East Meath - North Dublin Grid Upgrade Environmental Impact Assessment Report (EIAR): Volume 2

Chapter 15 – Agronomy and Equine

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Contents

15. Agronomy and Equine

15.1 Introduction

This Chapter presents the assessment of the potential impacts of the East Meath - North Dublin Grid Upgrade (hereafter referred to as the Proposed Development) on agronomy and equine during the Construction and Operational Phases. A full description of the Proposed Development is included in Chapter 4 (Proposed Development Description) in Volume 2 of this Environmental Impact Assessment Report (EIAR).

15.2 Methodology

The following sections outline the legislation and guidelines complied with, and the adopted methodology for defining the baseline environment and undertaking the assessment of the likely impacts of the Proposed Development on agronomy and equine.

The author has used the standard approach to environmental impact assessment set out in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) published by the Environmental Protection Agency (EPA) in May 2022 (EPA 2022). Using the EPA Guidelines, the potential impacts of the Proposed Development on agronomy and equine have been assessed by classifying the importance of the relevant receptors and quantifying the likely magnitude of any impact on these receptors. The assessment of agronomy and equine impacts considers the changes that would occur to the agronomy and equine environment as a result of constructing and operating the Proposed Development.

15.2.1 Study Area

The study area for this assessment includes agricultural and equine land parcels that are directly affected by the Proposed Development. Direct effects occur where the works associated with the construction and operation of the Proposed Development occur within the boundary of the land parcel. There are 40 agricultural land parcels where direct effects will arise from temporary or permanent land take and easements. The location of these land parcels is shown in Figure 15.1 in Volume 4 of this EIAR.

15.2.2 Relevant Guidelines

In the absence of specific guidelines for the assessment of agricultural and equine impacts, the author has followed the guidance for environmental impact assessment contained in the EPA Guidelines (EPA 2022). The appraisal methodology used is set out in Section 15.2.4 and the EPA guidance on assessing significance of impact is adapted, as shown in Table 15.1.

15.2.3 Data Collection and Collation

Background information was gathered on all farm types and sizes within the study area from the following data sources:

- Central Statistics Office (CSO) Census of Agriculture 2020 (CSO 2020). The average size and type of farms County Meath and County Dublin was determined from the Census of Agriculture 2020;
- Your Grid, Your Views, Your Tomorrow – Responding to Equine Concerns (EirGrid 2014);
- Land Registry mapping available on the Property Registration Authority (PRA) website (PRA 2023) was used to determine land ownership boundaries of farms along the Proposed Development;

- Baseline information gathered from roadside surveys conducted by the author on 11 July 2022 and 13 June 2023 was used to assess impacts on individual farms;
- Information gathered from meeting with EirGrid's Agricultural Liaison Officers (ALOs) in February 2024, based on their professional experience and engagement with affected landowners; and
- Google Earth aerial photography and mapping, accessed in August 2023 to December 2023 was used as an aid in examining farm layout and land quality (Google Earth 2023).

Baseline crops and grass yield data referred to in Section 15.2.4 is derived from average crop yields from 2008 to 2022 which is available from the CSO Crops and Livestock Survey Final Results June 2022 (CSO 2023). Baseline grass yields and trends are derived from Teagasc Ballyhaise Agricultural College 2008 to 2021 and University College Dublin (UCD) from 2016 to 2022 (UCD 2022) (see Section 15.8 for information sources). This information is used to determine baseline trends as outlined in Section 15.2.4.2 when assessing magnitude of impact.

15.2.4 Appraisal Method for the Assessment of Impacts

The assessment of agronomy and equine impacts considers the changes that would occur to the agronomy and equine environment and involves the following three steps:

1. Evaluation of the baseline environment, the types of farms and the sensitivity of farms and equine facilities within the study area;
2. Evaluation of the nature and magnitude of the impacts on farms within the study area and the effects on agriculture within County Meath and County Dublin (i.e. regional effects); and
3. Having considered the sensitivity of the baseline agronomy and equine environment and the magnitude of effects, the potential impact significance is predicted for:
    - Each directly affected land parcel identified as likely to be directly affected by the Proposed Development;
    - Agronomy and equine within the study area (i.e. locally); and
    - Agronomy and equine within County Meath and County Dublin (i.e. regionally).

These three elements of the methodology are described in Section 15.2.4.1, Section 15.2.4.2 and Section 15.2.4.3.

15.2.4.1 Evaluation of the Baseline Environment

The baseline environment is described in Section 15.3. The information was gathered from engagement with EirGrid ALOs, roadside surveys conducted in July 2022 and June 2023, and examination of aerial photography (Google Earth 2023). The sensitivity of the land parcels along the Proposed Development is determined by reference to the criteria in Table 15.1. The main criterion relied upon is the type of farm enterprise. For example, equine farms are generally of high or very high sensitivity, due to the fact that horses are sensitive to construction noise and movement of unfamiliar construction machinery. Dairy farms are high sensitivity due to the fact that it is critical that the movement of cows between the grazing plots and the milking parlour is not interrupted (this could be caused where there is severance of access). Other criteria assessed on a case-by-case basis is the size of the land parcels (small land parcels may be unviable and have a low sensitivity), land quality (poor land quality indicates low sensitivity) and development status (e.g., land owned by public bodies such as the IDA or building development companies is likely to be used for non-agricultural purposes, and is therefore not as sensitive as land owned by farmers). The criteria for farm enterprise sensitivity is based on the author's professional judgement and knowledge of how the operation of farms are affected by various types of infrastructure projects.

Table 15.1: Criteria for the Assessment of Sensitivity

Farm Enterprise	Sensitivity
Stud farm, equestrian centre, racehorse training enterprise, horticultural / nursery enterprise, pig / poultry farm	High to Very High
Dairy farm, Intensive equine enterprise	High
Non-dairy livestock enterprises, including beef cattle and sheep, land used primarily for hay / silage, small non-intensive equine enterprise	Medium
Tillage and mixed tillage and livestock (beef, cattle and sheep)	Medium
Small livestock enterprises, rough grazing land, scrub plots and woodland / forestry	Low

15.2.4.2 Evaluation of the Magnitude of Impacts

The magnitude of the potential impacts is assessed by predicting the degree of change in the physical nature of the affected land parcel or on agriculture within the study area. For example, if the Proposed Development takes 10% of an affected agricultural land parcel, and provided the farm enterprise can continue during the Operational Phase of the Proposed Development, it is possible to predict that the yield from the land parcel will be reduced by approximately 10%.

