
Chapter 16
Material Assets:
Agricultural Properties

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16. MATERIAL ASSETS: AGRICULTURAL PROPERTIES

16.1 Introduction

This chapter of the EIA assesses the impact of the proposed DART+ West project (hereafter referred to as 'the proposed development') on agricultural property during the construction and operation phase. This chapter describes and assesses the likely direct and indirect significant impacts of the proposed development on agricultural property. This chapter sets out the methodology used to undertake the assessment (Section 16.3), describes the existing environment (Section 16.4), examines the predicted impacts of the proposed development (Section 16.5), proposes mitigation measures (Section 16.6) and identifies residual impacts (Section 16.7).

Other impacts on Material Assets are also addressed throughout this EIA, most particularly in the following chapters

- Chapter 7 Population.
- Chapter 10 Water (including Hydrology & Flood Risk).
- Chapter 11 Hydrogeology.
- Chapter 12 Air Quality.
- Chapter 14 Noise and Vibration.
- Chapter 15 Landscape and Visual Amenity.
- Chapter 17 Material Assets: Non-agricultural Properties.
- Chapter 21 Architectural Heritage.
- Chapter 23 Human Health.

16.2 Legislation, policy and guidance

16.2.1 Legislation

Córas Iompair Éireann is applying to An Bord Pleanála for a Railway Order for the DART+ West project under the Transport (Railway Infrastructure) Act 2001 (as amended and substituted) ("the 2001 Act") and as recently further amended by the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 in Statutory Instrument No. 743/2021 ("the 2021 Regulations"). The purpose of the 2021 Regulations was to give further effect to the transposition of the EIA Directive (EU Directive 2011/92/EU as amended by Directive 2014/52/EU) on the assessment of the effects of certain public private projects on the environment by amending the 2001 Act. This agricultural impact assessment has been undertaken in accordance with these requirements.

16.2.2 Policy

Relevant policy documents that have informed this chapter include:

- Dublin City Development Plan 2016-2022.
- Draft Dublin City Development Plan 2022-2028.
- Fingal Development Plan 2017-2023.
- Draft Fingal Development Plan 2023-2029.
- Kildare County Development Plan 2017-2023.
- Draft Kildare County Development Plan 2023-2029.
- Meath County Development Plan 2021-2027.
- North Lotts and Grand Canal Dock Strategic Development Zone Planning Scheme 2014.
- Ashtown – Pelletstown Local Area Plan 2014.
- Barnhill Local Area Plan 2019.
- Collinstown LAP 2010.

- Dunboyne, Clonee, Pace LAP 2009.
- Hansfield Strategic Development Zone Planning Scheme 2006.
- Kellystown Local Area Plan, January 2021.
- Leixlip Local Area Plan 2020-2023.
- Maynooth Local Area Plan 2013-2019.
- Pelletstown Local Area Plan 2014.

16.2.3 Guidance

There are no guidelines that are specific to the assessment of the impact on agricultural property. In line with best practice, the assessment and appraisal of the impact on agriculture was prepared with regards to the following guidance documents:

- European Commission (2017), *Environmental Impact Assessment of Projects-Guidance on Scoping* (Directive 2011/92/EU as amended by 2014/52/EU).
- European Commission (1999), *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*.
- Environmental Protection Agency (EPA) (2002), *Guidelines on the information to be contained in Environmental Impact Statement*.
- Environmental Protection Agency (EPA) (2003), *Advice notes on current practice in the preparation of Environmental Impact Statement*.
- Environmental Protection Agency (EPA) (2015) *Environmental Protection Agency Advice Notes for Preparing Environmental Impact Statements*.
- National Roads Authority (NRA) (2008), *Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1)*.
- Environmental Protection Agency (EPA) (2022), *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*.
- Transport Infrastructure Ireland (TII), *Project Management Guidelines*.
- Iarnród Éireann project management guidelines.

16.3 Methodology

16.3.1 Study Area

The study area for this assessment comprises of the agricultural property directly impacted by the proposed development.

16.3.2 Survey methodology

The methodology for the assessment of the significance of impact on agriculture is comprised of a desktop review of project mapping and information. Subsequently, a desktop-based survey of the areas potentially impacted by the proposed development has been undertaken and, where necessary, detailed farm surveys involving direct landowner consultation and walkover farm surveys.

Following the completion of the desktop survey, a total of 18 agricultural properties were identified that would require a landowner consultation meeting.

The baseline environment and impact assessment relied on information from several sources as outlined in Table 16-1.

Table 16-1 Information sources

Information	Source
Land registry / landownership information	Property Registration Authority of Ireland (PRAI) & landowner consultation.
Land use, farm details	Roadside surveys, landowner consultations & walkover farm surveys.
Agricultural statistics	National census of agriculture statistics derived from the June 2010 census of agriculture (Central Statistics Office, 2012). Farm Structure Survey 2016 (Central Statistics Office, 2016).
Soils information	Irish National Soils Map, 1:250,000k, V1b (2014). Teagasc, Cranfield University (EPA, 2014). Creamer, R. "Irish SIS Final Technical Report 13: Irish Soil Information System Legend" (EPA, 2014).
Planning and zoning objectives	Dublin City Development Plan 2016 – 2022 Draft Dublin City Development Plan 2022 - 2028 Fingal Development Plan 2017 – 2023 Draft Fingal Development Plan 2023 - 2029 Kildare Development Plan 2017 – 2023 Draft Kildare Development Plan 2023 - 2029 Meath Development Plan 2021- 2027 Maynooth LAP 2013-2019, Collinstown LAP 2010, Leixlip LAP 2020-2023, Dunboyne, Clonee, Pace LAP 2009
Project design mapping & project information, draft Railway Order land acquisition mapping and schedules.	IDOM

Farm surveys involved on-site meetings with agricultural property owners, walk-over surveys of affected lands and the completion of detailed farm questionnaires. In addition, equine farm holdings have been assessed by an equine specialist, Mr. Michael Sadlier, in line with the above methodology.

