
Chapter 16

Material Assets: Agricultural Properties

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16. Material Assets: Agricultural Properties

16.1. Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes and presents an assessment of the likely significant effects of the proposed Project on Agricultural Property. The assessment will examine the potential impacts on agricultural property and practices during the construction and operational phases of the proposed Project.

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

- Chapter 7 Population;
- Chapter 10 Water (Hydrology & Flood Risk);
- Chapter 11 Hydrogeology;
- Chapter 12 Air Quality;
- Chapter 14 Noise and Vibration;
- Chapter 15 Landscape and Visual;
- Chapter 17 Material Assets: Non-agricultural Land;
- Chapter 18 Material Assets: Utilities;
- Chapter 19 Material Assets: Resource and Waste Management;
- Chapter 20 Archaeology and Cultural Heritage;
- Chapter 21 Architectural Heritage; and
- Chapter 23 Human Health.

16.2. Legislation, Policy and Guidance

The key legislation and guidance referenced in the preparation of the EIAR is outlined in Chapter 1 (Sections 1.5, 1.6 and 1.7). Specific to Agricultural Properties, the legislation, policy and guidance documents which have informed the assessment are outlined below.

16.2.1. Legislation

The Transport (Railway Infrastructure) Act 2001 (as amended) provides for the making of a Railway Order application by Córas Iompair Éireann to An Bord Pleanála. The European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743 of 2021) gives 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 or private projects on the environment by amending the Transport (Railway Infrastructure) Act 2001 ('the 2001 Act').

An examination, analysis and evaluation is carried out by An Bord Pleanála in order to identify, describe and assess, in the light of each individual case, the direct and indirect significant effects of the proposed

railway works, including significant effects derived from the vulnerability of the activity to risks of major accidents and disasters relevant to it, on: population and human health; biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives; land, soil, water, air and climate; material assets, cultural heritage and the landscape, and the interaction between the above factors. In carrying out an EIA in respect of an application made under section 37 of the 2001 Act, An Bord Pleanála is required, where appropriate, to co-ordinate the assessment with any assessment under the Habitats Directive or the Birds Directive. Ireland has given effect to the Habitats and Birds Directives through Part XAB of the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) as amended.

The within agricultural impact assessment has been undertaken in accordance with the above legislative and regulatory regime. The requirement to consider and assess the effects of a proposed Project on the elements of which agriculture may be considered to comprise, namely material assets and land, are prescribed in the EIA Directive. Land is introduced as a factor to be identified, described and assessed in the EIA Directive and the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743/2021). Information to be submitted and assessed as part of an EIAR in respect of land should include details of 'land take' and land use requirements of the whole project during the construction and operational phases (DHPLG, 2018).

16.2.2. Policy

The assessment has had due regard to relevant policy that include the following:

- Dublin City Development Plan 2022-2028;
- Park West - Cherry Orchard Local Area Plan 2019;
- South Dublin County Development Plan 2022-2028;
- Adamstown Strategic Development Zone Planning Scheme 2014;
- Clonburris Strategic Development Zone Planning Scheme 2019;
- Kildare County Development Plan 2017-2023 (and draft plan 2023-2029 as available); and
- Celbridge Local Area Plan 2017-2023.

16.2.3. Guidance

In the absence of guidelines that are specific to the assessment of the impact on agricultural property, consistent with best practice, the assessment and appraisal of the impact on agriculture was prepared having regard to the following guidance documents:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Public Transport Project Management Guidelines, PE-PMG-02046 (TII, 2021);
- Design Manual for Roads and Bridges (DMRB) – HE-DMRB-SE LA 104 – Environmental assessment and monitoring (formerly HA 205/08, HD 48/08, IAN 125/15, and IAN 133/10) Revision 1, Highways England (August 2020);

- Design Manual for Roads and Bridges (DMRB) – HE-DMRB-SE LA 112 - Population and Human Health (formerly DMRB Volume 11, Section 3, Part 6 Land, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects and, Part 9 Vehicle Travellers) Revision 1, Highways England (January 2020);
- Irish Forest Service Soil Classification (Teagasc/ EPA, 2009);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (TII, November 2008);
- Guide to Process and Code of Practice for National Road Project Planning and Acquisition of Property for National Roads (NRA, March 2003, revised 2005); and
- Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land, Ministry of Agriculture, Fisheries and Food (MAFF, 1988).

