

Forestry Report

Proposed Windfarm for Boleybaun, Drumkeeran, County Leitrim

RECEIVED: 19/01/2024

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January 2022

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Forest Overview

This forest is located approximately 3km West of the R280 regional road and Drumkeeran village. The lands proposed for development of a four-turbine wind farm have been planted and maintained in line with Department of Agriculture requirements since 1997.

The proposed site contains approx. 19.8 hectares (Ha) of forestry, all of which is classed as average yield. The site consists of mixed quality, semi-mature Lodgepole pine and Sitka spruce.

Approximately 2Ha of forestry will be removed to accommodate the placement of Turbine 1 (T1) and Turbine 2 (T2). Any felling operations will be carried out by a registered contractor and supervised by Western Forestry Co-Op and will at all times be fully compliant with Department of Agriculture requirements.

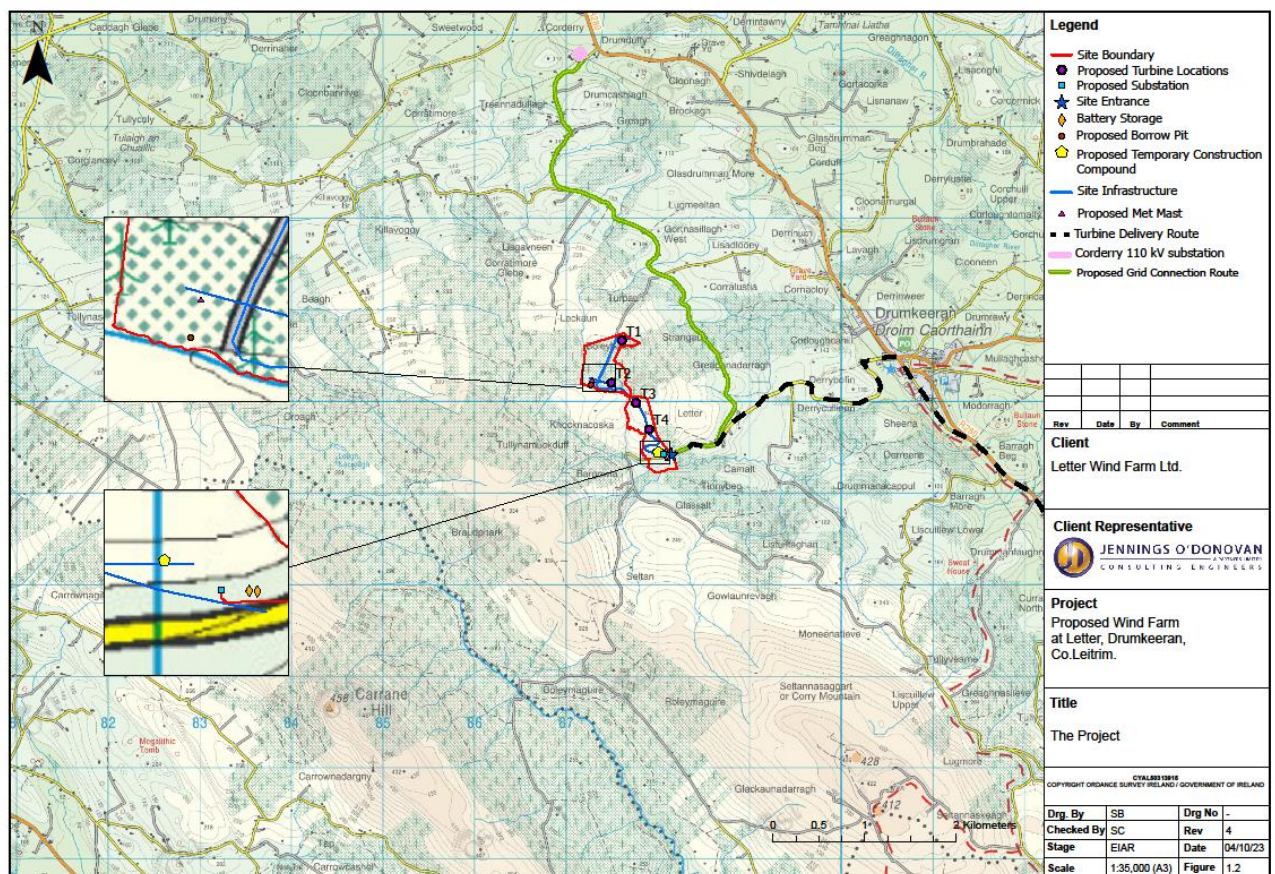


Figure 1.1 Site Location Map

Designated areas

The forest is located within 15km of 6 Special Areas of Conservation and Special Protection Areas as listed below. There is no direct impact on any of the European designated sites or

surrounding areas by the proposed felling of the approximate 2 Ha required for clearance to accommodate T1 and T2. Any potential for indirect impacts will be investigated in the Appropriate Assessment.

Table 1.1: Designated European Sites within 15km of Letter Wind Farm

Site Type	Site Code	Site Name	Distance to site (metres)
SAC	002032	Boleybrack Mountain SAC	6636.55
SAC	001976	Lough Gill SAC	8203.26
SAC	000584	Cuilcagh - Anierin Uplands SAC	12982.71
SAC	001673	Lough Arrow SAC	13241.59
