August 2026

Strategic Infrastructure Development – Consultation Document

Proposed 110kV Substation and 110kV Grid Connection

On behalf of

JCO Limited

MALONE O'REGAN ENVIRONMENTAL

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MALONE O'REGAN ENVIRONMENTAL

Ground Floor – Unit 3
Bracken Business Park
Bracken Road, Sandyford
Dublin 18, D18 V32Y
Tel: +353- 1- 567 76 55
Email: enviro@mores.ie

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Prepared By: Caoimhe Fox **Signed:** _____

Checked By: Kathryn Broderick **Signed:** _____

Approved By: Kevin O'Regan **Signed:** _____

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Proposed 110kV Substation and 110kV Grid Connection

JCO Limited

Company Address

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1 INTRODUCTION

Malone O'Regan Environmental ('MOR Environmental') was commissioned by JCO Limited ('the Applicant') to prepare a Section 182E Pre-application Consultation Request for the construction and operation of a development that will comprise:

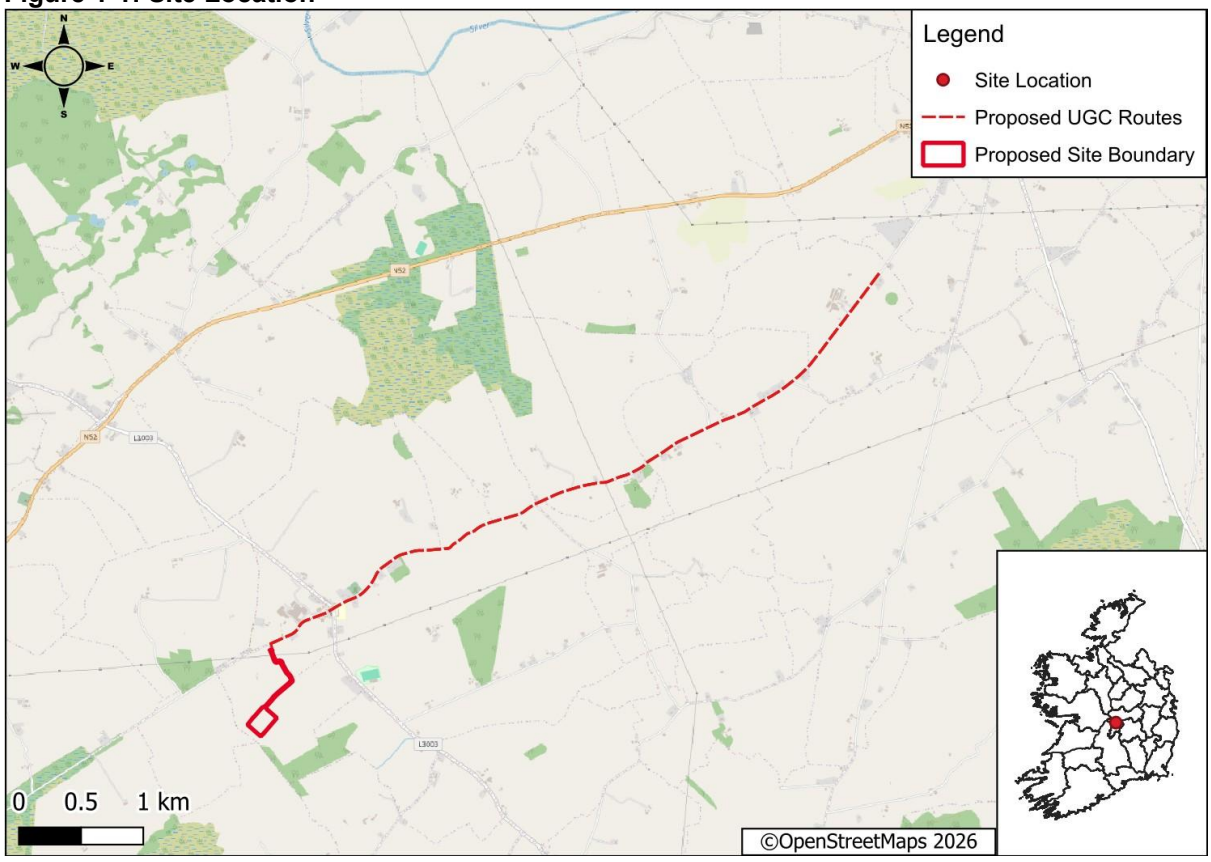
- Construction of a new 110kV substation ('Proposed Mullanfawnia 110kV Substation'); and,
- Construction of a 110kV underground cable ('Proposed 110kV UGC').

Henceforth, the Proposed Mullanfawnia 110kV Substation and the Proposed 110kV UGC will be noted as 'the Proposed Development'.

The Proposed Development will be located across the following townlands: Mullanafawnia, Tinnacross, Rathmount, Raheenglass, Thomastown Demesne, Moneenderg, Derry Lower, Derry Upper, Dovehill, Lisduff, Cornagark and Gortnamuck ('the Site'). Refer to Figure 1-1.

The Proposed 110kV UGC will connect the Proposed Mullanfawnia 110kV Substation to the permitted Harmony Solar 110kV 'Loop In/Loop Out' ('LILO') substation (An Coimisiún Pleanála ('ACP') - Ref. VA19.317635) on ESB lands located in the townlands of Freagh, Co. Offaly (henceforth referred to as 'Permitted Freagh Substation').

Figure 1-1: Site Location



1.1 Report Objective

The purpose of this consultation document is to provide ACP with sufficient details to allow them to determine that the Proposed Development meets the criteria of Strategic Infrastructure Development ('SID').

1.2 The Applicant

JCO Limited is a joint venture between Nordic Solar A/S and Summit Solar Limited.

Nordic Solar is a Danish solar energy company headquartered in Copenhagen. They develop, construct and operate utility-scale solar parks and BESS across Europe with the mission to make everyone benefit from solar energy, with circa ('ca.') 2.5GW of Solar and more than 1GW of Battery Energy Storage Systems ('BESS') in development. As they pursue this mission, their vision is to emerge as one of the leading solar energy companies in the Nordics.

Summit Solar Limited is an Irish solar development company with success in developing more than 500MW of projects in Ireland.

1.3 Background

1.3.1 SID Determination Precedent

In support that the Proposed Development constitutes SID under Section 182A of the Planning and Development Act 2000 (as amended), previous determinations issued by ACP in respect of comparable electricity transmission infrastructure have been reviewed in Section 1.3.1.1.

1.3.1.1 ABP-311176-21– Lands at Broughal and Mullanafawnia, Co.Offaly

A pre-consultation request was submitted by Summit Solar in 2021 (ABP 311176-21). Please note that JCO Limited is a joint venture between Nordic Solar and Summit Solar Limited.

ACP determined on 26th October 2021 that a proposed development comprising a 110kV looped in substation, a 110kV extendable substation and 110kV underground cable connecting two permitted solar development sites, fell within the scope of section 182A of the Planning and Development Act 2000, as amended. It was concluded that the planning application should be made directly to ACP.

This determination is directly relevant to the Proposed Development, as it comprises a 110kV substation together with associated 110kV electricity transmission infrastructure required to facilitate the connection of renewable energy generation to the national electricity transmission network.

In both cases, the primary purpose of the infrastructure is to facilitate the export of electricity generated by permitted renewable energy developments via the national transmission network. The scale, function and purpose of the proposed transmission infrastructure are therefore materially comparable to those considered by ACP in ABP-311176-21.

This precedent therefore provides strong support for the conclusion that the Proposed Development should similarly be considered SID.

1.3.2 Planning Background

The Proposed Development will facilitate the transmission of electricity generated by the permitted solar PV developments under Planning Ref. 20/476, 21/227 and 22/368 (henceforth noted as the 'permitted solar PV developments') via the Proposed 110kV UGC to the Permitted Freagh Substation, located ca. 6.5km northeast of the permitted solar PV developments. Please see Figure 1-2.

