been implemented.

Protection of Fauna

- Duration of construction activities will be restricted to between 7:00 am and 7:00 pm, Monday to Friday and between 8am and 2pm on Saturdays. Construction work will not take place at night unless in exceptional circumstances to reduce potential disturbance to fauna.
- A pre-construction survey for badger should be undertaken prior to the commencement of any works as per NRA (2005) guidance in order to identify any changes within the site. The pre-construction survey should be undertaken no more than 10 to 12 months in advance of construction commencement. The survey should be supplemented by an additional survey immediately prior to site works commencing if a sufficient time period has elapsed since the pre-construction survey.
- Any mitigations required for badgers will be carried out under license from NPWS and using NRA Guidelines (2005) (now TII) where applicable, Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.
- Any mitigations required for badgers will be carried out under license from NPWS and using NRA Guidelines (2005) (now TII) where applicable, Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.
- The pre-construction survey should be undertaken 2 weeks prior to commencing during the period of suitable weather, when otters signs are visible.
- No use of heavy machinery and use smaller work parties, where otters are known to be sheltering (informed by survey). Where possible large mature trees within the river corridor should be retained.

Soft Felling

If felling of such mature trees is required, the following TII (2006) guidance will be followed:

- Immediately prior to felling, trees should be inspected for the presence of bats and/or other Bat activity by a suitably qualified Bat ecologist during daylight hours and night-time using a Bat detector. This survey should be carried out from dusk through the night until dawn to ensure Bats do not re-enter the tree.
- Where examination of the tree has shown that Bats have not emerged or returned to tree, felling may proceed the following day. Should a delay in felling be encountered, resurveying is required.
- During felling of trees, the following points will be followed:
    - Any vegetation and tree removal should be carried out during winter (December to February) to avoid impacts on bats, corresponding to a time when even best bat roost habitat recorded on site would be highly unlikely to be used as winter roosts. Winter hibernation roosts are generally restricted to places that are sheltered from extremes of temperature (Marnell et al., 2022) and trees present on site are deemed unlikely to be mature enough to provide appropriate winter roosting habitat on the basis of the habitat suitability survey carried out onsite undertaken in May 2022.

<u>Lighting during construction:</u>

Potentially lighting associated with the site works could cause disturbance/displacement of bats. During the site works, lighting will follow mitigation measures outlined by Bat Conservation Ireland in Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers (2010), Bats and lighting: Overview of current evidence and mitigation guidance (Stone, 2013) and Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25 (Kelleher & Marnell, 2006).

The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas.
- Where possible, construction lights will be switched off when not in use.
- Lighting will be positioned and directed so that it does not to unnecessarily intrude on adjacent ecological receptors. There will be no directional lighting focused towards the boundary habitats respectively and cowling and focusing lights downwards will minimise light spillage. and
- Works will primarily take place during hours of daylight to minimise disturbance to any nocturnal mammal species.

Pre-construction mammal survey

In accordance with NRA Guidance, pre-construction mammal surveys will be undertaken to identify evidence of protected mammals (e.g. in particular otter holts and badger setts) within the works areas associated with the proposed development. The surveys will be undertaken to ensure that such protected species have not taken up residence within or close to the development footprint. Should breeding or resting places be recorded in the pre-construction surveys a site-specific mitigation plan shall be prepared prior to the commencement of works. It is not anticipated that any protected mammal breeding/resting places will be encountered as part of the proposed project based on the findings of the extensive surveys undertaken. However, should any breeding /resting places be encountered during the pre-construction surveys, NPWS will be informed and they will be subject to exclusion procedures as outlined in the TII/NRA guidelines (2006).

Responsibility

Periodic routine inspections of construction activity will be carried out by an Environmental Manager /Ecological Clerk of Works (ECoW) to be employed by the main contractor to ensure all controls to prevent environmental impact are in place. Only suitably trained staff will undertake environmental inspection at the site. A suitably qualified ecologist will attend for vegetation clearance to ensure ecological/environmental mitigation measures described in this CEMP are implemented in full.

References

- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2005a).
- Guidelines for the treatment of bats during the construction of National Road Schemes (NRA, 2005b). and
- NPWS Irish Wildlife Manuals, No. 28: Bat Mitigation Guidelines for Ireland – V2 (Marnell et al., 2022).
- NRA (2006) Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes. National Roads Authority, Dublin, Ireland.
- Bats & Lighting. Guidance Notes for: Planners, engineers, architects and developers (BCI, 2010).

Details of ecological protection to be finalised by Appointed Contractor

EMP 7: Construction Waste Management

Purpose

The purpose of the plan is to describe measures for the management of all wastes associated with construction works.

Procedure

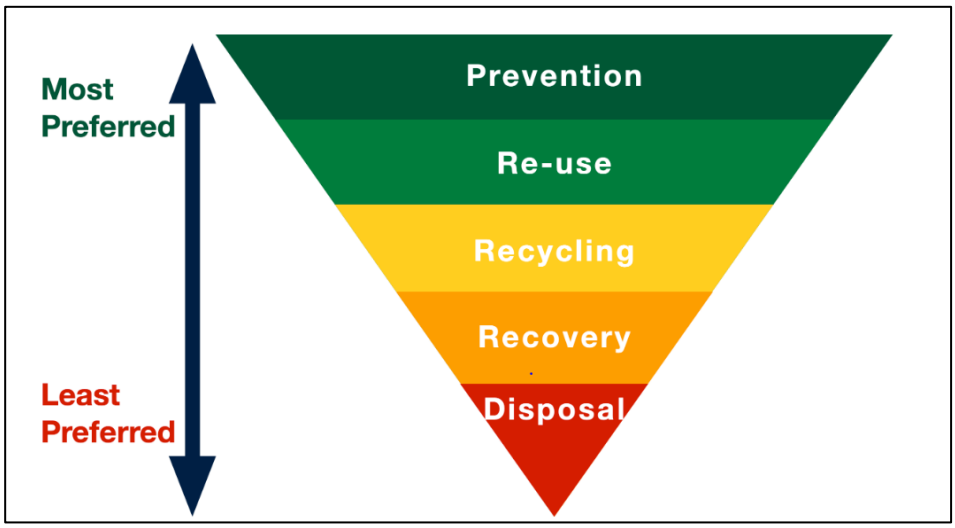
The Appointed Contractor(s) will be required to develop a Construction Waste Management Plan (CWMP) which will form part of the overall live CEMP. The waste management goal for the construction phase of the project is to manage all waste in accordance with the relevant statutory provisions and the waste hierarchy.

The CWMP will form part of the CEMP:

- Regard should be had to the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, July 2006) in preparing and maintaining this plan.
- National waste management policy is governed primarily by the requirements of European law, particularly the Directive 2008/98 on Waste, also known as the Waste Framework Directive. The Directive was responsible for implementing the Waste Hierarchy as show in Figure below.

The adoption of the CWMP (Appointed Contractor(s)) will abide by the waste hierarchy and will be developed in accordance with Wexford County Development Plan as well as the local and national waste management policies

- The CWMP should address the following aspects of the Project:
- Analysis of the waste arising/material surpluses.
  - Specific waste management objectives for the project.
  - Methods proposed for prevention, reuse and recycling of wastes.
  - Material handling procedures.



Any material deemed unsuitable for re-use in the works will be transported off site in trucks and disposed of under license from Wexford County Council. This will prevent any contaminated runoff to drains adjacent to access road during heavy rainfall.

As part of the record keeping procedures, the Environmental Manager will keep records provided by waste contractors of all waste being removed from site. The Environmental Manager will record waste removed from site on a quarterly basis. This information will be recorded in a standard format.

Waste to be generated during construction:

During the construction phase, the following waste will be generated:

Material Unsuitable for Reuse:

Material arising from site clearance and excavation works that is deemed unsuitable for reuse will be segregated and stored separately:

Temporary stockpiles of soil will be located in an area away from drainage ditches and will be bunded on the downgradient edges with a silt curtain or other suitable materials to reduce risk of silt runoff. Surplus topsoil or excavated material unsuitable for reuse onsite will to be transported to an approved licenced waste facility.

Domestic Waste-Water Effluent:

Wastewater from welfare facilities on site will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will then be collected when required from site by a permitted waste contractor and removed to an appropriately authorised waste facility for treatment and disposal.

Concrete

Excess concrete will be returned to the supplier for reuse. To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area within the site compound. The Environmental Manager will monitor the pH of the water in the chute wash down bund.

Metals

Metals will be segregated for reuse and recycling.

Timber

Timber waste will be stored separately. Any pallets will be returned to the supplier for reuse. Offcuts/trimmings will be used in formwork where at all possible. A container for waste wood, covered where possible will be located at compound/other storage areas. This waste will be collected by the waste contractor and forwarded to a suitably licenced facility for recycling.

Blocks, Bricks, and Tiles

The careful storage of these materials will significantly reduce the volumes of wastes occurring at the site. Every effort will be made to use broken blocks/off-cuts. Final quantities of these wastes generated will be stockpiled (possibly crushed/screened) and reused onsite as subbase materials for road/other suitable hardstanding locations where suitable.

Packaging/Plastic

Double handling will be avoided by segregating packaging wastes immediately after un-wrapping. Waste packaging will be segregated and in separate containers, at storage area for collection by the waste contractor for disposal to licensed facility.

Other waste

Other wastes which may be generated may include residual non-recyclable waste such as paper, cloth, some cardboards, or plastics. Others may include fibreglass and geotextiles, and polystyrene. These types of materials will be stored in a dedicated container at the site compound. All residual wastes will be dispatched to suitably licensed facility for disposal. Other construction and demolition waste will be collected and disposed of at a suitably licenced facility.

Hazardous and Other Waste

The waste types below that may be generated during the construction works. Although some waste types may be generated in locations other than the construction compound (for example if absorbent filters are required at foundation/track locations etc., such waste materials will be stored within the construction compound only). Waste materials generated outside the construction compound will be taken to the compound on a daily basis.

Common Construction Wastes					
Concrete	Wood	Cables	Ducting	Metallic packaging/tins	Cardboard Packaging
Paper packaging	Plastic packaging	Wooden packaging	Office paper	Non-hazardous detergent	Plastic containers
Plastic bottles	Mixed waste	Septic tank sludge	Ferrous metal	Non-hazardous waste electrical(s)	Food Waste

EWC Code and Waste Type/Stream	
13 02 08*: Waste oils	17 04 11: Cables
17 04 07: Mixed Metal	17 05 03*: Soil and stones containing hazardous substances
17 01 01: Concrete	17 05 04: Soil and stones
17 01 07: C&D waste	17 06 04: Insulation materials
17 02 01: Wood	17 09 04: Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
17 02 03: Plastic	20 01 01: Paper and cardboard
17 03 01*: Bituminous mixtures containing coal tar	20 03 01: Domestic waste
17 03 02: Bituminous mixtures other than those mentioned in 17 03 01	20 03 04: Domestic Wastewater
13 05 07*: Oily water from Oil/Water Separators	13 05 06*: Oil from Oil/Water Separators
13 05 08*: Mixtures of waste from grit chambers and oil/water separators	

If hazardous waste is encountered, then appropriate handling, storage, transportation, and disposal will be carried out. Prior to being removed from the site, the waste will undergo a comprehensive waste assessment and classification by suitably trained/qualified person(s), in accordance with the European Waste Catalogue hazardous waste list. At the site every effort will be made to segregate waste, and properly segregate hazardous waste from non-hazardous and inert waste arising. Hazard wastes will be identified, removed and kept separate from other wastes in order to avoid cross contamination. Specific method statement detailing the necessary mitigation measures during the excavation/handling, transportation, and disposal of hazardous materials encountered at the site will be prepared as required.

Oils, paints, adhesives and chemicals will be kept in a separate contained secured storage area. Lids will be kept on containers to avoid spillage/evaporation. Waste oils, adhesives etc will handle, and disposed of appropriately. Every effort will be made at the site for no long-term storage of hazardous materials/fuels/oils/chemicals, etc. There shall be no long-term storage of waste oils etc. at the site.

General Waste Management

- Waste generation best practice procedures in general will minimise waste generated onsite.
- Measures including good site management will be taken to limit the quantity of waste generated during construction phase.
- Access to materials will be controlled. A dedicated storage area will be provided in the site compound for building materials such as cables, geotextile matting, blocks, tools and equipment, fence posts and wire, booms, pipes etc. The site compound will be securely fenced from the outset and will be locked when there are no site personnel present.
- Waste will be stored in the construction compound and collected throughout the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility.
- Waste materials generated will be segregated at the site compound, where it is practical. Where the onsite segregation of certain waste types is not practical, offsite segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source.
- Waste oil and waste oil drums will be collected and stored in containers and on a bunded tray within the storage container.
- All waste will be disposed of at appropriately licensed facilities.
- Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compounds and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility.

Responsibility

The Environmental Manager will be responsible for adherence to correct waste management procedures. They will also identify a waste contractor to remove waste that can be recycled or re-used.

The Environmental Manager will keep records provided by waste contractors of all waste being removed from site. The Environmental Manager will record waste removed from site regularly. This information will be recorded in a standard format. It will be the construction manager's responsibility to organise the removal of skips from their area when they are full.

The Environmental Manager will inspect waste segregation and storage areas during routine inspections.

References

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, July 2006).

Details of site waste management to be finalised by Appointed Contractors.

EMP 7: Construction Traffic Management

Purpose

To describe measures for the management of construction traffic, including construction personnel traffic and oversized loads, for the minimisation of disturbance and nuisance to the local community.

Procedure

Traffic Management Plan

- A detailed Traffic Management Plan (TMP) will be prepared and submitted to the Wexford County Council for approval prior to the commencement of construction.
- The plan will include the proposed haul routes, vehicle types, anticipated traffic numbers etc, for the construction stage of the development.
- The plan will include provision for:
  - Communicating with the community, the Gardaí, and the Local Authority.
  - Details of site access and any site traffic rules, including security, parking, loading, and unloading, required speed or other relevant details.
  - Programme of maintenance and upkeep of public roads.
  - Site operating hours (including delivery) to be outlined.
- The Appointed Contractor will adopt the following principles in planning, developing, and implementing traffic management proposals:
  - Maximize the safety of the workforce and the travelling public.
  - Keep traffic flowing as freely as possible and reduce the impact of the road works to a minimum.
- The Appointed Contractor will plan and manage the construction works to ensure as far as is reasonably practicable that:
  - Works within the site and road network do not result in a safety hazard to road users or the workforce involved in the contract.
  - Any resulting increase in traffic delays and congestion is minimized.

Traffic Management Measures

At a minimum the following measures outlined below will be implemented to minimise the impacts of construction phase traffic associated with the project.

- The Appointed Contractor will survey the area for any unforeseen hazards prior to the commencement of works and set up warning signage as appropriate.
- Ensure a strict protocol for Heavy Good Vehicle (HGV) drivers to follow the designated haulage route, and timing restrictions as detailed.
- Signage relating to the proposed construction traffic will be installed at the entrance to the substation.
- A maximum speed limit would be imposed for HGVs on the local road network during the construction phase.

- In order to minimise traffic congestion during peak traffic hours, the majority of staff will either arrive onsite before or after the peak morning traffic and finish work before or after the evening peak traffic hours.
- The condition of the public road will be monitored on an on-going basis and a road sweeping vehicle would be provided as required to remove any mud that is deposited on the road network on the approach to the site.
- Enforcement of existing regulatory markings and signage would be ensured.

Road Safety Protocol

A road safety and courtesy protocol will be in place for all road users for the duration of construction. All companies delivering to site would have to sign up to this protocol as part of their supply contract. Courtesy for other road users is fundamental to the protocol. HGV traffic would give way to oncoming traffic where possible. Vehicles would always slow down or stop, as appropriate, for pedestrians and cyclists along the proposed haulage routes. Passing bays will be provided to ensure intervisibility between traffic coming from opposing directions.

Road Network Maintenance

The road condition will be inspected daily by site management to ensure that the access route road is maintained in a safe and passable condition. When necessary, potholes and ruts will be filled in and the road cleaned of any mud and rubble. Following completion of construction, the condition of the public access route road will be of at least the same standard as it was prior to commencement of construction.

Signage

Signage will be manufactured using retro-reflective material to Class Ref 2 of EN 12899. The colours, chromaticity and luminance factors will be as specified in Specification TS4 published by the Department of the Environment, Heritage, and Local Government. Specification TS4 consists of guidelines produced by the DoEHLG, Dublin.

Signage will be inspected at regular intervals by the contractor to check that it is in place, secure, unobstructed (by vegetation etc.) and cleaned when required. Warning lights will be appropriately fitted as required. Where signs could be obscured by bends, hills, or dips in the road, additional warning signs will be put in place. If traffic management controls involving traffic lights are being implemented, a contact person will be available in the event of traffic light failure outside of normal working hours.

Staff Training

The contractor will provide training to operatives in the traffic control systems being used on site. The works will be designed and maintained by a trained operative holding a current Signing Lighting and Guarding CSCS card.

The importance of traffic management, the safety of motorists, pedestrians and site staff will be emphasised to all construction staff. All personnel will be informed of the Traffic Management Plan during their induction when they first arrive on site. Toolbox talks will also be given so that all personnel are aware of traffic management controls being implemented as the work progresses. Onsite turning bays, speed limit signage, directional signage to the sub-station, site compound, delivery routes, exit routes, stores, offices, canteen, and the requirement for reverse parking, will be erected as required.

The appointed contractor will also ensure that on site personnel will be aware of environmental constraints/sensitive areas in which works are to be avoided.

Responsibility

Management of traffic on site during construction will be done by:

- Project Manager.
- Construction Manager.
- Construction personnel.
- Sub-contractors as appropriate.
- Delivery personnel

Details of Traffic Management Plan to be finalised by Appointed Contractor

EMP 8: Management of Archaeology

Purpose

There's potential for unknown subsurface archaeological features to disturbed during the construction works. The purpose of this plan is it to describe measures for the management and protection of these archaeological and features.

Procedure

The following mitigation measures will be undertaken in advance of and during the construction phase subject to the grant of planning permission:

Construction Area:

- It is recommended that that all ground disturbances across the proposed development areas be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works the Department of Culture, Heritage and the Gaeltacht will be informed immediately and a buffer zone of at least 20m will be established around the archaeological site.
- All recommendations are subject to approval by the National Monument Service of the Department of Housing Local Government and Heritage and Wexford County Council.

Responsibility

- Environmental Manager
- Construction Manager

Details of any management and protection of archaeological and cultural heritage on the site to be finalised by Appointed Contractor

EMP 9: Construction Noise Management

Purpose

The construction phase of the proposed development has the potential to increase noise levels surrounding the proposed site. Potential noise impacts from the construction phase will depend on the number and type of equipment employed during the works. The purpose of this plan is to describe measures for the management of impacts from construction noise.

Procedure

Control of Noise at Source

- Plant will be properly and regularly maintained.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers.