16.3. Methodology

16.3.1. Study Area

The study area for this assessment comprises of the agricultural property directly impacted by the proposed Project. There are 2 agricultural properties impacted by the proposed Project.

16.3.2. Survey Methodology

16.3.2.1. Desk Surveys

The methodology for the assessment of the significance of impact on agriculture is comprised of a desktop survey of project mapping and information.

The following publicly available data sources [Accessed: May 2022] were used to inform the baseline environment and impact assessment as summarised below:

- Environmental Protection Agency (EPA) - <http://gis.epa.ie/Envision>;
- Census of Agriculture 2020 and 2010, available from Central Statistics Office (CSO)- www.cso.ie;
- Farm Structure Survey 2016 (CSO, 2016);
- Teagasc Soil Maps <http://gis.teagasc.ie/soils/map.php>;
- Planning and Zoning objectives for:
 - Dublin City Development Plan 2022 – 2028;
 - Park West - Cherry Orchard Local Area Plan, 2019;
 - South Dublin County Development Plan 2022-2028;
 - Adamstown Strategic Development Zone Planning Scheme 2014;
 - Clonburrish Strategic Development Zone Planning Scheme 2019;
 - Kildare Development Plan 2017 – 2023 (and draft plan 2023 – 2029 as available); and

- Celbridge Local Area Plan 2017 – 2023.

- Land registry/ landownership information from the Property Registration Authority Ireland (PRAI); and
- Open source mapping including Google Earth.

16.3.2.2. Field Surveys

A windshield survey to identify land uses and agricultural practices along the proposed Project route corridor has been carried out as part of the assessment for the EIAR.

16.3.3. Assessment Methodology

16.3.3.1. Key Parameters for Assessment

The key activities that have potential to result in likely significant effects on agricultural properties and practices are outlined below:

Construction Phase

- Land-take (Permanent and Temporary) and severance for construction works outside the landownership boundary of Córas Iompair Éireann (CIÉ);
- Removal or severance of buildings and/ or facilities – Removal or severance of buildings and/or facilities will have a significant effect on properties;
- Noise disturbance and nuisance due to construction activity;
- Disturbance of farming operations e.g. harvesting operations resulting from additional traffic during construction works; and
- Damage to land drainage, damage to lands and soils following reinstatement of land post construction works.

Operational Phase

- Permanent land-take resulting in a reduction in agricultural lands will affect agricultural productivity and will require a change in current management practices and possibly enterprise type;
- Permanent Severance – will require a change in current management practices and may require a change in current enterprise type. This is particularly relevant to stock farms requiring access on a regular basis to and from grazing areas to facilities. The severance of large fields leaving triangulated plots will create increased management difficulties and potentially reduce the effectiveness of large machinery operations; and
- Noise disturbance and nuisance to livestock due to changes to the frequency of passing train traffic.

16.3.3.2. Assessment Criteria and Significance

16.3.3.2.1. 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 impacts associated with the proposed Project 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 impacts and any existing adverse effects.

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 impacts of the proposed Project will influence the baseline rating of farm holdings. Such farms will include specialist dairy farms and specialist equine farms. Dairy farms are sensitive to impacts 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 impacts such as noise, dust and visual impacts 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 Project are shown in Table 16.1. The criteria for each of the baseline ratings have been developed in consideration of the relevant EPA guidelines on describing the existing environment.

Table 16.1: Baseline Rating Criteria

Rating	Criteria
High	<ul style="list-style-type: none"> 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; and Agricultural lands used for research and education.
Medium	<ul style="list-style-type: none"> Livestock and/ or tillage enterprises on medium quality lands; Agricultural lands of good quality leased for livestock or tillage production; and Agricultural lands of good quality which is zoned or planning permission exists for non-agricultural purposes.
Low	<ul style="list-style-type: none"> 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; and Agricultural lands of medium quality which is zoned or planning permission exists for non-agricultural purposes.
Very Low	<ul style="list-style-type: none"> Extensively managed livestock farm enterprises on poor quality lands; Unused agricultural lands of medium or poor quality; and Agricultural lands of poor quality which is zoned or planning permission exists for non-agricultural purposes.