Offaly County Council Planning Reg: 20/476 – Granted

> *'A 10 year permission for development which consists of the construction of a solar pv development with a maximum export capacity (mec) of up to 45mw comprising of ca. 105,000 no. Photovoltaic panels laid out in arrays, the construction of 38kv substation (ca. 114.4m2 x 4.75 tall), a transformer unit (ca. 18m2 x 4m tall) and associated bund (ca.55m2), along with ancillary development including: 16 no power hubs (ca.15.25m2 x 2.4m) which incorporate an inverter and a transformer, 1 no. Single storey*

communications building (11.1m2 x 2.5m), 1 no. Single storey client side sub-station building (15.25m2 x 2.9m), 1 no. Single storey equipment storage building (7.5m2 x 2.7m), 1 no. Single storey grp kiosk (3m2 x 4m), 10 no. Cctv cameras mounted on 4m high poles, perimeter security fencing, a new site entrance and all ancillary works. The total development area will be ca. 45.2ha. A natura impact statement (nis) will accompany the planning application'

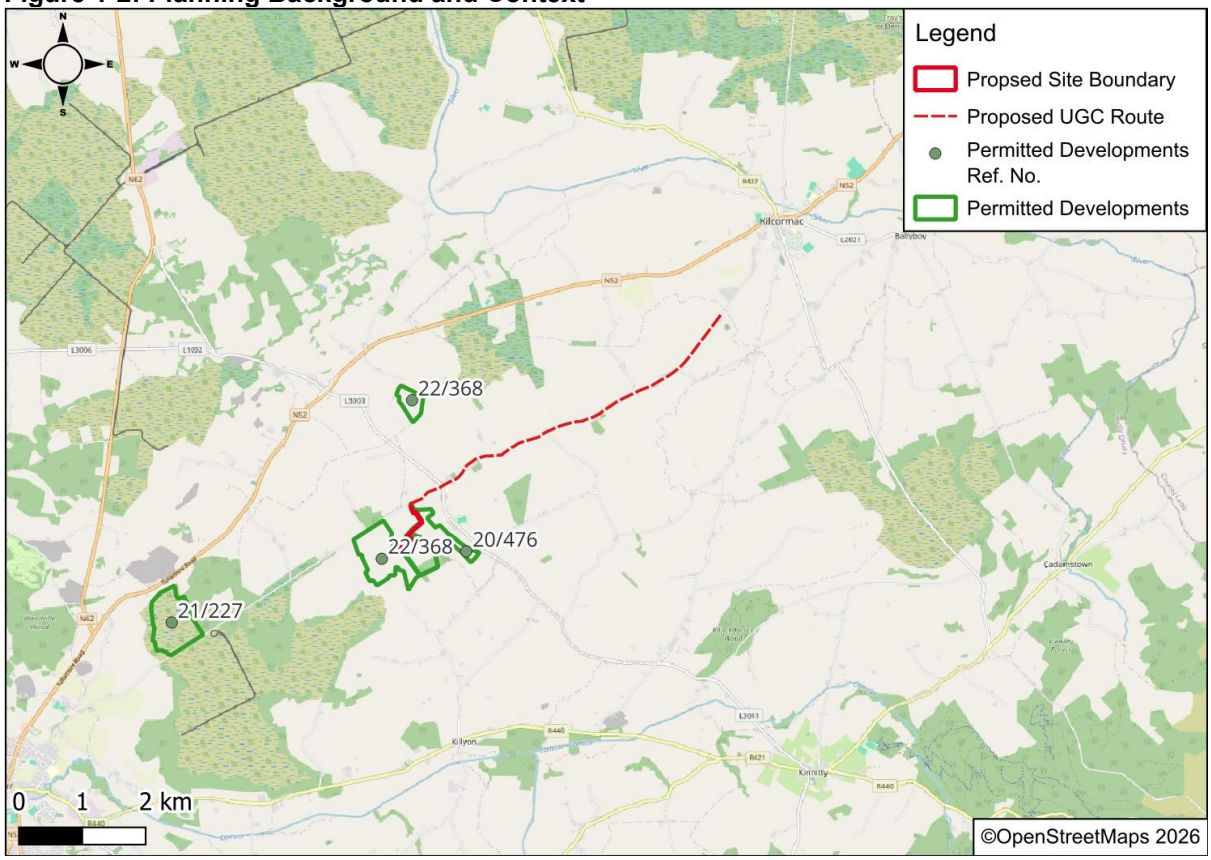
Offaly County Council Planning Reg: 21/227– Granted

'A 10 year permission for the construction of a solar pv development with a maximum export capacity (mec) of up to 40mw comprising on ca. 122,904 no. Photovoltaic panels laid out in arrays, the construction of a 38kv substation (ca. 144.4m2 x 4.75m tall), a transformer unit (ca. 18m2 x 4m tall) and associated bund, along with ancillary development including: 16 no. Power hubs (ca. 15.25m2 x 2.4m), which incorporate an inverter and a transformer, 1 no. Single storey communications building (11.1m2 x 2.5m), 1 no. Single storey client side sub-station building (15.25m2 x 2.9m), 1 no. Single storey equipment storage building (7.5m2 x 2.7m), 10 no. Cctv cameras mounted on 4m high poles, perimeter security fencing, 1 no. Attenuation pond, landscaping enhancement and all ancillary works. The total development area will be ca. 70.2ha. A natura impact statement (nis) will accompany the planning application'

Offaly County Council Planning Reg: 22/368 – Granted

'A 10 Year Permission. The Development Will Consist Of Solar Pv Development On Two Separate And Detached Parcels Of Land, Parcel 1 Is Located In The Townland Of Clonbeale Beg Glebe, Rathure North, While Parcel 2 Is Located In The Townland Of Parkmore. Both Separate Parcels Will Be Connected To An Existing Permitted Solar Development Under Planning Application Ref: Pl20/476 By Underground Cables (Will Be Subject To A Separate Strategic Infrastructure Development Consent Application). Each Detached Parcel Containing Pv Panels Will Be Laid Out In Arrays Over A Total Development Area Of Ca. 69ha, Along With Ancillary Development Including: 24 No. Power Hubs (Ca. 15.25m2 X 2.4m) Which Incorporate An Inverter And A Transformer, 2 No. Single Storey Communications Building (11.1m2 X 2.5m), 2 No. Single Storey Client Side Sub-Station Building (15.25m2 X 2.9m), 2 No. Single Storey Equipment Storage Building (7.5m2 X 2.7m), 1 No. Single Storey Grp Kiosk (3m2 X 4m), 12 No. Cctv Cameras Mounted On 4m High Poles, Perimeter Security Fencing And All Ancillary Works. A Natura Impact Statement (Nis) Will Accompany The Planning Application'

Figure 1-2: Planning Background and Context



1.3.3 Proposed Mullanfawnia 110kV Substation

The Site of the Proposed Mullanfawnia 110kV Substation is located within the townland of Mullanfawnia, Co. Offaly, ca. 13.4km southwest of Offaly town (OS ITM Reference 612452 708953). The Site of the Proposed Mullanfawnia 110kV Substation is ca. 4ha.

The Proposed Mullanfawnia 110kV Substation will be designed to connect the permitted solar PV developments (Planning Ref. 20/476, 21/227 and 22/368) to the national grid, via the Proposed 110kV UGC, to the Permitted Freagh Substation.

The Proposed Mullanfawnia 110kV Substation will be a “node” in the transmission system and will be connected as a spur node to the Permitted Freagh Substation, located ca. 6.5km northeast of the Site, interconnected by the Proposed 110kV UGC.

The Proposed Mullanfawnia 110kV Substation will not be a “tail-fed” substation. The main difference between the Proposed Mullanfawnia 110kV Substation and other substations termed “tail-fed” is that the proposal is designed to be adaptable to become a meshed node or collector hub for connection of other users, and more importantly, for extension and reinforcement of the transmission system. It is considered that the proposed arrangement will create a “node” and not a “tail-fed” connection. Although this proposed substation will be privately owned, subject to reaching a commercial agreement with the operators, this substation will also be able to serve other renewable energy developments in the surrounding area that could use this substation as a ‘behind-the-meter’ connection node to the proposed new looped-in substation.

1.3.4 Future Development

All future renewable developments, including solar, battery storage or wind projects that will utilise this proposed node will be subject to separate planning applications to the relevant Local Authority.

The Proposed Development will facilitate the connection and delivery of a number of permitted solar PV developments as outlined in Section 1.3.1 to the national electricity transmission network. The Proposed Development, therefore, constitutes key enabling infrastructure required to facilitate the delivery and operation of these consented renewable energy developments.

1.3.5 Strategic Infrastructure Development ('SID')

The Proposed Mullanfawnia 110kV Substation will become a node on the national grid for this region in County Offaly, whilst also forming the connection point for the permitted solar PV developments and any future renewable projects in the area.