Farm surveys of the affected lands have enabled an assessment of the impact of the proposed development and the exploration of possible mitigation measures necessary to alleviate negative effects.

16.3.2.1 Evaluation of the baseline environment

The baseline environment for agricultural property was evaluated on an individual property basis and assigned a baseline rating. This baseline rating combined with a magnitude of impact from construction and operational effects associated with the proposed development will determine the significance of the agricultural impact.

Baseline Rating

Farm holdings within the study area were assigned a baseline rating which is determined by the farm type, farm size, land quality, sensitivity to construction and operational effects and any existing adverse effects. This information was sourced from landowner consultations and walkover surveys on farm holdings directly affected by the proposed development.

Farm type influences the degree of the baseline rating with higher ratings for specialist farm types or enterprises that consist of the breeding or farming of high value livestock. Enterprises that are farmed at an intensive level, such as dairying i.e., with a high stocking rate, and indoor farm enterprises such as pig or poultry farms are indicative of a high baseline rating. Equine farms that consist of breeding or training of high value bloodstock or are involved in equine activities considered sensitive to development works are indicative of a high baseline rating. Tillage-based and horticultural farm enterprises are also indicative of a high baseline

rating. Less intensive farm enterprises such as beef and sheep farms are generally indicative of a medium baseline rating.

Larger farm holdings or single unit farms will allow for greater scale of production and are indicative of a high baseline rating. Farms that are smaller or fragmented in structure are generally indicative of a medium baseline rating.

Land quality on a farm holding will determine farm productivity and lands of good quality will be indicative of a high baseline rating. Farms with lands that are limited in agricultural usage due to soil type, topography or drainage will be indicative of a medium or low baseline rating.

The sensitivity of some farm enterprises to the effects of construction and/or operational effects of the proposed development will influence the baseline rating of farm holdings. Such farms will include specialist dairy farms and specialist equine farms. Dairy farms are sensitive to effects that will reduce available grassland area and existing access to the milking platform, i.e., access for dairy cows between the farmyard and the grazing paddocks. Equine farms involved in the breeding and training of horses or in activities requiring interaction with horses are considered sensitive to effects such as noise, dust and visual effects associated with development works.

The determination of a baseline rating may also be influenced by existing adverse effects such as the proximity of the lands to urban areas and the zoning of lands.

Baseline Rating Criteria

The criteria used to determine the baseline rating for the farm holdings on the proposed development are shown in Table 16-2. The criteria for each of the baseline ratings have been developed in consideration of the relevant EPA guidelines on describing the existing environment.

Table 16-2 Baseline rating criteria

Rating	Criteria
High	Intensively managed farm enterprises on good quality lands. Specialist dairy enterprises or farm enterprises involved in the breeding of high-quality livestock. Tillage enterprises on good quality lands. Mixed livestock and/or tillage enterprises on good quality lands. Agricultural lands used for research and education.
Medium	Livestock and / or tillage enterprises on medium quality lands. Agricultural lands of good quality leased for livestock or tillage production. Agricultural lands of good quality which is zoned or planning permission exists for non-agricultural purposes.
Low	Extensively managed farm enterprises on medium quality lands. Land parcels with limited agricultural capacity due to size or shape. Agricultural lands of medium or poor quality leased for livestock or tillage production. Lands under commercial forestry or woodland. Agricultural lands of medium quality which is zoned or planning permission exists for non-agricultural purposes.
Very low	Extensively managed livestock farm enterprises on poor quality lands. Unused agricultural lands of medium or poor quality. Agricultural lands of poor quality which is zoned or planning permission exists for non-agricultural purposes.

Impact Magnitude

Impacts on agricultural properties arising from construction and operation of the proposed development include:

- Land-take.
- Land severance.
- Impact on farm buildings / facilities.
- Other effects such as impacts on land drainage and services.

Land-take

The effect of agricultural land-take can be significant and the acquired area together with its location and duration will determine the magnitude of impact. The greater the area of land-take indicates a higher magnitude of impact. The area and location of land-take are often interlinked as land-take near a farmyard on a single unit farm will generally be of a greater magnitude than a similar area on a fragmented part of the farm holding. The duration of land-take can vary from permanent (greater than sixty years) to short term (one year to seven years). The degree of the magnitude of impact decreases with shorter durations.

The proposed development will involve temporary and permanent landtake from agricultural properties. The proposed depot will involve a significant level of landtake on some individual properties and associated compensatory storage areas.

Summary details of permanent landtake are presented in Section 16.5.2 and details of permanent land-take on individual properties are presented in Table 16-6.

Land Severance

The severance of lands is largely determined by the land-take location which can often result in more significant effects on farm holdings. Similarly to the effect of land-take, the area of severed lands, their location relative to remaining lands and the duration of severance will influence the magnitude of impact. The severance of a significant area or proportion of available land will indicate a high magnitude of impact. The severance of lands adjoining a farmyard, particularly an intensive farm such as a dairy farm, will have a higher magnitude of impact than the severance of lands at the external boundary of a farm. The permanent severance of lands will have a greater magnitude of impact than temporary severance.

The proposed development will result in land severance and restricted access to lands on some of the affected farm holdings. During the construction period, there may be temporary effects on access to both severed and remaining lands due to works involved and traffic diversions required for the construction of the proposed development and the associated junctions. Where severance of land occurs, mitigation measures may be necessary to restore access to lands.