16.3.3.2.2. Impact Magnitude

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

- Land-take;
- Land severance;
- Impact on farm buildings/ facilities; and
- Other impacts 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.

Summary details of land-take are presented in Section 16.5 with details of land-take on individual properties presented in Table 16.5.

Land Severance

The severance of lands is largely determined by the land-take location which can often result in more significant impacts on farm holdings. Similar 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.

During the construction period, there may be temporary impacts on access as works may involve traffic diversions required for the construction of the proposed Project. Where severance of land occurs, mitigation measures may be necessary to restore access to lands.

The proposed Project will not result in any severance.

Impact on Farm Buildings / Facilities

The impact of a proposed Project 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 Project will not impact on facilities on agricultural properties.

Other Impacts such as Impacts on Land Drainage and Services

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

16.3.3.2.3. Magnitude of Impact Criteria

The criteria used to determine the magnitude of impact for the farm holdings on the proposed Project are shown in Table 16.2. The criteria for each of the impact ratings have been developed in consideration of the relevant EPA guidelines on the assessment of impact.

Table 16.2: 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; and 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; and 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; and 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; and 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; and Temporary construction impacts.

16.3.3.2.4. Significance of Impact

The significance of impact on an agricultural property is determined by the baseline rating of a farm holding combined with the magnitude of impact of the proposed Project. There are four categories of baseline rating ranging from 'very low' to 'high' (Table 16.1). There are five categories of magnitude of impact ranging from 'very low' to 'very high' (Table 16.2).

The likely significance rating is determined by reference to the matrix in Table 16.3 using the baseline rating and magnitude of impact. The likely significance of impact is prior to the implementation of any mitigation measures.

Table 16.3: Significance of Impact Criteria

Baseline	Criteria				
	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

16.3.4. Consultation

The overall project stakeholder and public consultation undertaken in respect of the Project is set out in the Public Consultation No. 1 Findings Report (for PC1) and Public Consultation No. 2 Findings Report (for PC2) which are included in Volume 4, Appendix 1.3 and Appendix 1.4. All feedback was collated, including feedback specific to the EIAR topic ‘Material Assets: Agricultural Properties’. This feedback has informed this chapter including the baseline and impact assessment presented.

Specific consultation was also undertaken with key stakeholders in relation to EIA Scoping. A summary of the issues raised in relation to the scope of the EIA is included in Volume 4, Appendix 1.2. Feedback on the scope and level of detail of the assessment, data sources and methodologies as they pertain to the EIAR topic ‘Material Assets: Agricultural Properties’ have been reviewed and have influenced this chapter of the EIAR.

Specific consultation was also undertaken with representatives of various departments in Kildare, South Dublin and Dublin City Councils. This included a combination of presentations, workshops and meetings to discuss the project, technical design issues and environment and planning matters.

Nine pre-application meetings were held with ABP to explain the project and present technical and environmental information. A summary of the information presented and the environmental issues discussed at the nine meetings is provided in Volume 4, Appendix 1.6. Feedback relevant to the topic ‘Material Assets: Agricultural Properties’ has been reviewed and has influenced this chapter of the EIAR.

16.3.5. Difficulties Encountered / Limitations

This Chapter of the EIAR has been prepared based upon the best available information and in accordance with current best practice and relevant guidelines.

There were no technical difficulties or otherwise encountered in the preparation of this chapter of the EIAR. Minimising impact to the land and disruption to the landowners has been a significant element of the pre-planning works to date and has included landowner engagement and discussions. Correspondence has been issued to identified properties likely to be affected by the permanent footprint of the Preferred Option with a notification that the property had been identified as likely to be impacted by the Preferred Option and an invitation for the recipient to contact the project team to arrange a meeting and receive further information.

Engagement with the potentially affected landowners is ongoing. Further engagement will be undertaken at the post-planning stage.

16.4. Receiving Environment

The proposed Project has been divided into four distinct geographic zones along the length of the corridor (Zones A to D) as outlined in Chapter 4 Project Description and summarised below. The proposed Project is described from west to east along the railway corridor.