Construction Phase

- Best practice in the form of BS5228 –1&2:2009 + A1 2014, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites will be adopted during the construction phase in order to minimise the noise generated by construction activities and nuisance to neighbours.
- All plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations 1996 (SI 359/1996) and other relevant legislation.
- If construction limits are found to be exceeded, noise screens will be utilised around proposed site and machinery such as generators etc.
- All compressors and generators will be "sound reduced" or "super silent" models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
- Site activities shall be staggered when working in proximity to any receptor. This proposed method of working will provide effective noise management of site activities to ensure that any receptor is not exposed to unacceptably high levels of noise over extended periods.
- A nominated person from the appointed contractor will be appointed to liaise with local residents and businesses regarding noise nuisance events.
- A pre-construction commitment to managing nuisance noise will be agreed through notification and consultation with affected parties, if deemed necessary.
- Working hours at the site during the construction phase will be limited to 07.00 to 19.00 Monday to Friday and 08.00 to 14.00 Saturday. No intrusive works on Sundays or public holidays.
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006).
- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General).
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution).
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment).

- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment.
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order.
- Training of site staff in the proper use and maintenance of tools and equipment.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plant start-up will be sequential rather than all together.
- Internal access tracks to be well maintained.
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations.
- Drop heights for materials such as gravels will be minimised whenever practicable.

Responsibility

- The Construction Manager will be familiar with the noise sensitive receptors and alert the Environmental Manager in good time prior to work commencing in the areas closest to any noise sensitive receptors.
- The Environmental Manager will review any relevant planning conditions in updating this plan.

References

- BS5228 –1&2:2009, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites
- IOA GPG Supplementary Guidance Note 5: Post Completion Measurements (July 2014).

Details of management of noise on the site to be finalised by Appointed Contractor

EMP 10: Construction Dust Management

Purpose

The purpose of this plan is to describe the measures for the management of nuisance impacts on air quality from construction generated dust.

Procedure

A dust minimisation plan will be formulated for the construction phase of the proposed developmentt as construction activities are likely to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within several hundred metres of the construction area.

Construction phase generated dust can be minimised by the following measures:

- The use of water as a dust suppressant, e.g., a water bowser to spray access road and compound hardcore areas during any extended dry periods when fugitive dust emissions could potentially arise.
- Public roads will be inspected regularly for cleanliness and cleaned as necessary.
- Control of vehicle speeds passing over access road within the site.
- Where necessary, site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Regular site inspections should take place to examine dust measures and their effectiveness.
- Site roads will be regularly cleaned and maintained as appropriate.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Speeds will be restricted on roads as site management dictates. Public roads in the vicinity of the site will be regularly inspected for cleanliness and cleaned, as necessary.
- A temporary vehicle wheel wash facility will be installed in proximity to the site entrance. Impose and signpost a maximum speed limit of 15 kph on surfaced and 10 kph on unsurfaced haul roads and work areas.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation.
- Use water assisted dust sweeper(s) on the access and local roads, to remove, as necessary any material tracked out. The required application rate frequency will vary according to soil type, weather conditions and vehicular use.
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface.

The dust minimisation plan will be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures.

Construction Traffic Emissions

Construction traffic emissions can be reduced using the following measures:

- Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently.
- Implementation of the Traffic Management Plan to minimise congestion.
- All site vehicles and machinery to be switched off when not in use - no idling.

Monitoring

With respect to monitoring measures temporary dust deposition monitoring will be carried out at the facility during construction phase of the project in order to ensure the boundary levels of deposition and nuisance dust are within recommended limit which are typically less than 350mg/m^2/day.

Responsibility

The Environmental Manager is responsible for developing and reviewing the site Dust Minimisation Plan.

The Construction Manager is responsible for organising dust suppression through use of bowsers and cleaners.

References

- 'Control of Dust from Construction and Demolition Activities', UK British Research Establishment (BRE).
- 'Environmental Good Practice on Site', Construction Industry Research and Information Association (CIRA).
- 'Environmental Management Plans', Institute of Environmental Management and Assessment (IEMA).
- 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan' National Roads Authority of Ireland (NRA).

EMP 11: Emergency Response Plan

Purpose

To describe measures for the prevention of an emergency and the response required to minimise the impact of such an event.

Procedure

In the event of an environmental emergency, all personnel will react quickly and adhere to this procedure.

All site personnel will be inducted in the provisions of the Emergency Response Plan.

The following outlines some of the information, on the types of emergency, which must be communicated to site staff.

- Release of hazardous substance - Fuel or oil spill.
- Concrete spill or release of concrete.
- Flood event – extreme rainfall event.
- Environmental buffers and exclusion zones breach.
- Housekeeping of materials and waste storage areas breach.
- Stop works order due to environmental issue or concern (threat to archaeological or ecological feature).
- Fire on site (cross-reference site Safety Emergency Plan as appropriate).

If any of the above situations occur. the Emergency Response Plan is activated. The Construction Manager will be responsible for overseeing the Emergency Response Plan and will be prepared and ready to implement the plan at all times. The Construction Manager will be immediately informed and report to the scene. He/she must be aware of the.

- Nature of the situation – brief description of what has happened.
- Location of the incident.
- Whether any spill has been released.
- Whether the situation is under control.

The Emergency Response Plan must be completed by the appointed Contractor.

Outline Emergency Response Plan

An Emergency Response Plan (ERP) will be prepared by the Appointed Contractor and included within the CEMP. It will provide details on the procedures to be carried out in the event of an environmental or health and safety incident as well as the responsibilities of all personnel in the event of an emergency. The ERP will identify site specific key personnel and their contact details. The ERP will also include information on spill control measures and the procedure and contact information for the reporting of incidents. Information on all incidents will be recorded on an environmental incident form and will provide information such as the cause, extent, actions, and remedial measures as well as any recommendations made to avoid reoccurrence of the incident.

The following outlines steps likely to be appropriate for inclusion in such a plan:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury. Identify potential environmental receptors that are potentially impacts.

- Where necessary, sound the emergency siren/fog horn that activates an emergency evacuation on the site. All personnel must proceed to the assembly point if the emergency poses any significant threat to their welfare and if there are no injured personnel at the scene that require assistance.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if unable to do so.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required.
- Contact the next of kin of any injured personnel where appropriate.
- Where relevant, the Construction Manager will report the spillage to relevant authorities.

Contacts

As an environmental control measure, the Environmental Manager will append the relevant contact details to the Emergency Response Plan document. Examples of such contact details include:

- Environmental Manager.
- Specialist oil removal Company.
- Wexford County Council.
- Inland Fisheries Ireland.
- National Parks and Wildlife Service.

Responsibility

- The appointed Contractor/Environmental Manager will prepare and finalise an ERP to be ready to respond to any incident.
- All site personnel will report any spillages of oil or chemicals to the Environmental Manager and Construction Manager immediately.
- As appropriate, the Environmental Manager will report the spillage to the Regional Fisheries Board, local authority and any other relevant authority.

Details of Emergency Response Plans to be finalised by Appointed Contractor

EMP 12: Site Environmental Training and Awareness

Purpose

To describe measures for the training of all site personnel in the protection of the environment and the relevant controls.

Procedure

Site signage will be provided at the entrance to the site to inform the public that access to the site is restricted to those directly involved in the construction works.

An initial site environmental induction and ongoing training will be provided to communicate the main provisions of the CEMP to all site personnel. Two-way communication will be encouraged to promote a culture of environmental protection.

The following outlines some of the information which will be communicated to site staff.

- Environmental procedures of the CEMP.
- Environmental buffers and exclusion zones.
- Housekeeping of materials and waste storage areas.
- Environmental Emergency Response Plan.

Housekeeping and Storage of hazardous materials

- Hazardous materials marked with the following symbols will only be stored in the secure storage container in the site compound.

- Subcontractors will provide a copy of the Material Safety Data Sheets (MSDS) for all hazardous substances brought on site.

All CEMP policies will be adhered to, in the management of fuels and oils, concrete, and installation of sediment and erosion controls and drainage features. All finalised details will be communicated with site personnel. Environmental Training including spill kit training, installation of silt fence training is to be provided by the Appointed Contractor. Environmental training records will be retained in the site office.

Responsibility

Environmental Manager
Construction Manager
All site personnel

Details of Induction and Training to be finalised by Appointed Contractor.

EMP 13: Monitoring and Auditing Procedure

Purpose

To describe measures for environmental monitoring during the construction works and audit of control measures to ensure environmental protection.

Procedure

All mitigation measures, any planning conditions and relevant construction methods will be monitored on site. The Appointed Contractor will nominate an Environmental Manager for the works who will provide Audit Checklists to ensure regular checks of the site's control measures for the ongoing protection of the environment.

At a minimum monitoring will be carried to ensure adherence with the following.

EMP-1	Management of Excavations
EMP-2	Surface Water Runoff Control
EMP-3	Fuels and Oils Management
EMP-4	Management of Concrete
EMP-5	Protection of Habitats and Fauna (Ecological Management)
EMP-6	Waste Management
EMP-7	Traffic Management
EMP-8	Management of Archaeology
EMP-9	Construction Noise
EMP-10	Dust Management

Checklists for daily, weekly or monthly site audits will be finalised by the Environmental Manager and the relevant personnel informed of their duties. Checklists will include (but are not limited to) confirmation that fuel is stored appropriately, waste management rules are adhered to, all environmental buffers are maintained, sediment and erosion control measures of the sediment & erosion/storm water control plan are in place and functioning, and concrete chute wash-out procedure is being followed. Checklists will be finalised with the Appointed Contractor's CEMP.

All environmental records, including completed checklists, will be retained at the site office.

Responsibility

Project Manager

Environmental Manager

Construction Manager

Project Ecologist

Project Archaeologist

Details of monitoring procedure and checklists to be finalised by Appointed Contractor's Environmental Manager

EMP 14: Environmental Accidents, Incidents and Corrective Actions

Purpose

To describe measures for the recording, investigating and close-out of any environmental accidents or incidents on the site.

Procedure

- The Environmental Manager and Construction Manager will be contacted as soon as possible where there is any incident that carries the possibility of negative environmental consequences (e.g. minor oil leakage or blockage of drainage pipe).
- The ERP and standard emergency procedures will be applied to get the incident under control and prevent injury or loss of life in the first instance.
- Work in the area will be halted and the Environmental Manager will be called to the scene to assess the situation and to decide on initial responses and remedial measures.
- Once the situation is under control, the environmental accident or incident will be recorded, and the cause investigated.
- Any remedial action required will be taken to mitigate any damage and prevent a reoccurrence.
- Corrective actions will be communicated to personnel and sub-contractors where relevant – particularly where it results to a change in procedure.

Example list of environmental accidents & incidents

- Accidents involving large spill of fuel or concrete from delivery truck (emergency response required).
- Spills of fuel and oil (minor).
- Waste or rubbish left around the site (not in dedicated waste areas).
- Breach of any buffers (ecological, archaeological, watercourse).
- Failure of any control measures (silt fences collapsed in a storm).
- Concrete chute wash out in a non-dedicated area.
- Unplanned vehicle movement off the access road.
- Unplanned vehicle movement within a buffer zone.

Responsibility

- Site staff will contact the Environmental Manager or Construction Manager as soon as possible where there is any incident that carries the possibility of negative environmental consequences.
- The Environmental Manager is responsible for alerting the relevant authorities.

Details of Environmental Accidents, Incidents and Corrective Actions Procedure, including a chain of responsibility, to be finalised by Appointed Contractor and communicated to all personnel and sub-contractors.

EMP 15: Environmental Complaints

Purpose

To describe measures for the recording and resolving complaints by third parties, including local residents or members of the public

Procedure

A complaints procedure will be established for the duration of the construction phase. Any complaints received regarding alleged noise or any other complaint will be investigated immediately. Details of the complainant, the complaint (time of occurrence and nature of noise/vibration/other) and follow up action will be logged in the complaints record. The Project Manager will develop and implement an appropriate queries/complaints procedure. Records will include full details of the concerns expressed and ensure that a formal assessment is commenced of the reported concern.

The Project Manager will also discuss complaints with and oversee an initial response to the person who has submitted the complaint/concern confirming its receipt. The Project Manager will liaise with the environmental manager and an investigation to assess the issue of concern will be carried out and decisions made to see what corrective and/or preventive action, or further investigation is necessary. With overall responsibility for complaints, the project manager will respond within a reasonable timescale and maintain records of all correspondence. If significant corrective action and external stakeholder involvement is required the site manager/project manager will oversee all elements of the process.

Complaints that may be received will be logged, assessed and appropriate action taken as soon as practical. It will be critical to the success of the project that key issues are properly addressed from the outset to create a good working relationship and an integrated team approach to resolving potential issues before they arise.

Responsibility

Project Manager

Environmental Manager

Construction Manager

Details of Environmental Complaints Procedure to be finalised by Appointed Contractor.

Appendix B

Noise Impact Assessment

MWP

Noise Impact Assessment

Tomsallagh 110kV Substation and Grid Connection

WXD Energy Ltd

April 2024

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
24255	6003	A	03/04/2024	KB	CF	CF	Final

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Appendices

1. Introduction

MWP have been commissioned to carry out a noise impact assessment of a proposed 110 kilovolt (kV) Air Insulated Switchgear (ASI) substation with overhead line (OHL) loop-in grid connection ("proposed development") in the townland of Tomsallagh, located approximately 4.5km northeast of Enniscorthy and 5km south of Ferns, Co. Wexford. This report describes the likely noise impact of the construction and operation of the proposed development.

The proposed development comprises:

- A 110kV AIS loop-in substation with associated compound, including control and operational buildings, electrical plant, equipment, cabling, lighting, CCTV, lightening masts, drainage infrastructure, security palisade fencing, and all associated and ancillary works necessary to facilitate the development.
- Erection of 2 no. OHL end masts (c. 20m high) and 2 no. lattice gantries (c. 16m high) and associated overhead cabling to enable a loop-in/loop-out grid connection to the existing Crane-Lodgewood 110kV OHL.
- New entrance and access road from the L-6065-1 local public road.

1.1 Substations and Noise Emissions

The main noise source from a substation is from the transformer(s). The noise is generally recognisable as a steady hum which arises from electric and magnetic forces within the transformer. Infrequent noise may also arise from voltage changes (tap changer) and cooling fans under high loads.

Other noise sources from electrical infrastructure include aeolian noise (wind through power lines), corona noise (hiss or crackling from high voltage power lines) and potentially noise from faulty equipment, although these are not considered significant (EirGrid, 2016).

Construction noise will occur during excavation and earth moving, laying of roads and hard standings, and transportation of materials. The construction phase will be phased and temporary.

Noise assessments were undertaken for the operational and construction phases of the proposed development.

This assessment also considers whether nearby existing and/or consented projects will likely have significant cumulative effects in combination with the proposed development, including the consented Tomsallagh Solar Farm (Wexford Co. Co. Planning Ref:20171275) (ABP-300427) within which the proposed development is located.

1.2 Grid Connection and Access Track Noise Emissions

Noise emissions from the grid connection will only occur during the construction phase. The construction phase will be phased and temporary.

During the operational phase, the OHL loop in grid connection will not introduce any new permanent noise source into the receiving environment.

There will be some temporary noise emissions during the construction of the proposed development access track.

Due to the nature of the proposed development, during operation, use of the access track will be limited to workers (one to two workers) and occasional maintenance vehicles, consequently, vehicles will occasionally cross the access track however the low volume will not be discernible from existing traffic on the surrounding local roads.

1.3 Fundamentals of Environmental Noise

Fundamentally, noise is vibrations of the air which are detectable by the ear. Sound waves radiate out spherically from a sound source in three dimensions. The human ear can detect a very wide range of pressure variations. In order to cope with this wide range, a logarithmic scale (decibel (dB) scale) is used to translate pressure values into manageable numbers from 0dB to 140dB. 0dB is the threshold of hearing, and 120dB is the threshold of pain.

Measuring in decibels means that a 3dB increase is equivalent to a doubling of the sound energy and a 10dB increase in a tenfold increase in energy. For broadband sounds which are very similar in all but magnitude, a change or difference in noise level of 1dB is just perceptible under laboratory conditions, 3dB is perceptible under most normal conditions and a 10dB increase generally appears twice as loud. A healthy human ear is also sensitive to a large range of frequencies (approximately 20 Hz to 20,000 Hz) and varies in sensitivity depending on the frequency.

The human ear is not equally sensitive to sound at all frequencies and is less sensitive to sound at low frequencies and high frequencies. A -weighting (dB A) is the main way of adjusting measured sound pressure levels (noise) to take account of the uneven human response to frequencies. **Figure 1** illustrates some everyday sounds on the dB(A) scale. A quiet bedroom is around 35dB(A), a busy office around 60dB(A) and a rock concert around 100dB(A).

Figure 1 The Level of Typical Common Sounds on the dB(A) Scale

2. Methodology

2.1 Scope of Assessment

The scope of the assessment has been defined by industry standard best practice and guidance used in Ireland. In general, this includes:

- Establishing the existing or baseline noise conditions at noise sensitive receptors in this case, residential dwellings (Section 3.1).
- Establishing noise limits based on the measured baseline noise levels in accordance with best practice and guidance (Section 2.2).
- Using computer software and by calculation, predict the noise emissions from the proposed development at the noise sensitive receptors (Section 4.1 and Section 4.2).
- Assess cumulative impacts of adjoining and surrounding developments (Section 4.3).
- Comparing the predicted noise emissions against the noise limit criteria. The predicted noise emissions must not exceed the noise limit criteria (Section 4.1 to 4.3).
- Prescribe appropriate mitigation measures for the operational and construction phases of the proposed development (Section 5).

There will be no significant sources of vibration during either the construction or operational phases of the proposed development.

2.2 Criteria for Evaluating Construction and Operational Noise Effects

2.2.1 Construction Phase - Noise

There is no statutory guidance in Ireland relating to the maximum noise levels permitted during construction works, and in the absence of statutory guidance or other specific limits prescribed by local authorities, the thresholds outlined in the British Standard (BS) 5228-12009+A1:2009, Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise has been adopted in this assessment, as they are recognised by the expert community as the most appropriate in the assessment of construction noise. The noise levels, which are reproduced in Table 1, are typically deemed acceptable at receptors.

Table 1 Construction Stage Noise Level Thresholds

Assessment category and threshold value period (T)	Threshold values, LAeqTdB		
	Category A Note A	Category B Note B	Category C Note C
Night-time (23:00 to 07:00hrs)	45	50	55
Evening and Weekends Note D	55	60	65

Assessment category and threshold value period (T)	Threshold values, LAeqTdB		
	Category A Note A	Category B Note B	Category C Note C
Daytime (07:00 – 19:00hrs) and Saturdays (07:00 – 13:00hrs)	65	70	75

Note A: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B: Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

The existing ambient noise levels (LAeq) are less than the Category A threshold values from BS 5228 'Example method 1 – The ABC method' in the daytime, evening, and night-time. Therefore, at the closest residential noise sensitive locations, the combined ambient noise levels with predicted noise from construction works should not exceed the Category A values outlined for daytime, evening and night-time periods.

2.2.2 Operational Phase – Noise

There are no specific noise criteria relating to the operation of substation and associated infrastructure. The setting of appropriate noise criteria for this assessment is based on a review of the EPA's document 'Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) – 2016'. Section 4.4.2 of the guidance notes sets out a screening process to set the appropriate noise criteria according to the location of the development and the measured baseline results. The guidance notes provide a flow chart or the Identification of Appropriate Noise Criteria, see **Figure 2**.

