

Proposed Gathabawn Windfarm Project

Environmental Impact Assessment Report

Chapter 6: Land

September 2026

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CHAPTER 6 LAND

EIAR 6.1 INTRODUCTION

EIAR 6.1.1 Competent Expert

The Land evaluation was carried out by **Andy Dunne** (B.Agr.Sc., M.Sc.(Agr.), PhD) director of Environmental Agricultural Engineering Consultancy (EAEC), a firm of agricultural and engineering consultants. Andy has been involved in a great variety of land use and agricultural development activities for more than 30 years and he is familiar with national and EU regulation and policy in the area.

EIAR 6.1.2 Sources of Information

In order to gather information on the baseline environment, the following sources were considered:

Table 6-1: Sources of Baseline Information for Land

Consultation Sources
No feedback was received from consultees with regard to Land or Land Use. See Chapter 3: Consultation for further details.
Desktop Sources
- Department of Agriculture, Food and the Marine's CAP Strategic plan 2023-2027 Summary (2022) - Department of Rural and Community Development's Our Rural Future: Rural Development Policy 2021-2025 (2021) - EPA State of the Environment Report (2024) - Department of Agriculture, Food and the Marine's Forest Strategy (2022-2030) – (2023) - Department of Agriculture, Food and the Marine's Statement of Strategy 2025-2028 – (2025) - Kilkenny County Council Development Plan (2021-2027) - National Parks and Wildlife Service – Maps and Data - Environmental Protection Agency database (www.epa.ie) - Environmental Protection Agency Corine Landcover database (https://gis.epa.ie/EPAMaps/) Environmental Protection Agency LULUCF https://www.epa.ie/publications/monitoring--assessment/climate-change/airemissions/LULUCF-July-2020.pdf - Available online aerial imagery from National Parks and Wildlife Service, Bing and Google
Fieldwork
Site walkover September 2026

EIAR 6.1.3 Methodology Used

The evaluations for Land herein have been carried out in accordance with *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022), along with the ARVI approach for impact significance assessment developed under the EC IMPERIA LIFE11 Project. This methodology has been taken into consideration in the determination of the sensitivity of receptors, and the magnitude and significance of potential impacts. The methodology can be found in full in Appendix 6.1: Methodology for the evaluation of Land. The author's extensive experience with EIA preparation and land management also informs this report.

A list of guidelines and legislation which were taken into account during the evaluation of this chapter is also included in Appendix 6.1.

EIAR 6.1.4 Statement on Certainty and Sufficiency of Information Provided

A clear documentary trail is provided throughout this chapter and chapter appendices to the competency of data and methods used and the rationale for selection of same. The information used to compile this chapter was collated from reports and documents generated by local authorities and statutory agencies, with remit in the regulatory field, including the Department of Agriculture, Food and the Marine, the EPA and Kilkenny City & County Development Plan 2021-2027 and from site visits. All documentation used is referenced at the end of this chapter.

In respect of Land, no material limitations or difficulties were encountered during the course of the studies carried out to inform the assessment of impacts of the Proposed Gathabawn Windfarm on Land.

EIAR 6.1.5 Development being Considered

The subject development – the **Proposed Gathabawn Windfarm**, comprises 12 wind turbines and all associated foundations and hard-standing areas in respect of each turbine, 2 control buildings, 7.7km of access roads, 1 met mast and 1 LiDAR unit for measuring meteorological conditions, underground cabling between the turbines and control buildings, 7 site entrances, newly created Biodiversity Areas and all ancillary associated and facilitating works and activities. 7 turbines and 1 control building are proposed in the Ballylehaun Area, and 5 turbines and 1 control building are proposed in the Ballyring Area.

The overall whole Gathabawn Windfarm Project also includes a connection to the national electricity grid, which is not part of the currently proposed development. While the ultimate grid connection point is subject to a separate process with Eirgrid, a candidate route has been identified to the closest node at Eirgrid Ballyragget Substation. This **Candidate Gathabawn Grid Connection** comprises a new substation in Parksgrove (Parksgrove Substation) and three distinct underground cable (UGC) sections: Ballylehaun-Ballyring UGC, Ballyring-Parksgrove UGC, and Parksgrove-Moatpark UGC.

To facilitate the evaluation of the whole project, this candidate grid connection is included in the baseline descriptions and considered within the impact evaluations detailed below.

EIAR 6.2 SENSITIVE ASPECTS

EIAR 6.2.1 Overview of Landuse in the Local Environment

From a land and land use perspective, the existing environment is rural countryside being farmed conventionally. Landuse at the windfarm development site is predominantly permanent agricultural grassland and this is consistent with the landuse in the surrounding area. There are some areas of commercial forestry cover in the district, while public roads, comprising both county and regional roads, and private access roads serve domestic houses and farms in the surrounding area.

See [Figure 6.1: EPA Land Cover Mapping](#) (included at the end of this Chapter).

EIAR 6.2.2 Zone of Influence/Study Areas

The area or zone of influence around the proposed Gathabawn Windfarm Project within which sensitive aspects of the environment could be affected by the Project is called the Study Area herein. The Study Areas for the Sensitive Aspects of the Land environment are set out in the table below and illustrated on [Figure 6.2: Agricultural Lands – Construction Stage](#).

Table 6-2: Study Area of the Project in relation to sensitive aspects of the Land environment

Sensitive Aspect	Zone of Influence/Study Area	Justification for the Study Area extent
Agricultural Land	Individual landholdings comprising field networks within which the works are located	Impacts to Agricultural Land limited to within the fenced boundaries of the Project. Loss of connectivity relates to those fields within landholdings which have the potential to be split by the development.
Public Amenity Land	Amenity areas and access routes to amenity areas within which the works are located	Impacts to amenity areas or amenity land use will be limited to within the boundaries of the works. Impact includes any access points to amenity areas outside the works boundaries.
Equestrian Land	Land used for horse rearing located within a distance of three times the turbine tip height from a turbine location	As per The British Horse Society* 2024 “Advice on Wind turbines and horses for planning officers and developers” where a separation distance of three times the turbine tip height from equestrian businesses is recommended. *A UK registered charity organisation

EIAR 6.3 BASELINE ENVIRONMENT

The context and characteristics of the baseline environment, and the trends and evolution thereof, in relation to *Agricultural Land*, *Amenity Land*, and *Equestrian Land* are described in the subsections below.

The result of fieldwork and desktop surveys are summarised in the sections below, illustrated on the mapping listed below, with the detailed data included in the Appendices listed:

EIAR Figures (included at the end of this Chapter):

Figure 6.1: EPA Land Cover Mapping

Figure 6.2: Agricultural Lands – Construction Stage

Figure 6.3: Agricultural Lands – Operational Stage

EIAR Appendices (included at the end of this Chapter):

Appendix 5.1: Site Photos and Drone footage of the Gathabawn Windfarm (see end of Chapter 5)

Appendix 5.2: Site Photos of the Candidate Gathabawn Grid Connection

EIAR 6.3.1 Context and Characteristics

EIAR 6.3.1.1 Agricultural Land

Agricultural land is land used for the production of crops or livestock. Such land has generally been enclosed and improved significantly by the addition of nutrients and the application of knowledge and technical expertise. While variable in appearance, it is greatly modified from its unimproved state in terms of botanical composition, drainage status and physical presentation.

Agriculture accounts for 67.6% of the usage of national land cover. The main agricultural use class is permanent pasture (55.1% national land cover), followed by land principally occupied by improved grassland which is interspersed with areas of natural vegetation (6.9%), and arable land (4.5%).