- Zone A - Hazelhatch & Celbridge Station to Park West & Cherry Orchard Station (refer to Section 4.6);
- Zone B - Park West & Cherry Orchard Station to Heuston Station (incorporating Inchicore Works) (refer to Section 4.7);
- Zone C – Heuston Yard & Station (incorporating New Heuston West Station) (refer to Section 4.8); and
- Zone D - Liffey Bridge to Glasnevin Junction (Phoenix Park Tunnel Branch Line) (refer to Section 4.9).

This section includes a description of the baseline environment as it relates to Material Assets: Agricultural properties. A description of the relevant agriculture in the study area have been provided by geographic area and is outlined in Sections 16.4.3 to Section 16.4.6.

The study area is comprised of agricultural properties directly impacted by the proposed Project. There are a relatively low number of agricultural properties within the study area.

16.4.1. Agricultural Land

16.4.1.1. National Level

The national agricultural farmed area is 4,509,256ha including rough grazing. When this category is excluded, there is 3,699,919ha of grassland, 265,592ha of cereals and 92,208ha of other crops, fruit and horticulture (CSO, 2022¹). There are 135,037 farms in Ireland with an average farm size of 33.4ha nationally. The main agricultural enterprises are beef (54.9%), 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 (CSO, 2022¹).

¹ CSO Census of Agriculture 2020 – Preliminary Results. Available at <https://www.cso.ie/en/releasesandpublications/ep/p-coa/censusofagriculture2020-preliminaryresults/>

16.4.1.2. Agricultural Land in Co. Dublin

In the Census of Agriculture 2010, the total agricultural area of County Dublin was 40,237ha. When commonage and rough grazing are excluded there is 18,079ha grassland, 11,107ha cereals and 6,593ha of other crops, fruit and horticulture (CSO, 2012²).

In 2010, there were 798 farms in County Dublin with an average farm size of 47.6ha. 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%) (CSO, 2012²).

16.4.1.3. Agricultural Land in Co. Kildare

In the Census of Agriculture 2010, the total agricultural area of County Kildare was 115,058ha and when commonage and rough grazing are excluded there is 79,651ha grassland, 26,849ha cereals and 3,962ha of other crops, fruit and horticulture (CSO, 2012).

In 2010, there were 2,578 farms in County Kildare with an average farm size of 44.1ha. 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%) (CSO, 2012). In Kildare, horse breeding and horse training are widely popular and are a strong feature of the county agricultural landscape. The Census of Agriculture 2010 identifies 465 farms with horses and/or ponies with 5,155 animals of which 3,541 are thoroughbred. At the time of writing it is noted there is currently 64 registered horse trainers in the county with Horse Racing Ireland Rás³.

16.4.2. Soils

The National Teagasc Soils map classifies surface soils in Ireland into 25 classes. Soils within the full linear project site from Hazelhatch & Celbridge to Glasnevin Junction and the surrounding area are presented in Figure 16-1.

Overall agriculture practices are consistent with the soils observed in this area. Further information regarding the soil within the area can be found in Chapter 9 Land and Soils of this EIAR.

16.4.3. Zone A: Hazelhatch & Celbridge Station to Park West & Cherry Orchard Station

16.4.3.1. Soils

The soils (Teagasc soils) underlying much of the greater Dublin region are largely classified as Made Ground (Made) associated with urbanisation leading to an increased volume of hardstanding and impermeable surfaces, particularly within the M50 motorway. Made Ground are typically urban soils extensively influenced by human activities, found mostly but not only in urban areas.

Within Zone A, Made Ground is present surrounding Clondalkin Industrial Estate and east to Park West. At its southwestern extent the route (south of Celbridge) transverses across a region of shallow poorly drained mainly basic soils (BminSP) derived from mainly calcareous parent materials. West of

² CSO Census of Agriculture 2010 – Final Results. Available at <https://www.cso.ie/en/media/csoie/releasespublications/documents/agriculture/2010/full2010.pdf>

³ HFI, Trainer Information. Available at: <https://www.hri-ras.ie/information-centre/industry/trainers/>

Clondalkin, the route transverses across extensive regions of deep well drained mainly basic mineral soil (BminDW), poorly drained mainly basic mineral soils (BminPD) and shallow well drained mainly basic mineral soils (BminSW).

