

## Chapter 16

## Material Assets & Land – Agriculture

### 16.1 Introduction

This section of the EIAR discusses the impact of the proposed N5 Ballaghaderreen to Scramoge Road Development on agricultural property.

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

- Chapter 6 Population and Human Health;
- Chapter 9 Hydrogeology;
- Chapter 10 Hydrology;
- Chapter 11 Landscape and Visual Impact;
- Chapter 12 Noise and Vibration;
- Chapter 13 Air Quality and Climate;
- Chapter 14 Archaeological and Cultural Heritage;
- Chapter 15 Architectural Heritage;
- Chapter 17 Material Assets & Land – Non-Agriculture.

### 16.2 Methodology

This chapter will describe the receiving environment and determine the significance of the impact of the proposed road development on agriculture. The assessment methodology has considered the following guidelines:

- Advice notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008).

The following Draft Guidance documents have also been consulted:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Draft May 2017; and
- Advice Notes for Preparing Environmental Impact Statements, Draft September 2015.

The methodology for the assessment of the significance of impact on agriculture comprised of a desktop survey of project mapping and information, roadside survey of the proposed alignment and detailed farm surveys involving landowner consultation. The baseline environment and impact assessment relied on information from a number of sources as outlined in Table 16.1.

**Table 16.1 Information Used in Assessment and Sources**

Information	Source
Land registry / landownership information	Roscommon County Council & landowner consultation.

Information	Source
Land use, farm details	Landowner consultations & walkover farm surveys.
Agricultural statistics	National census of agriculture statistics derived from the June 2010 census of agriculture (Central Statistics Office, 2012).
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). Creamer, R. "Irish SIS Final Technical Report 10: Soil Profile Handbook" (EPA, 2014).
Planning and zoning objectives	Roscommon County Development Plan (2014-2020).
Road design mapping & project information	ROD-AECOM Alliance
Compulsory Purchase Order (CPO) deposit mapping & schedule	Roscommon County Council NRDO

Roadside surveys of agricultural property were carried out on an ongoing basis during the completion of farm surveys which commenced in November 2014 and continued until September 2016.

The farm surveys involved on-site meetings with agricultural property owners, walkover survey of affected lands and the completion of detailed farm questionnaires. A walkover survey of the affected lands enabled an assessment of the impact of the proposed road development and the possible mitigation measures necessary to alleviate negative impact.

Landowner details, feedback and relevant survey information were submitted to the project design team to assist with the preparation of the final road design.

Landowner consultation also included public consultation meetings held in March and December 2015 and landowner meetings with Roscommon County Council during 2015. In December 2015, all landowners were invited to individual meetings with the project team regarding the design and draft CPO for the proposed road development.

### 16.2.1 Study Area

The study area comprises of the farm, residential and other land and property directly impacted by the proposed N5 Ballaghaderreen to Scramoge Road Development.

There are 170 agricultural properties directly impacted by the proposed N5 Ballaghaderreen to Scramoge Road Development and landtake will comprise of 349.4ha of lands. Agricultural land cover consists primarily of improved grassland with areas of forestry and peat bog.

### 16.2.2 Assessment Methodology

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 operation impacts associated with the proposed road development will determine the significance of the agricultural impact.

### 16.2.2.1 *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 any existing adverse effects. This information was sourced from landowner consultation and walkover surveys on farm holdings directly affected by the proposed road 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. Tillage-based and horticultural farm enterprises are 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 or operational impacts 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 between grazing paddocks and the farmyard. Equine livestock used for the breeding and training of horses can be regarded as sensitive to impacts such as noise, dust and visual impacts.

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 for other than agricultural uses.

### 16.2.2.2 *Baseline Rating Criteria*

The criteria used to determine the baseline rating for the farm holdings on the proposed road 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**

Baseline	Criteria
High	Intensively managed farm enterprises. 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.

Baseline	Criteria
<b>Medium</b>	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.
<b>Low</b>	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.
<b>Very Low</b>	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.

### 16.2.2.3 Impact Magnitude

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

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

#### Landtake

The effect of agricultural landtake can be significant and the acquired area together with its location and duration will determine the magnitude of impact. The greater the area of landtake indicates a higher magnitude of impact. The area and location of landtake are often interlinked as landtake 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 landtake can vary from permanent (greater than sixty years), short term (one year to seven years) to temporary (less than one year). The degree of the magnitude of impact decreases with shorter durations.

The proposed road alignment is entirely offline on agricultural lands and will involve significant areas of landtake on some individual farms.