Proposed Gathabawn Windfarm: The baseline land and land use environment of the Gathabawn Windfarm is rural countryside in conventional farming usage. All of the Proposed Gathabawn Windfarm construction works areas (59 ha) are located on agricultural lands. The agricultural lands are predominantly comprised of permanent grassland (53.5 ha), tillage (4.5 ha), along with farm tracks (1 ha). Farming in the locality is long established, comprising livestock farming, mainly dairying and beef cattle rearing with sheep rearing and tillage being minor enterprises. As has generally occurred nationally, there has been notable production upscaling, restructuring of farm holdings, enlargement of field layouts and technological improvement over time.

Access to agricultural lands at the Proposed Gathabawn Windfarm site is generally through existing farm gateways abutting the public road network, primarily off the local roads around the periphery of the site. In total there are 25 no. of agricultural landholdings involved in the Proposed Gathabawn Windfarm development, the vast majority of these landowners live and farm locally.

In addition to the agricultural land described above, one of the landholdings in the Ballylehaun Area includes a 5.3 ha hazel wood. This hazel wood is not grazed by cattle. Outside of the windfarm site boundary, there is another hazel/hawthorn wood and lands that are designated for the protection of semi-natural grassland and orchids (Cullahill Mountain SAC Site Code 831). All of these sites are addressed in more detail in Chapter 13.

During operation, the works boundary of the operational windfarm on agricultural lands will comprise 18 ha (17 ha land use change from agriculture – these are the lands within the operational fences along with 1 ha along existing farm tracks (which will be upgraded to windfarm site road).

Candidate Gathabawn Grid Connection: Within the Construction Works Area for the Candidate Gathabawn Grid Connection, 14 ha are located on agricultural lands. The agricultural lands along the grid connection cabling routes are comprised of permanent grassland, along with existing farm tracks. The Parksgrove Substation is located on 0.6 ha of scrub/vacant land. Following the completion of grid connection construction works, the only above ground features will be the Parksgrove Substation and the new access road over the cabling in Moatpark, comprising a total land take area of 0.8 ha.

ElAR 6.3.1.2 Public Amenity Land

Proposed Gathabawn Windfarm: There are public recreational amenity areas proximate to the development site, consisting of looped walkways and a community garden, however all of these amenities are located outside of the Proposed Gathabawn Windfarm site boundaries.

Candidate Gathabawn Grid Connection: Only 1 no. amenity use of land overlaps the candidate grid connection – the Gathabawn Loop Walk, which begins at the trailhead in Gathabawn village, following the local roads into County Laois and onto the Cullahill Mountain area, before heading back onto local roads L5820 and L5821 and back on the L5818 to finish in Gathabawn village. This looped walk only interacts with Ballylehaun-Ballyring UGC element of the candidate grid connection, and only on those sections of the walk which are routed along the L5818, L5821 and L5820. Therefore, the effect on users of this walk is scoped out from further consideration herein, as they are more appropriately considered in Chapters 14: Material Assets (road users, including walkers), and Chapter 18: Human Health.

ElAR 6.3.1.3 Equestrian Land

Proposed Gathabawn Windfarm: Two landowners involved in the Gathabawn Windfarm development carry out training and breeding of horses on their lands. They have a gallop, which is a specialised area of track designated for the training and exercise of horses, that is located c.90m from the site of T7 (*on the equestrian landowners' land*). These landowners are party to the windfarm development and have not raised any concerns about the placement of any windfarm infrastructure.

There are no other equestrian enterprises such as equestrian centres and riding schools in close proximity to the Proposed Gathabawn Windfarm. The closest equestrian enterprise is the Cullahill Equestrian Centre which is located c.2km northwest of the site. Nuenna Farm Equestrian Centre is located c.5km southeast of the site, near Freshford town.

Candidate Gathabawn Grid Connection: There are no equestrian lands within the study area associated with the Candidate Gathabawn Grid Connection. There are cob ponies being kept and bred on lands along the Ballylehaun-Ballyring UGC, however these lands are substantially outside the study area for equestrian use.

ElAR 6.3.2 Existing Sources of Impacts

The occurrence of existing pollution or environmental damage in the areas on or around the location of the Gathabawn Windfarm Project have been considered. No existing pollution or damage to Land is taking place within the Proposed Gathabawn Windfarm site. It is noted that the Parksgrove Substation element of the Candidate Gathabawn Grid Connection is located on a small area of scrub/fallow lands.

EIAR 6.3.3 Importance, Sensitivity and Vulnerability to Change**EIAR 6.3.3.1 Importance**

Agricultural Land: Farming is the primary land use in the area around the proposed development and around the whole project area in general. This land use contributes at a notable level to the local economy in the commercial production of food and therefore to the security of rural livelihoods. On a broader scale however, there is no particular strategic or significant aspect to the farming hereabouts at regional or national level.

Public Amenity Landuse: Due to the absence of official amenities or waymarked trails on lands within the Proposed Gathabawn Windfarm site boundary, or on private lands associated with the Candidate Gathabawn Grid Connection, it is considered that the importance of Public Amenity land use is Low.

Equestrian Land: The thoroughbred horse breeding and racing industries are important to the national economy. However, the number of equestrian businesses locally is low and each is party to the proposed development. It is not considered to be an important or characteristic land use of the surrounding area, where dairy, beef and sheep farming are the dominant enterprises. Overall, it is considered that Equestrian Land is of Low importance locally.

EIAR 6.3.3.2 Sensitivity

Agricultural Land: The farming use of land as it occurs in this area is a practice that modifies and maintains what would otherwise be natural systems into productive agricultural usage. Agricultural land is a dynamic entity and land maintenance and development works are routine and ongoing in the management of farmland. Overall, while agricultural land use is considered to be of social value, it is considered to have **Low sensitivity** as it is not liable to be influenced by the development.

Public Amenity Landuse: Due to the absence of official amenities at the windfarm site, it is considered that the sensitivity of Public Amenity land use to change is **Low**.

Equestrian Land: the sensitivity of equines to wind turbines is mainly related to separation distance. The British Horse Society 2024 "Advice on Wind turbines and horses for planning officers and developers" recommends a separation distance of three times the turbine tip height from equestrian businesses. As the closest turbine is at a distance of more 510m (3 x 170m) from the closest 3rd party lands where horses are exercised, it is considered that the sensitivity of horses to the turbines will be **Medium - Low**.

EIAR 6.3.4 Evolution of the Baseline Environment (the 'Do-Nothing' scenario)

Agricultural Land: In terms of land use trends in the area, no particularly strong tendency is apparent in farming practice. Agricultural usage, primarily grass production is the dominant land use and will remain so for the foreseeable future, although over time, emphasis on a particular farm enterprise may alter arising from consumer demand or policy changes. Change in farming is very slow. It is anticipated that the CAP will maintain this slow pace into the foreseeable future. Modification to the existing environment will thus be at a rate that is barely perceptible over time. Therefore, it is assumed in this report that the baseline environment identified above will be the receiving environment during the lifetime of the development.

Public Amenity Land-use: There are no current plans for establishing waymarked trails or public parks at the Whole Gathabawn Windfarm Project site.

Equestrian Land: There are no particularly strong equine land use trends in this part of County Kilkenny, with the majority of equine land in Ireland centred around Kildare and Tipperary. Thus, it is assumed that the baseline environment identified above will be the receiving environment during the lifetime of the development.

EIAR 6.3.4.1 Relevance of Climate Change to Land

Climate change will impact on agricultural land in Ireland. Increased average temperature will change plant growth patterns and will make the management of plant types adapted to past temperature ranges and annual precipitation amounts more challenging and livelihood threatening.