SAC	001898	Unshin River SAC	13461.05
SPA	004050	Lough Arrow SPA	13286.91

The Appropriate Assessment report accompanying the Environmental Impact Assessment Report (EIAR) addresses the designated sites in detail. The effects of the development, including tree felling and replacement planting of new forestry, will be assessed under the Source, Pathway Receptor (SPR) assessment model process as part of the Appropriate Assessment.

Forest Access

There is an existing forest road on the North side (E587,502 N824,716) of the property which meets the public road. This existing road has access to the areas for the proposed turbine locations and would be suitable for timber extraction. A map of the existing forest road is shown in **Figure 1.2** with photographs displayed in **Plate 1.1**.

This forest road is the original access to these lands and is used on an ongoing basis by landowners along the track for farming and forestry purposes currently.

There is limited housing in the area where the forest road adjoins the public road and the quantity of timber to be extracted to accommodate this area of clearance is estimated at 500 tonnes. This amount of timber removal will involve an estimated 22 truck movements.

The existing forest road traverses three folios from the public road to the forested lands. The below map denotes the route. It is via this road that the timber will be extracted.

As demonstrated in image number 3; photos demonstrate minor upgrade works will be required to this road to accommodate the felling operations to allow for trucks to load at site. It is envisaged that approximately 40 lorry loads of stone may be required to be delivered to site to bring the road to a suitable standard for timber extraction.