In order to quantify the magnitude of the impact, typical baseline trends in the agricultural environment are examined and interpreted using professional judgement. Crop yield data referred to in Section 15.2.3 is used to establish typical trends and yield variations. According to CSO data from 2008 to 2022, the trend in yield of spring barley and winter wheat varies each year by approximately 7.9% and 9%, respectively, from the average mean yield. According to Teagasc and UCD data, the trend in yield of grass at Ballyhaise Agricultural College (2008 – 2021) and UCD (2016 – 2022) varies on average by 6.5% and 6.2% respectively from the average yields. These figures give an indication of the natural trends in yields. Therefore, the author concludes that impacts which result in a 2.5% to 5% variation in yield are considered to create a low magnitude impact on the farm and are similar to natural baseline trends in yield. Between 5% and 10%, the magnitude of yield loss is starting to exceed the natural baseline trends and is considered a medium magnitude. Yield effects which exceed 10% are considered to be high magnitude. Other factors affect the magnitude of impacts, such as severance or separation of land, the duration of the impact, the quality of land affected and the impact on farmyards and other farm facilities. Table 15.2 shows the criteria which are used to indicate the magnitude of impact. These indicative criteria are based on analysis of baseline trends in crop yields and professional judgment.

Table 15.2: Criteria for the Assessment of Magnitude of Impacts

Indicative Criteria	Magnitude of Impacts
A high proportion of the land permanently taken (>10%) A high proportion of farm permanently separated (> 15 %) Farm buildings or water sources may be affected permanently	High to Very High
A medium proportion of the farm permanently taken (5% -10%) A medium proportion of farm permanently separated (e7 % -15%) Farm buildings or water sources may be affected but can be replaced Temporary (construction) impacts which have long term impacts	Medium
A small proportion of the farm permanently taken (2.5% - 5%) A small proportion of farm separated or no separation (2.5% - 7%) Farm buildings or water sources generally not affected but if affected can be replaced Temporary (construction) impacts which have short – medium term impacts	Low
A very small proportion of the farm taken (<2.5%). A very small proportion of farm separated or no separation (<2.5% of the farm) Temporary (construction) impacts which do not have residual impacts	Negligible to Very Low

The duration of the impact will affect the magnitude (i.e., the longer the impact, the higher the magnitude). Impacts that occur during the Construction Phase (e.g., construction noise and vibration) will generally be of

shorter duration, and therefore lower magnitude, than residual impacts which occur during the Operational Phase (e.g., permanent land take). Damage to land due to excavation and construction traffic is generally not permanent and is assumed to be medium-term duration (7 to 15 years), except at the proposed Temporary Construction Compounds (TCCs) where the damage to land is assumed to be medium to long-term.

15.2.4.3 Evaluation of the Significance of Impacts

Once the description of the impact, including magnitude, character, duration etc. has been identified, this can be cross-referenced with the sensitivity of the receptor to derive the overall significance of the impact, as per Section 3.7.3 of the EPA Guidelines (EPA 2022). An impact which affects a farm with a low sensitivity will not be as significant as a similar magnitude of impact which affects a farm with a high sensitivity. In Table 15.3, the author has used his professional judgement to adapt the EPA Guidelines (May 2022) for assessing significance, with minor adjustments that are appropriate for agricultural impact assessment. In general, the potential impacts resulting from the Proposed Development on agriculture will be adverse in nature.

Table 15.3: Comparison of Significance of Impact Criteria Used in this Assessment with the EPA Guidelines (EPA 2022)

Significance of Impacts as per EPA Guidelines	Significance of Impact used in this Assessment
Imperceptible An effect capable of measurement but without significant consequences	**Not Significant Effect** An impact which may result in measurable effects and / or noticeable changes but the consequences are not significant.
Not Significant An effect which causes noticeable changes in the character of the environment without significant consequences	
Slight An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.	**Slight Adverse Effect** An effect which causes noticeable changes in the character and management of a farm in a minor way. The farm enterprise experiences inconvenience as a result of the proposed road development.
Moderate An effect that alters the character of the environment in a manner that is consistent with existing emerging trends.	**Moderate Adverse Effect** An effect which alters the character of a farm in a manner that requires moderate changes in the management and operation of the farm. The farm enterprise can be continued as before but with increased management or operational difficulties.
Significant An effect which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.	**Significant Adverse Effect** An effect which by its character, magnitude, duration or intensity alters a sensitive aspect of the farm. The farm enterprise can be continued but will require major changes in management and operation of the farm. This would typically occur where the farm was split in two due to separation but where access between the separated portions and the farm buildings could still be achieved effectively.
Very Significant An effect which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.	
Very Significant An effect which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.	**Very Significant Adverse Effect** An effect which by its character, magnitude, duration or intensity alters a sensitive aspect of the farm. The effect is similar to a Significant Adverse effect, however due **to** factors such as the sensitivity of the receptor or the magnitude of impact the effect is categorised as Very Significant Adverse.
Profound An effect which obliterates sensitive characteristics.	**Profound Adverse** An effect which obliterates sensitive characteristics of the farm. The farm enterprise cannot be continued as a result of the Proposed Development. This would occur where land-take was of such a scale that the remaining land would not form a viable unit or where separation was of such a nature to make the holding unworkable or where important farm buildings and facilities were removed and could not be replaced. In some situations the farm enterprise may continue but will require dramatic changes in the future management

Significance of Impacts as per EPA Guidelines	Significance of Impact used in this Assessment
	and operation of the farm, such that the scale and operation of the enterprise is changed dramatically.

When assessing significance of impacts, the basic principle which applies is, as sensitivity increases, so does the significance of impact, at any one level of magnitude. This assessment is subject to variation due to professional judgement and on a case-by-case basis.

15.2.4.4 Difficulties Encountered in Data Collection

When gathering information for this assessment, no difficulties were encountered which could affect the assessment.

15.3 Baseline Environment

15.3.1 Land Quality and Soil Types

Digital soils data and maps sourced from the Irish Soils Information System (Teagasc 2023), along with roadside windshield survey, were used to describe the soil types along the Proposed Development. The soils along the Proposed Development consist mainly of Surface Water Gleys, Luvisols and Alluvial soils. Surface Water Gleys are heavy clay soils associated with low lying landscapes and generally have poor drainage characteristics. When effective drainage outfalls are achieved, these soils can be highly productive. Surface Water Gleys are more suited to grass production than arable cropping. However, in the east of the country these soils are often used for tillage due to the low rainfall. Luvisols are deep soils with clay enrichment in the lower layers of the soil profile. These are associated with undulating landscapes and are more versatile being suited to arable cropping and grassland. Interspersed with these two main soil types are Alluvial soils which occur along rivers and streams. These soils account for less than 5% of the study area and can be productive, but agricultural productivity is often seasonal due to the high water tables in the winter period.