Tools to address climate change crosscut all sectors of economic activity, including agriculture. Climate mitigation is focused on reducing greenhouse gas emissions and increasing the carbon sink and storage potential of forestry, vegetative land cover and soils.

Climate mitigation is required in order to protect the continued reliable use of agricultural lands and the food production system.

EIAR 6.4 IMPACT OF THE PROPOSED DEVELOPMENT

This Section comprises an evaluation of the impacts of the proposal on the receiving Land environment.

EIAR 6.4.1 Criteria and Methodology

The criteria used for impact evaluation in this report is based on the Environmental Protection Agency *Guidelines on the information to be contained in Environmental Impact Assessment* (2022). The methodology for determining the significance of impacts to Land is based on the sensitivity of the attribute (sensitive aspect) and the magnitude of the impact, as outlined in [Appendix 6.1](#).

EIAR 6.4.2 Source-Pathway-Receptor

The following sources of impacts and pathways for these impacts to the identified receptors (sensitive aspects) of Land, are listed below:

EIAR 6.4.2.1 Sources of Impact

<u>Construction Phase</u>	<u>Operational Phase</u>	<u>Decommissioning Phase</u>
Use of agricultural lands (within construction works areas)	Landuse Change	Return of lands to agricultural use
Excavation of land	Maintenance of access roads, hardstanding areas and the drainage system	
Storage of overburden	Maintenance of bat buffer zones	
Use and movement of heavy machinery	Fencing	
Construction of new roads and widening of existing roads	Land management practices	

EIAR 6.4.3 Overview of the impacts to Land

A summary of the findings of the evaluation of the effects of the Whole Gathabawn Windfarm Project on Land are listed in the table below. The relevant phases of the development are the construction, operational and decommissioning phases which are denoted by C, O and D respectively.

The evaluations follow this summary table.

All of the effects of the proposed Gathabawn Windfarm Project on Land will have no likelihood of causing significant adverse effects to Land receptors. A short evaluation of these effects is provided in Section EIAR 8.4.5, with a list of these impacts provided below.

Table 6-3: List of effects to Land which will not be significant

Effects of the Proposed Development	Phase of the Development	Impact Significance – See Section EIAR 6.4.4
AGRICULTURAL LAND IMPACTS		
Degradation or loss of farm water supply	C	Slight
Reduction in Land Area available for Agricultural Use	C, O	Neutral
Reduction or loss of productivity due to degradation of soils	C	Neutral
Loss of connectivity of landholdings	C, O	Neutral

Effects of the Proposed Development	Phase of the Development	Impact Significance – See Section EIAR 6.4.4
Effects on animal health and wellbeing due to increases in airborne dust and deposition of dust on grasslands	C	Imperceptible
Reduced growth rates due to a change in the drainage regime	C, O	Neutral
Increased farm management costs due to the spread of invasive species	C, O, D	Unlikely Impact
Return to agricultural use	D	Neutral
PUBLIC AMENITY LANDUSE IMPACTS		
Loss of Access/Landuse	C, O	Neutral - Slight
EQUESTRIAN LANDUSE IMPACTS		
On-Site Equestrian Land use Loss/deterioration of use	C, O, D	Unlikely Impact
3rd Party Loss/deterioration of use	O	Unlikely Impact

EIAR 6.4.4 Impacts which will not be Significant

All of the effects of the proposed Gathabawn Windfarm Project on Land will not be significant. A short evaluation of these effects is provided below.

EIAR 6.4.4.1 Evaluation of the Effects on Agricultural Land

Degradation or loss of farm water supply (C): Slight impact. Turbidity is unlikely to affect the use of those wells for livestock drinking water provision. However, should a well be contaminated by oils/fuels, then there is potential for that well to become unavailable for livestock use. A source for a spring could be interrupted by the construction of a new wind farm site road or turbine foundation/hardstand. This would result in a temporary loss of water supply for livestock until an alternative supply can be provided or the impacted well is cleared of contamination, resulting in disruption in water supply. Due to the location of the turbines in relation to 3rd party lands, and therefore the distance to any wells or springs which supply water to livestock on 3rd party lands, it is considered that effects on water supply on landholdings outside of the windfarm development site are unlikely to occur.

In relation to landholdings within the windfarm site, the loss of water supply could result in financial costs to the landowner, resulting in a Moderate magnitude of impact to individual landholdings. When Low sensitivity of agricultural landuse in the area is taken into account, the significance of this impact is assessed as Slight adverse, and Not Significant. Best practice mitigation measures will be implemented which will remedy any water supply impacts. These best practice measures are identified in Section EIAR 6.4.5.

Reduction in Land Area available for Agricultural Use (C, O): Neutral impact. Agriculture accounts for 67.6% of the national land cover, with pastures making up the majority of this area (55% of national land cover). During construction, 59 ha of agricultural lands will be fenced off to accommodate the construction works, this area will reduce to 17 ha during the operational phase, affecting 24 no. agricultural landholdings. The Candidate Gathabawn Grid Connection works areas are located on 14 ha of agricultural lands, while the Parksgrove Substation is located on 0.6 ha of scrubland/vacant land. Following completion of the works, the only above ground features will be the Parksgrove Substation and new access road over cabling in Parksgrove and Moatpark, comprising a land take area of 0.8 ha.

The loss of agricultural land is very small in scale, in the context of the abundance of agricultural lands in the surrounding area. Overall, the change to environmental conditions will be small, and changes to the landowner will be Neutral as the landowner will be a financial beneficiary of the proposed development. Overall, the magnitude of this loss of use is considered to be Negligible and Neutral.

Reduction or loss of productivity due to degradation of soils (C): Neutral impact. The potential for reductions or loss of productivity on agricultural lands as a result of degradation (compaction, erosion or weathering) of soils will be limited to 58 ha of agricultural lands which occur within the construction works area. No compaction or degradation of soils will occur beyond the works areas as temporary fencing will be erected to prevent the encroachment of personnel, vehicles, machinery or materials beyond the boundary of works. When the financial payments to landowners are taken into account, along with the reinstatement of lands following the completion of construction, it is evaluated that the impact will be Neutral.

Loss of connectivity of landholdings (C, O): Neutral impact. This is determined as an Imperceptible Impact due to the alternative access available on many landholdings and the provision of crossing points and access gates along both the construction area boundary fence lines and the operational phase boundary fence lines. Therefore, it is considered that impacts to landholding connectivity will be imperceptible. Overall, the impact is considered to be Neutral.

Effects on animal health and wellbeing due to increases in airborne dust and deposition of dust on grasslands (C): Imperceptible impact. According to Chapter 9: Air Quality, during dry and windy weather conditions, dust deposition can occur up to 250m from the source. However, the greatest impacts will occur within the first 50m. The lands within 50m and 250m of the main sources of dust (i.e. excavations, earth moving and backfilling) are predominantly owned by landowners involved in the development, with only 1 no. 3rd party agricultural landholdings within 50m, and just 2 no. within 250m at the Ballylehaun Area, therefore the number of receptors potentially affected is very low. Dust can affect animal health and wellbeing, particularly when animals are exposed to very high levels of dust over extended periods. However, it is considered that the construction of the Proposed Gathabawn Windfarm is unlikely to cause significant impacts given the requirement for prolonged dry and windy weather conditions, the temporary nature of the works, and the low numbers of livestock/animals and landholdings potentially affected. The impact from windfarm construction works areas is considered to be Imperceptible - Slight.