16.4.3.2. Agriculture in Zone A

There are 2 agricultural properties impacted by construction within this zone. Farm 1 has tillage operations, while Farm 2 is tillage/ dry stock. For further details on the Farm operations refer to Table 16.5 in Section 16.5.2.4.

16.4.4. Zone B: Park West & Cherry Orchard Station to Heuston Station (incorporating Inchicore Works)

16.4.4.1. Soils

The area surrounding Park West & Cherry Orchard Station (east of the M50) is underlain by pockets of deep well drained mainly basic mineral soil (BminDW) and poorly drained mainly basic mineral soil (BminPD). Further to the east and surrounding the Inchicore Works soils consist predominantly of made ground (Made). Made ground refers to soil which has been significantly altered or placed by human activity. Made ground is typically encountered in urban environments. At Islandbridge alluvial mineral soils (AlluvMIN) and shallow well drained mainly basic mineral soils (BminSW) are present, typical of soils found along rivers i.e. the River Liffey. Alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel.

16.4.4.2. Agriculture in Zone B

There are no agricultural properties within this zone.

16.4.5. Zone C: Heuston Yard and Station (incorporating New Heuston West Station)

16.4.5.1. Soils

Soils within the area of Heuston Station, Heuston Yard and the proposed Heuston West Station consist primarily of made ground (Made) with alluvial mineral soils (AlluvMIN) along the banks of the River Liffey.

16.4.5.2. Agriculture in Zone C

There are no agricultural properties within this zone.

16.4.6. Zone D - Liffey Bridge to Glasnevin Junction (Phoenix Park Tunnel Branch Line)

16.4.6.1. Soils

Within Zone D the primary soil type is made ground (Made) in the developed urban areas. Within the Phoenix Park the soil types along the route consist of deep well drained mainly basic mineral soil (BminDW) and poorly drained mainly basic mineral soil (BminPD). These two soils are also present along the Royal Canal in Glasnevin.

16.4.6.2. Agriculture in Zone D

There are no agricultural properties within this zone.

16.4.7. Baseline Rating

The baseline ratings for agricultural properties along the proposed Project are presented in Table 16.4.

Table 16.4: Baseline Rating of Agricultural Property

Rating	No. of Properties	% of Total
High	2	100%
Medium	0	0%
Low	0	0%
Very Low	0	0%
Total	2	100%

16.4.8. Evolution of the Environment in the Absence of the Project (Do Nothing)

Annex IV of the EIA Directive sets out the information required to be included in an EIAR. This includes:

“a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”.

In the event that the proposed Project does not proceed, an assessment of the future baseline conditions has been carried out and is described within this section.

In the “do-nothing” scenario the interventions for the modernisation of the railway corridor and areas outside of CIÉ lands for the Project would not be undertaken and includes the continued use of the existing railway line. The baseline condition of land and soils (soils and geology) will remain unaltered under such a scenario other than natural variation in these parameters with time.