Impact on Farm Buildings / Facilities

The impact of a proposed development on farm buildings or facilities is generally indicative of a medium to high magnitude of impact. The degree of magnitude will depend on the type and nature of farm buildings that are affected. Where animal housing and animal manure storage or fodder storage facilities are affected the degree of magnitude will be high. Farm buildings such as general-purpose sheds or animal handling facilities are indicative of a medium magnitude of impact. Other facilities such as the loss of natural shelter are indicative of a low to medium magnitude of impact.

The proposed development will not impact on facilities on agricultural properties.

Other Impacts such as Impacts on Land Drainage and Services

The construction activities on the proposed development may result in the disturbance of existing land drainage and the interruption of services such as water, power and other utilities. The magnitude of impact will be influenced by the type of disturbance and the duration involved. These impacts are generally of a temporary to short term duration being limited to the extent of construction works.

The proposed development will temporarily impact on the local drainage network and field drainage immediately adjacent to the proposed works area. There will be a temporary impact on water supply where existing connections to water mains are affected. There will be a temporary disruption of power supply (for agricultural fencing) where existing fencing is affected.

Magnitude of Impact Criteria

The criteria used to determine the magnitude of impact for the farm holdings on the proposed development are shown in Table 16-3. The criteria for each of the impact ratings have been developed in consideration of the relevant EPA guidelines on the assessment of impact.

Table 16-3 Magnitude of impact criteria

Rating	Criteria
Very High	<ul style="list-style-type: none"> The impact on the farm is such that the farm enterprise(s) cannot continue. Permanent land-take of such an area that the farm enterprise(s) is unworkable. Permanent land severance of such an area that the farm enterprise is unworkable. Essential farm buildings / facilities may be significantly impacted.
High	<ul style="list-style-type: none"> The impact on the farm is such that the farm enterprise(s) cannot continue without considerable management changes. Permanent land-take of such an area that the continued management of the farm enterprise will require considerable change. Permanent land severance of a nature that the continued management of the farm enterprise will require considerable change. Essential farm buildings / facilities may be directly or indirectly impacted.
Medium	<ul style="list-style-type: none"> The impact on the farm is such that the farm enterprise(s) can be continued as before but with increased management difficulties. Permanent land-take of such an area that the management of the farm enterprise(s) can be continued but with increased difficulties. Permanent land severance of a nature that the management of the farm enterprise(s) will require management changes. Farm buildings and/or farm facilities may be directly or indirectly impacted.
Low	<ul style="list-style-type: none"> The impact on the farm is such that the farm enterprise(s) can be continued as before with minor management changes. Permanent or short-term land-take of such an area that the farm enterprise(s) incurs minor difficulties as a result. Permanent or short-term land severance of a nature that the farm enterprise(s) will require minor management changes. Farm buildings / facilities would not be directly impacted. There may be indirect impacts. Temporary construction impacts.
Very Low	<ul style="list-style-type: none"> The impact on the farm is such that the farm enterprise can be continued as before or with temporary management changes. Temporary land-take of such an area without noticeable consequences. Permanent land-take of very small areas of land or of public roadbed only. Temporary land severance of a nature that the farm enterprise can be continued but with minor management changes. Farm buildings / facilities would not be directly impacted. There may be indirect impacts. Temporary construction impacts.

Significance of Impact

The significance of effect on an agricultural property is determined by the baseline rating of a farm holding combined with the magnitude of impact of the proposed development. There are four categories of baseline

rating ranging from 'very low' to 'high'. There are five categories of magnitude of impact ranging from 'very low' to 'very high'. The likely significance rating is determined by reference to the matrix in Table 16-4 using the baseline rating and magnitude of impact. The likely significance of effect is prior to the implementation of any mitigation measures.

Table 16-4 Significance of effect

Baseline	Magnitude of impact				
	Very high	High	Medium	Low	Very low
High	Profound	Significant	Moderate	Slight	Not significant
Medium	Very significant	Significant	Moderate	Slight	Not significant
Low	Significant	Moderate	Slight	Not significant	Not significant
Very low	Moderate	Slight	Slight	Not significant	Imperceptible

16.3.3 Consultation

Consultation was identified as being required on 17 out of the 18 agricultural properties. Consultation was undertaken with landowners of 14 of these 17 agricultural properties.

16.3.4 Difficulties encountered/ Limitations

On three agricultural properties, the landowner or their representative has declined to engage in landowner consultation with the agronomist. No walkover survey has been conducted by the agronomist on these properties and specific information on the nature and extent of the farming operation(s) is not known. On one agricultural property, consultation has yet to be completed. For the above four properties, an impact assessment has been conducted based on available information including information gathered from landowner meetings with the project team, roadside surveys and a desktop assessment of project design mapping / online mapping.

16.4 Receiving environment

This section includes a description of the baseline environment as it relates to Material Assets: Agricultural properties.

16.4.1 Agricultural land

The proposed development will require the permanent acquisition of agricultural lands and will result in a reduction in the national utilisable agricultural land area.

16.4.1.1 National Level

The national agricultural farmed area is 4,509,256 ha including rough grazing. When this category is excluded, there is 3,699,919 ha of grassland, 265,592 ha of cereals and 92,208 ha of other crops, fruit and horticulture (Central Statistics Office, 2022).

There are 135,037 farms in Ireland with an average farm size of 33.4 ha nationally. The main agricultural enterprises are beef (54.7%), sheep (12.9%), dairying (11.3%), and mixed field crops (8.5%). Mixed grazing livestock (6.3%), tillage (3.4%), mixed crops and livestock (1.3%) and other (1.3%) are the remaining enterprises (Central Statistics Office, 2022).