It is considered that this project falls within the requirements of the Planning Development (Strategic Infrastructure Act 2006), which falls within the scope of section 182A of the Planning and Development Act 2000, as amended, and also meets the criteria as a development that contributes substantially to the fulfilment of any of the objectives in the National Planning Framework.

The relevant criteria of Section 182A (2) are as follows:

a) The development would be of strategic economic or social importance to the State or the region in which it would be situated;

b) The development would contribute substantially to the fulfilment of any of the objectives in the National Planning Framework or in any regional spatial and economic strategy in force in respect of the area or areas in which it would be situated; and,

c) The development would have a significant effect on the area of more than one planning authority.

In respect of (b) above, the proposed substation site will have the capacity to serve permitted renewable energy developments and would contribute substantially to the fulfilment of any of the objectives in the National Planning Framework or in any regional spatial and economic strategy in force in respect of the area or areas in which it would be situated.

The permitted solar developments will not use the total capacity of the extendable substation (180MW). Hence, this will offer significant strategic benefit to the surrounding areas for the development of future renewable energy projects.

1.4 Need for the Development

Globally, there is clear recognition that action to mitigate climate change is necessary. This initially resulted in the Paris Agreement 2015 – an international effort to keep the global increase in temperature to 2°C above pre-industrial levels. According to the Fifth Assessment Report ('AR5') of the United Nations Intergovernmental Panel on Climate Change ('IPCC'), in order to keep the temperature increase below 2°C, global GHG emissions must be reduced by 40-70% by 2050 compared to 2010 and be near zero by 2100 [1]. Key to achieving this level of emissions reduction will be the preparation and implementation of low-carbon development.

The EU target for 2030 was to achieve a 40% reduction in domestic GHG emissions compared to 1990 [2].

At the 2021 United Nations Climate Change Conference (COP26), the participating countries reaffirmed earlier commitments under the Paris Agreement (2015) to the goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. There was also a recognition that limiting global warming to 1.5°C requires rapid, deep, and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century, as well as deep reductions in other greenhouse gases.

Renewable energy technologies play a vital role in the reduction of greenhouse gas ('GHG') emissions. In Ireland, wind energy generated 28% of all electricity consumption in 2018, which is second only to natural gas [3]. However, 7% of electricity in Ireland is still generated by coal, the fuel with the highest GHG emissions, as well as emissions of other pollutants [4]. It is paramount to transition to non-fossil fuel sources of electricity as fast as possible in order to achieve national (and international) GHG emissions reduction goals.

Ireland had an overall target of 16% of gross final energy consumption to come from renewable energy sources by 2020 [5]. This was to be achieved by 40% from renewable electricity, 12% from renewable heat, and 10% from renewable transport.

Ireland did not meet the 2020 overall renewable energy target. The overall share of renewable energy was 13.5% compared to the target of 16%. Ireland succeeded against its EU 2020 renewable energy target for transport (10.2% vs. 10%), and just missed its renewable energy target for electricity (39.1% vs. 40%). Ireland achieved just half its 2020 renewable energy target for heating and cooling (6.3% vs. 12%). Energy from renewable sources grew by 8.9% in 2020 [3].

The EPA also recently reported that Ireland is not on track towards decarbonising the economy in the long term [2]. As it stands, Ireland is not on course to achieve its short-term or long-term climate goals, and steep challenges will have to be faced toward 2050 [5]. We now have some of the most demanding decarbonisation targets globally, with the necessity to halve emissions by 2030 and reach net-zero by 2050 now enshrined in Irish law [3].

Developments such as the Proposed Development are not only essential to achieving renewable energy goals, but also to achieving the wider goal of decarbonising the economy in Ireland.

1.4.1 European Context

1.4.1.1 EU Renewable Targets

The EU wants to accelerate the take-up of renewables to contribute to and reach the goal of reducing net greenhouse gas emissions by at least 55% by 2030.

Increasing the share of renewable energy across the different sectors of the economy is therefore a key building block to reach the EU's energy and climate objectives by cutting greenhouse gas emissions by at least 55% (compared to 1990) by 2030 and becoming a climate-neutral continent by 2050.

Developments such as the Proposed Development are not only essential to achieving renewable energy goals, but also to achieving the wider EU renewable targets.

1.4.1.2 The Climate Energy Policy Framework 2030

The Climate and Energy Policy Framework 2030 [6] includes EU-wide targets and policy objectives for the period between 2021-2030. It seeks to drive continued progress towards a low-carbon economy and build a competitive and secure energy system that ensures affordable energy for all consumers and increase the security of supply of the EU's energy supply. It sets targets of at least 40% reduction (set to raise to at least 55%) in greenhouse

gas emissions and at least 32% share of renewable energy from all energy consumed in the EU by 2030.

1.4.1.3 Revised Renewable Energy Directive 2018/2001/EU (December 2018)

This sets out a new target for the share of energy from renewable sources in the EU to at least 32% for 2030, with a review for increasing this target through legislation by 2023. A major shift within the revision is the way in which Member States will contribute to the overall EU goal. It requires Member States to set national contributions to meet the binding target as part of their integrated national energy and climate plans.

1.4.2 National Context

1.4.2.1 The White Paper'Ireland's Transition to a Low Carbon Energy Future 2015-2030'

The White Paper 'Ireland's Transition to a Low Carbon Energy Future 2015-2030' [7] is the Government's Energy Policy Framework, which sets out the policies in the energy sector and the actions required by the Government of Ireland until 2030.

One of the actions set out by the White Paper is to improve Ireland's energy efficiency and develop Ireland's indigenous energy supplies. In order to do this, measures to maintain and enhance energy security will be put in place, including:

- *'Diversifying energy supply to include more renewables, which reduce the reliance on imported fuels;*
- *Promoting competitive markets and facilitating commercial investment through policy and regulatory certainty;*
- *Supporting regional, EU and international cooperation to develop energy security initiatives;*
- *Greater deployment of sustainable energy initiatives and technology;*
- *Promoting and facilitating interconnection with other countries and regions;*
- *Maximising strategic stocks of oil and gas held on the island; and,*
- *Enhancing energy storage.'*

This paper states, *'electricity storage is expected to play an important role in facilitating the deployment of intermittent renewable energy technologies like wind, solar PV and ocean energy*,' which is further supported by the EU's Energy Roadmap 2050 [6]. The EU's Energy Roadmap 2050 states that energy storage is critical, especially in relation to renewable energy [6].

The White Paper also discusses modelling work undertaken by the Department of Communications, Energy and Natural Resources ('DCENR') and the Northern Ireland Department of Trade and Investment. This modelling indicated that significant levels of energy storage, at a multi-megawatt scale, could be used to maximise the utilisation of renewable energy sources. Small-scale energy storage could be used to facilitate efficient use of networks, keep network operating costs low and maintain high security of supply.

1.4.2.2 The National Spatial Strategy, 2002-2020

The National Spatial Strategy, 2002-2020, recognises the importance of renewable energy, as it states that the aim should be to ensure that resources such as energy are used in a sustainable way.

Section. 2.6 – How to Strengthen Areas and Places

> *'National and international evidence also demonstrates that rural areas have a vital contribution to make to the achievement of balanced regional development. This involves utilising and developing the economic resources of rural areas, particularly in agriculture and food, marine, tourism, forestry, renewable energy, enterprise and local services, while at the same time capitalising on and drawing strength from vibrant neighbouring urban areas.'*

1.4.2.3 Climate Action Plan 2023

In 2023, the Government of Ireland released the Climate Action Plan 2023- Changing Ireland for the Better, a plan which sets out a major programme of change. It outlines the current state of play across key sectors, including Electricity, Industry, Built Environment, Transport, Agriculture, Forestry and the Marine Environment and charts a course to achieve an ambitious net zero emissions target by 2050 [7]. The plan commits to evaluating in detail the changes required to adopt such a goal in Ireland.

Decarbonising electricity is at the centre of the Climate Action Plan strategy, as this will also aid in the decarbonisation of other sectors such as transport, heating, and industry. The share of electricity from renewable energy increased from 7.2% to 36.4% between 2005 and 2021 [7]. Demand for electricity is forecast to increase by between 19% and 50% above existing capacity in the next decade, in line with economic forecasts. Ensuring we build renewable, rather than fossil fuel, generation capacity to help meet this demand is essential. It makes economic sense and also facilitates decarbonising our heating and transport through electrification. It is planned to increase the proportion of renewable electricity to up to 80% by 2030, and a target of 9GW from solar by 2030 [7].