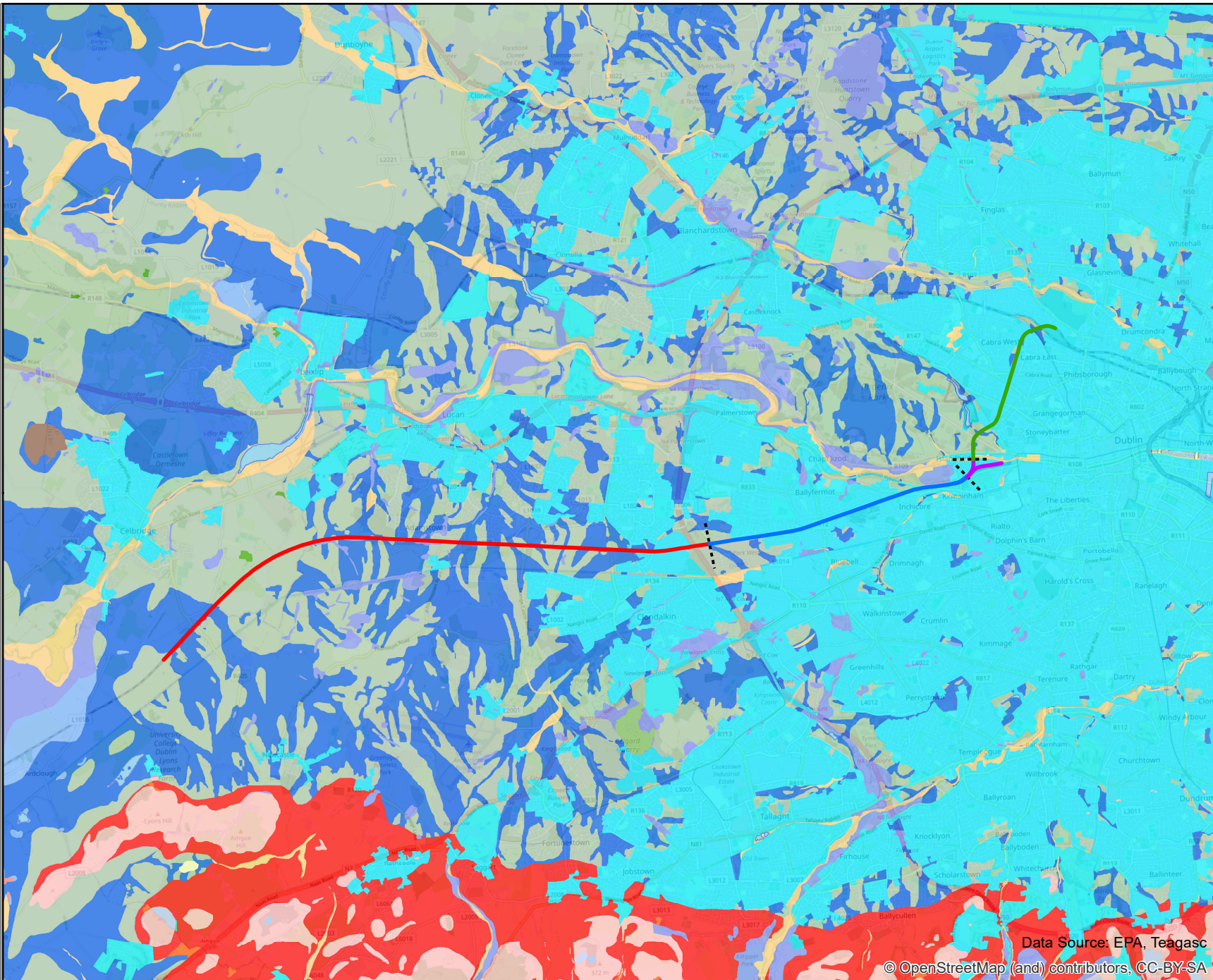
Agricultural practices by their very nature change over time. In the last one hundred years there has been considerable change in farming in Ireland with average farm sizes increasing while numbers involved directly with farming is decreasing. The size of an average farm in Dublin has tripled over the last century, rising from 16ha in 1915, to 48ha in 2010 and has almost doubled in Kildare rising from 24ha in 1915, to 44ha in 2010 (Life in 1916 Ireland: Stories from statistics, CSO 2016)⁴. In addition, the area farmed in the Dublin has decreased in the last hundred years from 76,000ha in 1915 to 38,000ha in 2010 with the same decrease applying to land in Kildare 146,000ha in 1915 to 114,000ha in 2010. In part these changes are driven by improved science and technologies but also by socio-economics and policy.

It is noted that the county with the largest percentage decline in the number of farms over this time period was Dublin with a drop of 83%. *This large decrease in the number of farms in Dublin is linked to the geographical spread of the urban area in Dublin over the last 100 years (CSO, 2016).* Several

⁴ Life in 1916 Ireland: Stories from statistics. Available at: <https://www.cso.ie/en/releasesandpublications/ep/p-1916/1916iirl/economy/ag/>



areas along the length of the existing rail line are identified for urban development in the short to medium term, notably Clonburris.