The occurrence of soil types along the Proposed Development is as follows:

- From Woodland Substation to Chainage 10,850, the main soil type is Surface Water Gley. The cropping is a mixture of grassland and tillage (cereals). The land quality is generally good. Small areas of alluvial soils also occur along this part of the Proposed Development;
- From Chainage 10,850 to 13,650, there is a mixture of Surface Water Gleys, Luvisols and Alluvial soils. The cropping is a mixture of grassland and tillage (cereals). The land quality is generally good;
- From Chainage 13,650 to 18,000, the dominant soil type is Luvisol with a minority mixture of Surface Water Gleys and Alluvial soils. The cropping is a mixture of grassland and tillage (cereals). The land quality is generally good;
- From Chainage 18,000 to 30,000, the main soil type is Surface Water Gley. The cropping is a mixture of grassland and tillage (cereals). There is mixed cereals and horticultural cropping north of Dublin Airport. The land quality is generally good; and
- From Chainage 30,000 to 37,200, the dominant soil type is Luvisol. The cropping is a mixture of grassland and tillage (cereals). The land quality is generally good.

The land quality is suitable to support very high sensitivity enterprises such as stud farms, and high sensitivity enterprises such as dairy and horticultural enterprises.

Farm types and their sensitivity are provided in Table 15.1, and further information specific to the Proposed Development is provided in Table 15.4 and Table 15.5.

15.3.2 Farm Types

Table 15.4: Comparison of Farm Types and Sensitivity Within County Meath and County Dublin and Within the Study Area

Enterprise Type (Note 1)	County Meath (Note 1)	County Dublin (Note 1)	Within the Study Area (Note 2)	National (Note 1)	Sensitivity
Average farm size (ha)	43.8	47.3	45.4 (Note 3)	33.4	-
Tillage / beef / sheep / mixed / grass cropping (%)	88	93	92.5	85	Medium
Dairy (%)	11	3.5	2.5	11	High
Other (equine and horticultural) (%)	1	3.5	5	1	Medium to Very High
No. of horses / km^2 (Note 4)	2.4	1.9	-	2.3	-

Note 1: Based on Census of Agriculture 2020 (CSO 2020).
Note 2: These figures relate to the 40 land holdings where there are direct impacts from the Proposed Development (i.e. either temporary or permanent land-take or easements).
Note 3: The average size of directly affected land parcels is 32ha. However, when outlying lands remote from the Proposed Development are included, the author assumes that the average size of directly affected farms is similar to the county averages (i.e. 45.4ha (55% and 45% of the Proposed Development is within County Meath and County Dublin respectively).
Note 4: Census of Agriculture 2010 (CSO 2010); area based on Table 1, number of equines based on Table 8D; equine data only available from 2010 data at time of publication.

The average size of farms within the study area is likely to be reflective of the County Meath and County Dublin averages, and therefore, is larger than the national average (approximately 45.4ha versus 33.4ha). The majority of the farm enterprises within the study area are of medium sensitivity (i.e., beef / sheep / tillage / grass cropping). A comparison to the national statistics shows that within County Meath (approximately 55% of the Proposed Development will be within County Meath), the number of dairy farms and number of 'Other' enterprises (i.e., equine and horticultural) is similar to the national average. Within County Dublin (approximately 45% of the Proposed Development will be within County Dublin), the number of dairy farms is much lower than the national average and the number of 'Other' enterprises (i.e., equine and horticultural) is 3.5% compared to the national average of 1%.

Within the study area comprised of 40 agricultural and equine land parcels, there are three equine enterprises (7.5%). Land parcel No. 22 (see Figure 15.1 in Volume 4 of this EIAR) is a high sensitivity equine land parcel. There are two equine enterprises (Ref No. 30 and No. 31) (see Figure 15.1 in Volume 4 of this EIAR) which are of medium sensitivity as there are no specialised equine facilities present (e.g., tracks and sand arenas etc.). There is one high sensitivity dairy farm (2.5%) (Ref No. 29) (see Figure 15.1 in Volume 4 of this EIAR). Overall, the sensitivity of the study area is medium.

Table 15.5: Farm Types and Sensitivity Within the Study Area

Enterprise Type	Number and Percentage within the Study Area	Sensitivity
Beef / sheep / mixed / grass cropping	18 (45%)	Medium (17) Low (1)
Tillage (and Tillage and Livestock)	18 (45%)	Medium (17) Low (1)
Dairy	1 (2.5%)	High
Equine	2 (5%)	Medium
Scrub	1 (2.5%)	Low

15.4 Potential Impacts

15.4.1 'Do Nothing' Scenario

In the Do Nothing scenario (i.e., in the absence of the Proposed Development), there would be no adverse impacts on agronomy and equine from the Proposed Development. The impact in the absence of the Proposed Development itself will be Neutral.

15.4.2 Construction Phase

A detailed description of the proposed construction works is provided in Chapter 4 (Proposed Development Description) in Volume 2 of this EIAR.

15.4.2.1 Potential Construction Phase Impacts Where Works are Entirely In-Road

The installation of the proposed underground cable circuit in-road will have potential impact on farms adjoining these works for a period of two to three months. This is based on a rate of construction of 40m to 50m per day. During the Construction Phase, the following potential impacts are likely to arise for the in-road sections:

- Construction dust, noise and movement:
    - The potential noise and dust impacts will arise from the movement of construction machinery and excavation and handling of soil materials. Deliveries of materials and construction machinery noises and movements have the potential to startle livestock in adjoining agricultural land. The likely impacts resulting from dust from in-road construction sites will result in very low magnitude impacts which will not have significant impacts on grazing livestock (including equines). Livestock (including equines) habituate to machinery and construction noises on farms without adverse impacts. Therefore, before mitigation, the magnitude of impact is assessed as very low and the potential impact from construction noise and movement is also assessed as Not Significant.
- Disturbance to land access in relation to farm machinery and livestock movements:
    - The potential impact will result from disturbance and delays caused to local traffic during the Construction Phase. This has the potential to change how farmers access their lands to carry out essential activities such as spreading of fertilisers and slurry and harvesting crops. There may be disturbance to the movement of livestock using transport vehicles and by walking along country roads (in order to access outlying grazing land or housing). This disturbance may arise more frequently on some dairy farms where cows may cross a public road to gain access to the milking parlour. While it is envisaged that there will be disturbance and inconvenience for several months due to traffic management on the public road network, the Construction Traffic Management Plan will commit to maintain effective access to agricultural land by farm machinery, transport lorries and livestock transport and movement. Therefore, before mitigation, the magnitude of impact is assessed as very low and the potential impact due to disturbance of land access is assessed as Not Significant.
- Disturbance to land drainage and water quality:
    - There is the potential for impacts to arise as a result of construction activities interfering with surface water runoff from or to adjoining agricultural lands. There is the potential to cause flooding if drainage is impeded. Where there is sediment or construction material runoff from the construction site, it has the potential to pollute water sources for livestock and potable water sources for farmyards and dwellings. Before mitigation, this potential impact is assessed as Not Significant. The risk from construction impacts on

potable and livestock water sources is very low. Intersection of land drains from adjoining agricultural land is unlikely during in-road construction.

- Other potential disturbance issues:
    - Where soil has been stored in heaps, there is the potential for weed propagation on the heaps and the spread of these weeds to adjoining agricultural land. This potential impact is assessed Not Significant and Short to Medium-Term; and
    - The removal of trees and hedgerow, at Passing Bays and along working areas, during the Construction Phase, will result in a reduction in available shelter. Removal of relatively short lengths of hedgerow across the working area (typically 30m in width) will result in potential impacts due to loss of shelter which are Not Significant.

Where the proposed cable installation and associated works is confined to in-road, there is no potential for impacts on agricultural land due to land take. Having assessed the effects of the works that are to be carried out entirely within the public road, there is no potential for significant pre mitigation impacts on agronomy and equine.

15.4.2.2 Potential Construction Phase Impacts Where Works are Off-Road and Located on Agricultural Land

The entire Construction Phase of the Proposed Development is expected to take three and a half years. During this period there will be construction activity for 60 to 90 days on any single land parcel. This is based on a rate of construction of 40m to 50m per day, with additional time required for the construction of proposed construction access tracks, cable jointing and energisation. During the Construction Phase, there is the potential for direct impacts to arise in 40 land parcels along the Proposed Development ,where works will be carried out in agricultural land (see Figure 15.1 in Volume 4 of this EIAR). In 29 of the land parcels identified in Appendix A15.1 in Volume 3 of this EIAR, there will be a permanent easement (ranging from 5m to 30m). The particular elements of the Proposed Development which will be constructed on agricultural land are as follows:

- A temporary construction working area will be in place across agricultural land. The width of this temporary construction working area (also referred to as a temporary construction swathe) will vary depending on the off-road section, and will range from 20m to 70m. Within this area there will be a proposed construction access route along the proposed cable trench. Where directional drilling is required (e.g. at some road crossings), additional working areas will be required. Temporary lay-down areas will be required for the delivery of material to the construction site;
- An underground cable trench, approximately 1.5m in width and 1.8m in depth containing the proposed underground cable circuit, will be excavated and back-filled. Joint Bays, communication chambers and link boxes will be located at average intervals of approximately 750m along the proposed cable route. These elements will be contained in co-located precast concrete boxes. The Joint Bay box will measure approximately 10m long, 2.5m wide and 2.5m deep. The communication chamber and link boxes will be approximately 2m long and 2m wide. Permanent access tracks (4m wide) will be constructed to access Joint Bays in 13 land parcels (Ref No 2, 3, 4, 11, 12, 20, 22, 23, 33, 34, 37, 39 and 40). Within the working areas, temporary access tracks (5m wide) will be constructed adjoining the trench in agricultural land;
- Six temporary Horizontal Directional Drilling (HDD) Compounds will be constructed for storage of machinery and materials at the three motorway crossing points (M3, M3 and M1 Motorways) in land parcel Ref No. 10, 11, 23, 24, 31 and 33;
- TCCs (six to be located in agricultural land parcels (Ref No. 4, 9, 21, 27, 33 and 40) (see Figure 15.1 in Volume 4 of the EIAR) are required for storage of construction materials, plant and equipment, in addition to office accommodation, vehicle parking and welfare facilities for the duration of the Construction Phase (approximately 39 months); and

- There will be Passing Bays located on agricultural land in land parcel Ref No. 5, 7, 15, 19, 25, 26, 28 and 30 (see Figure 15.1 in Volume 4 of the EIAR). These are areas adjoining the public road adjacent to the location of a Joint Bay in the road. A road surface is constructed on this area to maintain traffic movements along the road when it would otherwise be closed to traffic as a result of Joint Bay construction, cable pulling and jointing at the Joint Bay. These areas will be used for the Construction Phase after which they will be reinstated and returned to agricultural use.

During the Construction Phase, the following impacts will arise for off-road sections:

- Disturbance and damage to land:
  - Temporary land take will be required along the working area and at the sites of the TCCs and HDD Compounds, at stream, river and road crossings, and at traffic Passing Bays. The temporary construction working area and Passing Bays are proposed to be fenced off for a maximum period of three and a half years, potentially impacting on five cropping years and reducing land available for grazing, forage production and cropping. The TCCs and HDD Compounds will be fenced off for a period of approximately 39 months, potentially impacting on five cropping years. The excavation of a 1.5m wide trench, stripping of topsoil and movement of heavy machinery will disturb the soil structure and natural drainage. It is likely that the trench will intersect with land drains from adjoining agricultural land and this will interfere with land drainage. Without mitigation, the damage to land will have a medium to long-term impact (i.e. greater than 15 years) on areas that are directly disturbed. Based on the small areas of land parcels affected by the Proposed Development and the medium to long-term duration of the impact, the potential impacts, before mitigation, due to damage to land and soil structure range from Not Significant to Slight Adverse;
  - Where the working areas cross agricultural land, severance of services such as pasture water pipes and power cables (electric fencing) may necessarily occur. Such severance of services will be temporary and the likely impacts, before mitigation, are anticipated to range from Not Significant to Slight Adverse; and
  - Before mitigation, there is the potential for the spread of soil borne diseases and noxious weeds due to excavation, movement and storage of topsoil. Where construction machinery will cross farm boundaries, there is the potential for the spread of farm diseases (e.g. Tuberculosis). Before mitigation, these likely impacts are assessed as Not Significant.
- Construction dust, noise and movement:
  - There is the potential for noise and dust impacts to arise from the movement of construction machinery and excavation and handling of soil materials. Deliveries of materials and construction machinery noises and movements have the potential to startle livestock in adjoining agricultural land. The likely potential impacts resulting from dust from off-road construction sites will not have a significant impact on grazing livestock (including equines). Livestock (including equines) habituate to machinery and construction noises on farms without adverse effects. Therefore, before mitigation, the potential impact from construction dust, noise and movement is assessed as Not Significant.
- Disturbance to land access in relation to farm machinery and livestock movements:
  - In addition to disturbance on the local road network, the construction of the proposed underground cable circuit on agricultural land will interfere with access within farms. The working areas will be fenced off for a maximum period of three and a half years and this will result in potential severance of land in 12 land parcels (Ref No. 4, 9, 13, 15, 20, 33, 34, 36, 37, 38, 39 and 40). This will potentially impact how farmers move livestock and access their lands to transport farm produce and inputs, and to carry out essential