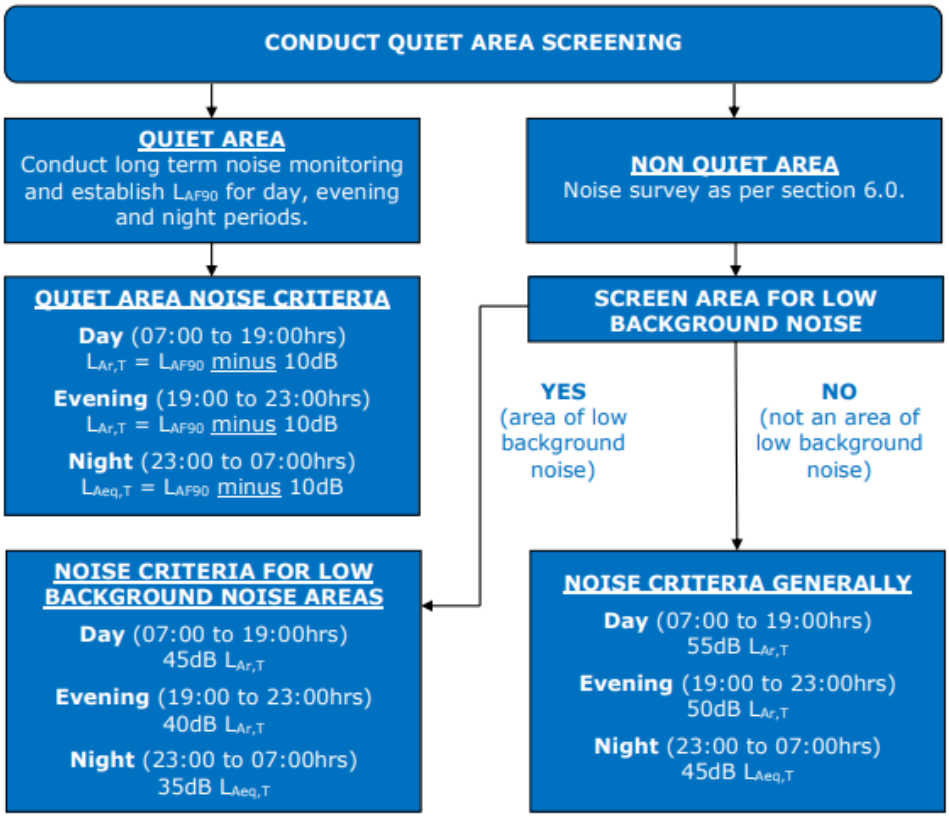

Figure 2 Flow Chart for the Identification of Appropriate Noise Criteria (Source: Guidance Note for Noise Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)

The aforementioned guidelines requires that sites are screened to determine whether they are a 'quiet area' in accordance with the EPA publication Environmental Quality Objectives – Noise in Quiet Areas (2003). This screening is required to determine the most applicable noise limits for sites. The site does not meet the defined criteria of a 'Quiet Area'.

Next, NG4 requires the site to be screened to determine if the site is in an 'area of low background noise'. Background noise levels are examined to see if they satisfy the following criteria:

- Average Daytime Background Noise Level ≤40dB LAF90,
- Average Evening Background Noise Level ≤35dB LAF90,
- Average Night-time Background Noise Level ≤30dB LAF90.

In order for a site to be considered an 'area of low background noise', all three criteria above must be satisfied.

Background noise levels of the baseline survey, which are discussed further in Section 3.1, determined that the areas monitored were not considered an 'an area of low background noise', as not all of the above criteria were satisfied. Therefore, for this assessment, the 'All other Areas' criteria, refer to Table 2, is applied at sensitive receptors for this assessment. If the predicted operation noise exceeds the 'All other Areas Noise Category' criteria (i.e 55dB Daytime, 50dB Evening, 45dB Night-time), then this is assessed as a potentially significant effect.

Table 2 Recommended Noise Limit Criteria (NG4, January 2016)

Scenario	Daytime Noise Criterion,dB, Lar,T (07:00 to 19:00hrs)	Evening Noise Criterion,dB, Lar,T (19:00 to 23:00hrs)	Night-time Noise Criterion,dB, Lar,T (23:00 to 07:00hrs)
Quiet Area	Noise from the licensed site to be at least 10dB below the average daytime background noise level measured during the baseline noise survey	Noise from the licensed site to be at least 10dB below the average evening background noise level measured during the baseline noise survey.	Noise from the licensed site to be at least 10dB below the average night-time background noise level measured during the baseline noise survey
Areas of Low Background Noise	45dB	40dB	35dB
All other Areas	55dB	50dB	45dB

During daytime and evening periods, rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all sensitive locations. A penalty of 5dB for tonal and/or impulsive elements is to be applied to the daytime and evening measured LAeq, T values to determine the appropriate rating level (LAr,T). During the night-time period no tonal or impulsive noise from the facility should be clearly audible or measurable at any noise sensitive location.

3. Existing Receiving Environment

3.1 Baseline Noise Survey

This section describes the baseline noise environment in terms of the noise monitoring locations, existing noise sources at these locations and the prevailing background noise levels.

A baseline environmental noise survey was undertaken in the vicinity of the proposed development to quantify the existing noise environment at the nearest noise-sensitive locations that may be affected by the proposed development. In this case, the nearest noise-sensitive locations are residential.

3.1.1 Survey Periods

MWP personnel (Kieran Barry) conducted the noise monitoring on 17th January 2024. Noise monitoring was carried during day, evening, and night-time periods.

3.1.2 Instrumentation and Setup

The baseline noise survey was carried out in accordance with best practice and guidelines relevant to the measurement of environmental noise, particular guidance set out in the Environmental Protection Agencies (EPA) Noise Guidance 4 document.

The sound level meter was located away from reflective surfaces, in open ground. The microphone was at a height of 1.5m above the ground. The measurements were performed using the following equipment:

Table 3 Construction Stage Noise

Manufacturer	Equipment Model	Serial Number	Microphone	Calibration Date
Larson Davis	831	0003826	PCB PCB377B02	10th May 2022

The microphone was protected using a proprietary Larson Davis windshield. Before and after the survey the measurement apparatus was check calibrated using a Larson Davis CAL200 Sound Level Calibrator Serial Number 11262 that produces a sound level of 93.96dB re. 2 x 10^{-5} PA, at a frequency of 1k Hz.

The calibration certificates are attached as **Appendix A**. Weather conditions were cold and dry with light winds less than 5 meters per second, ideal for environmental noise monitoring.

3.1.3 Procedure

Noise measurements were conducted at the two locations identified. Measurements were conducted with sample periods of 15 minutes for both locations for daytime, evening and night-time periods.

The survey results were noted onto a Survey Record Sheet immediately following each sample and were also saved to the instrument memory for later analysis where appropriate. Survey personnel noted the primary sources contributing to noise build-up during the survey.

3.1.4 Measurement Parameters

The noise survey results are presented in terms of the following parameters:

- LAeq is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. This parameter is representative of the specific noise from plant when plant is the dominant noise source, i.e., there is no extraneous noise from sources such as traffic.
- LA90 is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise. This parameter is representative of the specific noise from plant when there is extraneous noise from intermittent noise sources such as intermittent traffic.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa. A summary of the acoustic terminology used in this report is included in Appendix B.

3.1.5 Noise Sensitive Receptors

The noise sensitive receptors (NSRs), shown in Figure 3, are the closest residential properties to the proposed development and were identified through review of the proposed development site layout design. The noise monitoring locations (NMLs) chosen to represent the noise sensitive receptors are also shown in Figure 3 (NML1 represents NSR1 to NSR7 and NML2 is representative of NSR8 to NSR24). The selection of noise monitoring locations (NMLs) was supplemented by reviewing aerial images of the study area and other online sources of information (e.g. Google Earth) and verified on the ground.

Photos of each monitoring location are shown in Appendix C.

The noise monitoring locations illustrated in Figure 3 can be considered representative of the ambient noise environment of the closest NSRs which may be impacted by the proposed development.

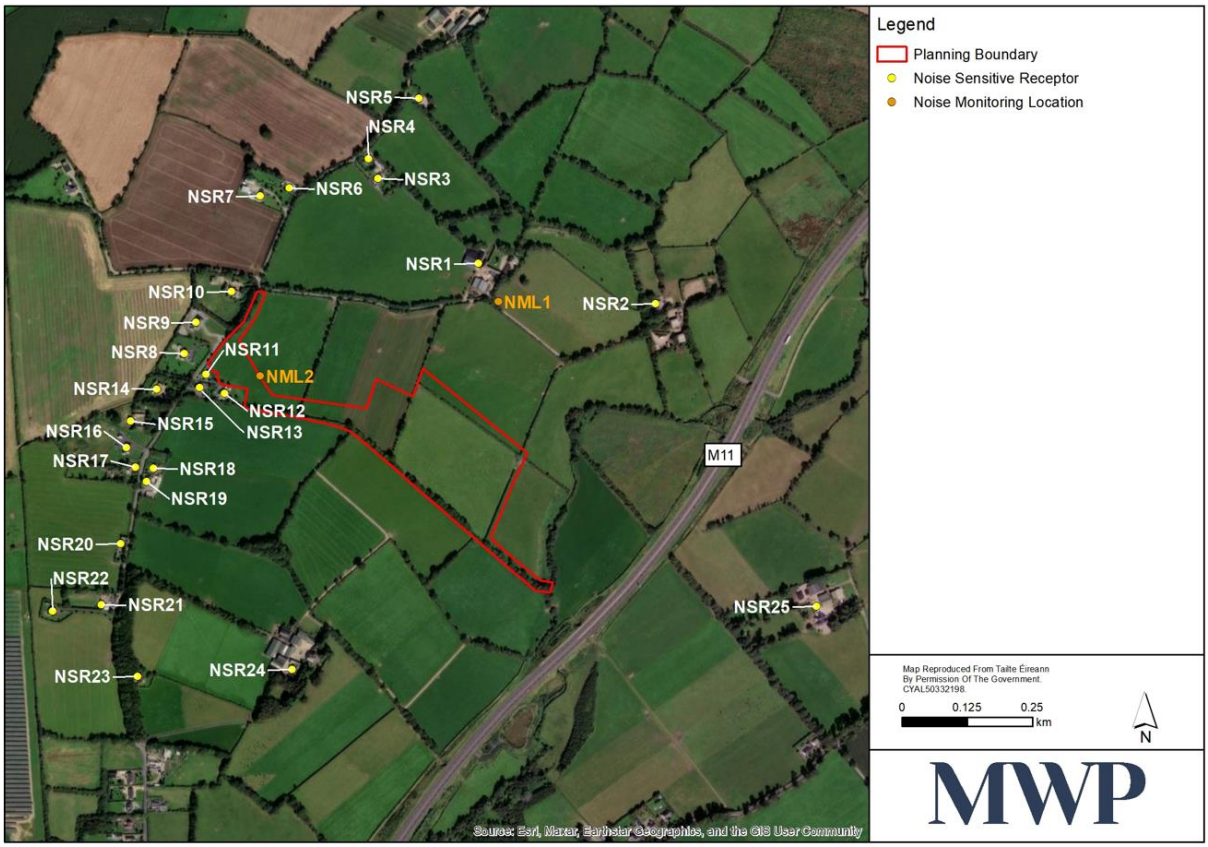

Figure 3 Noise Monitoring Locations

At NML1, the main continuous noise was a low sound of the motorway M11 which is approximately 500m southeast of the monitoring point. Other contributing noise during the daytime period was rustling of trees and birds chirping. There were occasionally cows mooing in farmyard recorded also.

The evening period noise consisted of low noise from the M11 as well as rustling of trees. Other noise noted were low sound dogs occasionally barking at distance.

During the night-time period, NML1 was generally quiet except for occasional traffic noted along and rustling of trees.

At NML2, during the daytime noise readings, there was occasionally a low noise of farm machinery in one of the distant fields from monitoring location. There were also cars passing on local road closest to the monitoring point occasionally. Noise from the M11 was less prevalent at this monitoring location. Other noise contributions at this location included rustling of trees birds chirping and occasionally cows mooing in nearby fields.

The evening and night-time periods were generally quiet at NML2, with cars occasionally passing on the local road which contributed to the soundscape. At this noise monitoring location, noise from cars intermittently using the M11 motorway were not noticeable.

Table 4 NML1 Baseline Noise Results

NML1	Time and Date	L_{Aeq} 15min dB	L_{A90} 15min dB
Daytime	24/01/24 13:15	44	37
	24/01/24 17:20	46	41
	24/01/24 17:47	47	44
Average		**46**	**41**
Evening	24/01/24 19:07	44	40
Night	24/01/24 23:01	39	31
	24/01/24 23:18	38	31
Average		**39**	**31**

Table 5 NML2 Baseline Noise Results

NML2	Time and Date	L_{Aeq} 15min dB	L_{A90} 15min dB
Daytime	24/01/24 13:46	38	34
	24/01/24 14:16	38	35
	24/01/24 14:32	39	36
Average		**38**	**35**
Evening	24/01/24 19:26	42	39
Night	24/01/24 23:36	34	30
	24/01/24 23:52	34	29
Average		**34**	**30**

4. Potential Impacts

4.1 Construction Phase Noise

This section presents the predicted noise levels associated with the construction of various elements of the proposed development. The main noise elements of the construction phase consist of the following:

- 110kV Substation Works
- Access Track Works
- Grid Connection Works
- Construction Traffic Noise

The main noise sources associated with the proposed development include heavy machinery and support equipment used during construction.

For the purpose of assessing the likely construction phase impacts, the construction phase has been separated into separate categories as described in the following sections. The noise levels described in the following sections for the various construction phases are indicative only and are based on theoretical worst-case assumptions in order to demonstrate that it will be possible to undertake the works without significant noise effects. By their nature the works are temporary and will only potentially impact on a small number of receptors at any one time. In reality, construction noise levels will be lower than those presented.

The associated noise levels have been sourced from BS 5228 Noise and Vibration from open and construction sites, totalled, and extrapolated to the nearest NSR. The resultant noise level is then compared against the relevant noise threshold. The result is a theoretical worst case, as it assumes all machinery will be operating simultaneously which will not be the case and accounts for attenuation due to distance only. In reality there will be further noise attenuation due to atmospheric absorption, ground absorption, and landform screening. Therefore, the noise levels presented herein are an overestimate.

Using the following equation, noise emissions from the construction site are extrapolated to the nearest noise sensitive receptor.

$$SPL2 = SPL1 - 20\log(r2/r1)$$

Where:

- Sound Pressure Level 1 (SPL1) = Known noise level at 10m from construction site
- Sound Pressure Level 2 (SPL2) = Unknown noise level at nearest receptor
- r2 = Distance between noise sensitive receptor and construction site

4.1.1 Substation Construction Noise

It is expected that the overall installation and construction phase for the proposed development will have a 14 to 18 month duration. A variety of items of plant will be in use for the purposes of site preparation, construction of the compound, substation and other site works. There will be vehicular movements to and from the proposed development that will make use of existing roads. It is anticipated that the construction of the Proposed Development will be completed during normal construction hours, i.e., 07.00 and 19.00 Monday to Friday and 08.00 to 14.00 on Saturday. Due to the nature of these activities, there is potential for generation of noise.

Table 6 presents the predicted noise levels from a number of plant items required during the construction phase of the substation at the closest residential location i.e., the property approximately 280m north of the substation, NSR1. The plant and machinery shown in Table 6 is typical of plant commonly used in substation construction activities and can provide an accurate assessment of construction noise emissions. Noise levels from the equipment identified above have been sourced from BS5228 Noise Database for Noise and Vibration Control on Construction and Open Site 1& 2: 2014+A1.

Table 6 Plant and Machinery and associated noise levels typically used in substation construction

Plant and Machinery	Sound Pressure Level @10m dB(A)	Predicted Sound Pressure Level @ 280m LeqdB(A)
Telescopic Handler	71	
Mobile Crane	70	
30-50T Excavator	79	
15-30T Excavator	78	
12T Roller	80	
Dump truck	78	**57**
Tractor & Trailer	79	
15-20T Rubber Tired Excavator	68	
3-10T mini digger	69	
Diesel Generator	61	
Total	**86**	

The resultant theoretical worst-case noise emission level at the nearest receptor, NSR1, is 57dB(A). This is below the construction noise thresholds of 65dB(A) for daytime. Working hours at the site during the construction phase will be limited to 07:00 to 19:00 Monday to Friday and 08:00 to 14:00 Saturday, therefore no construction noise is anticipated for evening and night-time hours. There will be no intrusive works on Sundays without written agreement from the Planning Authority.

NSR1 is belonging to an involved landowner in the proposed development. The next nearest receptor to the proposed substation construction area, NSR12, is located approximately 360m to the west. Noise levels from substation construction are predicted to be 55dB(A) at NSR12 and is also below the construction noise thresholds of 65dB(A) for daytime.

4.1.2 Access Track

The proposed access track will be routed through an existing field, located to the west and adjacent to the proposed substation.

Dwellings in proximity to the access track route, will experience elevated noise levels from the excavation and road resurfacing machinery during the period it takes to pass the receptor enroute to the substation. Given the very short time frame, the temporary and minor nature of the works and machinery (back-hoe loader, dump truck and road re-surfacing plant) in combination with the low number of receptors impacted at any one time, the potential impact is not considered significant. Noise emissions are already elevated on the adjacent road due to passing traffic.

4.1.3 Grid Connection

The grid connection works are considered minor scale and consist of connecting the substation via an OHL loop in connection to existing electricity lines. Construction works noise will not be significant for these works and are adequate distance noise sensitive receptors, therefore no significant noise impacts are expected from these works.

4.1.4 Construction Traffic

During the construction works there will be deliveries of building materials to the site, and removal of excavated material off-site will be made. The volume of traffic generated by the transportation requirements will be minimal.

Construction traffic will include:

- HGVs importing construction materials including concrete and piping.
- HGVs exporting waste/spoil materials.
- HGVs delivering plant and fuel.
- Traffic associated with onsite construction personal.

Construction site traffic will use the existing roads surrounding the proposed development. The relatively low volume of additional traffic will be temporary and intermittent over the construction phase and will not be discernible from existing daytime traffic volumes on local roads surrounding the development.

4.2 Operational Phase

There is no statutory Irish guidance relating to the maximum permissible noise level that may be generated during the operational phase of the proposed facility.

The EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA, 2016) provides noise guidance to operator's subject to Integrated Pollution Control (IPC), Industrial Emissions (IE) or waste licences. While the proposed development does not fall under the remit of the EPA, the EPA's NG4 guidelines are considered the most appropriate noise assessment criteria as they follow best practice principles. Hence, the proposed development is appraised against the EPA's NG4 guidelines as set out in Table 2. As the baseline monitoring determined that the area be designated under the 'All other Areas Category'

criteria, the limits 55dB Daytime, 50dB Evening, 45dB Night-time, will be used to assess whether there is a potentially significant effect.

4.2.1 Noise Associated with Substations

There are several ways in which noise can be generated from electricity infrastructure. Continuously radiated noise is the most noticeable to neighbours and this is associated primarily with transformers. This is acknowledged in the 2016 EirGrid research report (EirGrid Evidence Based Environmental Studies Study 8: Noise. Literature review and evidence based filed study on the noise effects of high voltage transmission development) on noise from electrical infrastructure which states:

'there is strong evidence that the only relevant noise sources are the power transformers and associated cooling systems'.

Transformers typically generate a low frequency humming noise, the extent of which depends on the transformer type and the level of noise attenuation at the substation. Generally, modern transformers are manufactured with a specified and guaranteed emission level. Improvements in the manufacture of transformers have reduced the associated level of noise emissions and hence modern transformers are typically quieter than equivalent capacity older transformers.