Legend

Rail Network Line

Zone

- Zone A: from Hazelhatch & Celbridge Station to Park West & Cherry Orchard Station
- Zone B: Park Wet & Cherry Orchard Station to Heuston
- Zone C: Heuston Station and Yard
- Zone D: From Liffey Bridge to Glasnevin Junction
- - - - - Zone Boundaries

Soils

Soil Description

- AlluvMIN - Alluvial (Mineral)
- AminDW - Deep well drained mineral (Mainly acidic)
- AminPD - Mineral poorly drained (Mainly acidic)
- AminPDPT - Peaty poorly drained mineral (Mainly acidic)
- AminSP - Shallow well drained mineral (Mainly acidic)
- AminSRPT - Shallow, rocky, peaty/non-peaty mineral complexes (Mainly acidic)
- AminSW - Shallow well drained mineral (Mainly acidic)
- BminDW - Deep well drained mineral (Mainly basic)
- BminPD - Mineral poorly drained (Mainly basic)
- BminPDPT - Peaty poorly drained mineral (Mainly basic)
- BminSP - Shallow poorly drained mineral (Mainly basic)
- BminSRPT - Shallow, rocky, peaty/non-peaty mineral complexes (Mainly basic)
- BminSW - Shallow well drained mineral (Mainly basic)
- Cut - Cutover/cutaway peat
- Lacustrine type soils
- Marine Sediment
- Made Ground
- Water

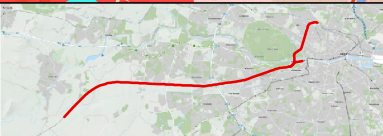


Data Source: EPA, Teagasc

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Rev	Date	Dm	Chk'd	App'd	Description
v02	26/10/2022	NR	EH	CR	Soil Distribution
v01	25/03/2022	NR	EH	CR	Soil Distribution

Client: **Iarnród Éireann Irish Rail**

Date: 18/01/2023 Scale: 1:100,000 @ A4

Project Code: 5195886 Issuer: TTA

Engineering Designer: **ATKINS** (Member of the SNC-Landes Group) Supported by: **rps**

Drawn: NR Checked: EH Approved: CR

QMS Code

Project Title	DART + SOUTH WEST		
Drawing Title	Figure 16.1: Soils (Teagasc)		
Drawing File Name	DP-04-23-DWG-EV-TTA-23738	Version	v02
Status	S3		

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

16.5. Description of Potential Impact

16.5.1. Potential Construction Impacts

Construction activity associated with the proposed Project that will give effect to impacts on agricultural property include:

- Temporary land-take;
- Construction noise;
- Dust;
- Restricted Access to Land;
- Disturbance of Field Drainage;
- Disturbance of Services (Water and Electricity); and
- Spread of Disease or Pests.

The nature of each specific impact is discussed below.

16.5.1.1. Temporary Land-take

The construction works for the proposed Project will involve a total temporary land-take of 0.29ha of agricultural lands.

16.5.1.2. Construction Noise

The activity of earth moving machinery, transport lorries and other ancillary vehicles will generate as well as some construction techniques will introduce additional noise emissions in the immediate vicinity of the construction area. Noise can be of significance for farm animals when noise becomes excessively loud. While in general animals become accustomed to regular noises and sounds, intermittent noises can cause fright and distress, particularly close to farm buildings where it 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 during the proposed Project construction process may be interrupted/ restricted.

16.5.1.5. Disturbance of Field Drainage

Construction activities may give rise to damage to land drains leading to damage to crops and soils from localised flooding.

16.5.1.6. Disturbance of Services

The construction of the proposed Project has potential to disturb current piped water supplies for livestock. Furthermore, many farms utilise electric fencing to manage stock. In some instances, the

electric fencing will be supplied by a battery-operated system, which will not be affected. However, many farms utilise a mains supply to operate their electric fencing and electricity supply may be temporarily interrupted.

16.5.1.7. Spread of Disease or Pests

As linear development the construction has the potential for spreading both plant and animal disease between fields and farms. The spread of disease may occur by carrying contaminated material on either machines or personnel from an infected farm to an uninfected one.