The renewables sector is very dynamic in nature, with technologies still rapidly evolving. Ensuring increased levels of renewable generation will require substantial new infrastructure, including wind and solar farms, grid reinforcement, storage developments, and interconnection:

> *'Increasing the share of electricity demand generated from renewable sources to up to 80% where achievable and cost effective, without compromising security of electricity supply'.*

As renewable generation is intermittent and often unpredictable, this creates new challenges for utilities, market participants, and policy makers. Intermittency also creates the need for a range of technology solutions, which include large-scale interconnection, storage, and dispatchable capacity [7]. Up until recently, intermittency was a key obstacle to the expansion of renewable electricity, especially wind, and therefore, fossil fuels continue to be the dominant electricity-generating technology.

Specific actions for the electricity sector, aimed at keeping Ireland on target for our 2030 decarbonisation ambitions, are set out in the Climate Action Plan 2023. Specifically, the following actions:

Table 1-1: CAP Actions

Action No.	Description
Action EL/23/1	*'Establish a taskforce to accelerate renewables'*
Action EL/23/2	*'Publish the Renewable Electricity Spatial Policy Framework'*
Action EL/23/3	*'Publish a roadmap for the development and implementation of Regional Renewable Electricity Strategies'*
Action EL/23/4	*'Prepare new draft Wind Energy Development Guidelines for onshore renewables'*
Action EL/23/5	*'Complete analysis to update Shaping Our Electricity Future to accommodate 80% renewables and align with carbon budgets and sectoral emissions ceilings for electricity'*
Action EL/23/6	*'Ensure electricity generation grid connection policies and regular rounds of connection offers which facilitate timely connecting of renewables, provides a locational signal and supports flexible technologies'*
Action EL/23/7	*'Publish an annual report setting out identifiable public benefits delivered by renewable energy sector including employment and skills/ training metrics, local investment, and community benefits'*
Action EL/23/10	*'Deliver onshore and offshore RESS auctions as per the annual RESS auction calendar'*
Action EL/23/11	*'Publish decision and mechanism for Premium Export Guarantee to facilitate larger on-site generation investments'*
Action EL/23/13	*'Publish the Small-scale Generation high-level design and launch scheme to support the deployment of rooftop and ground mounted solar'*
Action EL/23/14	*'Ensure that hybrid technology grid connections are facilitated, and remaining barriers removed'*
Action EL/23/16	*'Publish updated Interconnection Policy to reflect Ireland's increased climate and energy ambition, the revised EU TEN-E Regulation, Brexit challenges and the increased significance of hybrid interconnectors'*
Action EL/23/17	*'Following completion of DECC Interconnector Policy, CRU to update its Interconnection Policy'*
Action EL/23/21	*'Carry out further studies to identify the investments and upgrades needed to facilitate 80% renewable electricity annual share'*
Action EL/23/22	*'Publish a policy framework for electricity storage based on electricity system needs'*
Action EL/23/23	*'Review the regulatory treatment of storage including licensing, charging and market incentives'*

1.4.3 Regional Context

1.4.3.1 Regional Spatial and Economic Strategy 2019-2031 ('RSES') for the Eastern and Midland Region

RSES is underpinned by key cross-cutting principles that reflect the three pillars of sustainability: Social, Environmental and Economic, and expressed in a manner which best reflects the challenges and opportunities of the Region.

The central need is for the RSES to be people-focused, as 'quality of life' encapsulates strong economic output and stability, good environmental performance and a good standard of living for all. There are three key principles, including Climate Action and *'[t]he need to enhance climate resilience and to accelerate a transition to a low carbon society recognising the role of natural capital and ecosystem services in achieving this'*.

There are 16 Regional Strategic Outcomes ('RSO's') which align with the 3 key principles of the RSES. Outcome 9 Supports the Transition to Low-Carbon and Clean Energy:

- *'Pursue climate mitigation in line with global and national targets and harness the potential for a more distributed renewables-focussed energy system to support the transition to a low carbon economy by 2050. (NSO 8, 9)'*

1.4.4 Local Context

1.4.4.1 Offaly County Council Development Plan 2021-2027

The policies and objectives contained in the Offaly County Development Plan ('the CDP') 2021-2027 set strategic planning initiatives for sustainable development, ensuring that future growth and development are for the long-term benefit of the County.

Chapter 3 of the CDP 2021-2027, 'Climate Action and Energy, outlines the approaches to, and provides the policy context for, climate change mitigation and adaptation in the County.

"To achieve a transition to an economically competitive, low carbon climate resilient and environmentally sustainable county, through reducing the need to travel, promoting sustainable settlement patterns and modes of transport, and by reducing the use of non-renewable resources, whilst recognising the role of natural capital and ecosystem services in achieving this. "

Climate Action – Overarching Policies - Electricity Transmission and Distribution

CAEP-01:

"It is Council policy to support and facilitate the development, reinforcement, renewal and expansion of the electricity transmission and distribution grid, including the development of new lines, pylons and substations as required to provide for the future physical and economic development of Offaly.

CAEP-02:

It is Council policy to require that, in all new developments, local services such as medium and low voltage electricity cables shall be undergrounded, with multiple services accommodated in shared strips underground and that access covers are shared, whenever possible.

CAEP-03:

It is Council policy that proposals for new electricity distribution lines 38 kV or above along with transmission lines 110 kV or above will be considered subject to the protection of Designated and Non Designated Sites as outlined in Objectives BLO-02 to BLO-06 and landscape considerations as outlined in objectives BLO-22 Areas of High Amenity, BLO-

24 Landscape and BLO 26 and BLO-27 Protection of Key Scenic Views, Prospects and Key Amenity Routes.

CAEP-04:

It is Council policy to support EirGrid's Implementation Plan 2017 – 2022 and Transmission Development Plan 2019 and any subsequent plans prepared during the plan period that facilitate the timely delivery of major investment projects subject to appropriate environmental assessment and the outcome of the planning process.

CAEP-05*:*

It is Council policy to support the reinforcement and strengthening of the electricity transmission and distribution network to facilitate planned growth and transmission/ distribution of a renewable energy focused generation across the major demand centres. This includes:

- *Facilitating trans-boundary networks into and through the County and Region to ensure the Regional Spatial and Economic Strategy can be delivered in a sustainable and timely manner;*
- *Facilitate the delivery of the necessary integration of transmission network requirements to allow linkages of renewable energy proposals to the electricity* transmission grid in a sustainable and timely manner; and
- *Support the safeguarding of strategic energy corridors from encroachment by other developments that could compromise the delivery of energy networks."*

Energy Storage

CAEP-06:

"It is Council policy to promote the use of efficient energy storage systems and infrastructure that supports energy efficiency and reusable energy system optimization, in accordance with proper planning and sustainable development."

Renewable Energy - Objective

CAEO-03

"It is an objective of the Council to achieve a reasonable balance between responding to government policy on renewable energy and in enabling the wind energy resources of the county to be harnessed in an environmentally sustainable manner."

2 EXISTING ENVIRONMENT

2.1 Site Context

The Site is currently located within a predominantly rural landscape comprising agricultural grassland in an area of low sensitivity. Due to the area's rural context, the Site is well screened by natural boundaries such as hedgerows / treelines.

The Site is accessed via the L7006 local road, which is located to the north of the Site. Beyond the L7006 are scattered residential properties, with agricultural grassland extending further to the north. Further areas of agricultural grassland are located to the south, east and west of the Site. J. Grennan & Sons Rath is located approximately 550m to the northeast of the Site, while Drumcullen GAA Club is located approximately 650m to the east.

The existing receiving environment will evolve through the construction of permitted solar PV developments in the surrounding area, as outlined in Section 1.3. These permitted solar PV developments will result in a change in the existing land-use, with areas of agricultural land transitioning to renewable energy infrastructure and associated development.

The Proposed 110kV UGC route will be located primarily within the existing road network and will therefore largely utilise established road infrastructure.