An AIS substation, such as the one proposed, is where the electrical equipment infrastructure is primarily installed outdoors, with the use of natural air as an insultation between circuits.

The proposed development is a 110kV AIS substation. The components of which consist of a compound containing outdoor AIS equipment comprising busbars, line bays, grid transformers and associated bays, house transformers and control building.

The sound power levels for a typical 110kV substation is in the order of 93dB(A). For the purpose of this assessment, 93dB(A) is used as the sound power level output for the 110 kV substation in the noise model, refer to Figure 3.

4.2.2 Operational Noise Prediction Methodology

The noise predictions were undertaken using noise prediction software, specifically Bruel & Kjaer's software (iNoise 2024.1). The software calculations are based on ISO 9613, Attenuation of sound during propagation outdoors, Part 2, General Method of Calculation. The ISO 9613-2 model can take account of the following factors that influence sound propagation outdoors:

- Geometric divergence
- Air Absorption
- Reflecting obstacles
- Screening
- Vegetation
- Ground reflections

The following inputs were used to inform the noise prediction software.

Table 7 Model Input Data

Item	Description
Noise Source Locations	Planning Drawings
House Locations	Aerial Imagery
Acoustic Emission	Estimate
Source Height	2m
Landform	Generally flat (no landform barriers)
Ground Factor	0.8 Note 1
Receptor Height	1.5m bungalows and 4m at two story residential receptors
Wind Direction	Downwind
Relative Humidity	70%
Temperature	10°C

Note 1: Ground Factor is a value between 0 and 1, where 0 represents hard/ reflective surfaces and 1, represents soft absorbent surfaces.

4.2.3 Operational Noise Prediction Results and Discussion

The noise model, shown in **Figure 4**, shows the predicted noise levels from the proposed development in operation, at the noise sensitive receptors (NSRs). **Table 8** shows the predicted noise levels at the NSRs from the proposed 110kV substation in relation to the operational noise targets.

Table 8 Operational Noise Levels and Operational Noise Targets

NSR	Location	Predicted Noise Levels dB (A)	Daytime	Evening	Night-time
		Day/Evening/Night	Operational Noise Target, LAeqdB (A)	Operational Noise Target, LAeqdB (A)	Operational Noise Target, LAeqdB (A)
NSR1	Refer Figure 3	27	55	50	45
NSR2	Refer Figure 3	24	55	50	45
NSR3	Refer Figure 3	24	55	50	45
NSR4	Refer Figure 3	23	55	50	45
NSR5	Refer Figure 3	21	55	50	45

NSR	Location	Predicted Noise Levels dB (A) Day/Evening/Night	Daytime Operational Noise Target, LAeqdB (A)	Evening Operational Noise Target, LAeqdB (A)	Night-time Operational Noise Target, LAeqdB (A)
NSR6	Refer Figure 3	23	55	50	45
NSR7	Refer Figure 3	22	55	50	45
NSR8	Refer Figure 3	25	55	50	45
NSR9	Refer Figure 3	24	55	50	45
NSR10	Refer Figure 3	25	55	50	45
NSR11	Refer Figure 3	26	55	50	45
NSR12	Refer Figure 3	28	55	50	45
NSR13	Refer Figure 3	26	55	50	45
NSR14	Refer Figure 3	25	55	50	45
NSR15	Refer Figure 3	24	55	50	45
NSR16	Refer Figure 3	24	55	50	45
NSR17	Refer Figure 3	24	55	50	45
NSR18	Refer Figure 3	25	55	50	45
NSR19	Refer Figure 3	25	55	50	45
NSR20	Refer Figure 3	23	55	50	45
NSR21	Refer Figure 3	22	55	50	45
NSR22	Refer Figure 3	22	55	50	45
NSR23	Refer Figure 3	22	55	50	45
NSR24	Refer Figure 3	27	55	50	45
NSR25	Refer Figure 3	20	55	50	45

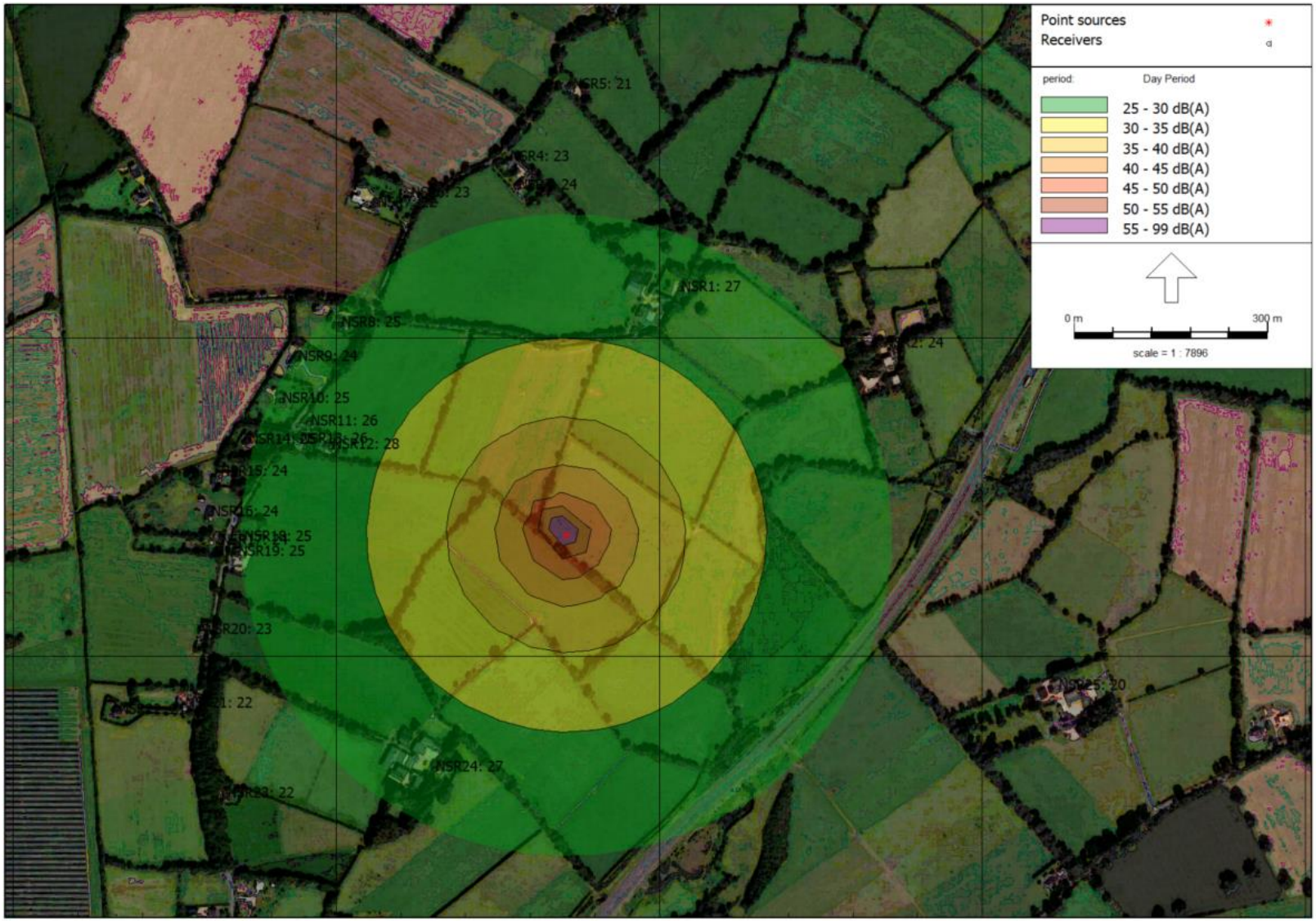

Figure 4 Noise Model

Figure 4 and Table 8 show that the predicted noise emissions at the nearest sensitive receptor, NSR1, is 27dB (A) which is below operational noise targets when the proposed development is operating. It should be noted that NSR1 is an involved landowner of the proposed development. The next nearest non-involved NSR is NSR12 where the predicted noise emissions from the proposed 110 kV substation is predicted to be 28dB (A).

Noise emissions at the other receptors further away from the proposed development, dissipate further due to distance and will therefore be less than the highest predicted noise level at NSR1 and NSR12, refer to Figure 4 and Table 8.

Overall, the noise model demonstrates that noise emissions from the proposed development are not predicted to exceed the noise limit targets set to prevent significant operation noise impacts at the nearest noise sensitive receptors.

It is likely, that in reality, noise levels will be lower than predicted due to the conservative assumptions used in the prediction methodology.

4.2.4 Operational Phase Traffic Noise

There will be a low number of workers required during the operational phase. There will also be occasional traffic coming to site for maintenance and deliveries.

Additional traffic during the operational phase will not increase by the order of 25%, which is required for a 1dB increase. Significant noise impacts as a result of increased traffic during the operational phase are therefore not anticipated.

4.3 Cumulative Impacts

This assessment considers whether any of these existing/approved projects will likely have significant cumulative effects in combination with the proposed development. The assessment also considers whether all of the existing/approved projects taken together as a whole will likely have significant cumulative effects in combination with the proposed development. There are many projects listed on the planning databases considered, however, the focus for this assessment was on the proximity, scale and nature of those projects in relation to the proposed development and on those which could potentially exacerbate environmental effects and thus be of significance to the cumulative effects assessment. Projects considered in this cumulative assessment are outlined in Section 3.1 of the accompanying Environmental and Planning Report (document reference 24255-6001 Environmental and Planning Report).

4.3.1 Construction Phase Cumulative Impacts

The proposed access track would be constructed in advance of any the main construction works for the proposed development. Therefore, there is no likelihood of in combination or cumulative noise effects from this element of the project predicted.

It is probable however that the proposed development will be constructed in parallel with the adjoining consented Tomsallagh Solar Farm project (Wexford County Council Planning Ref 20171275, An Bord Pleanála Planning Reference ABP-300427-17).

TMS Environmental carried out a noise assessment for the Tomsallagh Solar Farm Project (TMS, 2017) which concluded that noise levels are not predicted to exceed 65dB (A) at the site boundary. For the purposes of the cumulative assessment, it is assumed that 65dB (A) will be the worst case noise level at site boundary from solar farm works.

The highest level of construction noise from the proposed development substation works was predicted to be 57dB (A) at NSR1. The cumulative noise at NSR1 would therefore be 66dB (A) which exceeds the adopted construction noise criteria of 65dB (A). The likelihood however of all machinery from construction works of both projects operating simultaneously is low. Therefore a noise level in excess of 65dB(A) is not anticipated at the site boundary solar farm works.

The next nearest receptor to the proposed substation construction area, NSR12, is located approximately 360m to the west. Noise levels from substation construction are predicted to be 55dB (A). Taking account of the solar farm construction works and predicated noise levels being 65dB(A), the cumulative construction noise levels are predicted to be 65dB (A) if all elements of construction works for both solar farm and the proposed development are ongoing simultaneously. Therefore the adopted construction noise limits of 65dB(A) are not exceeded at this receptor.

The Tomsallagh Solar Farm Extension (Wexford County Council Planning Ref 20180055 and An Bord Pleanála Ref 301329-18) is approximately 750m northeast of the proposed substation. There is adequate distance between the proposed substation development to conclude that there will be no cumulative noise impacts which would exceed the adopted construction noise limit of 65dB (A).

The cumulative construction works noise levels from the above projects are not predicted to exceed 65dB (A) at the nearest non-involved NSR (NSR12) and therefore no significant cumulative impacts are predicted.

4.3.2 Operational Phase Cumulative Impacts

For the permitted Tomsallagh Solar Farm (Wexford County Council Planning Ref 20171275 An Bord Pleanála Planning Reference ABP-300427-17), the TMS Environmental noise report predicted operational noise levels to be between 23 and 31dB (A) at the nearest sensitive receptors.

The highest operational noise at any NSR from the proposed development substation is predicted to be 28dB (A).

In a worst-case scenario, the combined cumulative noise of both the solar and substation operating together is therefore predicted to be 33dB (A) at the nearest sensitive receptor, which is well below the operational noise targets for this assessment (55dB for daytime, 50dB for evening and 45dB night-time).

The Tomsallagh Solar Farm Extension (Wexford County Council Planning Ref 20180055 and An Bord Pleanála Ref 301329-18) is approximately 750m northeast of the proposed development substation which is sufficient distance for there to be no cumulative noise impacts, in combination with the proposed development substation.

There are therefore no significant cumulative impacts predicted during the operational phase of the proposed development.

5. Mitigation Measures

5.1 Construction Phase

No specific construction phase mitigation measures are required as the predicted noise levels are not anticipated to exceed construction noise thresholds. However, construction works will be carried out in accordance with best practice and in line with recommendations contained within BS 5228-1:2009+A1:2014.

To mitigate against the impacts of noise on the local community during construction, the following measures are proposed:

- A pre-construction commitment to managing nuisance noise will be agreed through notification and consultation with affected parties, if deemed necessary.
- Working hours at the site during the construction phase will be limited to 07.00 to 19.00 Monday to Friday and 08.00 to 14.00 Saturday. No intrusive works on Sundays or public holidays[1].
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006).

The main control measures will be control of noise at source using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General).
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution).
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment).
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment); and,
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).

In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.

[1] Without written agreement from the Planning Authority

- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plant start-up will be sequential rather than all together.
- Internal access tracks to be well maintained.
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations.
- Drop heights for materials such as gravels will be minimised whenever practicable.

5.2 Operational Phase

The results demonstrate that the proposed development will not exceed the noise limit criteria, refer to **Table 2**, at the nearest sensitive receptors. Therefore, no mitigation measures are required.

6. Conclusion

There will be noise emissions associated with the construction phase, but these will be temporary and of short duration and not considered to be significant. The predicted noise emissions based on the representative machinery typical for this scale of project are expected not to exceed the recommended noise thresholds typically adopted for construction projects in Ireland.

Once operational the predicted noise emissions do not exceed the noise limit criteria adopted for this project which are based on EPA guidance.

7. References

Tomsallagh Solar Farm Noise Impact Assessment (TMS, 2017)

EirGrid Evidence Based Environmental Studies Study 8: Noise

BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 – Vibration.

BS 6472 Guide to evaluation of human exposure to vibration in buildings (2008): Part 1 - Vibration sources other than blasting.

BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration.

BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings

Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (EPA, 2016).

ISO 1996: 2017: Acoustics – Description, measurement, and assessment of environmental noise.

Appendix A

Equipment Calibration Certificates

NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to

Malachy Walsh & Partners
Reen Point
Blennerville
Tralee
Co. Kerry

Certificate Number	232454
Item Calibrated	Larson Davis CAL200 Sound Level Calibrator
Serial Number	11262
ID Number	None
Order Number	29155
Date Received	07 Jun 2023
NML Procedure Number	AP-NM-13
Method	The above calibrator was allowed to stabilize for a suitable period in laboratory conditions. It was then calibrated by measuring the sound pressure level generated in its measuring cavity (half-inch configuration). The calibrator's operating frequency was also measured.
Calibration Standards	Norsonic 1504A Calibration System incorporating: Agilent 34401A Digital Multimeter, File No. 0736 [Cal due: 16 Aug 2023] B & K 4134 Measuring Microphone, File No. 0744 [Cal due: 10 Jul 2023] B & K 4228 Pistonphone, File No. 0740 [Cal due: 10 Jul 2023]

Calibrated by — David Fleming

Approved by — Paul Hetherington

Date of Calibration: 14 Jun 2023

Date of Issue: 14 Jun 2023

CIPM MRA

This certificate is consistent with Calibration and Measurement Capabilities (CMC's) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

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Glasnevin | Dublin 11 | Ireland

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NSAI

National Metrology Laboratory

Certificate of Calibration

Issued to

Malachy Walsh & Partners
Reen Point
Blennerville
Tralee
Co. Kerry

Certificate Number	221922
Item Calibrated	Larson Davis Sound Level Meter with PCB PCB377B02 Microphone
Serial Number	0003826 (SLM) and 150020 (Microphone)
ID Number	None
Order Number	27026
Date Received	10 May 2022
NML Procedure Number	AP-NM-09
Method	The above sound level meter was allowed to stabilise for a suitable period in laboratory conditions. It was then calibrated by carrying out the verification tests detailed in IEC 61672-3 (2006), *Periodic tests, specification for the verification of sound level meters*. This standard specifies a procedure for the periodic verification of conformance of a sound level meter or integrating-averaging meter to IEC 61672-1 (2003).
Calibration Standards	Norsonic 1504A Calibration System incorporating: SR DS360 Signal Generator, No. 0735 [Cal Due Date: 10 Jun 2022] Agilent 34401A Digital Multimeter, No. 0736 [Cal Due Date: 10 Jun 2022] B&K 4134 Measuring Microphone, No. 0744 [Cal Due Date: 03 Jun 2023] B&K 4228 Pistonphone, No. 0740 [Cal Due Date: 04 Jun 2023] B&K 4226 Acoustical Calibrator, No. 0150 [Cal Due Date: 07 Oct 2022]

Calibrated by	David Fleming	**Approved by**	PP Paul Hetherington
Date of Calibration	31 May 2022	**Date of Issue**	31 May 2022

CIPM MRA

This certificate is consistent with Calibration and Measurement Capabilities (CMC's) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures. Under the MRA, all participating institutes recognize the validity of each other's calibration certificates and measurement reports for quantities, ranges and measurement uncertainties specified in Appendix C (for details see www.bipm.org)

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Appendix B

Glossary of Noise Related Terminology

Terminology	Description
A-weighting	a filter that down-weights low frequency and high frequency sound to better represent the frequency response of the human ear when assessing the likely effects of noise on humans
acoustic character	one or more distinctive features of a sound (e.g. tones, whines, whistles, impulses) that set it apart from the background noise against which it is being judged, possibly leading to a greater subjective effect than the level of the sound alone might suggest
acoustic screening	the presence of a solid barrier (natural landform or manmade) between a source of sound and a receiver that interrupts the direct line of sight between the two, thus reducing the sound level at the receiver compared to that in the absence of the barrier
ambient noise	All-encompassing noise associated with a given environment, usually a composite of sounds from many sources both far and near, often with no particular sound being dominant
annoyance	a feeling of displeasure in this case evoked by noise
attenuation	the reduction in level of a sound between the source and a receiver due to any combination of effects including: distance, atmospheric absorption, acoustic screening, the presence of a building façade, etc.
audio frequency	any frequency of a sound wave that lies within the frequency limits of audibility of a healthy human ear, generally accepted as being from 20 Hz to 20,000 Hz
background noise	the noise level rarely fallen below in any given location over any given time period, often classed according to day-time, evening or night-time periods (for the majority of the population of the UK the lower limiting noise level is usually controlled by noise emanating from distant road, rail or air traffic)
dB	abbreviation for 'decibel'
dB(A)	abbreviation for the decibel level of a sound that has been A-weighted
decibel	the unit normally employed to measure the magnitude of sound
directivity	the property of a sound source that causes more sound to be radiated in one direction than another
equivalent continuous sound pressure level	the steady sound level which has the same energy as a time varying sound signal when averaged over the same time interval, T, denoted by $L_{Aeq,T}$
external noise level	the noise level, in decibels, measured outside a building
filter	a device for separating components of an acoustic signal on the basis of their frequencies
frequency	the number of acoustic pressure fluctuations per second occurring about the atmospheric mean pressure (also known as the 'pitch' of a sound)
frequency analysis	the analysis of a sound into its frequency components