The transfer of plant diseases between crops due to the construction of the proposed Project, while possible, is not considered significant. There are a number of soil borne pests that may be transferred and that may potentially give rise to a significant effect. This is will only occur when contaminated soil adhering to a construction machine is deposited in a clean field growing a susceptible crop. In most instances this will be unlikely, and even if it should occur will not be significant. However, where high cost/ value susceptible crops are grown then the effect of the transfer of a soil borne pest by a construction machine will potentially be significant.

16.5.2. Potential Operational Impacts

The proposed Project will require a land-take of 0.058ha of agricultural lands for easements for the project.

Table 16.5: Agricultural Property Assessment

Zone	Farm ID	Farm Type	Land-take (ha)*	Impact Details	Baseline Rating	Magnitude of Impact	Impact Significance (Pre-mitigation)	Possible Accommodation	Residual Impact Significance
A	1	Tillage	0.168 (T) 0.043 (E)	No severance. No impact on facilities. Impact on existing access.	High	Low	Not significant	Ensure access is provided during construction works.	Not significant
A	2	Tillage/ Drystock	0.122 (T) 0.015 (E)	No severance. No impact on facilities. Access maintained.	High	Very Low	Not significant	Ensure access is maintained during construction works.	Imperceptible

* (T) – Temporary (E) - Easement

16.6. Mitigation Measures

This section describes the measures that when implemented will mitigate any adverse impact on agricultural land. Mitigation measures will be considered on a farm-by-farm basis and details of specific measures that are required for individual properties are shown in Table 16.5.

16.6.1. Construction Stage Mitigation

16.6.1.1. Temporary land-take

The following mitigation measures are proposed during the construction phase to manage and minimise impacts to agricultural properties:

- A landowner liaison officer will be identified by the appointed contractor in the Construction Environmental Management Plan (CEMP). This liaison officer will coordinate landowner engagement to ensure matters are agreed and addressed in a timely manner and any landuse conflicts can be resolved;
- Prior to works commencing each landowner will be met by a member of the project team to inform of the expected start date on their lands, duration of works and to agree on specific issues of access, presence of livestock etc. pertaining to the proposed Project; and
- Following the completion of relevant construction works, lands temporarily acquired will be reinstated to existing agricultural condition. All materials and waste will be removed and disposed of appropriately.

16.6.1.2. Construction Noise

The appointed Landowner Liaison Officer will maintain an open channel for communication between the appointed contractor and adjacent landowners during the construction phase, especially when excessively loud activities are programmed, in order to 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 to 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 for the construction of the proposed Project. Temporary or replacement access will be at a suitable location and, where possible, with the agreement of the landowner. An open channel for 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.

16.6.1.7. Disease or Pest Mitigation

- All machinery coming from outside of the State will be cleaned and disinfected on entry to the country;
- All machines will be sprayed with appropriate disinfectant prior to arrival on site. The Contractor will verify to the Project Liaison Officer (PLO) that this has been done;
- The PLO will liaise with the local District Veterinary Office (DVO) to establish the location of any restricted herds along the route of the proposed Project. The liaison will continue on a regular basis throughout the construction and reinstatement periods. Where any landholder becomes aware that his/ her herd has become infected, it is his/ her responsibility to inform the PLO as a matter of urgency;
- Where the PLO has been informed of a restricted herd along the route, it will require the Contractor to disinfect machinery and personnel before leaving the land concerned. The number of accesses across the working strip will be reduced to one in the case of lands having restricted herd status. The Contractor will arrange for disinfectant mats/ baths to be replenished with disinfectants, as required; and
- In the event of an outbreak of a Notifiable Disease, the proposed project will be subject to such operational restrictions as are imposed by Department of Agriculture Food and the Marine (DAFM).

16.6.2. Operational Stage Mitigation

There are no likely significance effects on agricultural properties or practices as a result of the proposed Project and therefore no operational mitigation measures are required.

16.7. Monitoring

No monitoring measures are proposed.

16.8. Residual Effects

Following the implementation of general mitigation measures as outlined in Section 16.6, no residual effects are anticipated.

16.9. Cumulative Effects

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



16.10. References

Teagasc, Cranfield University. (2014). Irish National Soils Map. EPA.