16.4.1.2 County Dublin

The total agricultural area of County Dublin is 40,237 ha and when commonage and rough grazing are excluded there is 18,079 ha grassland, 11,107 ha cereals and 6,593 ha of other crops, fruit and horticulture (Central Statistics Office, 2012).

There are 798 farms in County Dublin with an average farm size of 47.6 ha. The main agricultural enterprises are beef (28.1%), tillage (25.4%), mixed field crops (14.8%), sheep (12.4%), mixed grazing livestock (9.6%), dairy (3.5%), mixed crops & livestock (3.3%), and other (2.9%) (Central Statistics Office, 2012).

16.4.1.3 County Kildare

The total agricultural area of County Kildare is 115,058 ha and when commonage and rough grazing are excluded there is 79,651 ha grassland, 26,849 ha cereals and 3,962 ha of other crops, fruit and horticulture (Central Statistics Office, 2012).

There are 2,578 farms in County Kildare with an average farm size of 44.1 ha. The main agricultural enterprises are beef (42.5%), tillage (15.6%), mixed grazing livestock (14.4%), sheep (8.5%), mixed field crops (7.8%), dairy (5.2%), mixed crops & livestock (4.6%), and other (1.4%) (Central Statistics Office, 2012).

16.4.1.4 County Meath

The total agricultural area of County Meath is 191,940 ha and when commonage and rough grazing are excluded there is 149,929 ha grassland, 27,552 ha cereals and 9,471 ha of other crops, fruit and horticulture (Central Statistics Office, 2012).

There are 4,569 farms in County Meath with an average farm size of 42.0 ha. The main agricultural enterprises are beef (52.7%), mixed grazing livestock (14.4%), dairy (10.0%), mixed field crops (8.4%), tillage (7.9%), sheep (5.4%), mixed crops & livestock (2.4%) and other (1.1%) (Central Statistics Office, 2012).

16.4.2 Soils

Soil series information is organised as Soils Associations – the mapping of local soils series or soil types that commonly occur in the landscape. There are two main soil associations found within the study area, principally Straffan and Elton (Teagasc, Cranfield University, 2014). The Soil Associations within the study area are presented in Figure 16-1 and in Drawing no MAY-MDC-GEO-ROUT-DR-G-95000-D in Volume 3A of this EIAR.

Soil Association Straffan - (see Figure 16-1) is classified as a Surface-water Gley or water influenced soils. There is a slowly permeable sub surface horizon that impedes downward water movement resulting in waterlogging. In the study area, Straffan soils are found between Clonsilla and Leixlip and west of Maynooth town. They are described as fine loamy in texture and the parent material is drift with limestones. Straffan soils are suitable for grassland and are also used for tillage.

Soil Association Elton (see Figure 16-1) is classified as a Luvisols or soils with clay enriched subsoils. The predominant soil is a poorly drained Gley soil. In the study area, Elton soils are found in Clonsilla and between Maynooth and Leixlip. They represent Typical Luvisols with distinct topsoil described as fine loamy in texture and the parent material is drift with limestones. Elton soils are suitable for grassland and have been intensively used for tillage due to favourable climatic conditions.

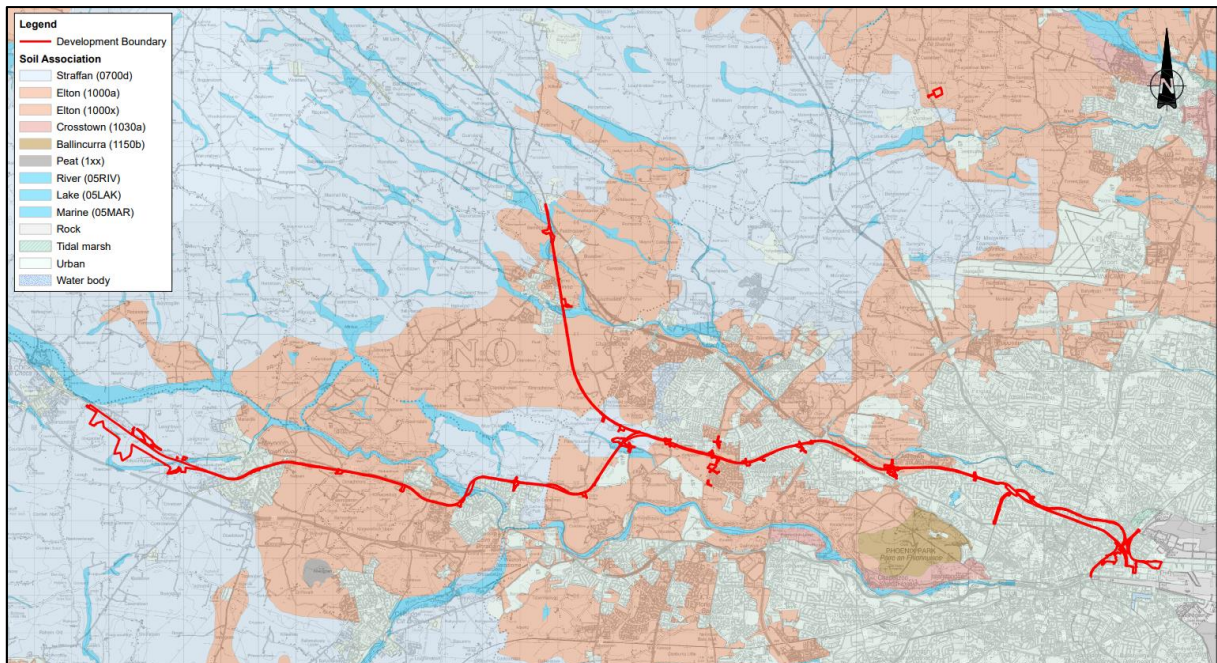


Figure 16-1 Soil associations (Teagasc, Cranfield University, 2014)

16.4.3 Agriculture in the Study Area

The study area is comprised of agricultural properties directly impacted by the proposed development. There is a relatively low number of agricultural properties within the study area, and these are often isolated or located in small numbers in an urban setting or in close proximity to urban development. This is evident where lands are included within county development plans or local area plans and are zoned for development.