Along the candidate grid connection, the potential for dust is much reduced due to the small scale and linear nature of the works, which will be revegetate quickly. Any dust effects will be Neutral.

Reduced growth rates due to a change in the drainage regime (C, O): Neutral impact. The site drainage network which will be installed at the windfarm site during the construction phase will retain the existing drainage patterns through the capture of surface water runoff upslope of the works (in the clean water drain) and the piping of this water to the downslope side via the provision of regular cross drains and outfall weirs. The location of these cross drains will ensure that the existing drainage regimes are maintained. Overall, the impact is considered to be Neutral.

Increased farm management costs due to the spread of invasive species (C, O, D): Unlikely impact. No high impact invasive species were recorded at the Ballylehaun Area of the windfarm site during habitat surveys for the Biodiversity evaluation. No high impact invasive species were recorded along the Candidate Gathabawn Grid Connection. At the Ballyring Area, a stand of Japanese Knotweed was recorded in a drain near the site access road to T12. Given the active management of agricultural lands at that location and the obligation on landowners in respect of invasive species, it is considered unlikely that any new infestations would be allowed to become established.

Return to agricultural use (D): Neutral impact. There will be no loss of use of surrounding lands during decommissioning works. The reversion of lands to former landuse will take place across a number of

individual landholdings, with lands reseeded and returned to agricultural use within a relatively short timeframe. Overall, the impact on landuse will be Neutral.

ElAR 6.4.4.2 Evaluation of the Effects on Public Amenity Landuse

Loss of Access/Landuse (C, O): Neutral – Slight impact. As there are no Public Amenity Landuses within the works area boundaries for the Proposed Gathabawn Windfarm site, there is no potential for the windfarm works to adversely affect public amenity landuse. Along the Ballylehaun-Ballyring UGC element of the Candidate Gathabawn Grid Connection, while some temporary disruption may occur on public road sections of the Gathabawn Loop Walk during the construction phase, the roadworks will not cause any permanent changes to the use of these public roads as walking trails. Overall, the impact on the local Gathabawn Loop Walk is considered to be Slight-Imperceptible during construction, and Neutral during the operational phase. There is no potential for significant adverse effects to this landuse.

ElAR 6.4.4.3 Evaluation of the Effects on Equestrian Landuse

On-Site Equestrian Land use Loss/deterioration of use (C, O, D): Unlikely impact. There are some lands within the development site which are used for horse rearing and equestrian activities. There are two landowners engaged in the equine enterprises. Both of these landowners have decided to become involved in the wind farm project. Accordingly, it is considered that significant impacts are unlikely to occur.

3rd Party Loss/deterioration of use (O): Unlikely impact. The nearest 3rd party equestrian enterprise is Cullahill Equestrian Centre, which is located c.2km to the northwest of the site and is at a distance greater than three times tip height from the turbines. The British Horse Society 2024 “Advice on Wind turbines and horses for planning officers and developers” where a separation distance of three times the turbine tip height from equestrian businesses is recommended. This is achieved and therefore, it is considered that significant impacts are unlikely to occur.

ElAR 6.4.4.4 Summary of Impacts

There are **no likely Moderate, Significant, Very Significant or Profound residual impacts** to the Land environment arising from the construction, operation or decommissioning of the Whole Gathabawn Windfarm Project.

All of the residual effects of the Proposed Gathabawn Windfarm, and the Whole Gathabawn Windfarm Project on Land, will **not be significant**.

ElAR 6.4.5 Environmental Protection Measures

Mitigation measures which form part of standard windfarm construction/operation will be implemented during the construction/operation/decommissioning of the development to protect the Land environment and avoid/reduce these not significant effects. These environmental protection measures are identified below and are included in the Environmental Management Plan 2026 for the Whole Gathabawn Windfarm project.

WM03 GM03	<u>Pre-construction surveys for invasive species</u> will be carried out to determine if any new infestations of invasive species have been established in the interim period between the submission of the planning application and the commencement of construction works. These pre-construction confirmatory surveys for invasive species will be carried out at the construction works areas plus 7m, by the Project Ecologist, to accurately determine the extent of new invasive species infestations. Mapping, showing the most up to date distribution and extent of each infestation, will be distributed to the Environmental Clerk of Works and to the Project Engineer.
WM04	<u>Pre-construction surveys for Otter holts</u> will be carried out to determine if any new Otter holts have been established in the interim period between the submission of the planning application and the

	commencement of construction works. These pre-construction confirmatory surveys for Otter holts and activity (particularly holts at which breeding females or cubs are present) will be carried along the Ballyring Upper Stream, 150m upstream and downstream of facilitating works near the road bridge at Garrydague.
WM12 GM12	The <u>Environmental Management Team</u> will monitor construction works for compliance with the Environmental Management Plan. The project Environmental Management Team which includes an Environmental Clerk of Works, the Project Ecologist and specialists as required such as archaeologists, invasive species specialists and hydrologists, who are independent of the site contractors. The Environmental Management Team will report to the owner's Project Manager.
WM21	<u>Treatment of the existing stand of Japanese Knotweed</u> at the Ballyring Area has commenced pre-application and will continue during the planning and pre-construction phase. Treatment of the existing Japanese Knotweed will be carried out an invasive species specialist consultant in accordance with best practice.
WM22 GM21	Any excavation <u>works in close proximity (7m) to an invasive species infestation</u> location will be carried out under the direct supervision of an invasive species specialist ecologist.
WM23 GM22	<u>Invasive Species Control</u> : Visual inspections will be carried out by the Contractor on all machinery and equipment (particularly for machinery and equipment which has come into contact with water or soils) for evidence of attached plant or animal material, or adherent mud or debris. Any attached or adherent material will be removed before entering or leaving the site, securely stored away from traffic for removal to a contaminated waste storage bin at the temporary constructions.
WM51 GM50	<u>Treatment/management of invasive species infestations</u> : Any infestations of Japanese knotweed or other high-impact invasive species within 7m of works will be covered with high density polyethylene grass carpet terram prior to any works commencing at the location. The covering of any new infestations will only be carried out under the direct supervision of a specialist invasive species ecologist, and works within 7m of the infestation will be under the direct supervision of this specialist invasive species ecologist.
WM52	<u>Monitoring of invasive species</u> : Works within 7m of an invasive species infestation will only be carried out under the direct supervision of a specialist invasive species ecologist with prior experience of this type of work.
WM53 GM51	<u>Should an Otter holt be identified</u> during pre-construction surveys, then all construction works within 150m of the active otter holt, will be carried out during daylight hours and outside of 2 hours after sunrise or before sunset during summer/outside of 1 hours after sunrise or before sunset during winter. If an active holt (particularly holts at which breeding females or cubs are present) is located within 150 meters of the watercourse crossing points, no works will be undertaken while cubs are present in the holt and NPWS will be notified immediately. No wheeled or tracked vehicles (of any kind) will be used within 20m of active but non-breeding otter Holts – except under license, and light work, such as digging by hand or scrub clearance will not take place within 15m of such holts, except under license. The prohibited working area associated with otter holts will, where appropriate, be fenced with temporary fencing prior to any invasive works and declared as 'out of bounds'. Appropriate awareness of the purpose of the enclosure will be conveyed through toolbox talks with site personnel and sufficient signage will be placed on each exclusion fence. All contractors or operators on site will be made fully aware of the procedures pertaining to each affected holt and subject to conformance audits.
WM24 GM23	<u>Monitoring – Dust</u> : During working hours, the construction contractor will monitor dust control methods and weather forecasts for dry and windy conditions and will carry out weekly on-site and off-site inspections to monitor dust caused by the construction works. Public roads will be regularly inspected for cleanliness and regular dust soiling checks of surfaces along public roads and within 100m of site access points will also be carried out. The frequency of monitoring will be increased when construction activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