activities such as spreading of fertilisers and slurry and harvesting crops. Parts of fields adjoining the proposed working areas (e.g., the corners of fields) may be too small to farm effectively with large farm machinery. Before mitigation, this disturbance to land access will result in impacts that range from Not Significant to Significant Adverse.

- A reduction in farmed areas during the Construction Phase will impact on farmer's ability to adhere to the terms and conditions of Department of Agriculture, Food and the Marine area-based schemes. For example, a reduction in area farmed is likely to increase the organic nitrogen stocking rate on a farm potentially resulting in non-compliance with nitrates regulations and resulting in financial penalties. A reduction in area in land assigned to environmental scheme options is likely to result in financial penalties.
- Disturbance to land drainage and water quality:
    - There is the potential for impacts to arise as a result of construction activities interfering with surface water runoff from or to adjoining agricultural lands and interference with land drainage. Severing land drains would impede drainage and possibly cause flooding in adjoining land. Where there is sediment or construction material runoff from the construction site, it has the potential to pollute water sources for livestock and potable water sources for farmyards and dwellings. The construction of Joint Bays on agricultural land may potentially sever or block land drainage systems. The intersection of land drains from adjoining agricultural land is likely during off-road construction. The risk from construction impacts on potable and livestock water sources is very low as in the majority of cases livestock with drink water from piped water sources and from water troughs. Before mitigation, the potential impact is assessed as Not Significant to Moderate Adverse.

Before mitigation, the Construction Phase impacts range from Not Significant to Significant Adverse, as follows:

- There is one Significant Adverse impact assessed on land parcel No. 33 (medium sensitivity) This impact will arise as the access from the farmyard to the remainder of the farm will be severed by a TCC (TCC5) and damage to land will occur on 25% of the land parcel due to working areas and TCC5;
- There are six Moderate Adverse impacts assessed in land parcel No. 9, 35, 36, 37, 38 and 40. These are medium sensitivity land parcels, except for No. 40 which is low sensitivity. There will be TCCs on land parcels No. 9 and 40 (TCC2 and TCC6). The Moderate Adverse impacts will arise due to severance of agricultural land and damage to land and soil, except in land parcel No. 35 where there will be no severance and only damage to land and soil;
- There are 12 Slight Adverse impacts assessed in land parcels No. 4, 7, 12, 13, 20, 21, 22, 24, 26, 32, 34 and 39. Land parcel No. 21 is low sensitivity and the remainder are medium sensitivity. There will be TCCs in land parcels No. 4 and 21 (TCC1 and TCC3). There will be severance of land in land parcel No. 4, 13, 20, 34 and 39; and
- There are 21 Not Significant impacts assessed for land parcels No. 1, 2, 3, 5, 6, 8, 10, 11, 14, 15, 16, 17, 18, 19, 23, 25, 27, 28, 29, 30 and 31.

The detailed assessments of land parcels is provided in Appendix A15.1 in Volume 3 of this EIAR.

15.4.3 Operational Phase

During the Operational Phase, there is the potential for impacts to arise as a result of the following:

- Permanent easement and land take:
    - Where the proposed cables will occur on agricultural land, there will generally be a permanent 5m wide easement above the cable trench (a wider easement will be required on certain land holdings for proposed permanent access tracks and Joint Bays, HDD splayed sections and other features, specifically extended to 15m wide in the Woodland

Corridor (between Woodland Substation and the R156 Regional Road) and 30m wide between the M1 Motorway and Belcamp Substation). This easement will cross agricultural land (29 land parcels, as outlined in Appendix A15.1 in Volume 3 of this EIAR), for approximately 10km, directly affecting an estimated 18.7ha of land at the following locations; approximate Chainage 300 to Chainage 3,650, Chainage12,550 to Chainage 13,200, Chainage 15,800 to Ch16,450, Chainage 18,175 to Chainage18,250, Chainage 19,150 to Chainage 19,350, Chainage 19,725 to Chainage 19,775, Chainage 20,500 to Chainage 20,575, Chainage 21,300 to Chainage 22,600, Chainage 23,300 to Chainage 23,650 , Chainage 26,150 to Chainage 26,250, and Chainage 34,100 to Chainage 37,650 (see Figure 15.1 in Volume 4 of the EIAR);

- The cover of the Joint Bay will be located at the surface of the field and will restrict activities such as ploughing and agricultural production at the site of the Joint Bay. There will also be a hardstanding area around each Joint Bay which will permanently restrict agricultural production and interfere with field operations such as mowing of grass and ploughing. There will be 15 Joint Bays located on 13 agricultural land parcels (Ref No. 2, 3, 4, 11, 12, 17, 20, 22, 23, 33, 34, 37 and 39). Each Joint Bay and surrounding hard standing area will have a maximum footprint of approximately 0.025ha of land;
- Trees and hedgerow will be permanently removed during the Construction Phase along the temporary working area (ranging from 20m to 70m), at Passing Bays and adjoining in-road construction areas. Before mitigation, this will have an impact on shelter during the Operational Phase which is Not Significant; and
- An estimated 4km of permanent access tracks (4m wide equalling 1.6ha) will be located at the following locations (refer also to Figure 15.1 in Volume 4 of this EIAR); Chainage 800 to Chainage 3,650, Chainage 13,100 to Chainage 13,200, Chainage 15,800 to Chainage 15,900, Chainage 21,300 to Chainage 21,400, Chainage 22,050 to Chainage 22,125, Chainage 22,600, Chainage 23,300, Chainage 34,650 to Chainage 34,850, Chainage 35,450 to Chainage 35,500, Chainage 36,150, Chainage 36,950 to Chainage 37,650. These will be located in 13 land parcels (Ref No. 2, 3, 4, 11, 12, 20, 22, 23, 33, 34, 37, 39 and 40) where the tracks will interfere with field operations such as mowing of grass and ploughing. Before mitigation, the impacts from the proposed permanent access tracks will be Not Significant to Slight Adverse. The permanent easement will not be fenced off. Farmers will therefore still be able to use the land within the easement for agricultural purposes, with the exception of relatively small areas associated with the Joint Bays and permanent access tracks. The pre mitigation impact of permanent easement and land take are assessed as Not Significant to Slight Adverse.