Figure 2-1: Outline of the Overall Site



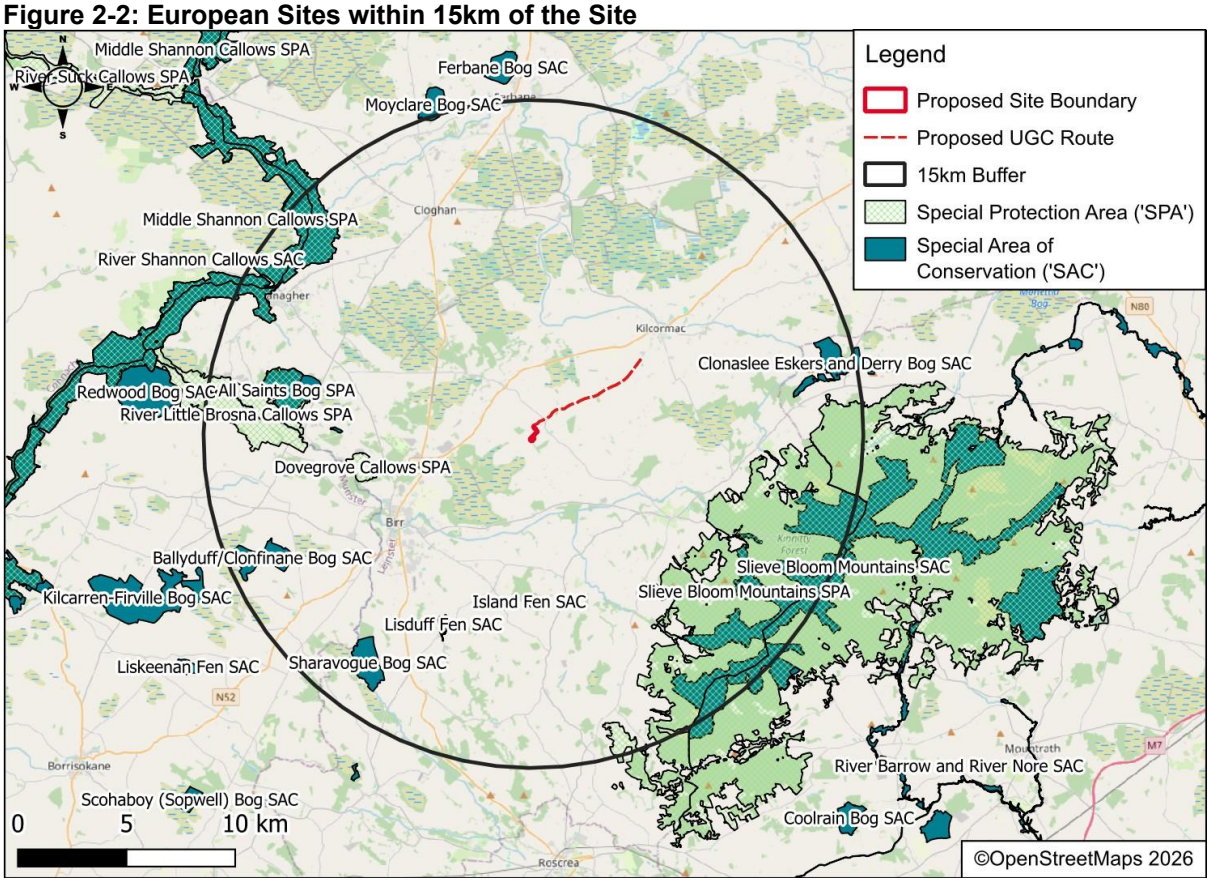
2.2 European Designated Sites

The Site is not located within or directly adjacent to any European sites; however, the boundaries of 10 Special Areas of Conservation ('SACs') and four Special Areas of Protection ('SPAs') are located within 15km of the Site. See Figure 2-2.

Table 2-1: European Designated Sites within 15km of the Site

Site Name	Code	Distance (km)	Direction from the Site
Special Areas of Conservation ('SAC')			
Ridgeroad, SW of Rapemills SAC	000919	ca.8.5km	NE
River Shannon Callows SAC	000216	ca. 12.1km	NW
Moyclare Boc SAC	000581	ca.14.8km	N
All Saints Bog and Esker SAC	000566	ca.10km	NW
Ballyduff/Clonfinane Bog SAC	000641	ca.12.3km	SW
Sharavogue Bog SAC	000585	ca.11.6km	SW
Lisduff Fen SAC	002147	ca.8.9km	S
Island Fen SAC	002236	ca.7.2km	S
Sileve Bloom Mountains SAC	000412	ca.10.2km	SE
Clonaslee Eskerand Derry Bog SAC	000859	ca.11.9km	NE
Special Area of Protection ('SPA')			
Dovegrove Callows SPA	004137	ca.7km	W
River Little Brosna Callows SPA	004086	ca.10.1km	W
Middle Shannon Callows SPA	004096	ca.12km	NW
Slieve Bloom Mountains SPA	004160	ca.8.6km	SE

Figure 2-2: European Sites within 15km of the Site



No hydrological connection was identified between the Site and Ridgeroad, SW of Rapemills SAC, Redwood Bog SAC, Ballyduff/Clonfinane Bog SAC, Kilcarren-Fiville Bog SAC. Liskeenan Fen SAC, Sharavogue Bog SAC, Lisduff Fen SAC, Island Fen SAC, Sileve Bloom Mountains SAC, Dovegrove Callows SPA, River Little Brosna Callows SPA, All Saints Bog SPA and Slieve Bloom Mountains SPA.

However, a potential hydrological connection was identified between the Site and the All Saints Bog and Esker SAC and the All Saints Bog SPA via the Rapemills Stream, ca. 9.6km downstream of the Site.

Furthermore, a potential hydrological connection was also identified between the UGC and the River Shannon Callows SAC and River Shannon Callows SPA via the Kyleboher stream. The Kyleboher stream is a tributary of the River Bronsa, and drains into the SAC and SPA ca. 16.7km downstream.

2.3 Watercourses in the Vicinity of the Site

2.3.1 110kV Substation

There are no open watercourses within the Site; however, there is one hydrological feature of note in the vicinity of the Site, as outlined below and illustrated in Figure 2-3.

The Rapemills stream is located ca.180m from the Site at its closest point. The stream flows in a northwesterly direction, draining into the Rapemills River 800m downstream.

According to the Water Framework Directive ('WFD') 2019-2024, Rapemills stream and Rapemills River are considered of moderate status and classified as '*at risk'* of not achieving good status.

The Site and adjacent watercourses are located within the Shannon (Lower)_SC_040 sub-catchment, forming part of the overall Lower Shannon WFD catchment [6]. All hydrological features in the close vicinity of the Site are illustrated in Figure 2-3.