WM60	<u>Road Paving</u> : In order to reduce the potential for dust emissions, the uphill section of the windfarm site road between T2 and T3 will be paved with tarmacadam. A dry wheel wash will be installed on level ground before and after this road to reduce dirt on the wheels of vehicles travelled near to the boundary of the Cullahill Mountain SAC.
WM72	<u>Dust control</u>: Dust minimisation measures will be implemented during the construction works as follows: The site roads will be regularly inspected and swept to remove build up of mud and aggregate materials from their surface, Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and windy conditions. Vehicles delivering material with dust potential will be enclosed or covered with tarpaulin to restrict the escape of dust. Public roads in the vicinity of the site will be regularly inspected for cleanliness, and cleaned as necessary
GM61	<u>Dust Control</u> : Any loads of material which have the potential for dust emissions (such as aggregate) will be covered during transportation.
WM13 GM13	A <u>Landowner Liaison Officer</u> (LLO) will be appointed and will monitor the erection and maintenance of the construction works area boundary fences and will liaise with the landowners regarding the location of access gateways along the fence, and of livestock water supply pipes and livestock water supply sources. The LLO will keep the landowners up to date with relevant construction work schedules.
WM30 GM27	<u>Fencing of works areas</u> : The boundaries of construction works areas in agricultural lands will be fenced to prevent the encroachment of construction phase personnel, machinery or materials beyond this boundary. Livestock proof fencing will be used, with landowner access maintained through the provision of openings along the boundary fences.
GM28	<u>Control of Movement of Machinery/Vehicles</u> : Construction traffic, personnel and materials will be restricted to within the construction works area fence and will avoid moving onto areas not delineated on the site drawings.
WM31	<u>Control of Movement of Machinery/Vehicles</u> : Construction traffic, personnel and materials will be restricted to the hardcore surfaces, particularly with respect to the newly constructed access roads. This means that machinery will be kept on the windfarm site roads and hardstanding areas, and, aside from advancing excavations, will avoid moving onto areas not delineated on the site drawings.
GM28	<u>Control of Movement of Machinery/Vehicles</u> : Construction traffic, personnel and materials will be restricted to within the construction works area fence and will avoid moving onto areas not delineated on the site drawings.
WM32 GM29	<u>Land reinstatement</u> will not be carried out during very wet weather or when the soil is waterlogged. If any compaction has occurred along the construction works area, these areas will be ploughed with a sub-soiler to loosen the subsoil layer.
WM47	<u>Concrete control procedures</u> will be implemented and will include the following: No concrete batching will take place on site, all concrete will be ready-mixed and delivered just-in-time. The pouring of concrete will be scheduled for dry days. If a sudden rainfall event should occur, then suitable covers will be ready and available at the pour site to cover the concrete. The pour site will be kept free of standing water. All operators involved in pouring concrete will be trained and experienced in working with concrete. Run-off from wind turbine foundation concrete pours will not be permitted to flow over adjacent lands or enter drainage channels. The run-off will be contained within the foundation area and pumped into a skip to settle out; settled solids will be appropriately disposed of off-site.

	The Contractor will not permit the discharge of cement contaminated waters to the construction phase drainage system, onto adjacent lands or directly to any artificial drain or watercourse. Concrete trucks will be washed out at the supplier's facilities and not on site. The only concrete washing that will occur on site is the hand washing of the chutes at the rear of the trucks. Washing of chutes will only take place at the designated area and into a Roadside Concrete Washout unit.
GM44	<u>Concrete control procedures</u> will be implemented and will include the following: All concrete will be ready-mixed and delivered to site just-in-time; Dry granular cement will be used in UGC cable trenches; The pouring of concrete will be scheduled for dry days. If a sudden rainfall event should occur, then plastic covers will be ready and available at the pour site to cover the concrete. The pour site will be kept free of standing water; Designated trained operator experienced in working with concrete will be employed during concrete pouring; Concrete trucks will be washed out at the supplier's facilities and not on site. The only concrete washing that will occur on site is the hand washing of the chutes at the rear of the trucks. Washing of chutes will only take place at the designated area and into a Roadside Concrete Washout unit. No discharge of cement contaminated waters to any artificial drain or watercourse will be allowed.
WM48	<u>Refuelling control procedures</u> will be implemented and will include the following: On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser carried on a double axel refuelling trailer, will be refuelled off-site, and will be towed around the site by a 4x4 vehicle to where machinery is located. The 4x4 vehicle will carry fuel absorbent material and pads in the event of any accidental spillage. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. In addition, spill response apparatus including spill-kits and fuel absorbent mats will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment and in the implementation of the Emergency Response Plan, as contained in the Environmental Management Plan. The fuel bowser will be parked on a level area, away from main traffic activity, in a designated part of the construction compounds when not in use. Taps, nozzles or valves associated with mobile fuel bowser will be fitted with a lock system. Only designated trained and competent operatives will be authorised to refuel plant on site. A Permit to Fuel system will be put in place. There will be no refuelling of vehicles or plant permitted within 100m of a watercourse or wet drainage channel or local spring/well.
WM49 GM47	<u>Storage of Fuels, Oils and Chemicals:</u> All fuels or oils or chemicals, required during construction, will be stored in a designated, bunded, locked storage area within the temporary compounds. All fuel, oil and chemical storage areas will be bunded appropriately to 110% of the volume of oils/fuels each area contains for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area. Fuel, oil and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage. Safety data sheets for all chemicals used will be kept on-site. An emergency response plan to deal with accidental spillages will be contained within the Environmental Management Plan.
WM74 GM63	<u>A Community Liaison Officer (CLO)</u> will be appointed. The CLO will liaise with and keep the local community up-to-date with relevant construction work schedules, through the use of letter drops to or direct contact with nearest neighbours. The CLO will be the point of contact for local residents and local landowners for matters relating to noise, dust or traffic. The Environmental Clerk of Works will liaise with the CLO and will be the point of contact between the contractor/developer and the Local Authority regarding any matters relating to noise or vibration from the construction works.

WM103 GM92	<u>A Community Liaison Officer</u> will be appointed for the duration of the operational phase and will act as a point of contact for the local community.
WM125 GM100	<u>A Community Liaison Officer (CLO)</u> will be appointed for the duration of the decommissioning phase and will be the point of contact for local residents.
WM114 GM89	<u>Vegetation Monitoring</u> : The rate of re-vegetation of exposed soils and growth of newly planted hedgerows and trees will be checked by the Asset Manager during quarterly site inspections. Where revegetation is slower than expected, that area will be prepared and re-seeded or replanted in an appropriate manner, as advised by a suitably qualified ecologist.
WM136 GM107	<u>Revegetation</u> : The Asset Manager and Project Ecologist will check the rate of re-vegetation of exposed soils and reinstated areas quarterly following decommissioning works (until revegetation is attained). Where revegetation is slower than expected, that area will be prepared and re-seeded in an appropriate manner.

EIAR 6.5 CUMULATIVE IMPACT WITH OTHER PROJECTS

Other existing and permitted projects and projects advanced in the planning system, were examined for their potential to cumulatively affect Land with the Whole Gathabawn Windfarm Project. These projects are referred to as 'Other Projects' herein. The potential for off-site and secondary consequential development is also considered.

Cumulative Study Areas are set out below and Other Projects located within this Study Area are identified and examined for potential for cumulative effects.