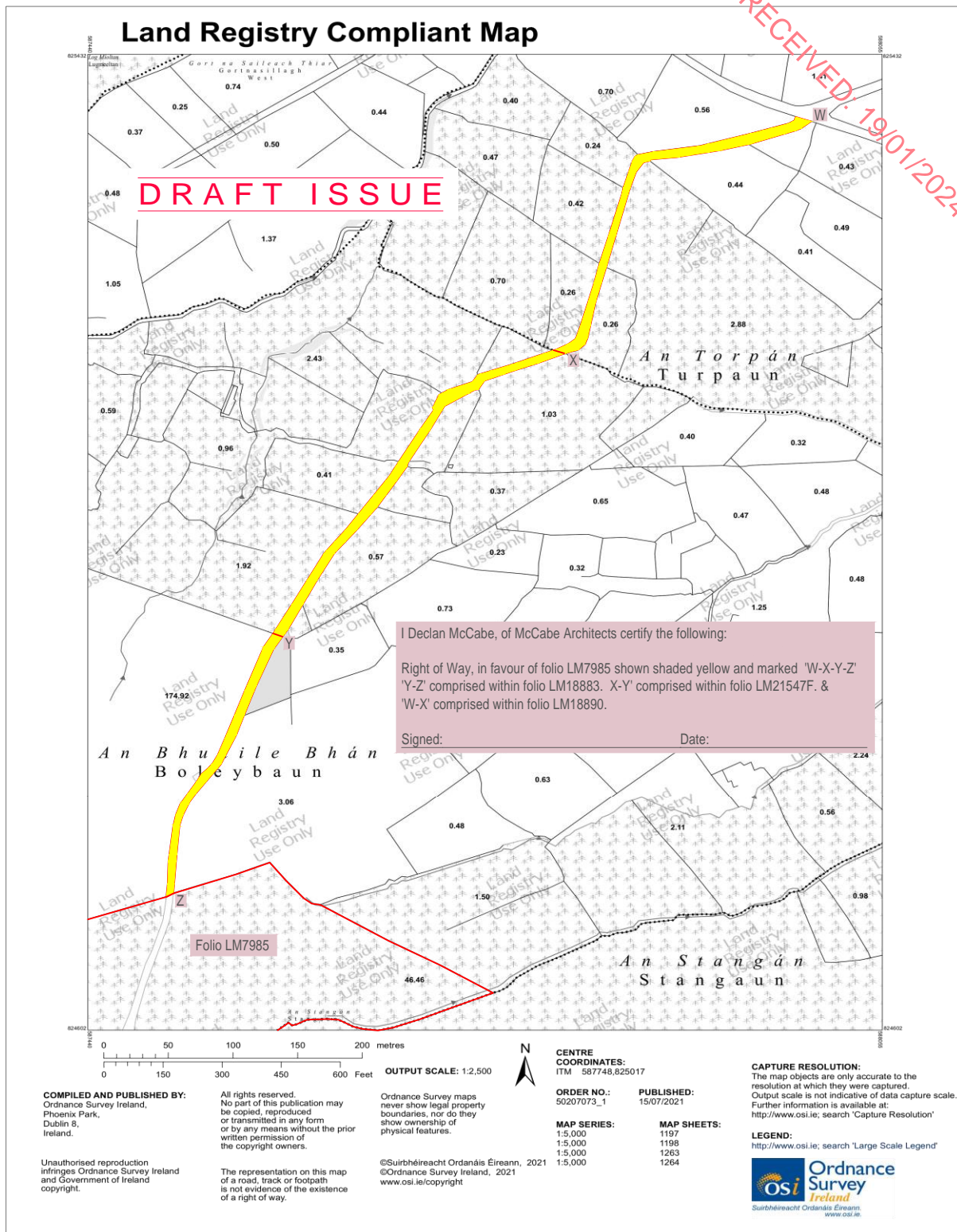


Figure 1.2 Existing Forest Road Exiting the Northern Side of the Property



Plate 1.1: Forest Road Leading from Public Road to Folio LM7985

Potential Impacts of Trees on Wind Turbines

When wind turbines are situated in mature, closed canopy forestry, the canopy creates a new hub height/ false floor which creates a reduction in energy yield.

The above affect is amplified by the forest canopy not being smooth or uniform. This creates a much more disturbed airflow than that on open ground.

The proposed clearance area of 1Ha per turbine is required to sufficiently address this issue and ensure clearance from trees to ensure no significant impact from forestry on wind turbine output.

There are numerous examples of wind turbines being located in forestry across the region. Once good forestry management practice and correct operations and maintenance program is enacted for the wind turbines the two (forestry and wind farming) can coexist well together.

Impact of Wind Turbines on Trees

The removal of sections of forestry to accommodate wind turbines (this includes the removal for the accommodation of roading) has a potential impact on the remaining forestry. This is addressed in the EIAR.

These impacts include the encouragement of windthrow, and potential damage to surrounding trees during harvesting operations, and damage to existing drainage channels in the forestry.