16.4.3.1 Zone A

There are no agricultural properties impacted within this zone.

16.4.3.2 Zone B

There are no agricultural properties impacted within this zone.

16.4.3.3 Zone C

16.4.3.3.1 Ch. 53+700 - Ashtown Level crossing

There is one agricultural property, an equestrian centre / riding stables, impacted to the southwest of the level crossing. The equestrian centre provides riding lessons on an all-weather sand arena and offers horse-riding tours in the Phoenix Park. Under the Fingal Development Plan 2017- 2023, the lands are zoned for High Technology and will be developed as part of the future Navan Road Parkway LAP.

16.4.3.3.2 Ch. 60+100 Clonsilla level crossing

There are two agricultural properties impacted to the south of Clonsilla level crossing. East of the R121 Regional Road, there is a farm that is leased on a short-term basis for livestock grazing. West of the R121, there is a property that is licensed for horticulture involving organic vegetables, crops and the management of allotments. Under the Fingal Development Plan 2017- 2023, lands to the east are included within the Kellystown LAP and are zoned for residential development while lands to the west are zoned high amenity / open space.

16.4.3.4 Zone D

16.4.3.4.1 Ch. 104+900 Dunboyne Station

There is one agricultural property impacted at Dunboyne station. The property is a tillage farm involved in crop production. Under the Meath County Development Plan 2021-2027, the lands are zoned New Residential.

16.4.3.5 Zone E

16.4.3.5.1 Ch. 71+000 Barberstown level crossing

There are two agricultural properties impacted in Barberstown / Barnhill. There is an equine farm to the south of the level crossing with lands on both sides of the local road. West of the level crossing, there is a grassland farm, and the affected lands are used for livestock grazing. Under the Fingal Development Plan 2017- 2023, lands to the east of the Royal Canal are zoned Open Space and High Amenity. Lands to the west of the Royal Canal are included in the Barnhill LAP and are zoned for residential development.

16.4.3.5.2 Ch. 72+800 Collins rail bridge

There is one agricultural property to the southwest of the bridge. On this property, lands are leased for cereal crop production. Under the Fingal Development Plan 2017- 2023, the lands are zoned Open Space and High Amenity.

16.4.3.5.3 Ch. 78+150 Blakestown level crossing

There is one agricultural property located southwest of the in Blakestown level crossing. The property is a tillage farm involved in crop production. Under the Kildare County Development Plan 2017- 2023, the lands are unzoned.

16.4.3.5.4 Ch. 80+000 Pike rail bridge – Ch. 81+000

There are two agricultural properties at this location. There is one agricultural property to the southeast of Pike bridge. This is an equine farm and affected lands are used for equine grazing. Under the Kildare Development Plan 2017- 2023, the lands are unzoned. At Ch. 81+000, there is one agricultural property to the south of the rail line. This is a grassland farm and affected lands are used for livestock grazing. Under the Maynooth Local Area Plan 2013-2019, the lands are zoned New Residential.

16.4.3.6 Zone F

16.4.3.6.1 Ch. 91+000 – Ch. 94+500 Maynooth Depot

There are nine agricultural properties with lands in the townlands of Bragganstown, Gragadder, Maws, Laraghbryan East, Treadstown and Newtown. The agricultural properties include dairy, tillage and beef farms with farms also leased for livestock grazing. Under the Kildare Development Plan 2017- 2023, these lands are unzoned.

16.4.4 Baseline rating

The baseline rating for agricultural property along the proposed development is presented in Table 16.5.

Table 16-5 Baseline Rating

Rating	No. of properties	% of total
High	10	55.6%
Medium	8	44.4%
Low	0	0
Very low	0	0

Rating	No. of properties	% of total
Total	18	100.0%

16.5 Description of potential impacts

16.5.1 Potential construction impacts

The assessment of the impact on agricultural land includes the identification of the likely effects from construction impacts. Construction activities associated with the proposed development that may give rise to further impacts on agricultural property include:

- Temporary landtake.
- Construction noise.
- Dust.
- Restricted access to land.
- Disturbance of field drainage.
- Disturbance of services.

The nature of each specific impact is discussed below.

16.5.1.1 Temporary landtake

The construction works for the proposed development will involve a total temporary land-take of 8.8 ha consisting of 8.0 ha agricultural lands and 0.8 ha public road.

16.5.1.2 Construction Noise

The activity of earth moving machinery, transport lorries and other ancillary vehicles will generate additional noise emissions in the immediate vicinity of the construction area. Noise can be of significance for farm animals (i.e., when noise becomes excessively loud). In general, animals become accustomed to regular noises and sounds. Intermittent noises can cause fright and distress. Intermittent noises close to farm buildings can distress livestock.

16.5.1.3 Dust

Dust generated from the exposure of soil to the atmosphere during construction may cause annoyance or nuisance to the farmer and farm animals. Livestock are at risk of eye irritations from high levels of windblown dust particles. This stress may reduce productivity and increase management difficulties.