Terminology	Description
ground effects	the modification of sound at a receiver location due to the interaction of the sound wave with the ground along its propagation path from source to receiver
hertz	the unit normally employed to measure the frequency of a sound, equal to cycles per second of acoustic pressure fluctuations about the atmospheric mean pressure
impulsive sound	a sound having all its energy concentrated in a very short time period
instantaneous sound pressure	at a given point in space and at a given instant in time, the difference between the instantaneous pressure and the mean atmospheric pressure
internal noise level	the noise level, in decibels, measured inside a building
L_{Aeq}	the abbreviation of the A-weighted equivalent continuous sound pressure level
L_{A10}	the abbreviation of the 10 percentile noise indicator, often used for the measurement of road traffic noise
L_{A90}	the abbreviation of the 90 percentile noise indicator, often used for the measurement of background noise
level	the general term used to describe a sound once it has been converted into decibels
loudness	the attribute of human auditory response in which sound may be ordered on a subjective scale that typically extends from barely audible to painfully loud
noise	physically: a regular and ordered oscillation of air molecules that travels away from the source of vibration and creates fluctuating positive and negative acoustic pressure above and below atmospheric pressure. Subjectively: sound that evokes a feeling of displeasure in the environment in which it is heard, and is therefore unwelcomed by the receiver
noise emission	the noise emitted by a source of sound
noise immission	the noise to which a receiver is exposed
noise nuisance	an unlawful interference with a person's use or enjoyment of land, or of some right over, or in connection with it
octave band frequency analysis	a frequency analysis using a filter that is an octave wide (the upper limit of the filter's frequency band is exactly twice that of its lower frequency limit)
percentile exceeded sound level	the noise level exceeded for n% of the time over a given time period, T, denoted by $L_{An,T}$
receiver	a person or property exposed to the noise being considered
residual noise	the ambient noise that remains in the absence of the specific noise whose effects are being assessed
sound	physically: a regular and ordered oscillation of air molecules that travels away from the source of vibration and creates fluctuating positive and negative acoustic pressure above and below atmospheric pressure subjectively: the sensation of hearing excited by the acoustic oscillations described above (see also 'noise')
sound level meter	an instrument for measuring sound pressure level

Terminology	Description
sound pressure amplitude	the root mean square of the amplitude of the acoustic pressure fluctuations in a sound wave around the atmospheric mean pressure, usually measured in Pascals (Pa)
sound pressure level	a measure of the sound pressure at a point, in decibels
sound power level	the total sound power radiated by a source, in decibels
spectrum	a description of the amplitude of a sound as a function of frequency
Standardised wind speed	Values of wind speed at hub height corrected to a standardised height of ten metres using the same procedure as used in wind turbine emission testing
threshold of hearing	the lowest amplitude sound capable of evoking the sensation of hearing in the average healthy human ear (0.00002 Pa)
tone	the concentration of acoustic energy into a very narrow frequency range

Appendix C

Noise Monitoring Location Photos

NML1 NML2

Appendix C

Archaeological Impact Assessment for Tomsallagh Solar Farm (AIA, 2017)

IAC Archaeology

20171275

ARCHAEOLOGICAL AND BUILT HERITAGE ASSESSMENT AT TOMSALLAGH, COUNTY WEXFORD

ON BEHALF OF: JBM SOLAR DEVELOPMENTS LTD

AUTHOR: FAITH BAILEY

SEPTEMBER 2017

IRISH ARCHAEOLOGICAL CONSULTANCY LTD
ARCHAEOLOGY & CONSERVATION CONSULTANTS

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ABSTRACT

20171275

Irish Archaeological Consultancy Ltd has prepared this report on behalf of JBM Solar Developments Ltd, to study the impact, if any, on the archaeological and built heritage resource of the proposed solar farm development at Tomsallagh, County Wexford (OS Sheet 20). The assessment was carried out Faith Bailey of IAC Ltd.

The area of proposed development is located within the townland of Tomsallagh and the parish of Clone within the barony of Scarawalsh, County Wexford. The site consists of 12 fields of pasture that covers 44.56ha. There are no recorded monuments located within the site, although three sites are recorded within 500m. The closest is formed by an early Neolithic pit (WX020-081), located c. 165m southeast of the site. All three sites were subject to archaeological excavation in advance of the M11 Road Scheme. The proposed solar farm development will not impact of any of these sites.

There are no protected or NIAH structures located within the immediate environs of the proposed development area. The closest consists of Tomsallagh House, which is situated c. 460m to the north-northwest (RPS WCC1122, NIAH 15702031). This structure also possesses a small demesne landscape, which survives in reasonable condition.

The proposed development is low impact in nature as minimal excavations are required for access roads, service trenches and the piled mounts for the solar panels. However, it is possible that ground disturbances associated with the development may have an adverse impact on previously unrecorded features or deposits that may survive beneath the existing ground level, with no surface expression.

It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist. It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

No impact upon the built heritage resource is predicted as a result of the proposed development going ahead. As such no mitigation is deemed to be necessary.

CONTENTS

20171275

LIST OF FIGURES

LIST OF PLATES

1 INTRODUCTION

1.1 GENERAL

The following report details an archaeological and built heritage assessment undertaken in advance of the proposed solar farm development at Tomsallagh, County Wexford (Figure 1). This assessment has been carried out to ascertain the potential impact of the proposed development on the archaeological and historical resource that may exist within the area. The assessment was undertaken by Faith Bailey of Irish Archaeological Consultancy Ltd, on behalf of JBM Solar Developments Ltd.

The archaeological and built heritage assessment involved a detailed study of the archaeological and historical background of the proposed development site and the surrounding area. This included information from the Record of Monuments and Places of Wexford, the Register of Protected Structures (Figure 2), topographical files within the National Museum and all available cartographic and documentary sources for the area. A field inspection has also been carried out with the aim to identify any previously unrecorded features or structures of archaeological or historical interest.

1.2 THE DEVELOPMENT

The proposed development occupies a 44.56 hectare site comprising the installation of photovoltaic panels on ground mounted frames within existing field boundaries and will include inverter and transformer stations to convert electricity to alternating current suitable for the national grid and associated underground cabling, customer control buildings, communications cabin, perimeter (stock-proof) fencing, inward-facing CCTV cameras, site access tracks (along existing), landscaping and all associated site development works (Figure 3).

2 METHODOLOGY

Research for this report was undertaken in two phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase involved a field inspection of the site.

2.1 PAPER SURVEY

- Record of Monuments and Places for County Wexford;
- Sites and Monuments Record for County Wexford;
- National Monuments in State Care Database;
- Preservation Orders List;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Wexford County Development Plan 2013–2019;
- Aerial photographs;
- Excavations Bulletin (1970–2016);
- National Inventory of Architectural Heritage

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as 'un-located sites' and cannot be afforded legal protection due to lack of locational information. As a result these are omitted from the Record of Monuments and Places. SMR sites are also listed on a website maintained by the Department of Culture, Heritage and the Gaeltacht (DoCHG) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument.

The Minister for the DoCHG may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

Topographical files of the National Museum of Ireland is the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

- Sir William Petty's Down Survey Map of the Barony of Scarawalsh and Parish of Clone c. 1656-1658
- Ordnance Survey maps of County Dublin, 1841 and 1903

Documentary sources were consulted to gain background information on the archaeological, architectural and cultural heritage landscape of the proposed development area.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The Wexford County Development Plan (2013–2019) was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey and Google Earth.

Excavations Bulletin is a summary publication that has been produced every year since 1970. This summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. This information is also available online (www.excavations.ie) from 1970–2016.

The National Inventory of Architectural Heritage (NIAH) is a government based organisation tasked with making a nationwide record of significant local, regional, national and international structures, which in turn provides county councils with a guide as to what structures to list within the Record of Protected Structures. The architectural survey for County Wexford was completed during two phases: 2005-2006 and 2007-2008. The NIAH have also carried out a nationwide desk based survey of historic gardens, including demesnes that surround large houses. This has also been completed for County Wexford and was examined in relation to the surviving demesnes within the surrounding area of the proposed development.

2.2 FIELD INSPECTION

Field inspection is necessary to determine the extent and nature of archaeological and historical remains, and can also lead to the identification of previously unrecorded or suspected sites/ structures and portable finds through topographical observation and local information.

The archaeological and architectural field inspection entailed –

- Walking the proposed development and its immediate environs.
- Noting and recording the terrain type and land usage.
- Noting and recording the presence of features of archaeological or architectural significance.
- Verifying the extent and condition of any recorded sites/ structures.
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

3 RESULTS OF DESKTOP STUDY

3.1 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The area of proposed development is located within the townland of Tomsallagh, County Wexford. The townland is situated in the parish of Clone and within the barony of Scarawalsh.

The proposed development area comprises farmland that is currently under pasture. There are three recorded archaeological sites located within 500m of the proposed development area. These were all revealed during archaeological investigations carried out in advance of the development of the M11 Gorey to Enniscorthy Road Scheme. The closest is formed by an early Neolithic pit (WX020-081), located c. 165m southeast of the site.

There is one protected structure located within 500m of the proposed development area. This consist of Tomsallagh House (RPS WCC1122), which is situated c. 460m to the north-northwest. The structure is also included within the NIAH survey for County Wexford.

3.1.1 Prehistoric Period

Mesolithic Period (6000–4000 BC)

The Mesolithic Period is the earliest time for which there is clear evidence of prehistoric activity in Ireland. During this period people hunted, foraged and gathered food and appear to have had a mobile lifestyle. The type of activities carried out by Mesolithic people are difficult to recognise using current archaeological methods; however, scatters of worked flint material; a by-product from the production of flint implements typically indicate their presence. Whilst there is no evidence for Mesolithic activity in the proposed development area there are some indications along Wexford's coast, from Carnsore Point to Kilmichael Point, dating from c. 5000 BC. It is highly likely that the major water courses in the county were used as a transport link at this time. A collection of early Mesolithic core axes have been recovered from a site at Killybeg, some 30km northeast of the proposed development area (Woodman 2015).

Neolithic Period (4000–2500 BC)

The Neolithic period was revolutionary: for the first time, there is evidence for the emergence of farming societies in Ireland. There was profound change as people moved (both gradually and rapidly) from peripatetic lifestyle to one organised around animal husbandry and cereal cultivation. Understandably, the transition to the Neolithic was marked by major social transformation; communities expanded and moved further inland to create more permanent settlements. This afforded the further development of agriculture which altered the physical landscape. Forests were rapidly cleared and field boundaries constructed. Pottery was also being produced, possibly for the first time as well as a variety of other artefacts including polished stone axes, a variety of flint tools and saddle querns for grinding corn. People

lived in rectangular houses that contained hearths as well as specially demarcated areas for activities such as food preparation. With the advent of the Neolithic period the emergence of the megalithic tomb occurs. There are four types of tomb; court cairn, portal, passage and wedge. It is likely that these were large communal ritual monuments.

Although there is limited evidence for the Neolithic populations within the county, a variety of stone implements dating from the Neolithic have been found throughout Wexford. The closest recorded site of this date consists of an early Neolithic pit (WX020-081), excavated in advance of the M11 Road Scheme, c. 165m southeast of the proposed development area. The site has been added to the SMR but will not be included within the RMP at its next revision.

Bronze Age (2500–500 BC)

The Bronze Age heralded further change within society both in terms of material culture and social practises as well as the nature of the construction and use of sites and monuments. Megalithic tombs were no longer constructed and the burial of the individual became more typical. Cremated or inhumed bodies were often placed in a cist, a small stone box set into the ground, or a stone lined grave. Burials were often made within cemeteries which were either unenclosed or else marked in the landscape with the construction of an earthen barrow. Barrows of this period often vary in form and can include the ring-ditch, the embanked ring-ditch, the ring barrow, the bowl barrow and the bowl barrow lacking an external bank. In general, ring ditches date to the Bronze Age, with the earlier examples being simpler in form and later examples incorporating entrances and a wider range of burials practices. Ring ditches appear to have continued to be built and earlier monuments re-used, during the Iron Age and early medieval period. A flat cemetery of this date was identified and excavated in advance of the M11 c. 795m west-northwest of the proposed development area (WX020-077).

Numerous gold objects dating to this period have also been found in Wexford, of which four exceptionally large gold disks were found in the Enniscorthy area (Furlong 2003). These were discovered in the 18th century and as such, their precise location is not known. Further finds including a sword recovered from the vicinity of New Ross as well as a hoard of bracelets and a possible gold fibula recovered from the River Barrow in 1895.

The most common Bronze Age site within the archaeological record is the burnt mound or *fulacht fiadh*. Over 7000 *fulachta fiadh* have been recorded in the country and hundreds excavated, making them the most common prehistoric monument in Ireland (Waddell, 1998, 174). Although burnt mounds of shattered stone occur as a result of various activities that have been practiced from the Mesolithic to the present day, those noted in close proximity to a trough are generally interpreted as Bronze Age cooking/industrial sites. *Fulacht fiadh* generally consist of a low mound of burnt stone, commonly in horseshoe shape, and are found in low lying marshy areas or close to streams. Often these sites have been ploughed out and survive as a spread of heat shattered stones in charcoal rich soil with no surface expression in close

proximity to a trough. Two burnt mounds/ spreads were excavated to the south of the proposed development area in advance of the M11 (WX020-083, WX020-063), although neither possessed any evidence of a trough.

Iron Age (500 BC – AD 400)

There is increasing evidence for Iron settlement and activity in recent years as a result of development-led excavations as well as projects such as LIARI (Late Iron Age and Roman Ireland). Yet, this period is distinguished from the rather rich remains of preceding Bronze Age and subsequent early medieval period by a relative paucity of evidence in Ireland. The available evidence suggests that large defensive structures and earthworks known as promontory or hill forts were characteristic of the period.

County Wexford was first mapped by Ptolemy around the year 150 AD through information extracted from various accounts of sailors and traders of the time. The detail of its position on the eastern coast shows Carnsore Point as being a particularly dangerous landmark for travellers. According to Ptolemy the Brigantes (*Ui Bairrche*) who occupied much of south Leinster were the most dominant tribe in County Wexford. However, they were eventually confined to a portion of Laois and Bargy in South Wexford. Their conquerors were the *Ui Cheinnselaig*, a branch of the *Laigin*, who gave their name to Leinster (Culleton, 1999). The evidence for Iron Age activity in Wexford is limited and there are no known Iron Age sites within the receiving environment of the area under assessment.

3.1.2 Early Medieval Period (AD 400–1169)

The early medieval period is depicted in the surviving sources as entirely rural characterised by the basic territorial unit known as *túath*. The Annals of the Four Masters refer to a monastic foundation, dedicated to St. *Ibar* or *Iubhar*, which was situated most probably on an island in Wexford harbour, on the south cost of the county. Annalistic references between the 5th and 10th centuries suggest a settlement of some size and importance, prosperous enough to have been targeted by Viking raiders (Furlong, 2003). From the 6th century onwards the Irish landscape was dominated by scattered rural monasteries. Ferns, located c. 4.2km north of the proposed development, is believed to have been established in the 6th century, where a monastery was founded in 598 AD, dedicated to St Mogue of Clonmore.

Two potential early ecclesiastical sites are located within the wider landscape surrounding the proposed development area. A church, graveyard and ecclesiastical enclosure are recorded at Killabeg (WX020-004001-4), c. 600m southwest of the proposed development area, although very little is known about the site. A possible ecclesiastical enclosure and the site of a church are recorded 850m to the west-southwest of the proposed development area (WX020-005001-3). Today little survives within the site with the exception of a bullaun stone.

During this period, Ireland is depicted in the surviving historical sources as entirely rural. Secular habitation sites in the early medieval period include crannógs, cashels and ringforts which are largely defined as circular enclosures surrounded by banks and ditches. In addition to these, there is some evidence for unenclosed settlements

which are more difficult to identify in the archaeological record. The ringfort or ráth is considered to be the most common indicator of settlement and are strongly associated with agricultural land. In a study of the ringfort (Stout 1997) it was suggested that c. 45,119 potential ringforts or enclosure sites are located throughout Ireland. These sites are typically enclosed by an earthen bank and exterior ditch, and range from 25m to 50m in diameter. Whilst there are no recorded ringforts located within the landscape surrounding the proposed development area, a circular enclosure that has the potential to date to this period was recently identified c. 820m to the southwest of the site as part of a geophysical survey (Regan and Hogan 2016). It is possible that this enclosure was associated with the early ecclesiastical site recorded at Killabeg, just to the north.

Within the more immediate environs of the proposed development area, an early medieval pit was excavated c. 200m to the southeast of the proposed development area in advance of the M11 Road Scheme (WX020-082).

3.1.3 Medieval Period (AD 1169–1600)

Norman involvement in Ireland began in 1169, when Richard de Clare and his followers landed in Wexford to support *Diarmait MacMurchadha*, deposed King of Leinster, in his bid to regain the Kingdom of Leinster. The Anglo-Normans, joined by 500 *Ui Chennselaig* men, took the Viking town of Wexford and the town of Ossory. Two years later de Clare (Strongbow) inherited the kingdom of Leinster through marriage to *Diarmuid's* daughter *Aoife*. By the end of the 12th century the Normans had succeeded in overthrowing the previous ruling elites in much of the country. Large land grants given by the King to his followers meaning that great swathes of land were parcelled out among the Norman elites in process known as sub-infuedation. This time period is synonymous with castle-building, both masonry and earthwork, as well as the creation of new towns and enlargement of older urban centres. The Norman tenurial system more or less appropriated the older established land units known as *túaths* in the early medieval period but called the territories manors (MacCotter 2008).

Prior to the arrival of the Anglo-Normans the seat of the Kingdom of Leinster was located at Ferns c. 4.2km north of the proposed development area. Recent work completed by the Discovery Programme has identified the possible location of this power centre close to Ferns Castle. Other sites dating to this period include St Mary's, a 12th century Augustinian priory (WX015-003004) established by McMurragh in c. 1160. The many monastic settlements that flourished during the medieval period were supplemented during the 13th century by the Continental monastic orders. These were introduced and patronised by the Anglo-Normans. The Franciscans were present in Wexford in the 1240s and the Augustinian Friars were established in Ferns by the middle of the 12th century and in New Ross by the late 13th century.

Whilst there are numerous recorded medieval sites and settlement located throughout County Wexford, no sites of this date have been recorded in proximity to the proposed development area.

3.1.4 Post-Medieval Period (AD1600–1900)

Following the Gaelic Resurgence of the 14th and 15th centuries, the Tudor era saw a focused attempt to reconquer and pacify the entire country during the reigns of Henry VIII and Elizabeth I. The Elizabethan implementation of the 'Surrender and Regrant' policy allowed the monarch to continue colonising Ireland at a time when the treasury funds were too low to afford a war. The policy was to induce native leaders to put their lands under the protection and ultimate ownership of the crown. The implication was that if they did not, it would be taken away from them anyway. Under the Irish custom the clan itself owned the land, not any individual and this included the chief. He administered it during his lifetime but could not will any part of it on his death at which time it reverted to the charge of the *tanaiste* or appointed successor for the clan, not necessarily his son and heir.

The inducement was that on re-granting the chieftain would personally own the land and could will it in any way he desired, the aim of which was to break up the clan system and to put the lands and the owners within the control of the crown. However, the crown could take the land back at any time and this occurred frequently over the coming years. Confiscated lands were granted to 'undertakers' – suitable English people of the new faith who would undertake to purchase available land at a very low price on agreement that it would be sub-let exclusively to English Protestants.