- Permanent disturbance:
  - The presence of the proposed cable circuit below-ground level will potentially impede activities such as land drainage. There will be at least 1,000mm of soil above the proposed underground cable circuit. This will facilitate activities such as ploughing. The proposed underground cable circuit will be housed in concrete structures and will potentially impact on the productivity of land at their locations. There will be approximately 10km of proposed underground cable circuit located on agricultural land with a below the surface footprint of approximately 1.5ha of land;
  - While the proposed cable route will not cross existing commercial forestry, future land use such as commercial forestry and tree planting will be set back from the proposed cable route. The set back distances will be agreed between EirGrid and the ESB and affected landowners on a case-by-case basis depending on what tree species are planted. Please see Chapter 18 (Landscape and Visual) in Volume 2 of this EIAR for further details on tree and hedgerow planting;
  - Building agricultural buildings in close proximity to the proposed cable circuit will also be subject to restrictions and agreement from the ESB;

  - The proposed cable circuit will require routine maintenance along its entire length. Inspection vehicles and personnel will access Joint Bays, link boxes and communications chambers on an annual basis for inspection and for any necessary maintenance. This has the potential to cause damage to field surfaces and disturbance to livestock; and
  - There will be cable markers located in field boundaries crossed by the Proposed Development. This has the potential to disturb hedgerow trimming / cutting operations. Before mitigation, the impact from permanent disturbance discussed above will range from Not Significant to Slight Adverse.
- Electric and Magnetic Fields (EMF):
  - The food quality standards written by Bord Bia for Beef and Lamb (Sustainable Beef and Lamb Quality Assurance Scheme), Milk (Sustainable Dairy Assurance Scheme) and Cereals (Irish Grain Assurance Scheme) and Farm Animal Welfare Advisory Council Guidelines for calf, dairy herds, cattle, sheep horses and pigs (Department of Agriculture, Food and the Marine 2020) do not refer to EMF, and therefore, EMF are not likely to have significant impacts on food quality. Before mitigation, the potential impact as a result of EMF is therefore assessed as Not Significant.

The following Operational Phase potential impacts are likely to arise, before the implementation of mitigation measures:

- There are two Moderate Adverse impacts assessed in land parcel No. 33 and 40 (No. 33 is a medium sensitivity land parcel and No. 40 is a low sensitivity land parcel). The Moderate impact will arise in land parcel No. 33 due to the medium to long-term damage to land and soil due to the presence of the TCC (TCC5) during the Construction Phase and due to the high degree of land take in land parcel No. 40;
- There are seven Slight Adverse impacts assessed in land parcel No. 3, 4, 9, 21, 22, 35 and 37. Land parcel No. 21 is low sensitivity, land parcel No. 22 is high sensitivity (equine) and the remainder of land parcels are medium sensitivity. These impacts will arise due to the damage to land and soil at the site of TCCs (TCC1, TCC2 and TCC3) and along the working areas during the Construction Phase in land parcel No. 4, 9 and 21. In the case of land parcel No. 3, 22, 35 and 37, the Slight Adverse impacts will arise from the permanent land take / easement; and
- There will be 31 Not Significant impacts for land parcels No. 1, 2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38 and 39.

15.5 Mitigation and Monitoring Measures

15.5.1 Construction Phase

The following mitigation measures will be implemented during the Construction Phase to address the impacts on agronomy and equine:

- The appointed contractor will be required to maintain close liaison with local community representatives and landowners and farmers to provide them with adequate progress information and advance notice of works. This will ensure that construction activities are planned around the reasonable access needs of the landowner, so that access is maintained when required by the landowner for farming activities, such as for example, forage and crop harvesting, fertiliser spreading, slurry spreading, and herding of livestock etc. Scheduling of works will be agreed with each landowner to facilitate the operation of the farm and minimise disturbance. Where it is necessary to move livestock along public roads or across the working area, this will be facilitated by the appointed contractor;
- Landowners with lands adjoining sites, if rock breaking is required to take place, will be notified in advance of these activities;