16.5.1.4 Restricted access to land

Access to land will be maintained, as much as possible, during the proposed development construction process (i.e., following the commencement of construction but before the accommodation works have been completed).

16.5.1.5 Disturbance of field drainage

Field drainage systems currently in situ will be interrupted by the construction works. These systems will be restored as part of the completed proposed development works. However, there may be temporary impaired drainage in the period of time between initial disturbance and final reinstatement of such drainage works.

16.5.1.6 Disturbance of services

Access to either piped water or drinking points on watercourses may be affected during construction through the severance of piping on the farm or the diversion of watercourses used by livestock on the farm. Electric fencing used on farms to stock proof farm boundaries or control the movement of stock may also be affected.

16.5.2 Potential operational impacts

The proposed development will involve a total land-take of 93.1 ha from 18 agricultural holdings involving permanent landtake of 84.3 ha and temporary landtake of 8.8 ha. Permanent landtake is comprised of 83.5 ha agricultural lands and 0.8 ha public road. Temporary landtake is comprised of 8.0 ha agricultural lands and 0.8 ha public road.

16.5.2.1 Impact on agricultural land nationally

The permanent acquisition of approximately 83.5 ha of agricultural land is not significant at a national level.

16.5.2.2 Impact on agricultural land in County Dublin, County Kildare and County Meath

The proposed development will involve the permanent acquisition of approximately 2.1 ha and 81.5 ha agricultural lands in Counties Dublin and Kildare respectively. There is no permanent acquisition of agricultural land in County Meath. The landtake will be very high on some of the individual farms but is not significant at county level.

16.5.2.3 Impact on agricultural land in the study area

The impact on agricultural land is confined to farm holdings impacted by the proposed development. An assessment of the impact of the proposed development on agricultural property is presented in Table 16-6, and in Drawing No. MAY-MDC-ENV-ROUT-DR-V-16000-D to 16011-D in Volume 3A of this EIAR. A summary of the results prior to any mitigation is presented in Table 16-7.

Measures to mitigate the adverse effects of the proposed development are described in Section 16.6. An assessment of the significance of the residual impact following the implementation of mitigation measures is presented in Section 16.8.

Table 16-6 Agricultural Property Assessment

Zone	Farm ID	Farm Size (ha)	Farm Type	Baseline Rating	Perm. Agri Land (ha)	Perm. Public Road (ha)	Temp. Agri Land (ha)	Temp. Public Road (ha)	Right of Way (ha)	Impact Details	Magnitude of Impact	Impact Significance (Pre-mitigation)	Specific Mitigation Measures (see Section 16.6)	Significance of Residual Effects
C	13	1.2	Equine	High	0.0426	0.0000	0.0211	0.1049	0.0000	Temporary and permanent reduction in agricultural area due to proposed re-routing of Ashtown road. Impact on existing property boundary. Temporary construction impact on equine activities. Temporary reduction in public road area.	Medium	Moderate	Provide permanent stockproof boundary.	Not Significant
C	53	5.7	Leased	Medium	0.1150	0.0000	0.5110	0.0287	0.0000	Permanent reduction in agricultural area due to rail access road at Clonsilla. Temporary reduction due to construction compound for pedestrian and cyclist bridge.	Medium	Moderate	Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Slight
C	55	16.2	Licensed - Organic Crops & Allotments	High	0.1497	0.0000	0.4093	0.0579	0.0000	Permanent reduction in agricultural area for the pedestrian and cyclist bridge at Clonsilla. Temporary reduction due to construction compound at Clonsilla. Impact on property entrance and property boundary.	Medium	Moderate	Restore property access and property entrance. Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Slight
D	125	38.7	Tillage	High	0.0000	0.0000	0.0069	0.0000	0.0000	Temporary reduction in agricultural area due to construction works.	Low	Slight	Reinstate temporarily acquired lands.	Not Significant

Zone	Farm ID	Farm Size (ha)	Farm Type	Baseline Rating	Perm. Agri Land (ha)	Perm. Public Road (ha)	Temp. Agri Land (ha)	Temp. Public Road (ha)	Right of Way (ha)	Impact Details	Magnitude of Impact	Impact Significance (Pre-mitigation)	Specific Mitigation Measures (see Section 16.6)	Significance of Residual Effects
E	58	64.8	Equine	High	1.2781	0.0000	0.8521	0.0688	0.0000	Permanent reduction in agricultural area for new road and bridge over rail line and Royal Canal at Barberstown. Temporary reduction due to construction compound. Severance of lands into two separate areas. Loss of access from severed area to equine yard. Impact on services to severed area. Impact on field access and property boundary.	High	Significant	Provide access to the severed area via access accommodation underpass (4.5m in height). Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Moderate
E	61	4.5	Grassland	Medium	0.5067	0.0000	0.7827	0.0000	0.0000	Permanent reduction in agricultural area for new road and bridge over rail line and Royal Canal at Barberstown. Temporary reduction due to construction compound. Severance of lands into two separate areas. Impact on services. Impact on field access and property boundary.	High	Significant	Restore access to the severed area via field access gate. Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Moderate
E	64	24.3	Leased	Medium	0.0000	0.0000	0.9199	0.0000	0.0000	Temporary reduction in agricultural area due to construction compound.	Medium	Moderate	Reinstate temporarily acquired lands.	Not Significant
E	70	16.0	Tillage	High	0.1200	0.0000	1.1131	0.0546	0.0000	Permanent reduction in agricultural area for substation at Blakestown. Temporary reduction due to construction compound. Impact on existing field access and property boundary. Impact on services.	Medium	Moderate	Reinstate temporarily acquired lands. Restore field access gate. Provide permanent stockproof boundary.	Slight