The plantation of northern Wexford took place between 1612 and 1618. Due to violent protestation from the dispossessed, it was decided in 1613 to construct a corporate town in the southern part of the plantation to improve security. Thus Enniscorthy was established as a town and grew quickly to become a major centre of commerce (Goff 1987).

This unrest was followed in the second half of the 17th century by the Cromwellian Restoration and Williamite land settlements. Before 1641, the confiscation was aimed primarily against the Irish, but after that date all Catholic proprietors, comprising mainly Irish and Old English, found their lands subject to forfeiture unless they could prove 'constant good affection' to the English parliament (Goff, 1987). Between 1641 and 1878 estates became progressively smaller and more fragmented.

During the Cromwellian period County Wexford suffered greatly. The campaign started in 1649 and included the capture of the castles at Ferns, where Cromwell left a garrison at Enniscorthy. Wexford town was also captured, where severe retribution was exacted on the inhabitants, as was characteristic of Cromwell's campaign in Ireland.

The rebellion of 1798 is the most violent and tragic event in Irish history between the Jacobite wars and the Great Famine. After years of sporadic outbreaks of violence, a major rebellion started in Carnew, County Wicklow on the 28th May 1798 when 36 prisoners were summarily executed. After his church and some houses in the village were burned down, Father John Murphy of Boolavogue led several thousand men and women armed with pikes and scythes into resistance and won an important victory on

the Hill of Oulart. They made their way to Ferns, burnt the bishop's palace and continued on to capture Enniscorthy where they established their base on Vinegar Hill, c. 5.3km southwest of the proposed development area, before taking the town. The insurrection eventually fell apart and the leaders and many other participants were rounded up and executed by the authorities.

Despite the conflicts experienced within the county during the 18th century, it was during this period that there was a dramatic rise in the establishment of large residential houses in Wexford. The large country house was only a small part of the overall estate of a large landowner and provided a base to manage often large areas of land that could be located nationwide. Lands associated with the large houses were generally turned over to formal gardens, which were much the style of continental Europe. This style of formal avenues and geometric gardens designs was gradually replaced during the mid-18th century by the adoption of parkland landscapes – to be able to view a large house within a natural setting. Although the creation of a parkland landscape involved working with nature, rather than against it, considerable constructional effort went into their creation. Earth was moved, field boundaries disappeared, streams were diverted to form lakes and quite often roads were completely diverted to avoid travelling anywhere near the main house or across the estate.

Tomsallagh House (RPS WCC1122), which is located c. 460m to the north-northwest of the proposed development area can be considered to be a modest country house. The first edition OS map of 1841 shows a small demesne associated with the house, the edge of which is located c. 270m northwest of the proposed development area.

3.2 SUMMARY OF PREVIOUS ARCHAEOLOGICAL FIELDWORK

A review of the Excavation Bulletins (1970-2016) has shown that no previous archaeological excavation has been carried within the proposed development area. Archaeological testing as part of the M11 Road Scheme was carried out to the southeast of the proposed development area. The closest archaeological remains that were identified consisted of an early Neolithic pit and an early medieval pit situated c. 165m and 200m to the southeast (Hardy et al. 2010). These have been included within the SMR as WX020-081 and WX020-082.

3.3 CARTOGRAPHIC ANALYSIS

Sir William Petty's Down Survey Map of the Barony of Scarawalsh and Parish of Clone c. 1656-1658

The lands of the proposed development were Protestant owned at the time of the Down Survey and therefore are not recorded in the same level of details as others. 'Lands of Sir Henry Wallop' are indicated, which included Tomsallagh as part of the Manor of Enniscorthy.

First Edition Ordnance Survey Map, 1841, scale 1:10,560 (Figure 4)

This is the first detailed depiction of the proposed development area. The site is characterised by the presence of multiple fields, which vary in size and are irregular in

plan. Many of the boundaries are shown as being lined with trees and two patches of marginal, water-logged ground are shown. The small stream that runs along part of the southeast boundary is depicted. An access route runs from a road that forms the western boundary to the site, in an easterly direction and provides access to a group of five structures at the centre of the site (not included within the proposed development area). No other buildings are marked within the site and no specific features of archaeological potential are present.

Second Edition Ordnance Survey Map, 1903, scale 1:10,560 (Figure 5)
By the time of this edition the fields have been re-arranged and are shown as being similar in form to what is extant today. A total of 13 fields are located within the proposed development area. The structures that are located within the centre of the site have been redeveloped around a courtyard. However, the access into the farm is still extant, as is to the stream to the southeast. Three small buildings are marked within garden plots in the north-western corner of the site, which front onto the road runs along the western boundary.

3.4 COUNTY DEVELOPMENT PLAN

Wexford County Council Development Plan (2013-2019) outlines the conservation and enhancement of the built, natural and cultural heritage. Its objectives are to assist the management and promotion our valuable heritage in a sustainable manner; to ensure that the use of heritage assets is managed so not to adversely impact on the intrinsic value of the assets, as well as ensuring that development proposals do not have an unacceptable impact on the county's heritage, unless there is a reason of over-riding public interest for such development.

3.4.1 Archaeology

There are three recorded archaeological sites located within 500m of the proposed development (Table 1, Figure 2). Two of these have been subject to archaeological excavation and as such are listed within the SMR as a record only.

TABLE 1: Recorded Archaeological Sites (RMPs)

RMP NO.	LOCATION	CLASSIFICATION	DISTANCE FROM SCHEME
WX020-081	Oulartard	Excavation – miscellaneous*	c. 165m southeast
WX020-082	Oulartard	Excavation – miscellaneous*	c. 200m southeast
WX020-083	Oulartard	Burnt mound	c. 215m south

* SMR only

3.4.2 Built Heritage

A review of the Register of Protected Structures has shown that there is one such structure listed within the Wexford County Council Development plan (2013-2019), which is located within 500m of the proposed development area (Table 2, Figure 2).

TABLE 2: Protected Structures (RPS)

RPS NO.	LOCATION	CLASSIFICATION	DISTANCE FROM

			SCHEME
WCC1122	Tomsallagh	Tomsallagh House	c. 460m north-northwest

There are no Architectural Conservation Areas located in or within the landscape surrounding the proposed development area.

3.5 AERIAL PHOTOGRAPHIC ANALYSIS

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995, 2000, 2005), Google Earth (2010-2015) and Bing Maps failed to identify any previously unrecorded sites or areas of archaeological potential.

3.6 NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE

3.6.1 Architectural Survey

A review of the NIAH survey has shown that there is one structure located within 500m of the proposed development. This consists of Tomsallagh House (NIAH 15702031), which is also a protected structure (Table 2). The NIAH survey describes the structure as follows:

> *Replacement hipped slate roof on an E-shaped plan centred on pitched slate roof (west) with pressed or rolled iron ridges, rendered chimney stacks on axis with ridge having stepped capping supporting yellow terracotta tapered pots, rooflights (west), and cast-iron rainwater goods on rendered eaves retaining cast-iron downpipes. Replacement fine roughcast battered walls on rendered plinth. Segmental-headed central door opening approached by two steps with concealed dressings framing timber panelled door having fanlight. Square-headed window openings with cut-granite sills, and concealed dressings framing six-over-six (ground floor) or three-over-six (first floor) timber sash windows.*

The building is likely to date to the 18th century and is deemed to possess regional significance. Further information is included in Appendix 3 of this assessment.

3.6.2 Garden Survey

Despite the fact that a small demesne is shown in association with Tomsallagh House on the first edition OS map (1841), it has not been included within the survey for County Wexford. However, the demesne does appear to survive in relatively good condition, although it is clear some of the boundary planting has been lost. Some of the outbuildings to the northwest of the principal house survive, along with some modern additions. The walled garden also appears to be present, although it is heavily overgrown. The main entrance into the demesne is present, although the recessed gate way has been replaced with a modern structure.

4 RESULTS OF FIELD INSPECTION

4.1 FIELD INSPECTION

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development area and its immediate surrounding environs were inspected.

The proposed development area is formed by 12 fields, all of which were under grazed pasture at the time of the inspection. The fields surround a farm yard, modern farm house and pasture paddock located to the immediate east of the house. The fields are numbered on Figure 3 and described below:

Field 1

A rectangular field located in the northern part of the proposed development area. The even field of pasture slopes moderately to the southeast and is bounded by banks, hedgerows and mature trees (Plate 1).

Field 2

Located to the east of Field 1 and west of Field 3 and 4, this is a triangular field of even pasture that slopes moderately to the south-southwest. It is bordered by banks, with mature trees and some hedgerows.

Field 3

A rectangular field located in the northeast part of the proposed development area, east of Field 2 and north of Field 4. The even field of pasture slopes moderately to the southeast and is bounded by banks, hedgerows and mature trees (Plate 2).

Field 4

A rectangular field located south of Field 3 and east of Field 2. The even field of pasture slopes moderately to the east-southeast and is bounded by banks, hedgerows and mature trees. Evidence for the clearance of stone off the land was apparent along the southern boundary of the field.

Field 5

This is the smallest of the fields within the proposed development area and is sub-rectangular in plan. The field slopes slightly to the east-southeast and is bounded to the west, north and east by banks and hedgerows with mature trees. The southern boundary is formed by a maintained hedgerow. The area was water logged at the time of the inspection. It has also been subject to a level of disturbance, due to the deposition of spoil along the northern edge (Plate 3).

Field 6

This field is located in the southeast corner of the proposed development area. It is an irregular shaped field that is bordered to the east by a small stream with the remaining boundaries formed by bank, hedgerow and mature trees. The northern

part of the field is characterised by a relatively level plateau. This slopes to the east and south within the eastern part of the field (Plate 4) and to the south in the western part of the field (Plate 5). The terrain is characterised by nature undulations across the extent of the field. The stream that borders the field possessed a moderate flow at the time of the inspection, but was relatively shallow.

Field 7
A sub-rectangular field located in the southern tip of the proposed development area. The field possesses natural undulations but slopes moderately to the north-northeast from a plateau (Plate 6). The stream that borders Field 6 to the north also borders this field and the terrain slopes to the east in proximity to the stream.

Field 8
A sub-square field to the west of Field 6 and east of Field 10. The even pasture field slopes moderately to the south and southeast and is bounded by banks, hedges and mature trees. A farm access track is also located along the north-eastern boundary.

Field 9
A sub-rectangular field to the west of Field 7 and east of Field 10. The even pasture field slopes moderately to the southeast and is bounded by banks, hedges and mature trees (Plate 7). Natural undulations were noted in the southern part of the field.

Field 10
A sub-rectangular field in the south-western part of the proposed development area and located to the west of Fields 8 and 9 and east of Field 11. The even pasture field slopes slightly from north to south and is bounded by banks, hedges and mature trees. A farm access track is also located along the northern boundary.

Field 11
A sub-rectangular field in the south-western corner of the proposed development area and located to the west of Field 10. The even pasture field is relatively level and is bounded by banks, hedges and mature trees (Plate 8). A farm access track is also located along the northern boundary and a local road borders the field to the west.

Field 12
A sub-triangular field in the western section of the proposed development area. The even pasture field slopes moderately to the east-southeast and is bordered by banks, hedgerow and mature trees (Plate 9). A farm access track is also located along the southern boundary and a local road borders the field to the west.

With the exception of the general archaeological potential that the presence of a stream within the landscape affords, no specific features of archaeological potential were noted during the course of the field inspection.

At the centre of the proposed solar farm, but outside of the proposed development area is a courtyard of farm buildings that are marked on the second edition OS map of

1903. Based on the mapping it is likely that a house was once located at the northern end on the eastern range of the courtyard. This has now been replaced with a modern farm house. However, the southern part of the eastern range and the southern range do survive, along with the main elevation of the western range (now ruined) The structures that are still intact are still in use for housing livestock. An arched entrance into the courtyard also survives.

The courtyard buildings possessed two storeys and were constructed from random rubble masonry. The ground floor opening consists of an irregular variety of arched and square headed doorways along with some square headed windows. The first floor is characterised by slit opes and occasional square headed doorways, presumably for the storage of fodder (Plates 10 and 11). Red brick has been used to create the arched doorways, along with camber arches above the square headed doors and windows. Red brick reveals also define the slit opes. The structures possesses a pitched slate roof, although portions of this have been replaced. The rear wall and roof along the western range has been removed.

The range of buildings is likely to date from 1870-1890 and represents a more formal Victorian type of architecture than the vernacular agricultural structures that are usually found in rural contexts.

4.2 CONCLUSIONS

The area of proposed development is located within the townland of Tomsallagh and the parish of Clone within the barony of Scarawalsh, County Wexford. The site consists of 12 fields of pasture that covers 44.56ha. There are no recorded monuments located within the site, although three sites are recorded within 500m. The closest is formed by an early Neolithic pit (WX020-081), located c. 165m southeast of the site. All three sites were subject to archaeological excavation in advance of the M11 Road Scheme. The proposed solar farm development will not impact of any of these sites.

There are no protected or NIAH structures located within the immediate environs of the proposed development area. The closest consists of Tomsallagh House, which is situated c. 460m to the north-northwest (RPS WCC1122, NIAH 15702031). This structure also possesses a small demesne landscape, which survives in reasonable condition.

A review of the historic mapping has revealed that the site has remained as agricultural land since at least the mid-19th century. Whilst the fields were subject to rearrangement during the latter part of the 19th century, no areas or sites of archaeological potential were noted within the historic cartographic resource. Similarly, no sites were identified during the analysis of the aerial photographic resource.

At the centre of the proposed solar farm, but not within the proposed development area, is the remains of a Victorian farmyard, which originally possessed three two storey ranges and a house. The house has since been replaced with a modern

structure. However, elements of the court yard do survive, although the western range is now in ruin. The structure is not typical of the vernacular architecture usually found in rural contexts. It represents considerable investment from a farmer/ landowner during the latter part of the 19th century as the style of building would more commonly be found in association with a large country house.

A review of the Excavations Bulletin (1970-2016) has shown that the only investigations to be carried out within the immediate landscape relate to advanced works associated with the M11 Road Scheme. Three sites, the closest of which was WX020-081 cited above, were subject to excavation within 500m.

A full field inspection of the proposed development area has been carried out as part of the assessment. No previously unrecorded sites of archaeological potential were noted. The stream that borders the site to the southeast lends a general archaeological potential to the landscape, as watercourses have attracted activity since the early prehistoric period. No other structures of architectural significance were identified within the proposed development area (other than the farmyard described above).

5 IMPACT ASSESSMENT AND MITIGATION STRATEGY

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation. Upstanding archaeology can be affected adversely by direct damage or destruction arising from development, from inadvertent damage arising from vibration, undermining etc. and also by indirect impacts to a building's visual setting, view or curtilage.

5.1 IMPACT ASSESSMENT

5.1.1 Archaeology

- The proposed development is low impact in nature as minimal excavations are required for access roads, service trenches and the piled mounts for the solar panels. However, it is possible that ground disturbances associated with the development may have an adverse impact on previously unrecorded features or deposits that may survive beneath the existing ground level, with no surface expression.

5.1.2 Built Heritage

- No impact upon the built heritage resource is predicted as a result of the proposed development going ahead.

5.2 MITIGATION

5.2.1 Archaeology

- It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist. It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

5.2.2 Built Heritage

- No mitigation is deemed to be necessary in association with the built heritage resource.

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Culture, Heritage and the Gaeltacht.

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CARTOGRAPHIC SOURCES

Sir William Petty's Down Survey Map of the Barony of Scarawalsh and Parish of Clone c. 1656-1658

Ordnance Survey maps of County Wexford, 1841 and 1903

ELECTRONIC SOURCES*

www.excavations.ie – Summary of archaeological excavation from 1970–2016

www.archaeology.ie – DoCHG website listing all SMR sites.

www.osiemaps.ie – Ordnance Survey aerial photographs dating to 1995, 2000 & 2005 and 6-inch/25-inch OS maps.

www.heritagemaps.ie – The Heritage Council web-based spatial data viewer which focuses on the built, cultural and natural heritage around Ireland and off shore.

www.googleearth.com – Aerial photographs of the proposed development area

www.bingmaps.com – Aerial photographs of the proposed development area

www.buildingsifireland.ie – NIAH architectural and garden survey results for County Wexford

APPENDIX 1 SMR/RMP SITES WITHIN THE SURROUNDING AREA

SMR NO.	WX020-081
RMP STATUS	Not scheduled for inclusion
TOWNLAND	Oulartard
PARISH	Clone
BARONY	Scarawalsh
I.T.M.	701783, 644508
CLASSIFICATION	Excavation - miscellaneous
DIST. FROM DEVELOPMENT	c. 165m southeast
DESCRIPTION	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and resolved by A. Mulcahy as Oulartard 1 (E4350) during the testing stage (Hardy et al. 2010, 70). It is situated on a W-facing slope with a N-S stream c. 200m to the W. This is a single pit (dims 0.9m x 0.8m; D 0.1m) filled with a black silty clay with frequent charcoal and moderate stone inclusions. A sample provided a C14 date of Cal. BC 3748-3532, providing an Early Neolithic date. The pit (WX020-082-----) c. 35m to the E is completely unconnected with this feature. (Mulcahy 2011; 2013)
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	WX020-082
RMP STATUS	Not scheduled for inclusion
TOWNLAND	Oulartard
PARISH	Clone
BARONY	Scarawalsh
I.T.M.	701817, 644510
CLASSIFICATION	Excavation - miscellaneous
DIST. FROM DEVELOPMENT	c. 200m southeast
DESCRIPTION	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and resolved by A. Mulcahy as Oulartard 2 (E4349) during the testing stage (Hardy et al. 2010, 70). It is situated on a W-facing slope with a N-S stream c. 150m to the W. This is a single pit (dims 1.28m x 1.2m; D 0.15m) with a lower fill of black silty clay with frequent charcoal and burnt stone inclusions. A sample from this provided a C14 date of Cal. AD 445-624. The pit (WX020-081----) c. 35m to the W is completely unconnected with this feature. (Mulcahy 2011; 2013)
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	WX020-083
RMP STATUS	Scheduled for inclusion
TOWNLAND	Oulartard

PARISH	Clone
BARONY	Scarawalsh
I.T.M.	701620, 644235
CLASSIFICATION	Burnt mound
DIST. FROM DEVELOPMENT	c. 215m south
DESCRIPTION	Identified in centre-line testing (E4110) in advance of the M11 Gorey to Enniscorthy road scheme and set aside for resolution as Oulartard 3 (Hardy et al. 2010, 70). It is situated in the valley of a NE-SW stream with a N-S section c. 20m to the W. It was partially excavated (E4260) by C. Hardy as several spreads of burnt mound material (dims 5.4m x 3m; max. T 0.32m) that extended beyond the excavated area to the W, but there was no evidence of a trough or other features. (Hardy 2011; 2013)
REFERENCE	www.archaeology.ie/ SMR file

APPENDIX 2 STRAY FINDS WITHIN THE SURROUNDING AREA

Information on artefact finds from the study area in County Wexford has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

No stray finds have been recorded from Tomsallagh or the surrounding townlands.