1. The agricultural landholdings within which the works are located. The potential for Other Projects to cause cumulative impacts is limited to the landholdings associated with the Gathabawn Windfarm Project.
2. For equine land, a study area of 6 times the tip height (i.e. 1,020m) of the Gathabawn Windfarm turbines is assessed.

Proposed Gathabawn Windfarm

There are no Other Projects within the study areas for the Proposed Gathabawn Windfarm.

Candidate Gathabawn Grid Connection

There are Other Projects within the study areas for the Candidate Gathabawn Grid Connection and these Other Projects were subject to a cumulative scoping exercise.

Scoping Result: None of these Other Projects were scopeded in for evaluation of cumulative effects.

Therefore, it is evaluated that cumulative effects with Other Projects will be Neutral.

EIAR 6.6 SUMMARY CONCLUSION

AGRICULTURAL LAND: Agricultural landuse is the dominant landuse at the windfarm site, with all turbines located in agricultural lands. Similar landuse, the rearing of livestock on improved grasslands with a minor tillage component, is the foremost landuse in the areas surrounding the Gathabawn Windfarm site. While the Gathabawn Windfarm works are primarily in agricultural lands, impacts are expected to range from Neutral to Imperceptible/Not Significant adverse. Therefore, the **impact of the proposed Gathabawn Windfarm to Agricultural Land will be Not Significant.**

With regard to cumulative impacts of the Gathabawn Windfarm project and the Candidate Gathabawn Grid Connection it is determined that these will have a negligible effect on agricultural landuse. No Other Projects were ascertained in connection with the Gathabawn Windfarm project. Other Projects within the study area for the Candidate Gathabawn Grid Connection were determined to result in Neutral cumulative impacts. Overall, it is evaluated that **cumulative effects on Agricultural Land will be Not Significant.**

OTHER LANDUSES: There are no equestrian lands that are not associated with the windfarm development at the windfarm site or in close proximity to the turbines. The closest third-party equestrian lands are 2.5 km from the nearest turbine. In accordance with British Horse Society guidelines, no significant impacts are likely to occur as the turbines are at a distance substantially greater than the 3 times tip height separation distance. There are no official walking trail, public parks, or Coillte recreational forest areas at the Gathabawn Windfarm site. Any disruption to local walking amenity will be temporary and Imperceptible, and diversions will be in place to accommodate access around the works. It is evaluated that the **impact of the proposed Gathabawn Windfarm to Equestrian Lands or Public Amenity Land will be Not Significant.**

MITIGATION MEASURES: Measures to further minimise the impact on agricultural landuse include the implementation of Environmental Management, Waste Management and Health & Safety Management Plans, appropriate design of the site drainage system and control of excavations, movement of machinery and vehicles and controls and procedures for the safe handling and storage of fuels and oils.

CLIMATE CHANGE: It is noted that climate change will have an adverse effect on agricultural lands in Ireland. In that context the production of renewable energy at Gathabawn will result in an annual offset of 38,250 tonnes of CO₂E which will contribute positively to Climate Mitigation of these effects.

To conclude, it is thus evaluated that the impact to Land of the Gathabawn Windfarm project, both alone and cumulatively with Other Elements of the whole project and cumulatively with Other Projects will be Not Significant.

EIAR 6.7 Glossary, List of Abbreviations

Glossary of Terms

Term	Definition
Afforestation	The planting of land with woody plants with a view to forest establishment.
Agriculture	The growing of crops and the rearing of animals for food, fibre or sporting purposes.
Grassland	Land which has been sown with productive grass species.
Improved grassland	Land which has been sown with particularly productive grass species and whose continued productivity is dependent on regular supplemental inputs of fertiliser and lime.
Gathabawn Windfarm	Twelve wind turbines are proposed for two areas – seven turbines in the Ballylehaun area and five turbines in the Ballyring area. In addition to the turbines and their hardstanding areas, the windfarm also includes site access roads, two Control Buildings; a met mast, underground cabling, temporary works to facilitate turbine deliveries, and other associated and ancillary works.
Candidate Gathabawn Grid Connection	Underground cabling between the Ballylehaun and Ballyring Areas (Ballylehaun-Ballyring UGC), underground cabling from the Ballyring Area (from Ballyring Control Building) to a new substation at Parksgrove (Ballyring-Parksgrove UGC), the Parksgrove Substation, and underground cabling from the substation to the existing Eirgrid Ballyragget Substation in Moatpark (Parksgrove-Moatpark UGC). The Candidate Gathabawn Grid Connection is not included as part of this Planning Application, it will be subject of a separate Planning Application, at a future date. The Candidate Gathabawn Grid Connection is considered in this EIA Report in order to facilitate the cumulative evaluation of the Whole Project.
Gathabawn Windfarm project	Gathabawn Windfarm and Candidate Gathabawn Windfarm Grid Connection
Landuse	The use to which land is put by human activity.
Plantation forestry	Forest sown by man, usually for commercial reasons and mostly of a small number of tree species.

List of Abbreviations

Abbreviation	Full Term
CAP	Common Agricultural Policy
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
IAPS	Invasive Alien Plant Species
LLO	Landowner Liaison Office
LULUCF	Land Use, Land Use Change, Forestry

EIAR 6.8 Reference List for Land

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ElAR 6.9 List of Figures

FIGURES (overleaf)

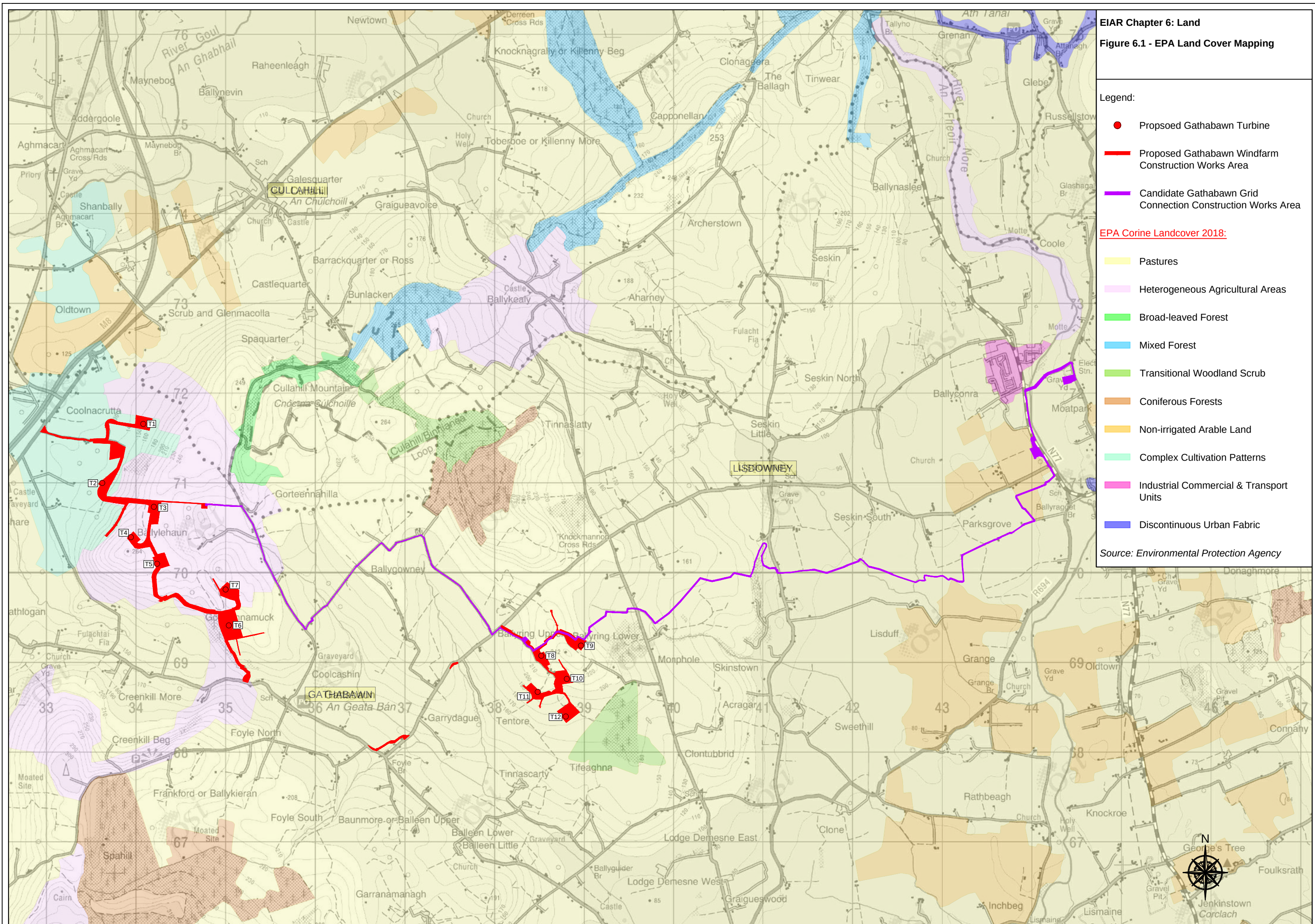
Figure 6.1	EPA Land Cover Mapping
Figure 6.2	Agricultural Lands – Construction Stage
Figure 6.3	Agricultural Lands – Operational Stage