Zone	Farm ID	Farm Size (ha)	Farm Type	Baseline Rating	Perm. Agri Land (ha)	Perm. Public Road (ha)	Temp. Agri Land (ha)	Temp. Public Road (ha)	Right of Way (ha)	Impact Details	Magnitude of Impact	Impact Significance (Pre-mitigation)	Specific Mitigation Measures (see Section 16.6)	Significance of Residual Effects
E	71	141.6	Equine	High	0.0000	0.0000	1.6584	0.0000	0.0000	Temporary reduction in agricultural area for construction compound at Pike Rail Bridge and ESB pole modification. Temporary impact on existing field access gate. Temporary impact on external and internal property boundaries. Temporary impact on right of way access to Donoughmore Graveyard.	Low	Slight	Reinstate temporarily acquired lands and boundaries. Restore field access gate. Provide permanent stockproof boundary.	Not Significant
E	75	1.7	Grassland	High	0.0000	0.0000	0.2439	0.0000	0.0000	Temporary reduction in agricultural area for ESB pole modification. Temporary impact on external property boundary.	Low	Slight	Reinstate temporarily acquired lands and boundaries.	Not Significant
F	92 / 94	114.5	Beef	High	12.4066	0.2193	0.0192	0.0000	0.1950	Permanent reduction in agricultural area due to offline double track rail line, realignment of L5041 and compensatory storage areas. New right of way on remaining lands. Impact on existing field access gates. Impact in field boundaries. Impact on local access to lands north of Jacksons Bridge.	High	Significant	Provide replacement field access gates. Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Significant
F	93	202.3	Leased	Medium	0.1077	0.1597	0.8682	0.0210	0.0000	Temporary and permanent reduction in agricultural area due to heightening of existing pylon and access required for ESB pole modification. Impact on field boundary.	Low	Slight	Provide permanent stockproof boundary. Reinstate temporarily acquired lands.	Not Significant
F	95	7.5	Leased	Medium	7.3306	0.0000	0.0000	0.0000	0.0000	Permanent reduction in agricultural area for proposed depot at Maynooth and realignment of L5041. Acquisition of entire area.	Very High	Profound		Profound

Zone	Farm ID	Farm Size (ha)	Farm Type	Baseline Rating	Perm. Agri Land (ha)	Perm. Public Road (ha)	Temp. Agri Land (ha)	Temp. Public Road (ha)	Right of Way (ha)	Impact Details	Magnitude of Impact	Impact Significance (Pre-mitigation)	Specific Mitigation Measures (see Section 16.6)	Significance of Residual Effects
F	99	143.0	Tillage	High	44.3071	0.3638	0.6385	0.4558	0.0000	Permanent reduction in agricultural area due to proposed Train Depot, depot access roads / bridge and compensatory storage areas. Temporary impact on agricultural area due to depot construction compound. Impact on existing private farm access bridge over rail / canal. Loss of access to severed forestry area. Impact on field boundaries.	High	Significant	Provide access to remaining area via proposed depot bridge and access road. Reinstate temporarily acquired lands. Provide permanent stockproof boundary.	Significant
F	101	127.5	Dairy	High	6.3110	0.0000	0.0000	0.0000	0.0000	Permanent reduction in agricultural area due to proposed depot. Reduction in milking platform area. Landtake impact on both owned and rented lands. Impact on farm road network. Impact on field boundaries.	High	Significant	Provide permanent stockproof boundary.	Significant
F	102	10.9	Leased	Medium	6.5791	0.0190	0.0000	0.0000	0.0000	Permanent reduction in agricultural area due to proposed depot, the emergency access road and compensatory storage area. Impact on existing field access. Impact on field boundaries.	High	Significant	Reinstate field access. Provide permanent stockproof boundary.	Significant
F	103	6.9	Leased	Medium	3.1416	0.0000	0.0000	0.0000	0.0000	Permanent reduction in agricultural area due to compensatory storage areas. Impact on existing field access. Impact on field boundaries.	High	Significant	Reinstate field access. Provide permanent stockproof boundary.	Significant
F	104	5.3	Beef	Medium	1.1511	0.0000	0.0000	0.0000	0.0000	Permanent reduction in agricultural area due to compensatory storage areas. Impact on existing field access. Impact on field boundaries.	Medium	Moderate	Reinstate field access. Provide permanent stockproof boundary.	Moderate

16.5.2.3.1 Summary of impact on agricultural land (Pre-Mitigation)

Details of the impact assessment of the proposed development on individual farm enterprises is presented in Table 16.6 above. A summary of the results is presented in Table 16.7 below.

Table 16-7 Summary of Impact Assessment

Magnitude of Impact	No. of properties	% of total
Very high	1	5.6%
High	7	38.9%
Medium	6	33.3%
Low	4	22.2%
Very low	0	0
	18	100.0%
Significance of Effects	No. of properties	% of total
Profound	1	5.6%
Very Significant	0	0
Significant	7	38.9%
Moderate	6	33.3%
Slight	4	22.2%
Not Significant	0	0
Imperceptible	0	0
	18	100.0%

The magnitude of impact on agricultural land and property ranges from Low to Very High. There are eight agricultural properties (44.5%) where the magnitude of impact is High or Very High. On these properties the farm enterprise cannot continue or can only continue with significant considerable management changes. Such management changes may involve changes to livestock type and numbers, areas of fodder / crop production and the use of existing farmyard facilities.

The significance of impact, which is determined by combining the magnitude of impact with the baseline rating for that farm, ranges from *slight to profound*.

There is one agricultural property (5.6%) on the proposed development where the level of impact is *profound*. These impacts are due to the individual or combined impact of land-take, land severance and / or the impact on essential farm buildings or facilities. The impact is such that the farm enterprise cannot continue in the absence of any mitigation.