APPENDIX 3 RPS/NIAH STRUCTURES WITHIN THE SURROUNDING AREA

RPS NO.	WCC1122
NIAH NO.	15702031
TOWNLAND	Tomsallagh
PARISH	Clone
BARONY	Scarawalsh
CLASSIFICATION	Tomsallagh House
DESCRIPTION	Description Detached three-bay two-storey farmhouse, extant 1811, on a rectangular plan with two-bay two-storey side elevations centred on single-bay (single-bay deep) full-height return (west). Occupied, 1911. Derelict, 1999. For sale, 2006. Undergoing "restoration", 2007. Replacement hipped slate roof on an E-shaped plan centred on pitched slate roof (west) with pressed or rolled iron ridges, rendered chimney stacks on axis with ridge having stepped capping supporting yellow terracotta tapered pots, rooflights (west), and cast-iron rainwater goods on rendered eaves retaining cast-iron downpipes. Replacement fine roughcast battered walls on rendered plinth. Segmental-headed central door opening approached by two steps with concealed dressings framing timber panelled door having fanlight. Square-headed window openings with cut-granite sills, and concealed dressings framing six-over-six (ground floor) or three-over-six (first floor) timber sash windows. Set in unkempt grounds. Appraisal A farmhouse representing an integral component of the domestic built heritage of County Wexford with the architectural value of the composition, one rooted firmly in the contemporary Georgian fashion, confirmed by such attributes as the compact rectilinear plan form centred on a restrained doorcase showing a simple radial fanlight; and the diminishing in scale of the openings on each floor producing a graduated visual impression. Having been sympathetically "restored" following a prolonged period of un-occupancy in the later twentieth century, the elementary form and massing survive intact together with quantities of the original or replicated fabric, both to the exterior and to the interior, thereby upholding the character or integrity of the composition. Furthermore, adjacent outbuildings (extant 1904) continue to contribute positively to the group and setting values of a self-contained ensemble having historic connections with Thomas Rudd (d. 1854; Lewis 1837 I, 357); and Nathaniel Webster Stephens (d. 1915), 'Farmer late of Tomsallagh Ferns County Wexford' (Calendars of Wills and Administrations 1915, 674).
RATING	Regional
CATEGORY OF INTEREST	Architectural, Artistic, Historical, Social
REFERENCE	Wexford County Development Plan (2013-2019), NIAH Survey

APPENDIX 4 LEGISLATION PROTECTING THE ARCHAEOLOGICAL RESOURCE

PROTECTION OF CULTURAL HERITAGE

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

THE ARCHAEOLOGICAL RESOURCE

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as 'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (National Monuments Act 1930 Section 2).

A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

OWNERSHIP AND GUARDIANSHIP OF NATIONAL MONUMENTS

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

REGISTER OF HISTORIC MONUMENTS

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

PRESERVATION ORDERS AND TEMPORARY PRESERVATION ORDERS

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site

illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

RECORD OF MONUMENTS AND PLACES

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

Section 12(3) of the 1994 Act provides that 'where the owner or occupier (other than the Minister for Arts, Heritage, Gaeltacht and the Islands) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Arts, Heritage, Gaeltacht and the Islands to carry out work and shall not, except in the case of urgent necessity and with the consent of the Minister, commence the work until two months after the giving of notice'.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989,* Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

THE PLANNING AND DEVELOPMENT ACT 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning

and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.

Wexford County Development Plan 2013–2019

It is an objective of the Wexford County Council:

Objective AH01
To conserve and protect archaeological sites, monuments (including their settings), underwater archaeology and objects within the jurisdiction of Wexford County Council including those listed on the Record of Monuments and Places, the Register of Historic Monuments or newly discovered sub-surface archaeological remains.

Objective AH02
To protect the heritage of groups of important national monuments, inclusive of their contextual setting and interpretation, in the operation of development management.

Objective AH03
To fully consider the protection of archaeological heritage when undertaking, approving or authorising development. In considering such protection, the Council will have regard to the advice and recommendations of the National Monuments Service and the principles set out in Framework and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands, 1999).

Objective AH04
To require an archaeological assessment for development that may, due to its size, location or nature, have a significant effect
upon archaeological heritage and to take appropriate measures to safeguard this archaeological heritage. In all such cases the Planning Authority shall consult with the National Monuments Service in the Department of Arts, Heritage and the Gaeltacht.

Objective AH05
To promote a presumption in favour of preservation in-situ of archaeological remains and settings when dealing with proposals for development that would impact upon archaeological sites and/or features. Where preservation in-situ is not possible the Council will consider preservation by record in appropriate circumstances.

Objective AH06
To protect historic and archaeological landscapes, including battlefields, and promote access to such sites provided that this does not threaten the feature.

Objective AH07
To protect historic urban defences (both upstanding and buried) and associated features and safeguard them from inappropriate development in accordance with

National Policy on Town Defences (Department of Environment, Heritage and Local Government, 2008).

Objective AH08
To include archaeological landscapes as part of the updated Landscape Character Assessment of the County to be prepared following the publication of a National Landscape Strategy/National Landscape Character Assessment.

Objective AH09
To identify appropriate archaeological sites in the County to which public access could be provided, and work to secure public access where appropriate in consultation with the land owner, subject to normal planning and environmental criteria and the development management standards contained in Chapter 18.

Objective AH10
To retain existing street layouts, historic building lines and traditional plot widths which derive from medieval or earlier origin.

Objective AH11
To protect historical burial grounds within County Wexford and encourage their maintenance in accordance with conservation principles

APPENDIX 5 LEGISLATION PROTECTING THE ARCHITECTURAL RESOURCE

The main laws protecting the built heritage are the *Architectural Heritage (National Inventory) and National Monuments (Miscellaneous Provisions) Act 1999* and the *Local Government (Planning and Development) Acts 1963–1999*, which has now been superseded by the *Planning and Development Act, 2000*. The Architectural Heritage Act requires the Minister to establish a survey to identify, record and assess the architectural heritage of the country. The background to this legislation derives from Article 2 of the 1985 Convention for the Protection of Architectural Heritage (Granada Convention). This states that:

For the purpose of precise identification of the monuments, groups of structures and sites to be protected, each member state will undertake to maintain inventories of that architectural heritage.

The National Inventory of Architectural Heritage (NIAH) was established in 1990 to fulfil Ireland's obligation under the Granada Convention, through the establishment and maintenance of a central record, documenting and evaluating the architecture of Ireland (NIAH Handbook 2005:2). As inclusion in the inventory does not provide statutory protection, the survey information is used in conjunction with the *Architectural Heritage Protection Guidelines for Planning Authorities* to advise local authorities on compilation of a Record of Protected Structures as required by the *Planning and Development Act, 2000*.

PROTECTION UNDER THE RECORD OF PROTECTED STRUCTURES AND COUNTY DEVELOPMENT PLAN

Structures of architectural, cultural, social, scientific, historical, technical or archaeological interest can be protected under the Planning and Development Act, 2000, where the conditions relating to the protection of the architectural heritage are set out in Part IV of the act. This act superseded the Local Government (Planning and Development) Act, 1999, and came into force on 1st January 2000.

The act provides for the inclusion of Protected Structures into the planning authorities' development plans and sets out statutory regulations regarding works affecting such structures. Under new legislation, no distinction is made between buildings formerly classified under development plans as List 1 and List 2. Such buildings are now all regarded as 'Protected Structures' and enjoy equal statutory protection. Under the act the entire structure is protected, including a structure's interior, exterior, attendant grounds and also any structures within the attendant grounds.

The act defines a Protected Structure as (a) a structure, or (b) a specified part of a structure which is included in a Record of Protected Structures (RPS), and, where that record so indicates, includes any specified feature which is in the attendant grounds of the structure and which would not otherwise be included in this definition.

Protection of the structure, or part thereof, includes conservation, preservation, and improvement compatible with maintaining its character and interest. Part IV of the act deals with architectural heritage, and Section 57 deals specifically with works affecting the character of Protected Structures or proposed Protected Structures and states that no works should materially affect the character of the structure or any element of the structure that contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The act does not provide specific criteria for assigning a special interest to a structure. However, the National Inventory of Architectural Heritage (NIAH) offers guidelines to its field workers as to how to designate a building with a special interest, which are not mutually exclusive. This offers guidance by example rather than by definition:

ARCHAEOLOGICAL

It is to be noted that the NIAH is biased towards post-1700 structures. Structures that have archaeological features may be recorded, providing the archaeological features are incorporated within post-1700 elements. Industrial fabric is considered to have technical significance, and should only be attributed archaeological significance if the structure has pre-1700 features.

ARCHITECTURAL

A structure may be considered of special architectural interest under the following criteria:

- Good quality or well executed architectural design
- The work of a known and distinguished architect, engineer, designer, craftsman
- A structure that makes a positive contribution to a setting, such as a streetscape or rural setting
- Modest or vernacular structures may be considered to be of architectural interest, as they are part of the history of the built heritage of Ireland
- Well designed decorative features, externally and/or internally

HISTORICAL

A structure may be considered of special historical interest under the following criteria:

- A significant historical event associated with the structure
- An association with a significant historical figure
- Has a known interesting and/or unusual change of use, e.g. a former workhouse now in use as a hotel
- A memorial to a historical event.

TECHNICAL

A structure may be considered of special technical interest under the following criteria:

- Incorporates building materials of particular interest, i.e. the materials or the technology used for construction
- It is the work of a known or distinguished engineer
- Incorporates innovative engineering design, e.g. bridges, canals or mill weirs

- A structure which has an architectural interest may also merit a technical interest due to the structural techniques used in its construction, e.g. a curvilinear glasshouse, early use of concrete, cast-iron prefabrication.
- Mechanical fixtures relating to a structure may be considered of technical significance.

CULTURAL

A structure may be considered of special cultural interest under the following criteria:

- An association with a known fictitious character or event, e.g. Sandycove Martello Tower, which featured in Ulysses.
- Other structure that illustrate the development of society, such as early schoolhouses, swimming baths or printworks.

SCIENTIFIC

A structure may be considered of special scientific interest under the following criteria:

- A structure or place which is considered to be an extraordinary or pioneering scientific or technical achievement in the Irish context, e.g. Mizen Head Bridge, Birr Telescope.

SOCIAL

A structure may be considered of special social interest under the following criteria:

- A focal point of spiritual, political, national or other cultural sentiment to a group of people, e.g. a place of worship, a meeting point, assembly rooms.
- Developed or constructed by a community or organisation, e.g. the construction of the railways or the building of a church through the patronage of the local community
- Illustrates a particular lifestyle, philosophy, or social condition of the past, e.g. the hierarchical accommodation in a country house, philanthropic housing, vernacular structures.

ARTISTIC

A structure may be considered of special artistic interest under the following criteria:

- Work of a skilled craftsman or artist, e.g. plasterwork, wrought-iron work, carved elements or details, stained glass, stations of the cross.
- Well designed mass produced structures or elements may also be considered of artistic interest.

(From the NIAH Handbook 2003 & 2005 pages 15–20)

The Local Authority has the power to order conservation and restoration works to be undertaken by the owner of the protected structure if it considers the building to be in need of repair. Similarly, an owner or developer must make a written request to the Local Authority to carry out any works on a protected structure and its environs, which will be reviewed within three months of application. Failure to do so may result in prosecution.

Wexford County Development Plan 2013–2019

It is an objective of the Wexford County Council:

Objective PS01
To protect the architectural heritage of County Wexford and to include structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures.

Objective PS02
To protect the curtilage of Protected Structures or proposed Protected Structures from any works which would cause loss of, or damage to, the special character of the structure and loss of or damage to, any structures of heritage value within the curtilage or attendant grounds of the structure.

Objective PS03
To encourage development within the curtilage of a Protected Structure that is compatible with its character in terms of siting, building lines, proportions, scale, massing, height, roof treatment and materials subject to normal planning and environmental criteria and the development management standards contained in Chapter 18, where appropriate This does not preclude putting forward innovative contemporary designs that respect the context of the Protected Structure.

Objective PS04
To promote the maintenance and appropriate reuse of Protected Structures and older buildings of architectural heritage merit that make a positive contribution to the character, appearance and quality of local areas and the sustainable development of the county

Objective PS05
To promote the retention of original or early building fabric including timber sash windows, stonework, brickwork, joinery, render and slate. Likewise, the Council will encourage the re-instatement of historically correct traditional features.

Objective PS06
To encourage the retention of those elements that give a Protected Structure its special interest where the structure has suffered damage by fire or other accidental causes and where those elements have survived either in whole or in part.

Objective PS07
To ensure that applications in relation to Protected Structures include an architectural heritage assessment/architectural impact assessment report. This report should assess the implications of the development on the character of the structure and the area in which it is located. This should be prepared in accordance with Appendix B of Architectural Heritage Protection- Guidelines for Planning Authorities (DEHLG, 2004) and any subsequent drafts.

Objective PS08
To ensure that all applications for Protected Structures are assessed by taking into consideration the advice contained in Architectural Heritage Protection- Guidelines for Planning Authorities (DEHLG, 2004) and any subsequent guidelines.

Objective PS09
To encourage the repair and retention of traditional timber, rendered and/or tiled shop fronts and pub fronts, including those which may not be Protected Structures.

Objective PS10
To facilitate the retention of older buildings, the Planning Authority will give consideration to the relaxation of car parking and other development management requirements in appropriate circumstances.

Objective PS11
To ensure that elements of the architectural heritage of the county, such as historic gardens, stone walls, ditches and street furniture that make a positive contribution to the built heritage, are retained.

APPENDIX 6 IMPACT ASSESSMENT AND THE CULTURAL HERITAGE RESOURCE

POTENTIAL IMPACTS ON ARCHAEOLOGICAL AND HISTORICAL REMAINS

Impacts are defined as 'the degree of change in an environment resulting from a development' (Environmental Protection Agency 2003: 31). They are described as profound, significant or slight impacts on archaeological remains. They may be negative, positive or neutral, direct, indirect or cumulative, temporary or permanent.

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological and historical resources potentially affected. Development can affect the archaeological and historical resource of a given landscape in a number of ways.

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.

- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.

- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.

- Visual impacts on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.

- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.

- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluviums or peat deposits.

- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, and service trenches.

Although not widely appreciated, positive impacts can accrue from developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

PREDICTED IMPACTS

The severity of a given level of land-take or visual intrusion varies with the type of monument, site or landscape features and its existing environment. Severity of impact can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;
- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected;
- Assessment of the levels of noise, visual and hydrological impacts, either in general or site specific terms, as may be provided by other specialists.

APPENDIX 7 MITIGATION MEASURES AND THE CULTURAL HERITAGE RESOURCE

POTENTIAL MITIGATION STRATEGIES FOR CULTURAL HERITAGE REMAINS

Mitigation is defined as features of the design or other measures of the proposed development that can be adopted to avoid, prevent, reduce or offset negative effects.

The best opportunities for avoiding damage to archaeological remains or intrusion on their setting and amenity arise when the site options for the development are being considered. Damage to the archaeological resource immediately adjacent to developments may be prevented by the selection of appropriate construction methods. Reducing adverse effects can be achieved by good design, for example by screening historic buildings or upstanding archaeological monuments or by burying archaeological sites undisturbed rather than destroying them. Offsetting adverse effects is probably best illustrated by the full investigation and recording of archaeological sites that cannot be preserved *in situ*.

DEFINITION OF MITIGATION STRATEGIES

ARCHAEOLOGICAL RESOURCE

The ideal mitigation for all archaeological sites is preservation *in situ*. This is not always a practical solution, however. Therefore a series of recommendations are offered to provide ameliorative measures where avoidance and preservation *in situ* are not possible.

Archaeological Test Trenching can be defined as 'a limited programme of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land, inter-tidal zone or underwater. If such archaeological remains are present field evaluation defines their character, extent, quality and preservation, and enables an assessment of their worth in a local, regional, national or international context as appropriate' (IFA 2014a).

Full Archaeological Excavation can be defined as 'a programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological deposits, features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site on land, inter-tidal zone or underwater. The records made and objects gathered during fieldwork are studied and the results of that study published in detail appropriate to the project design' (IFA 2014b).

Archaeological Monitoring can be defined as 'a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be

disturbed or destroyed. The programme will result in the preparation of a report and ordered archive (IFA 2014c).

Underwater Archaeological Assessment consists of a programme of works carried out by a specialist underwater archaeologist, which can involve wade surveys, metal detection surveys and the excavation of test pits within the sea or riverbed. These assessments are able to access and assess the potential of an underwater environment to a much higher degree than terrestrial based assessments.

ARCHITECTURAL RESOURCE

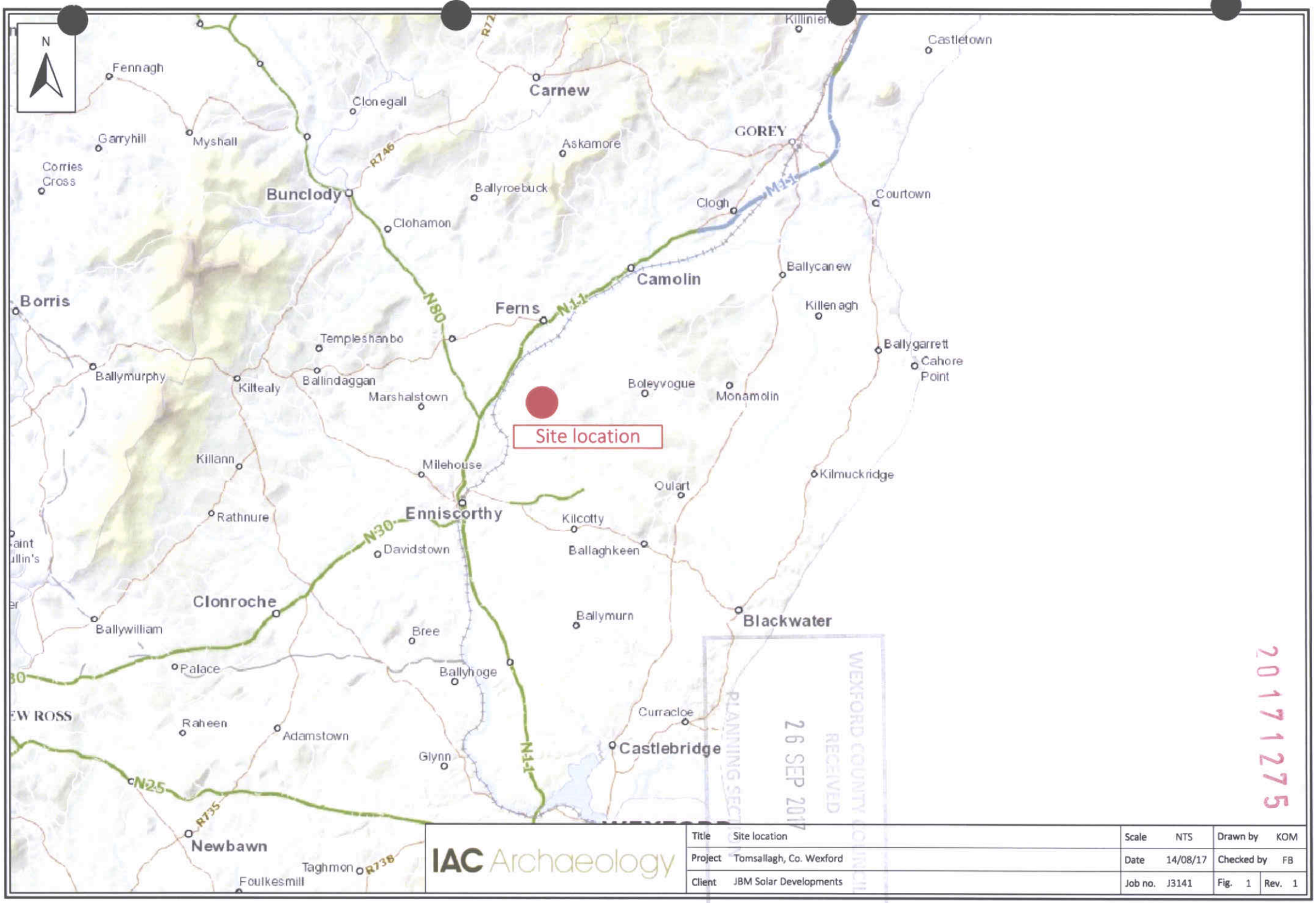
The architectural resource is generally subject to a greater degree of change than archaeological sites, as structures may survive for many years but their usage may change continually. This can be reflected in the fabric of the building, with the addition and removal of doors, windows and extensions. Due to their often more visible presence within the landscape than archaeological sites, the removal of such structures can sometimes leave a discernable 'gap' with the cultural identity of a population. However, a number of mitigation measures are available to ensure a record is made of any structure that is deemed to be of special interest, which may be removed or altered as part of a proposed development.