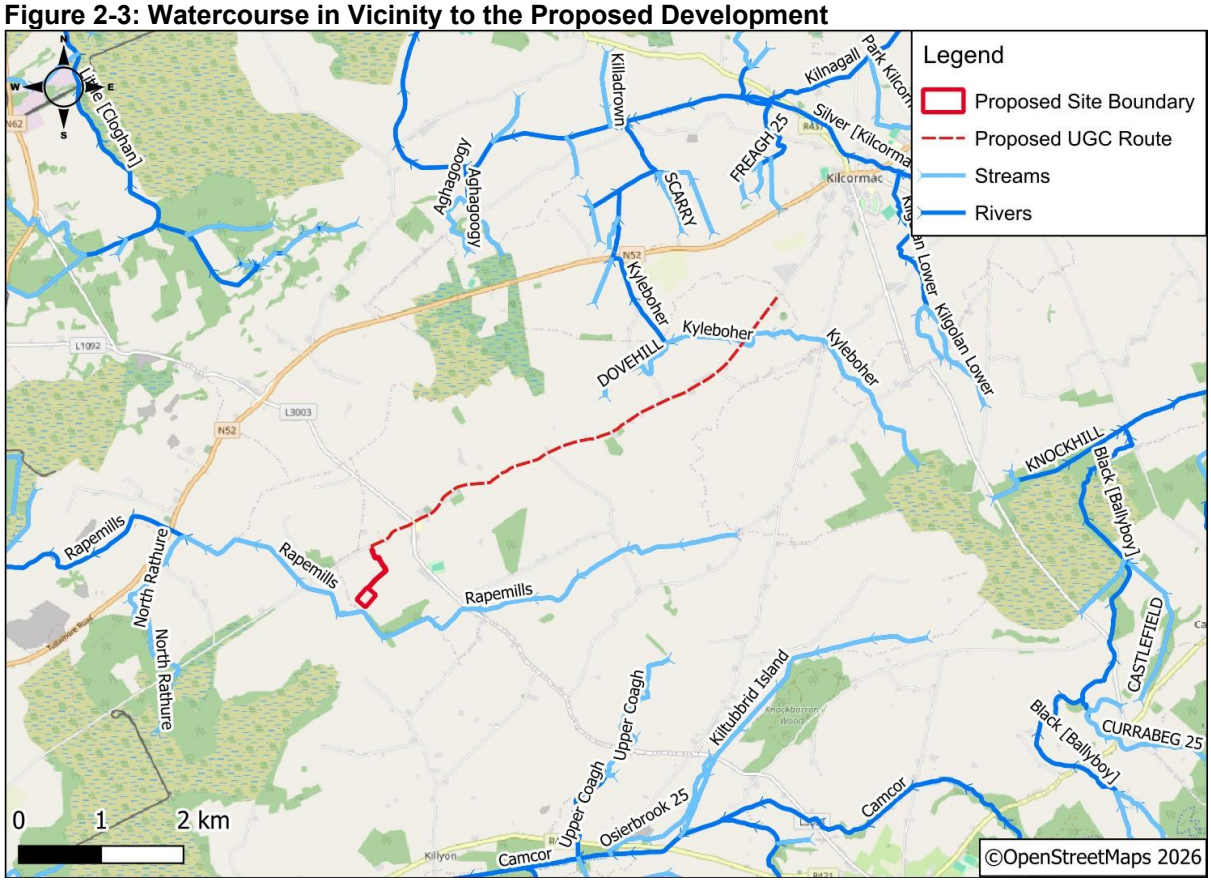
2.3.2 Grid Connection

There is one hydrological feature, the Kyleboher stream, within the vicinity of the Site as outlined below and as illustrated in Figure 2-3.

According to the Water Framework Directive ('WFD') 2019-2024, Kyleboher Stream is considered of moderate status and classified as '*under review*' in terms of waterbody risk.

The Site and adjacent watercourses are located within the Shannon (Lower)_SC_040 sub-catchment, forming part of the overall Lower Shannon WFD catchment [6].

Figure 2-3: Watercourse in Vicinity to the Proposed Development



2.3.3 Drainage Ditch Network

No watercourses bisect the Site; however, a network of drainage ditches was noted within the vicinity of the Site. Such drainage regimes are typical features of agricultural lands as they facilitate drainage from the fields during periods of heavy rainfall to reduce flooding. The Site is located adjacent to an area of benefited land, which was drained as part of the Drainage District Scheme [7]. The purpose of these drainage schemes was to improve land for agriculture by lowering water levels during the growing season to reduce waterlogging on the land beside watercourses known as callows.

The Site is also located in close proximity to the Drainage Ditch Channel, Boolinaraig DD, reference CX1.

2.4 Acoustics

The surrounding settlement pattern is generally dispersed and characteristic of the rural context, comprising individual dwellings and farm holdings interspersed with agricultural land.

The nearest residential receptor is located approximately 220 from the Proposed 110kV Mullanfawnia Substation. A number of residential properties are also located along the Proposed 110kV UGC.

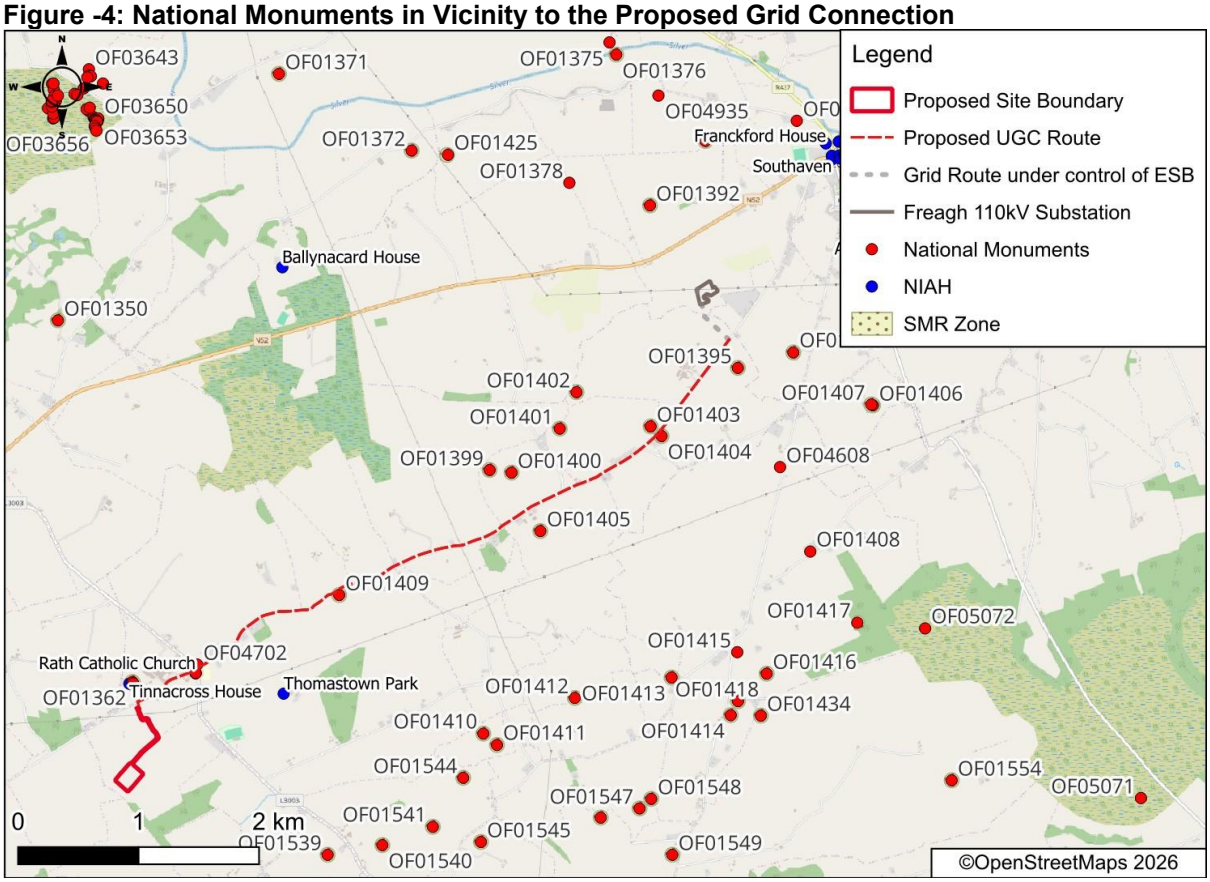
2.5 Landscape and Visual

The Site entails landscape sensitivity that is deemed by Offaly County Council to be '*Low*' whilst there are also areas identified as '*moderate*' to the west and northeast of the Site. This '*moderate*' designation is typically attributed to most cutaway bogs/raised exploited bogs in the county.

2.5.1 Cultural Heritage

No monuments are located within the Site; however, multiple monuments were located within the wider vicinity and within close proximity to the Proposed 110kV UGC (Figure 2-4).

Figure -4: National Monuments in Vicinity to the Proposed Grid Connection



3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Description of the Proposed Development

3.1.1 Proposed Mullanfawnia 110kV Substation

The proposed 110kV extendable substation will be developed on a ca. 1.7ha site, and will comprise an outdoor switchyard housing the high voltage equipment, which includes:

- A main step-up transformer;
- Busbar;
- Instrument transformers;
- Outdoor (AIS) switchgear;
- Cable chair;
- Lightning protection mast; and,
- Ancillary equipment.

This switchyard is enclosed in a palisade-type security fence. This substation will also have its own control building to house the indoor switchgear and control and protection equipment.

CCTV

There will be on-site CCTV, which will be remotely monitored via a 24/7 operational team who will alert all relevant personnel in the event of a break-in or vandalism at the Site. The cameras will only be focused along the fence line and will not be focused towards any neighbouring dwellings.

Fencing

A deer-proof perimeter fence will be installed to provide security and restrict access. The fence will, however, be fitted with small mammal gates, 300mm x 150mm, at appropriate points to enable access for wildlife such as rabbits, badgers and foxes to move freely throughout the landscape.

3.1.2 110kV Grid Connection

It is proposed that the Proposed Mullanfawnia 110kV Substation and Permitted Freagh Substation will be interconnected via the Proposed 110kV UGC.

The UGC will be installed in a cable trench as per industry standards, including ducting, fibre optic conductor, insulated earthing conductor where required and link boxes at some jointing locations. The ESB will ultimately be responsible for ensuring that the most appropriate connection option will be selected. The proposed grid connection route is shown in Appendix A.