The risk of disturbance to drainage channels is minimal considering the small amount of forestry to be removed. The overall drainage of the site including forested area is considered in EIAR **Chapter 9: Hydrology and Hydrogeology**.

When clearing areas of trees, the extent of disturbance on the remaining trees will depend on a number of factors (aspect, elevation, remaining tree shelter, etc.). Opening areas of the forest for structures and tracks etc. may lead to some trees becoming unstable and prone to windblow.

The opening of space within the forest could be a health and safety risk if wind blow risk is increased. All forestry operations will be undertaken by a qualified Forester from Western Forestry Co-Op who will supervise experienced harvester contracting team.

The access route for the turbine will not be utilised by lorries for the future harvesting of this forest. The future harvesting of the forest will be done via existing forest road to the north as outlined above.

Noise Disturbance During Felling of area for facilitation of turbines

Areas that have been identified to be cleared of trees are at a significant distance from the nearest properties. Noise disturbance that may arise is not considered to be a significant issue, given that it will be temporary and short lived. Additionally, it will occur only during daytime.

Increase of Extraction Road Traffic

The felling of trees to facilitate the turbines would require a limited number of timber lorries to remove the timber off site. The volume of additional traffic is likely to be low and the increase on that arising from any existing felling plans is likely to be minimal with insignificant impacts.

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Increased Soil or Wood Waste Entering Watercourses

Issues relating to potential water pollution from construction activities are dealt within EIAR **Chapters 5-9**. The risk of soils and wood waste entering watercourses arising during wind farm development is no different to that arising from the regular harvesting of these crops. Provided the appropriate guidelines are employed and their use enforced during extraction, there will be no additional risk to water courses associated with any felling that may take place.

Felling

A felling licence will be applied for to facilitate the removal of the trees to facilitate the area required for the turbines.

A felling licence is granted by the Minister for Agriculture, Food and Marine provides authority under the Forestry Act 2014 to fell or otherwise remove a tree or trees and to thin a forest for silvicultural reasons.

This Act prescribes the functions of the Minister and details the requirements, rights and obligations in relation to felling licences. The principal set of regulations giving further effect to the Forestry Act 2014 are the Forestry Regulations 2017 (S.I. No. 191 of 2017).

A felling license will be granted before any tree removal/ harvesting should take place.

Mitigation

Although the changes in felling and replanting plans are considered not to be significant, a number of steps will be taken to minimise any potential adverse impacts. These are outlined in full in the EIAR. The mitigation measures are standard forestry practice including:

- A felling licence will need to be applied for and approved before any tree felling will be allowed.
- Brash will be used under the harvesting machinery to minimise rutting and ground disturbance and reduce any risk of soil erosion and impaction.
- Felling and extraction of timber will only be permitted by experienced and fully trained operators.
- All Forest Service guidelines will be adhered to during all harvesting activities.
- Harvest site plans including extraction routes, fuelling areas, stacking areas, turning areas and drain crossings will be designed and implemented during all harvesting operations.
- All drains crossed during extraction, if necessary, will be cleared of any debris to ensure no drainage issues will occur for the remaining trees, which can be a major contributor to windblow.

- Felling and extraction of timber will, as far as possible, be undertaken in dry suitable weather conditions.
- All construction of forest tracks, including the creation of forestry buffer zones (setbacks from boundaries) and roadside drainage, will take into consideration the appropriate edition of the following specifications, which have been developed by the Forest Service:
 - Department of Agriculture Forestry and Water Quality Guidelines
 - Department of Agriculture Forest Harvesting and Environmental Guidelines

Conclusion

With the inclusion of the proposed mitigation measures and the relatively small harvesting area of two hectares, there are no significant residual impacts expected from these removal/harvesting operations.

Replanting Obligations

Under the 2014 Forestry Act, all trees that need to be cleared whether for silvicultural reasons or for recreational purposes such as tracks or buildings etc. (a windfarm in this case) will require felling licences.