On seven agricultural properties (38.9%), the level of impact will be *significant*.

On six agricultural properties (33.3%), the level of impact is *moderate*.

16.6 Mitigation measures

This section describes the measures that when implemented will mitigate the adverse impact on agricultural land. At this stage measures such as compensation for land acquisition and disturbance are not considered. These matters will be agreed, if possible, with landowners or their representative(s) once approval for the proposed development has been granted. If agreement is not possible, such compensation will be decided upon by an arbitrator.

16.6.1 Construction mitigation

16.6.1.1 Temporary landtake

Following the completion of relevant construction works, lands temporarily acquired will be reinstated to existing agricultural condition. Measures will be considered on a site-by-site basis, subject to proposed construction works. Where construction compounds will involve installing a hard-core surface it will be necessary for topsoil to be removed and stored. Where new access is proposed affecting existing property boundaries these will be reinstated on a like for like basis. This may require storage of stone wall material during construction or replanting of hedgerow / trees, as required.

16.6.1.2 Construction Noise

Measures to mitigate noise impacts on sensitive receptors are detailed in Chapter 14 (Noise and Vibration). In addition, construction stage mitigation has been included for a number of agricultural properties which is detailed in Table 16.6. Good communication between the contractor and adjacent landowners during the construction phase, especially when excessively loud activities are programmed, will prevent undue disturbance to farm animals due to noise. It will also facilitate farm enterprises so that livestock can be moved away from the construction work during critical times.

16.6.1.3 Dust

Measures to control the production of dust will be put in place by the contractor (refer Chapter 12 Air Quality which presents a series of measures to control dust). Good communication between the contractor and the farmers in the proximity of construction activities will facilitate on-going farm enterprises so that livestock may be kept as far as possible from the construction work during critical times.

16.6.1.4 Restricted access to land

Access will be restored, as soon as possible, to lands where it is removed or restricted by the proposed development. The location of such access will be at a suitable location and, where possible, with the agreement of the landowner. Good communication between individual farmers and the contractor will minimise difficulties caused by the restriction of access to land. Temporary fencing will be erected as required to delineate the site boundary and to minimise disturbance to adjacent lands. Temporary access gates may be required until such time as permanent access arrangements are in place.

16.6.1.5 Disturbance of field drainage

In cases where drainage is impeded during construction and causes obvious difficulty to a particular landowner, temporary measures will be considered on a site-specific basis. This may include allowing waters to drain to less critical areas, so as to minimise the impact.

16.6.1.6 Disturbance of services

Where required, an alternative source of water / electricity will be provided to ensure that disruption to farming is minimised during the construction phase.

16.6.2 Operation mitigation

The following general mitigation measures will be provided:

1. Access will be restored to lands where it is removed or restricted. Details of proposed access structures to lands are presented in Table 16-8. Access will also be provided to lands via accommodation access tracks and the replacement of field access gates. The location of such field access gates will be at a suitable location and, where possible, with the agreement of the landowner.

Table 16-8 Access accommodation structures

Chainage	Reference	Location	Type & Size
71+100	UP01	Barberstown	Farm Underpass: 4.5m wide x 4.5m high

2. Permanent boundary treatment along agricultural lands will consist of a stockproof boundary that is comprised of one of the following:
 - Concrete post and wire
 - Timber post and wire
 - 2.4m Security Purpose (SP) Palisade fencing
 - Open mesh steel pane for general purposes
 - Horse fencing
 - Acoustic barriers
 Further details of each of the above boundary treatments are presented in Chapter 4 Description of the Proposed Development.
3. The new drainage system will be designed to ensure that there will be no increased risk of flooding as a consequence of the proposed development.
4. Any services that are interfered with as a result of the proposed development will be repaired / replaced without unreasonable delay.
5. Ducting for the restoration of water and power supply services will be provided, as necessary.
6. Screening will be provided, where required, to mitigate the noise and visual effects of construction works and operational traffic.

16.7 Monitoring measures

Not applicable.

16.8 Residual effects

The significance of the residual effects on agricultural land has been assessed following the implementation of general mitigation measures as outlined in Sections 16.5 and 16.6. A summary of the residual impact on agriculture is presented in Table 16.9.

Table 16-9 Summary of Residual Effects

Significance of Effects	No. of properties	% of total
Profound	1	5.6%
Very Significant	0	0
Significant	5	27.8%
Moderate	3	16.7%
Slight	3	16.7%
Not Significant	6	33.3%
Imperceptible	0	0
Total	18	100.0%

After mitigation, there is one agricultural property (5.6%) on the proposed development where the level of impact is *profound*.

There are no agricultural properties on which the residual impact is likely to be *very significant*.

There are five agricultural properties (27.8%) on which the residual impact is likely to be *significant*. This represents a reduction of two agricultural properties with a *significant* impact.

On three farms, the residual impact will be rated as *moderate*. This represents a reduction of three agricultural properties with a *moderate* impact.

16.9 Cumulative effects

The cumulative assessment of the proposed development on agricultural property is as stated in Section 16.5.2.1 at national level and Section 16.5.2.2 at county level. The permanent acquisition of approximately 83.5 ha of land is not significant at a national level. The proposed development will involve the permanent acquisition of approximately 2.1 ha, 81.5 ha agricultural lands in Counties Dublin and Kildare respectively. There is no permanent acquisition of agricultural land in County Meath. The landtake will be very high on some of the individual farms but is not significant at a county level.

The cumulative assessment of relevant plans and projects is undertaken separately in Chapter 26 of this EIAR.

16.10 References

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