3.1.3 Earthworks

Only minimal earthworks and localised levelling works will be required for the overall development of the Site. These will include the following:

- Topsoil removal will be required for the substation foundation;
- Underground cable trenches and cabling associated with the on-site Mullanfawnia substation;
- Associated ground works with any access track; and,

- The detailed design of the substation will determine the extent of the earthworks. However, it would be expected to comprise a concrete foundation for the transformer and electrical equipment, with the rest of the area filled with crushed rock.

3.1.4 Drainage

Only small areas of the Proposed Development will comprise hardstanding, and as such, it was not considered that any alteration to the existing drainage at the Site will be required. Furthermore, the majority of the surfaces on-site will be permeable surfaces, allowing rainwater to percolate directly to the ground. As the welfare facilities will be infrequently used, it is proposed that they will be connected to a holding tank. All wastes collected in this holding tank will be frequently removed by a suitably licensed waste contractor. In summary, no specific drainage infrastructure will be required for the Proposed Development.

3.1.5 Site Access

Proposed Mullanfawnia 110kV Substation

The Proposed Development will be accessed via the existing permitted Site entrance on the L7006. This access and egress was granted as part of the permitted development PR: PL20/476. It should also be noted that Transport Infrastructure Ireland ('TII') or the municipal district engineer had no objection to the permitted access.

This entrance will be readily capable of taking all the vehicle movements during the Construction Phase of the Proposed Mullanfawnia 110kV substation

Internal Access

The Site will be accessed via a network of pre-existing hardcore tracks.

Operational Phase Access and Egress

All Operational Phase access and egress will be via an existing permitted Site entrance on the L7006. This was granted as part of the permitted development PR: PL20/476.

4 CONCLUSION

The need for climate change mitigation is recognised globally, with Ireland striving towards an overall target of 16% of gross final energy consumption coming from renewable energy sources by the end of this year (40% of which will be from renewable electricity) [5].

Ireland is not set to meet these targets, and with electrical demand increasing, the need to expand and develop our renewable energy generation is clear.

The Proposed Development will significantly increase the region's energy capacity and serve as an important connection node on the national grid. Given the size and electricity-generation potential of the Proposed Mullanfawnia 110kV Substation and the Proposed 110kV UGC, it is our opinion that the project meets the requirements of the Strategic Infrastructure Act 2006 and is therefore an appropriate development to submit under the SID process.

5 REFERENCES

[1] IPCC, “Intergovernmental Panel on Climate Change, Fifth Assessment Report (AR5),” Intergovernmental Panel on Climate Change, 2013.

[2] EPA, “Ireland's Greenhouse Gas Emission Projections 2014-2035,” EPA, Dublin, 2015C.

[3] SEAI, “Energy in Ireland Report,” Sustainble Energy Authority of Ireland, 2021.

[4] SEAI, “ENERGY IN IRELAND 2019 Report,” Sustainable Energy Authority of Ireland, 2019.

[5] EPA, “Ireland’s Final Greenhouse Gas Emissions 1990-2017,” Environmental Protection Agency, 2019.

[6] DCENR, “Ireland's Transition to a Low Carbon Energy Future 2015-2030,” Department of Communications, Energy and Natural Resources, 2015.

[7] Geological Survey, “Geological Survey Ireland Groundwater Database,” GSI, [Online]. Available: https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx. [Accessed 27 02 2024].

[8] EPA, “EPA GIS Maps,” EPA, [Online]. Available: https://gis.epa.ie/EPAMaps/Water. [Accessed 20 06 2024].

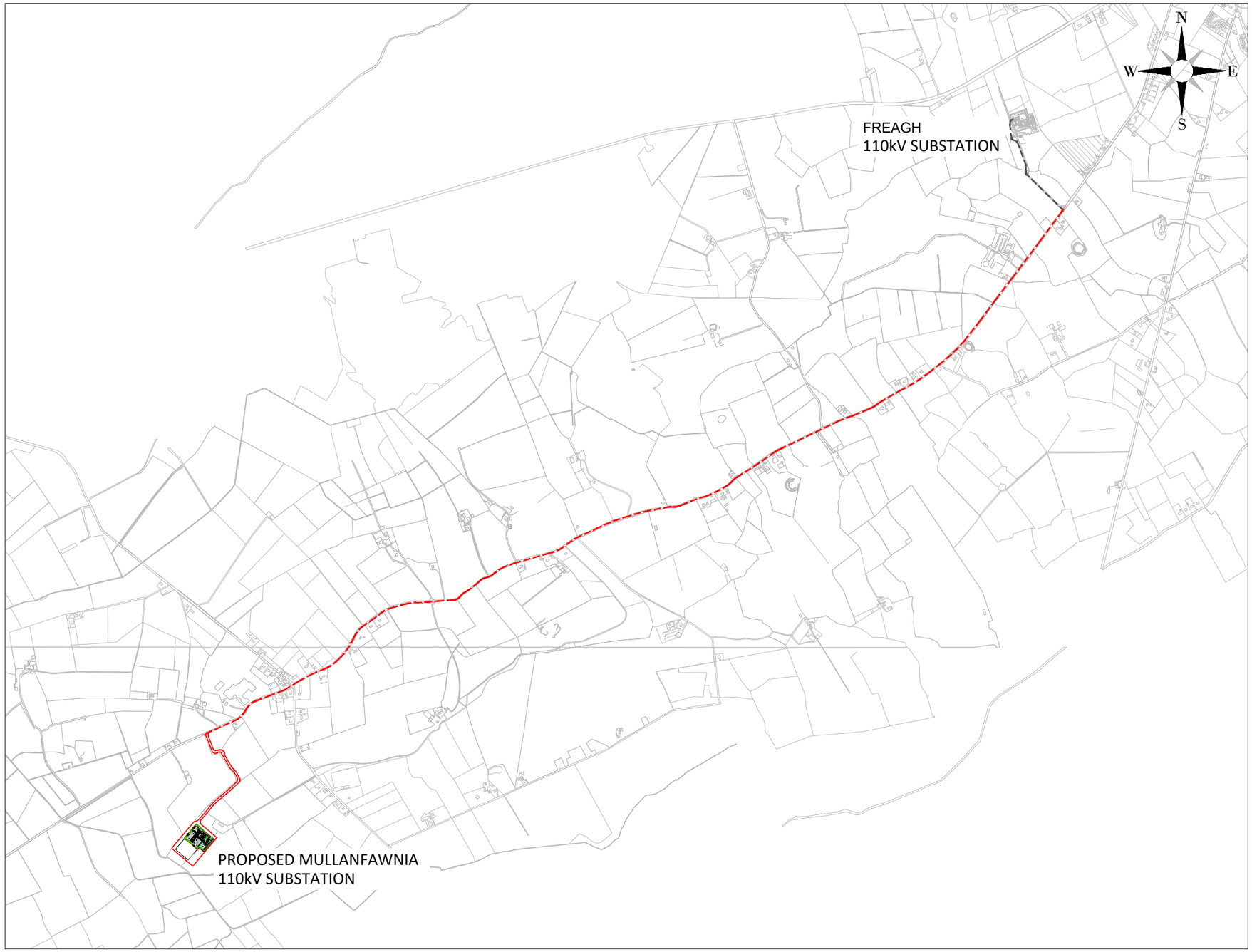
[9] GOV.ie, “Arterial Drainage Schemes,” 2022.