ElAR 6.10 List of Appendices

APPENDICES (overleaf)

Appendix 6.1	Methodology for the evaluation of Land
See also:	
Appendix 5.1	Site Photos and Drone footage of the Gathabawn Windfarm site
Appendix 5.2	Site Photos of the Candidate Gathabawn Grid Connection

Figures



EIAR Chapter 6: Land

Figure 6.2 - Agricultural Lands - Construction Stage

Legend:

Proposed Gathabawn Turbine

Proposed Gathabawn Windfarm Construction Works Area

Candidate Gathabawn Grid Connection Construction Works Area

Agricultural Landholding



EIA Chapter 6: Land
 Figure 6.3 - Agricultural Lands
 - Operational Stage
 Legend:
 ● Proposed Gathabawn Turbine
 — Proposed Gathabawn Windfarm
 — Operational Works Area Boundary
 - - - Additional Area of the Operational Works Area Boundary - Facilitating Works
 ■ Biodiversity Areas



Appendix to Chapter 6: Land

Appendix 6.1: Methodology for the evaluation of Land

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A6.1.4	Criteria for Evaluating the Magnitude of an Impact	4
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A6.1.6	Assessing the significance of an impact	5

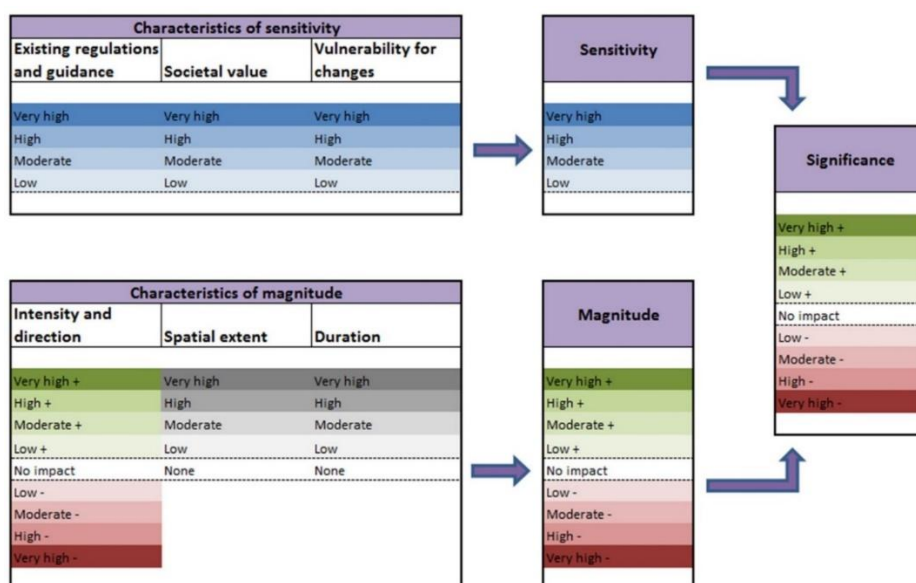
A6.1 Methodology for the evaluation of Land

In the absence of specific guidance on the evaluation of Land for an EIA Report, in addition to the desktop surveys and fieldwork carried out for the Project as detailed in Section EIAR 6.1.2 of Chapter 6: Land, the *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022), along with the ARVI approach for impact significance assessment developed under the EC IMPERIA LIFE11 Project, are employed for this evaluation. The ARVI approach has been used to evaluate impact significance using a multi-criteria decision analysis, where the sensitivity of the receptor in the environment and the magnitude of the change caused by a particular project are rated, and then an overall significance can be determined.

The IMPERIA Project Report Guidelines for the systematic impact significance assessment – the ARVI approach (2015) is included in full as Appendix 2.1 of this EIAR, with the methods used for determining sensitivity, magnitude and significance reproduced below. The author's extensive experience with EIA preparation also informs this report.

A6.1.1 Overview of the IMPERIA Project ARVI approach

In the framework developed under the EC LIFE project - IMPERIA, the evaluation of impact significance uses a replicable, multi-criteria decision analysis, where the sensitivity of the receptor (i.e. the sensitivity of a Sensitive Aspect of the environment) and the magnitude of the change caused by a project are rated using sub-criteria or scales, and then the overall significance is evaluated using a matrix.



The criteria for determining the overall sensitivity of a receptor and magnitude of the change (effect) to the receptor, is provided in the tables below. The matrix for determining the significance of the effect to the receptor is provided after these tables.

A6.1.2 Criteria for Evaluating the Sensitivity of a Receptor

Sensitivity of the receptor is a description of the characteristics of the receptor or aspect of the environment which will be affected by the development. It is a measure of 1) existing regulations and guidance, 2) societal value and 3) vulnerability for the change. The sensitivity of a receptor is estimated in its current state prior to any change implied by the project.

Existing regulations and guidance describes whether there are any such objects in the impact area, which have some level of protection by law or other regulations (e.g. prohibition against polluting groundwater and

Natura areas), or whose conservation value is increased by programs or recommendations (e.g. landscapes designated as nationally valuable).

Societal value describes the value of the receptor to the society and depending on the type of impact may be related to economic values (e.g. water supply), social values (e.g. landscape or recreation) or environmental values (e.g. natural habitat). Societal value measures general appreciation from the point of view of the society. When relevant, the number of people impacted is taken into account.

Vulnerability for the change describes how liable the receptor is to be influenced or harmed by changes to its environment.