The forestry act states that when forests are cut down, they need to be replanted. If replanting is not going to occur on site, then replacement lands may need to be planted instead.

The suitable replacement land has been sourced in Coolatty, Clones, Co. Monaghan and non-grant aided planting approval will be applied for to the Department of Agriculture.

The planting application will outline the required process and procedure for planting proposed for the site, from the species to be planted, to the fencing and fertilizer required to the drainage and ground prep required to establish the trees.

Replacement Lands

The following land has been identified for the facilitation of replacement planting required from the development. The area of suitable land measures 2.00 ha in Coolatty, Co. Monaghan.

This site has been reviewed by Western Forestry and Jennings O'Donovan and upon preliminary investigations there are no apparent issues with regard to planning and environmental constraints tied to its use for forestry. There are no nearby European sites in the vicinity or downstream from the proposed re plant location.

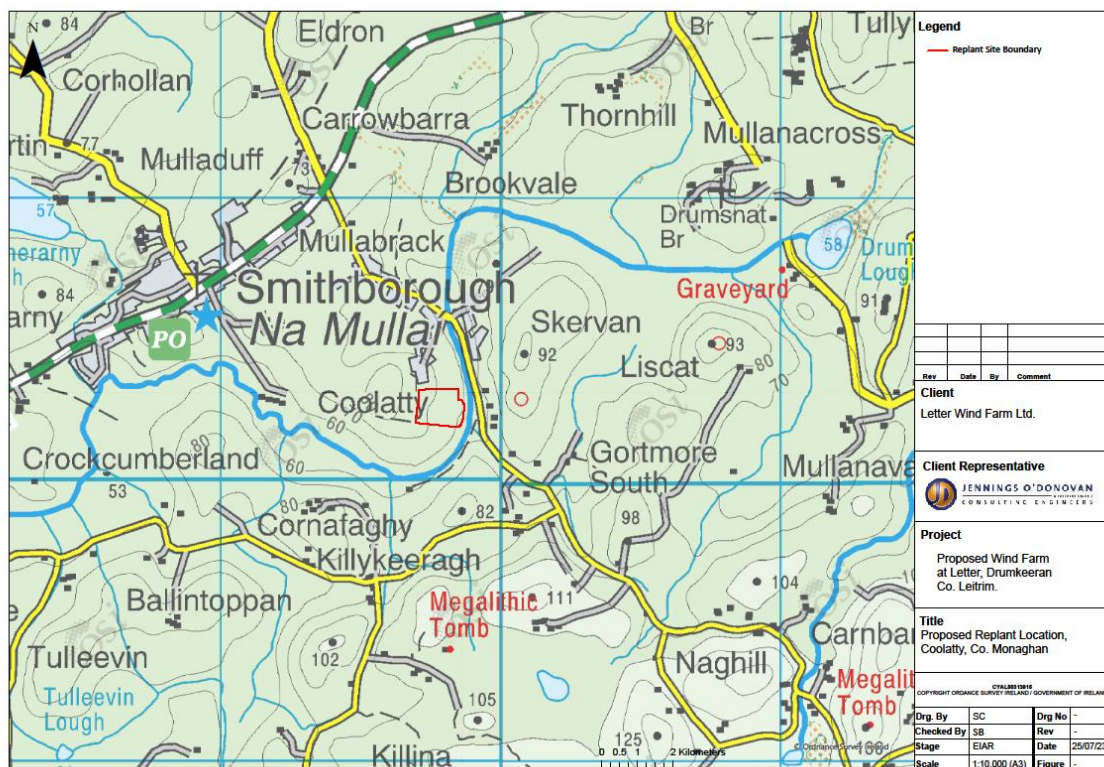


Figure 1.3 Proposed Replant Location in Coolatty, Co. Monaghan (Discovery Series)

The proposed area is ideal for replacement planting. The site can accommodate growing native broadleaves as there already mature broadleaves growing on the Eastern boundary of the site. The site is ideal for a like for like replacement with Sitka Spruce and Lodgepole Pine species on the existing Leitrim site at Boleybaun.