Conservation Assessment consists of a detailed study of the history of a building and can include the surveying of elevations to define the exact condition of the structure. These assessments are carried out by Conservation Architects and would commonly be carried out in association with proposed alterations or renovations on a Recorded Structure.

Building Survey may involve making an accurate record of elevations (internal and external), internal floor plans and external sections. This is carried out using a EDM (Electronic Distance Measurer) and GPS technology to create scaled drawings that provide a full record of the appearance of a building at the time of the survey.

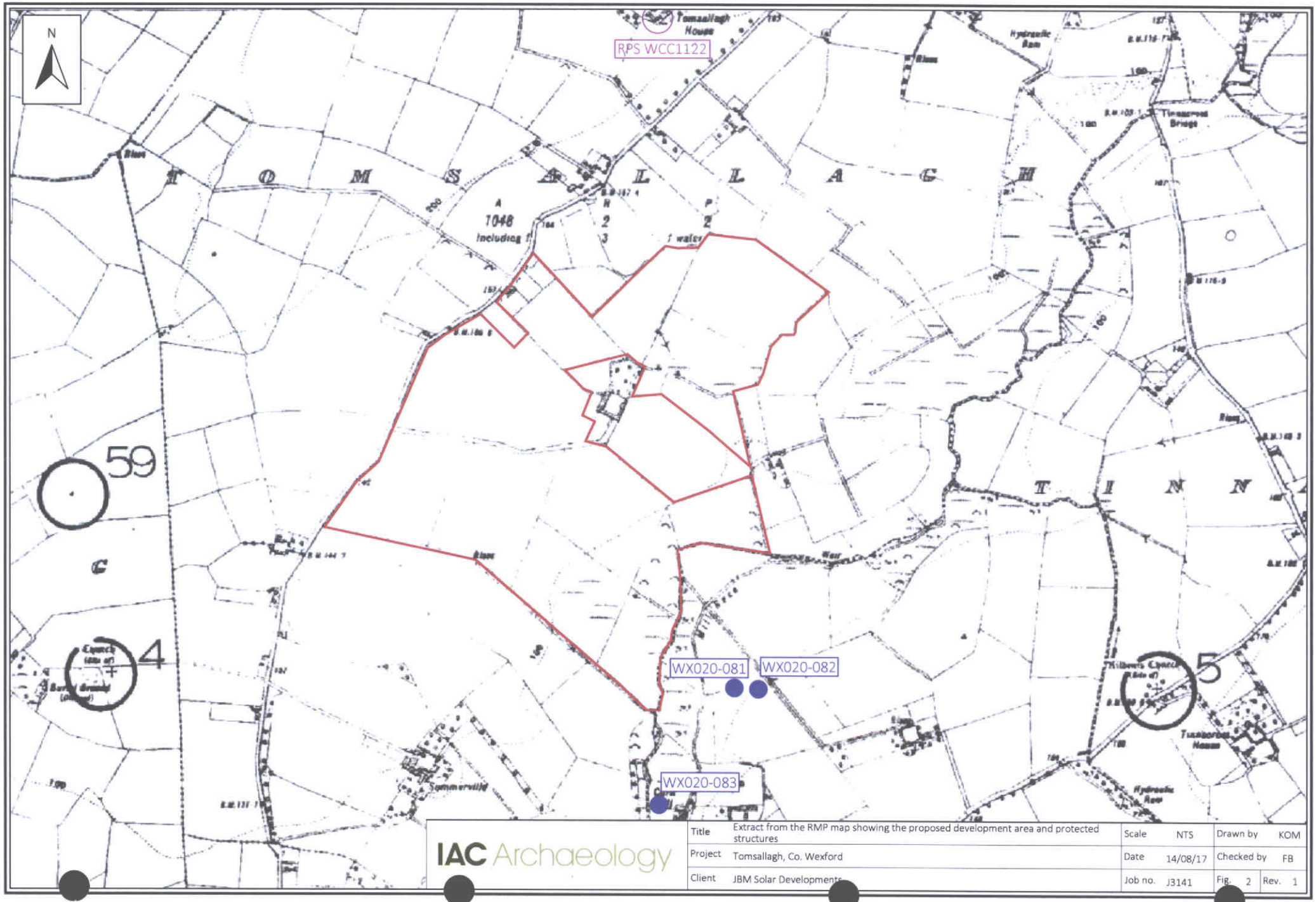
Historic Building Assessment is generally specific to one building, which may have historic significance, but is not a Protected Structure or listed within the NIAH. A full historical background for the structure is researched and the site is visited to assess the standing remains and make a record of any architectural features of special interest. These assessments can also be carried out in conjunction with a building survey.

Written and Photographic record provides a basic record of features such as stone walls, which may have a small amount of cultural heritage importance and are recorded for prosperity. Dimensions of the feature are recorded with a written description and photographs as well as some cartographic reference, which may help to date a feature.



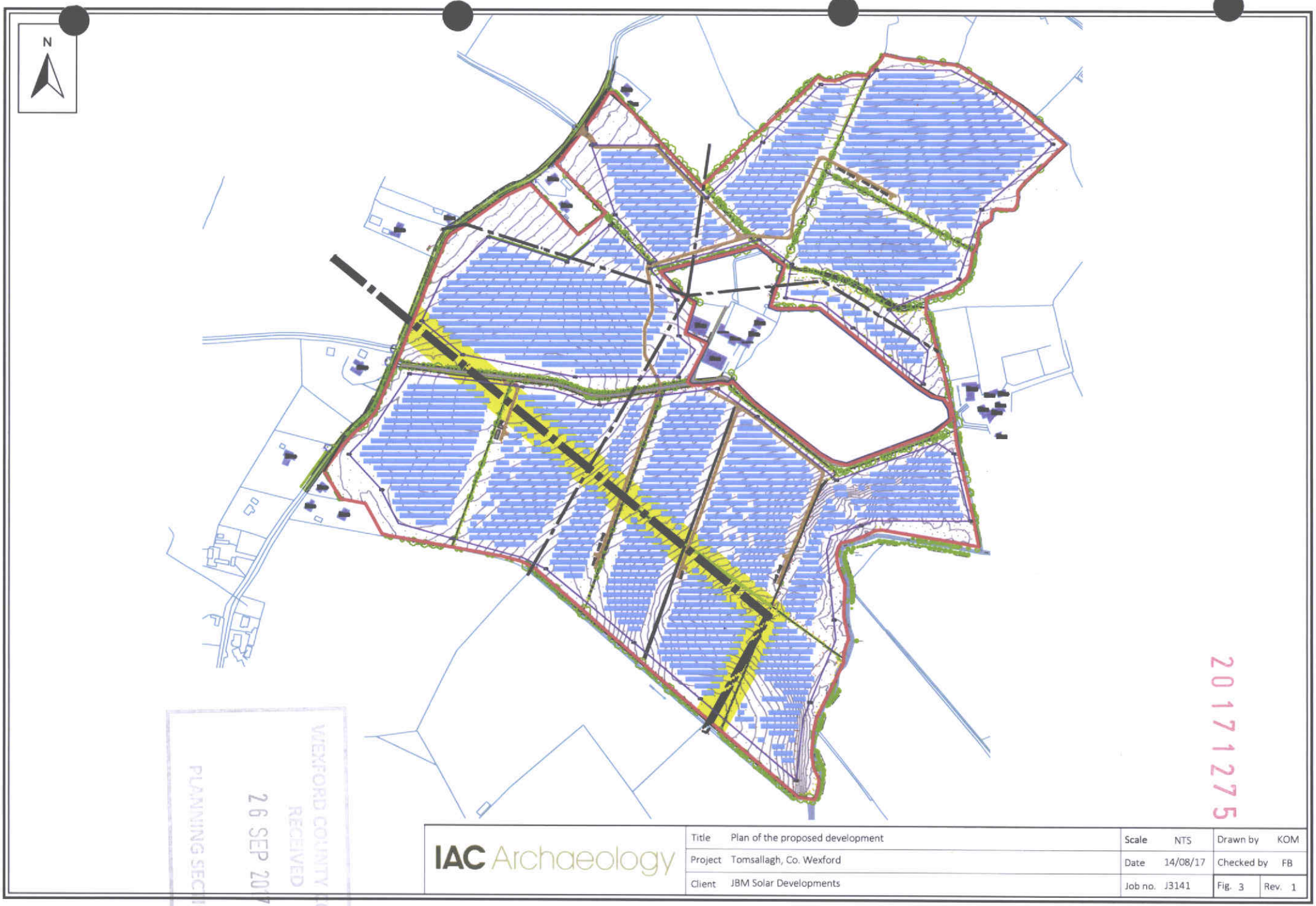
IAC Archaeology

Title	Site location	Scale	NTS	Drawn by	KOM
Project	Tomsallagh, Co. Wexford	Date	14/08/17	Checked by	FB
Client	JBM Solar Developments	Job no.	J3141	Fig. 1	Rev. 1

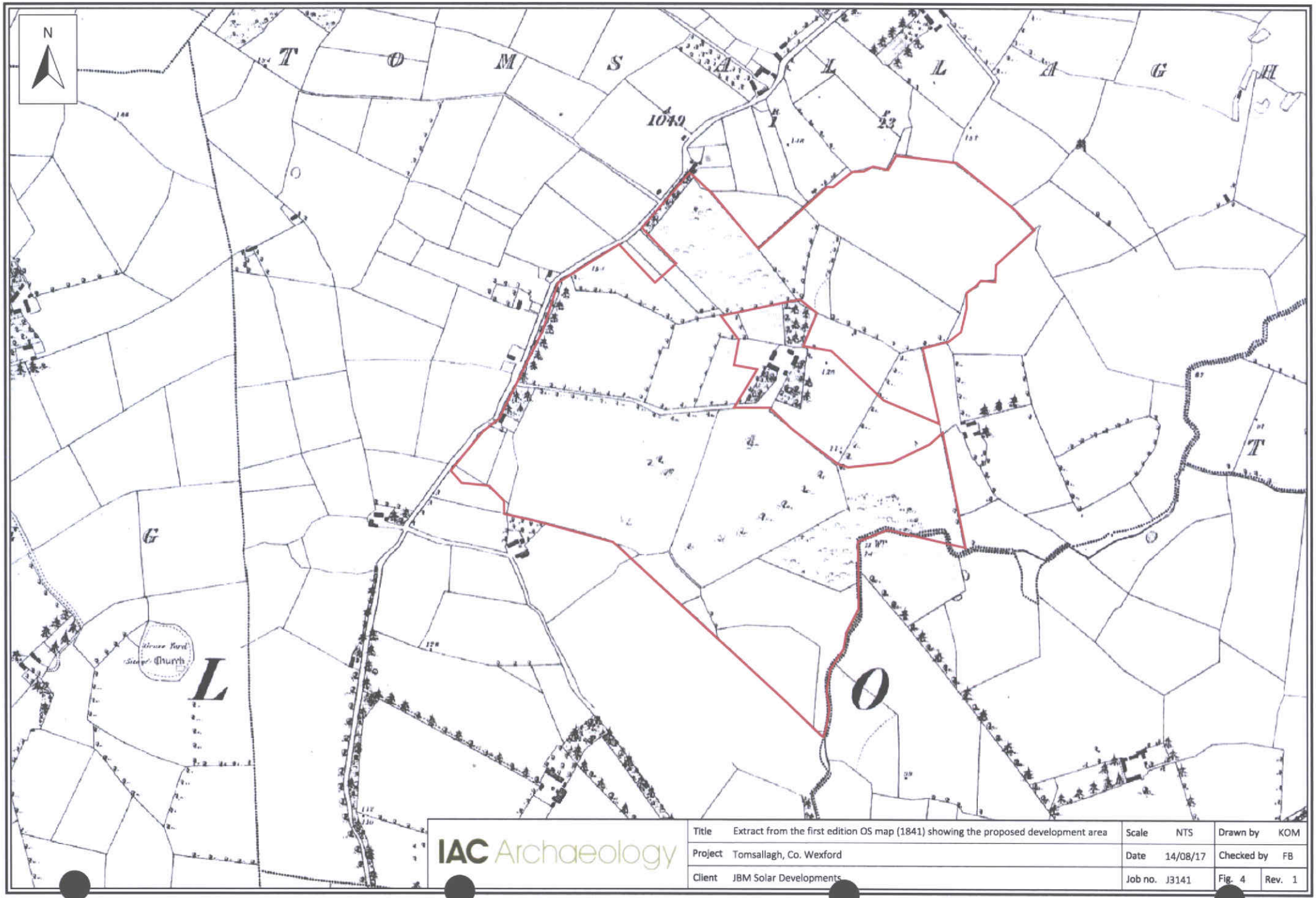


IAC Archaeology

Title	Extract from the RMP map showing the proposed development area and protected structures	Scale NTS	Drawn by KOM
Project	Tomsallagh, Co. Wexford	Date 14/08/17	Checked by FB
Client	JBM Solar Developments	Job no. J3141	Fig. 2 Rev. 1

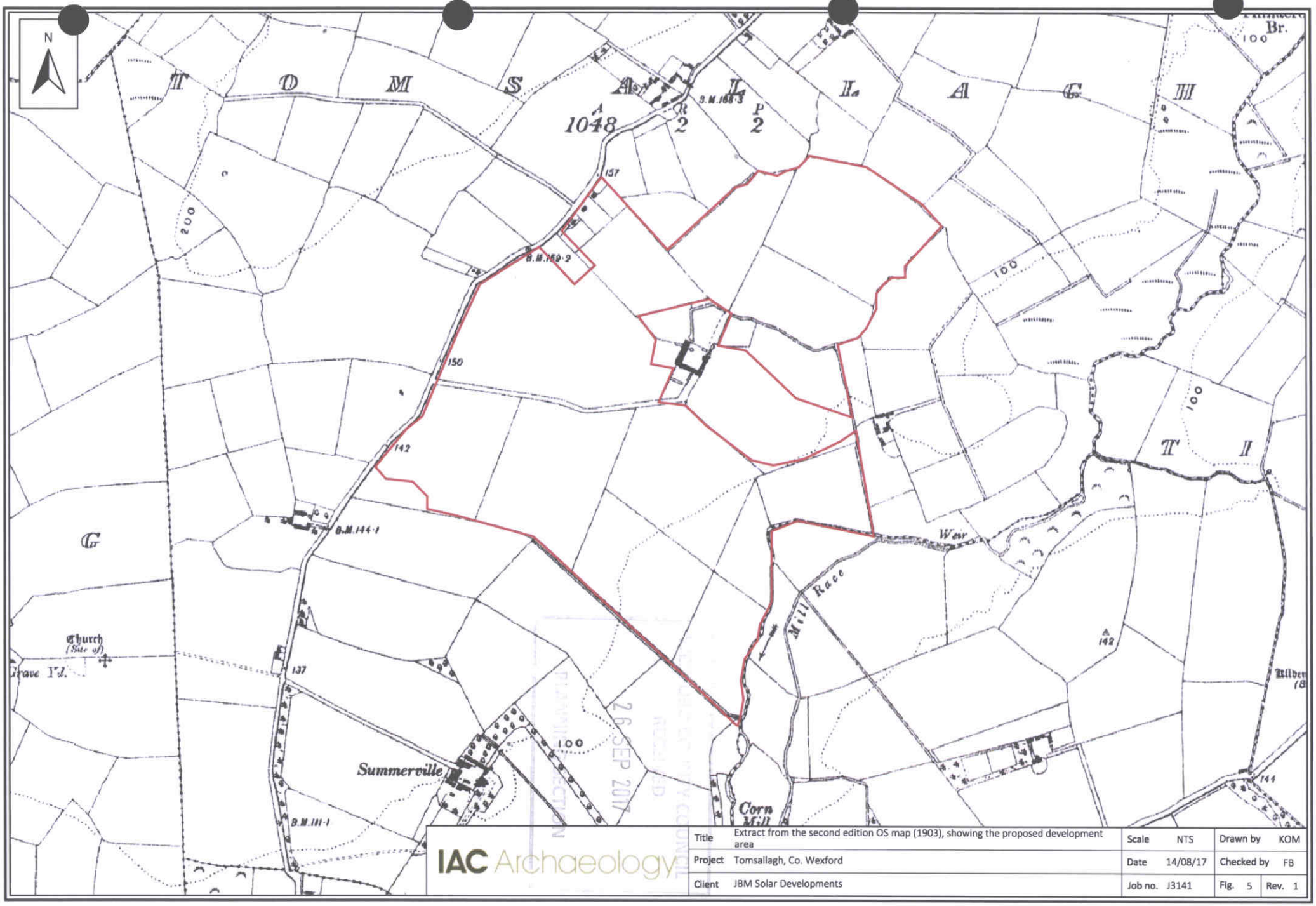


IAC Archaeology	Title	Plan of the proposed development	Scale NTS	Drawn by KOM	
	Project	Tomsallagh, Co. Wexford	Date 14/08/17	Checked by FB	
	Client	JBM Solar Developments	Job no. J3141	Fig. 3	Rev. 1



IAC Archaeology

Title	Extract from the first edition OS map (1841) showing the proposed development area	Scale	NTS	Drawn by	KOM
Project	Tomsallagh, Co. Wexford	Date	14/08/17	Checked by	FB
Client	JBM Solar Developments	Job no.	J3141	Fig. 4	Rev. 1



IAC Archaeology	Title	Extract from the second edition OS map (1903), showing the proposed development area	Scale	NTS	Drawn by KOM
	Project	Tomsallagh, Co. Wexford	Date	14/08/17	Checked by FB
	Client	JBM Solar Developments	Job no.	J3141	Fig. 5 Rev. 1

Plate 1: Field 1, facing northwest

Plate 2: Field 3, facing southeast

Plate 3: Disturbance in Field 5, north-northeast

Plate 4: Field 6, facing east-southeast

Plate 5: Field 6, facing north-northeast

Plate 6: Field 7, facing south-southwest

Plate 7: Field 9, facing north-northwest

Plate 8: Field 11, facing south-southwest

Plate 9: Field 12, facing northwest

Plate 10: Ruined western range, facing west-northwest

Plate 11: Southern and western ranges, facing west