- Traffic mitigation measures outlined in Chapter 14 (Traffic and Transport) in Volume 2 of this EIAR and any associated traffic management plans will be implemented to ensure that farmers and agri-business owners have adequate access to farmyards and land so that the transport of farm inputs and produce is not significantly affected;
- Mitigation measures for the control of dust, as set out in Chapter 7 (Air Quality) in Volume 2 of this EIAR will be implemented by the appointed contractor;
- Mitigation measures for the control and monitoring of noise and vibration as set out in Chapter 9 (Noise and Vibration) in Volume 2 of this EIAR will be implemented by the appointed contractor;
- Mitigation measures for the control and monitoring of water quality, as set out in Chapter 12 (Hydrology) in Volume 2 of this EIAR will be implemented by the appointed contractor;
- The appointed contractor will comply with any regulations pertaining to the control of farm diseases as specified by the Department of Agriculture, Food and the Marine and will employ reasonable precautions against spreading any such farm disease. The appointed contractor will operate a biosecurity plan where machinery and personnel that are moving between farms will have adequate available disinfection facilities and equipment to ensure that disinfection can take place as required. The ESB and / or its appointed contractor will also take due notice and consideration of reasonable concerns expressed by landowners or occupiers prior to entry;
- Where field boundaries are to be affected, replanting and fencing will be used to ensure that the boundaries are maintained between landowners and within existing field systems. Therefore, no permanent restructuring will occur. Hedgerows will be replanted with species-rich varieties and with suitable fit for purpose fencing in-line with Teagasc and the Department of Agriculture, Food and the Marine guidelines. However, technical considerations may limit planting above the proposed underground cable circuit. Where replanting is not feasible, suitable fit for purpose stockproof fencing will be provided with standard agricultural gates provided where required. Access between landowners will not be provided except where required on the joint bay access tracks (e.g. between Chainage 700 and 3,400 for the permanent access track to Joint Bay 1 to 4). Double gates will be provided at field boundaries between landowners on these permanent access tracks. The gates will be locked and maintained by ESB with no access provided to the landowner. Double fencing will be provided between separate landowners to maintain biosecurity between adjoining farms;
- Where the working area severs land access or access to farmyards, the appointed contractor will ensure that there is adequate access provided to facilitate the farmer to effectively farm severed land; and
- The appointed contractor will adhere to the mitigation specified in this EIAR (refer to Chapter 21 (Summary of Mitigation and Monitoring Measures) in Volume 2 of the EIAR, and the Construction Environmental Management Plan (CEMP) which is included as a standalone document in this planning application pack. Following the mitigation measures employed for the reinstatement of land (bullet points hereunder) the potential long-term (>15 years) damage to soil at the working areas will be reduced to medium-term (7-15 years), and the damage to land and soil at the TCCs and HDD Compounds will remain long-term. The appointed contractor will:
    - Maintain pre-entry records;
    - Erect fit for purpose livestock proof fencing to prevent straying livestock;
    - Maintain and repair existing field drainage systems to restore the drainage of land to the condition that prevailed before the proposed works;
    - Store soil separate from the works traffic ensuring minimum amount of damage and disturbance to excavated soil material;
    - Reinstate the land so that it is level and surface is free of stones and weeds; and

- Treat soil compaction by breaking up the soil to the required depth to address such compaction.

Once construction works are complete, the appointed contractor will implement the following mitigation measures:

- The drainage reinstatement will not impede the drainage of surrounding agricultural lands, and where land drains have been intersected or blocked during construction, these will be reconnected or diverted to a suitable outflow; and
- Field boundaries (hedgerows and fencing) removed during the Construction Phase will be replaced with fit for purpose stock proof fencing and hedgerows. However, hedgerows will not be replaced directly along the easement where they are permanently removed.

15.5.2 Operational Phase

The following mitigation and compensatory measures will be implemented during the Operational Phase to address the impacts on agronomy and equine:

- The loss of agricultural land due to the construction of the Proposed Development will be a permanent loss which cannot be mitigated, except through compensation. Restriction of Common Agricultural Policy (CAP) payments, farmyard building, commercial forestry and commercial tree planting will be addressed by compensation, where applicable; and
- Routine maintenance and inspection of cable infrastructure will be notified in advance to minimise disturbance to livestock and farm enterprises, where possible. If faults occur, excavation of soil may be required, resulting in disturbance and crop loss. The risk of such faults is low, and therefore, the frequency of this type of disturbance is very low.

15.6 Residual Impacts

The Construction and Operational Phases of the Proposed Development which will be located entirely in-road (i.e., within the public road network) will not significantly affect agronomy (including equine). Therefore, there is only the potential for significant impacts to arise on the 40 land parcels where the Construction Phase of the Proposed Development will occur off-road (see Figure 15.1 in Volume 3 of this EIAR).

15.6.1 Construction Phase

As discussed in Section 15.4.2.2, before mitigation, there will be one Significant Adverse impact, six Moderate Adverse impacts, 12 Slight Adverse impacts and 21 Not Significant impacts due to the Construction Phase.

Following mitigation, residual impacts will remain as a result of disturbance impacts due to temporary severance and damage to land and soils. Damage to soil structure will occur in the medium-term (7 to 15 years) in the working areas used to lay the proposed underground cable circuit, and in the medium to long-term (>15 years) at the sites of six TCCs (TCC1, TCC2, TCC3, TCC4, TCC5 and TCC6). These residual impacts, which have been assessed following the implementation of mitigation measures, will occur during the Construction Phase and are as follows:

- There are two Moderate Adverse impacts on land parcel No. 33 and 40, due to the anticipated large area of damage to land and soil at the sites of the TCCs (TCC5 and TCC6) and working areas. The pre-mitigation impact was also Moderate Adverse;
- There will be five Slight Adverse impacts that will arise from the Construction Phase, due to remaining disturbance impacts due to severance and damage to land and soils. These residual impacts will occur in land parcel No. 9, 21, 22, 35 and 37; and

- There will be 33 Not Significant residual impacts due to the Construction Phase on land parcel No. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38 and 39.

These impacts are also summarised in Table 15.6.

Table 15.6: Summary of Residual Construction Phase Impacts on Land Parcels within the Study Area

Impact Level	No. Within the Study Area		No. Within the Study Area with Permanent Easements or Land Take (Post-Mitigation)
	Pre-Mitigation	Post-Mitigation	
Not Significant	21 (50%)	33 (825%)	23 Ref No. 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 27, 31, 34, 36, 38, 39
Slight Adverse	12 (30%) Ref No. 4, 7, 12, 13, 20, 21, 22, 24, 26, 32, 34, 39	5 (12.5%) Ref No. 9, 21, 22, 35, 37	4 Ref No. 21, 22, 35, 37
Moderate Adverse	6 (17.5%) Ref No. 9, 35, 36, 37, 38, 40	2 (5%) Ref No. 33, 40	2 Ref No. 33, 40
Significant Adverse	1 (2.5%) Ref No 33	-	-
Very Significant Adverse	-	-	-
Profound Adverse	-	-	-
Total	40	40	29

There are two high sensitivity land parcels in the study area (Ref No. 22 is equine and Ref No 29 is dairy). The residual impact from the Construction Phase on Ref No. 29 is assessed as Not Significant and the residual impact on Ref No. 22 is assessed as Slight Adverse, due to damage to land and soil. A more detailed assessment of individual land parcel residual impacts is provided in Appendix A15.1 in Volume 3 of this EIAR.

15.6.2 Operational Phase

As discussed in Section 15.4.3, before mitigation, there will be two Moderate Adverse impacts, seven Slight Adverse impacts and 31 Not Significant impacts due to the Operational Phase of the Proposed Development.