The soil at the replacement site is described as fertile and suitable for the establishment of high yield class forestry. The proposed replanting will be, subject to Departmental approval.

The site is well fenced and there are no electricity lines or other obstacles obstructing the site. It is our recommendation that this site will make excellent forestry plantation compensate for the proposed loss of 2Ha of trees to be removed for the T1 and T2 at Letter Wind Farm.

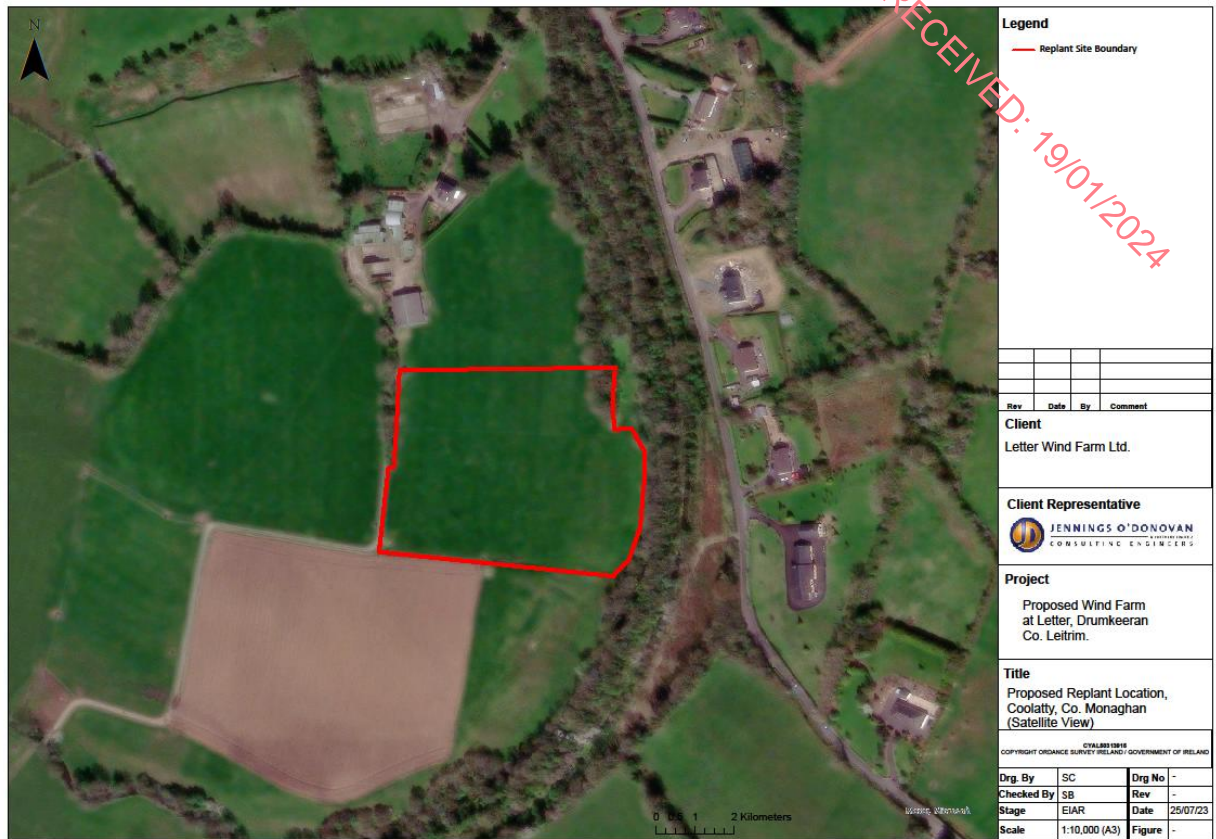


Figure 1.4: Outline of Proposed Replant Location in Coolatty, Co. Monaghan

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