Sensitivity	Criteria Existing regulations/guidance	Criteria Societal value	Criteria Vulnerability to change
Low	Few or no recommendations which add to the conservation value of the impact area, and no regulations restricting use of the area (e.g. zoning plans).	The receptor is of small value or uniqueness. The number of people impacted is small.	Even a large external change would not have substantial impact on the status of the receptor. There are only few or none vulnerable receptors in the area.
Moderate	Regulation sets recommendations or reference values for an object in the impact area, or the project may impact an area conserved by a national or an international program.	The receptor is valuable and locally significant but not very unique. The number of people impacted is moderate.	At least moderate changes are needed to substantially change the status of the receptor. There are some vulnerable receptors in the area.
High	The impact area includes an object that is protected by national law or an EU directive (e.g. Natura 2000 areas).	The receptor is unique and valuable to society. It may be deemed nationally significant and valuable. The number of people impacted is large.	Even a small external change could substantially change the status of the receptor. There are many vulnerable receptors in the area.
Very High	The impact area includes an object that is protected by national law or an EU directive (e.g. Natura 2000 areas).	The receptor is highly unique, very valuable to society and possibly irreplaceable. It may be deemed internationally significant and valuable. The number of people affected is very large.	Even a very small external change could substantially change the status of the receptor. There are very many vulnerable receptors in the area.

A6.1.3 Determining the Overall Sensitivity of a Receptor

The overall sensitivity of a receptor is assessed by the competent expert on the basis on his/her assessment of the components of sensitivity. A general guide for deriving the overall sensitivity is to pick the maximum of existing regulations and guidance and societal value and then adjust that value depending on the level of vulnerability.

Determining the Overall Sensitivity of a Receptor	
Low	The receptor has minor social value, low vulnerability for the change and no existing regulations and guidance. Even a receptor which has major or moderate social value may have low sensitivity if it's not liable to be influenced by the development.
Moderate	The receptor has moderate value to society, its vulnerability for the change is moderate, regulation may set reference values or recommendations, and it may be in a conservation program. Even a receptor which has major social value may have moderate sensitivity if it has low vulnerability, and vice versa.

High	Legislation strictly conserves the receptor, or it is very valuable to society, or very liable to be harmed by the development.
Very High	Legislation strictly conserves the receptor, or it is irreplaceable to society, or extremely liable to be harmed by the development. Even minor influence by the proposed development is likely to make the development unfeasible.

A6.1.4 Criteria for Evaluating the Magnitude of an Impact

Magnitude of the impact describes the characteristics of the changes or effects that the planned project is likely to cause. Magnitude is a combination of 1) intensity and direction, 2) spatial extent, and 3) duration. Assessment of magnitude evaluates the likely changes affecting the receptor *without* taking into account the receptors sensitivity to those changes.

Intensity describes the physical dimension of a development. The direction of the change/effect is either positive (green) or negative (red).

Magnitude	Criteria – Intensity & Direction
Very High	The proposal has an extremely beneficial effect on nature or environmental load. A social change benefits substantially people's daily lives.
High	The proposal has a large beneficial effect on nature or environmental load. A social change clearly benefits people's daily lives.
Moderate	The proposal has a clearly observable positive effect on nature or environmental load. A social change has an observable effect on people's daily lives.
Low	An effect is positive and observable, but the change to environmental conditions or on people is small.
No impact	An effect so small that it has no practical implication. Any benefit or harm is negligible.
Low	An effect is negative and observable, but the change to environmental conditions or on people is small.
Moderate	The proposal has a clearly observable negative effect on nature or environmental load. A social change has an observable effect on people's daily lives and may impact daily routines.
High	The proposal has a large detrimental effect on nature or environmental load. A social change clearly hinders people's daily lives.
Very High	The proposal has an extremely harmful effect on nature or environmental load. A social change substantially hinders people's daily lives.

Spatial extent describes the geographical reach of, or the range within which, an effect is observable.

Duration describes the length of time during which an impact is observable and it also takes other related issues such as timing and periodicity into account. These are relevant for impacts which aren't observable all the time such as periodic impacts.

Magnitude	Criteria Spatial Extent	Criteria Duration
Low	Impact extends only to the immediate vicinity of a source. Typical range is < 1 km.	An impact whose duration is at most one year, for instance during construction and not operation. A moderate-term impact may fall into this category if it's not constant and occurs only at periods causing the least possible disturbance.

Moderate	Impact extends over one municipality. Typical range is 1-10 km.	An impact lasts from one to a number of years. A long-term impact may fall into this category if it's not constant and occurs only at periods causing the least possible disturbance.
High	Impact extends over one region. Typical range is 10-100 km.	An impact lasts several years. The impact area will recover after the project is decommissioned.
Very High	Impact extends over several regions and may cross national borders. Typical range is > 100 km.	An impact is permanent. The impact area won't recover even after the project is decommissioned.

A6.1.5 Deriving the overall magnitude of the change from components of magnitude

Magnitude of the change is a comprehensive synthesis of its component factors. In a case, where intensity, spatial case and duration all get the same value, the magnitude would also be given this value. In other cases, intensity should be taken as a starting point, and the assessment should be adjusted based on spatial extent and duration to obtain an overall estimate. The aim is that the overall assessment should capture the characteristics of an effect. The table below describes some example descriptions of different categories for the magnitude of the change.

Determining the Overall Magnitude of the Change/Effect	
Very High	The proposal has beneficial effects of very high intensity and the extent and the duration of the effects are at least high.
High	The proposal has beneficial effects of high intensity and the extent and the duration of the effects are high.
Moderate	The proposal has clearly observable positive effects on nature or people's daily lives, and the extent and the duration of the effects are moderate.
Low	An effect is positive and observable, but the change to environmental conditions or on people is small.
No impact	No change is noticeable in practice. Any benefit or harm is negligible.
Low	An effect is negative and observable, but the change to environmental conditions or on people is small.
Moderate	The proposal has clearly observable negative effects on nature or people's daily lives, and the extent and the duration of the effects are moderate.
High	The proposal has harmful effects of high intensity and the extent and the duration of the effects are high.
Very High	The proposal has harmful effects of very high intensity and the extent and the duration of the effects are at least high.

A6.1.6 Assessing the significance of an impact

The **assessment of the overall significance uses the matrix below**, where positive impacts are in green and negative in red. The matrix is based on the **magnitude of the change** affecting a receptor and on the **sensitivity of the receptor** to those changes.

The values obtained from the table are indicative because the most relevant dimensions for characterising an impact are dependent on the type of impact. Thus, some discretion from the expert is required, in particular in cases, where the one component is low and the other one high or very high.

Determining the Overall Significance of an Impact										
Impact Significance		Magnitude of change								
		Very High	High	Moderate	Low	No Change	Low	Moderate	High	Very High
Receptor Sensitivity	Low	Significant*	Moderate*	Slight	Imperceptible	Neutral	Imperceptible	Slight	Moderate*	Significant*
	Moderate	Significant	Significant	Moderate	Slight	Neutral	Slight	Moderate	Significant	Significant
	High	Profound	Significant	Significant	Moderate*	Neutral	Moderate*	Significant	Significant	Profound
	Very High	Profound	Profound	Significant	Significant*	Neutral	Significant*	Significant	Profound	Profound

* Especially in these cases, significance might get a lower estimate, if sensitivity or magnitude is near the lower bound of the classification

Note on Terms used in 'Determining the Overall Significance of an Impact' Table: The Significance rating ascribed in the Table above have been refined from the ARVI tool, to provide a more nuanced understanding of the significance and also to be compatible with the terms used throughout this EIA Report, which have been informed by the EPA Guidelines on Information to be contained in EIAR (2022) for description of effects.

In the above Table - Low has been refined as Slight or Imperceptible depending on context; High has been renamed as Significant; Very High has been renamed as Profound; No Impact is understood to also mean Neutral effect, which is defined in the EPA Guidelines as 'no effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error'.