Following mitigation, residual impacts will remain due the presence of the permanent easement, permanent land take and permanent access tracks, and long-term damage to land at the construction sites. These residual impacts will occur during the Operational Phase and are as follows:

- There are two Moderate Adverse impacts assessed due to the long-term damage caused to land and soil in land parcel Ref No. 33 and 40;
- There will be seven Slight Adverse impacts arising from permanent land take, permanent access tracks, and long-term damage to land and soils. These residual impacts will occur in land parcel Ref No. 3, 4, 9, 21, 22, 35 and 37; and
- There will be 31 Not Significant residual impacts due to the Construction Phase on land parcel No. 1, 2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38 and 39.

These impacts are also summarised in Table 15.7 .

Table 15.7: Summary of Residual Operational Phase Impacts on Land Parcels within the Study Area

Impact Level	No. Within the Study Area		No. Within the Study Area with Permanent Easements or Land Take (Post-Mitigation)
	Pre-Mitigation	Post-Mitigation	
Not Significant	31 (77.5%)	31 (77.5%)	21 Ref No 1, 2, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 27, 31, 34, 36, 38, 39
Slight Adverse	7 (17.5%) Ref No 3, 4, 9, 21, 22, 35, 37	7 (17.5%) Ref No 3, 4, 9, 21, 22, 35, 37	6 Ref No 3, 4, 21, 22, 35, 37
Moderate Adverse	2 (5%) Ref No 33, 40	2 (5%) Ref No 33, 40	2 Ref No 33, 40
Significant Adverse	-	-	-
Very Significant Adverse	-	-	-
Profound Adverse	-	-	-
Total	40	40	29

15.6.3 Residual Impacts on the Study Area and Regional Effects

Forty agricultural land parcels will be directly affected by the Proposed Development, as shown in Figure 15.1 in Volume 4 of this EIAR. These land parcels have a combined area of 1,278ha (this is the sum of the areas of land parcels presented in Appendix A15.1 in Volume 3 of this EIAR). The total area required for the construction of the Proposed Development will be approximately 58.5ha of temporary land take for the construction duration of approximately 42 months. Within this temporary area there will be a permanent easement of approximately 18.7ha, approximately 1.6ha of permanent access tracks and approximately 0.4ha of new concrete surface (Joint Bays). The area of concrete structures beneath the soil surface (i.e., the proposed underground cable circuit) will be approximately 1.5ha. The temporary land take represents approximately 4.6% of the study area and the permanent easement and areas where there is a permanent restriction on agricultural productivity represent approximately 1.5% of the study area. These area reductions represent a low magnitude of impact. The majority of individual residual impacts are within the Not Significant and Slight Adverse impact categories (95% as outlined in Table 15.7), indicating a low level of impact on the study area overall. Therefore, the overall impact on the study area agronomy and equine along the Proposed Development will be Not Significant.

The agricultural land take required for the entire Proposed Development will be approximately 58.5ha and the majority of this will be temporary land take with medium-term impacts. The total area (permanent and temporary) represents 0.02% of the combined agricultural area of County Meath (197,366ha) and County Dublin (33,041ha) (CSO 2020). Impacts on these small areas are therefore assessed as Not Significant at a regional level.

15.7 Conclusion

There are no Significant, Very Significant Adverse or Profound impacts assessed as a result of the Construction or Operational Phases of the Proposed Development.

Significant impacts on agronomy and equine will not arise during the Construction Phase where the Proposed Development is constructed in-road. The study area is comprised of 40 land parcels, where construction will take place on agricultural land and where there will be permanent easements or land take required for the proposed underground cable circuit, access roads, TCCs and HDD Compounds, Passing Bays and Joint Bays. Of these 40 land parcels, Significant Adverse impacts are only likely to arise during the Construction Phase. The permanent disturbance impacts due to the operation of the Proposed Development are assessed as Not

Significant. The residual impacts, following the implementation of applicable mitigation measures, are summarised as follows:

- Thirty- one land parcels are assessed as having a Not Significant residual impact;
- Seven land parcels are assessed as having Slight Adverse residual impacts. These impacts will arise due to medium and long-term damage caused to soil structure and permanent land take and temporary disturbance on relatively small areas of the affected land parcels;
- Two land parcels are assessed as having an Moderate Adverse residual impact (Ref No. 33 and 40). These impacts will arise due to permanent land take and temporary disturbance on small areas of the land parcels and the long-term damage to soil structure caused at TCCs (TCC5 and TCC6); and

There are two high sensitivity enterprises within the study area (No. 22 and 29).The residual impact on land parcel No. 22 is assessed as Slight Adverse due to permanent land take, and disturbance and the impact on land parcel No. 29 is assessed as Not Significant. The overall residual impact on the agronomy and equine study area is assessed as Not Significant due to 77.5% of all directly affected land parcels having a Not Significant residual impact and 17.5% of all directly affected land parcels having a Slight Adverse residual impact. The Proposed Development construction works will affect less than 4.6% of the area of these land parcels.

The Proposed Development will have direct impacts on 0.02% of the agricultural area of County Meath and County Dublin. The residual impact on agriculture within this region is therefore assessed as Not Significant.

15.8 References

CSO (2010). Census of Agriculture 2010

CSO (2020). Census of Agriculture 2020

CSO (2022). Crops and Livestock Survey Final Results June 2022

EirGrid (2014). Your Grid, Your Views, Your Tomorrow – Responding to Equine Concerns

EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Google Earth (2023). Aerial photography and mapping. (Accessed August – December 2023).

PRA (2023 Accessed August – December 2023). Land Registry mapping. [Online] Available from www.prai.ie

Teagasc 2012 – 2022; Various Grass Yield References; Ballyhaise Grass Yields 2008 – 2012 https://www.teagasc.ie/media/website/publications/2012/Brendan_Horan_DairyConference2012; Ballyhaise Grass Yields 2010 – 1017; Ballyhaise Open Day Booklet (2018) available at https://www.teagasc.ie/publications/2022/ballyhaise-22-open-day.php, Ballyhaise Grass Yields 2011 – 2020 from Ballyhaise Dairy Research Farm; available at; https://www.teagasc.ie/media/website/publications/2022/Ballyhaise-Dairy-Research-Farm.pdf

Teagasc (2023). Irish Soils Information System [Online]Available from http://gis.teagasc.ie/soils/ (accessed September 2023)

UCD (2022). UCD Lyons Systems Herd Annual Report 2022. [Online] Available from https://www.ucd.ie/lyonsfarm/t4media/UCD%20Systems%20Herd%20Annual%20Report%202022%20Final%20Published%20.pdf