APPENDICES

APPENDIX A

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LEGEND

- PROPOSED 110kV GRID ROUTE
- SUBSTATION AND ACCESS BOUNDARY 40,400 M² (10 ACRES)
- GRID ROUTE UNDER CONTROL OF ESB

708275

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NOTES

REV	DATE	DRAWN BY	CHECKED BY	DETAILS
B	06/08/2026	M.B.	L.P.	GENERAL REVISION
A	13/07/2026	M.B.	L.P.	FIRST ISSUE

ENGINEER

AFRY Ireland Ltd.
The Hyde Building, The Park,
Carrickmines,
D18VC44
Ireland
Tel. +353 (0) 1 845 5031

CLIENT

PROJECT: RATH SOLAR FARM

TITLE: 110kV GRID ROUTE OVERVIEW

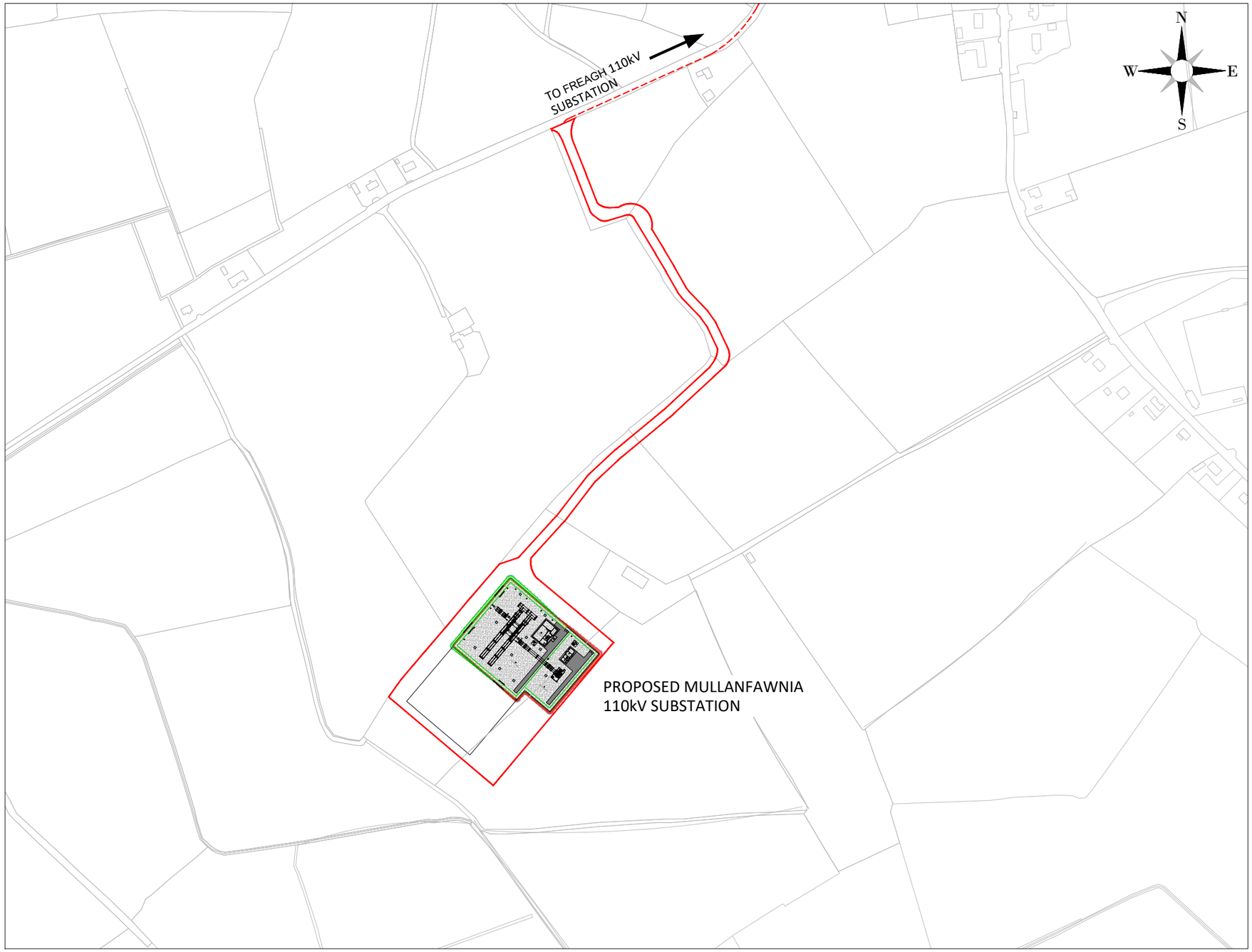
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LEGEND

PROPOSED 110kV GRID ROUTE

SUBSTATION AND ACCESS BOUNDARY
40,400 m² (10 ACRES)

NOTES

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ENGINEER
AFRY
ÅF PÖYRY
AFRY Ireland Ltd.
The Hyde Building, The Park,
Carrickmines,
D18VC44
Ireland
Tel. +353 (0) 1 845 5031

CLIENT

PROJECT
RATH SOLAR FARM

TITLE
110kV GRID ROUTE
AT MULLANFAWNIA SUBSTATION

REVISION
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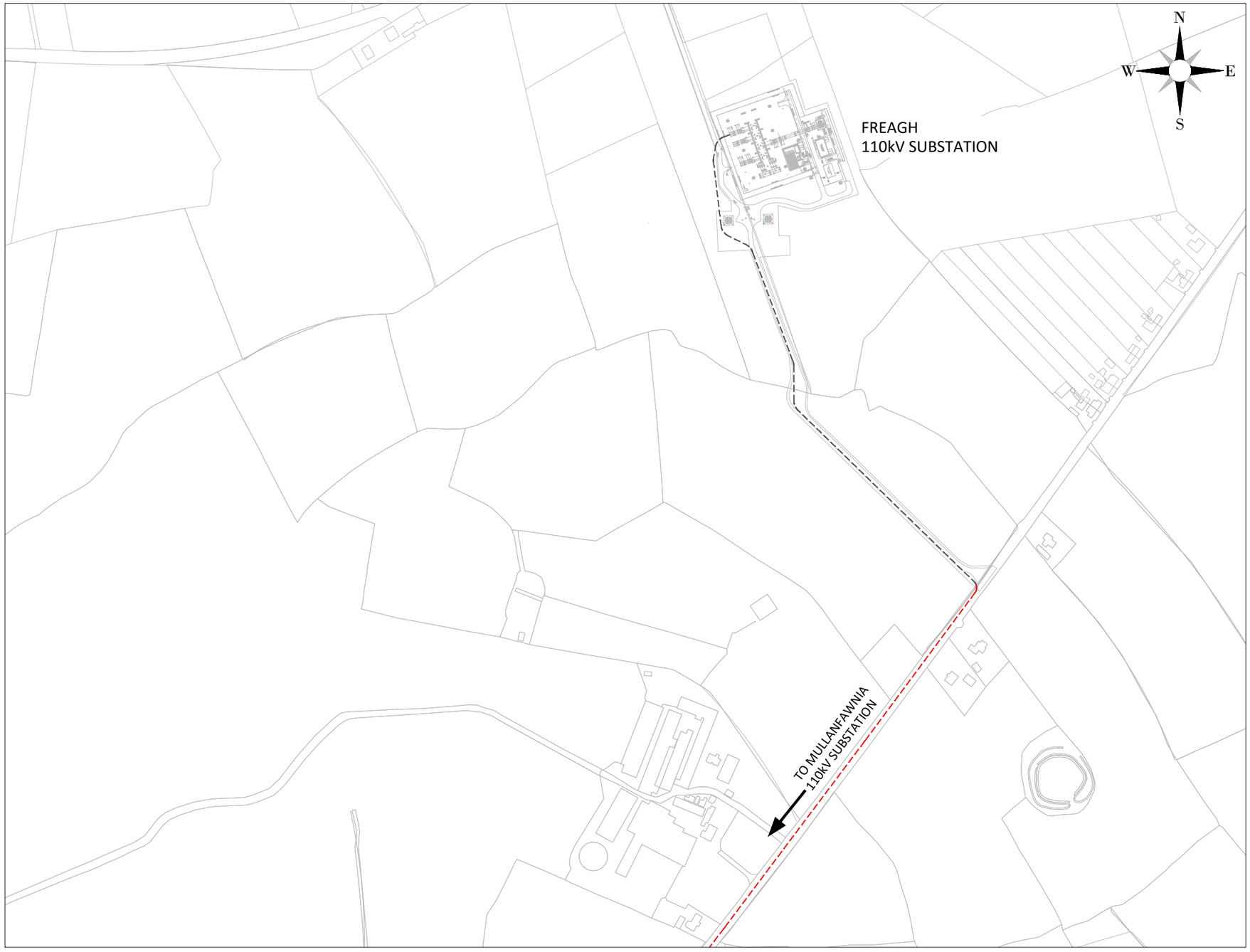
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LEGEND

----- PROPOSED 110kV GRID ROUTE

----- GRID ROUTE IN ESB LAND

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NOTES

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ENGINEER

AFRY

AFRY Ireland Ltd.
The Hyde Building, The Park,
Carrickmines,
D18VC44
Ireland
Tel. +353 (0) 1 845 5031

CLIENT

PROJECT: RATH SOLAR FARM

TITLE: 110kV GRID ROUTE AT FREAGH 110kV SUBSTATION

REVISION: B

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