#### Land Severance

The severance of lands is largely determined by the landtake location and can often result in more significant impacts on farm holdings. Similar to the effect of landtake, the area of severed lands, their location relative to remaining lands and duration 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 road alignment will have significant effects on individual farm holdings, particularly where division of lands takes place. In such situations, mitigation measures will be necessary to restore access to lands.

Impact on Farm Buildings / Facilities

The impact of a proposed road 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 medium magnitude of impact.

The proposed road development will impact on farm facilities consisting of farm buildings for animal housing and fodder storage, animal handling pens / crushes and other facilities consisting of concrete yards and hard core areas.

Other Impacts Such as Impacts to Land Drainage and Services

The construction activities on a proposed road 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 design of the proposed road development will temporarily impact on the local drainage network and field drainage immediately adjacent to the proposed N5 alignment. There will be a temporary impact on water supply where existing connections to water mains are affected.

**16.2.2.4 Magnitude of Impact Criteria**

The criteria used to determine the magnitude of impact for the farm holdings on the proposed road 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**

Magnitude	Criteria
<b>Very High</b>	<ul style="list-style-type: none"> <li>• The impact on the farm is such that the farm enterprise(s) cannot continue.</li> <li>• Permanent landtake of such an area that the farm holding is unworkable.</li> <li>• Permanent land severance of such an area that the farm enterprise is unworkable.</li> <li>• Essential farm buildings / facilities may be significantly impacted.</li> </ul>
<b>High</b>	<ul style="list-style-type: none"> <li>• The impact on the farm is such that the farm enterprise(s) cannot continue without significant management changes.</li> <li>• Permanent landtake of such an area that the continued management of the farm enterprise will require significant change.</li> <li>• Permanent land severance of a nature that the continued management of the farm enterprise will require significant change.</li> <li>• Essential farm buildings / facilities may be directly or indirectly impacted.</li> </ul>

Magnitude	Criteria
<b>Medium</b>	<ul style="list-style-type: none"> <li>The impact on the farm is such that the farm enterprise(s) can be continued as before but with increased management difficulties.</li> <li>Permanent landtake of such an area that the management of the farm enterprise(s) can be continued but with increased difficulties.</li> <li>Permanent land severance of a nature that the management of the farm enterprise(s) will require management changes.</li> <li>Farm buildings and/or farm facilities may be directly or indirectly impacted.</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>The impact on the farm is such that the farm enterprise(s) can be continued as before with minor management changes.</li> <li>Permanent or short-term landtake of such an area that the farm enterprise(s) suffer minor difficulties as a result.</li> <li>Permanent or short-term land severance of a nature that the farm enterprise(s) will require minor management changes.</li> <li>Farm buildings / facilities would not be directly impacted. There may be indirect impacts.</li> <li>Temporary construction impacts.</li> </ul>
<b>Very Low</b>	<ul style="list-style-type: none"> <li>The impact on the farm is such that the farm enterprise can be continued as before with temporary or short-term management changes.</li> <li>Temporary or short-term landtake of such an area without noticeable consequences.</li> <li>Permanent landtake involving public roadbed only.</li> <li>Temporary or short-term land severance of a nature that the farm enterprise can be continued but with minor management changes.</li> <li>Farm buildings / facilities would not be directly impacted. There may be indirect impacts.</li> <li>Temporary construction impacts.</li> </ul>

### 16.2.2.5 Impact Significance

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 road 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 impact is prior to the implementation of any mitigation measures.

**Table 16.4: Significance of Impact**

Baseline Rating	Magnitude of Impact				
	Very Low	Low	Medium	High	Very High
<b>High</b>	Slight	Slight	Moderate	Significant	Profound
<b>Medium</b>	Imperceptible	Slight	Moderate	Significant	Significant
<b>Low</b>	Imperceptible	Slight	Slight	Moderate	Moderate
<b>Very Low</b>	Imperceptible	Imperceptible	Slight	Slight	Slight

## 16.3 Description of Existing Environment

### 16.3.1 Agricultural Land in Ireland

The development of a road which will require the permanent acquisition of agricultural lands may result in a reduction in the national utilisable agricultural area.

The national agricultural area is 4,991,353ha including commonage and rough grazing. When these categories are excluded there is 3,777,734ha of grassland, 273,898ha of cereals and 80,029ha of other crops, fruit and horticulture.

There are 139,860 farms in Ireland with an average farm size of 32.7ha. The main agricultural enterprises are beef (55.6%), dairying (11.2%), mixed grazing livestock (10.5%) and sheep (9.7%). Mixed field crops (6.9%), tillage (3.4%), mixed crops and livestock (1.7%) and other (1%) are the remaining enterprises.

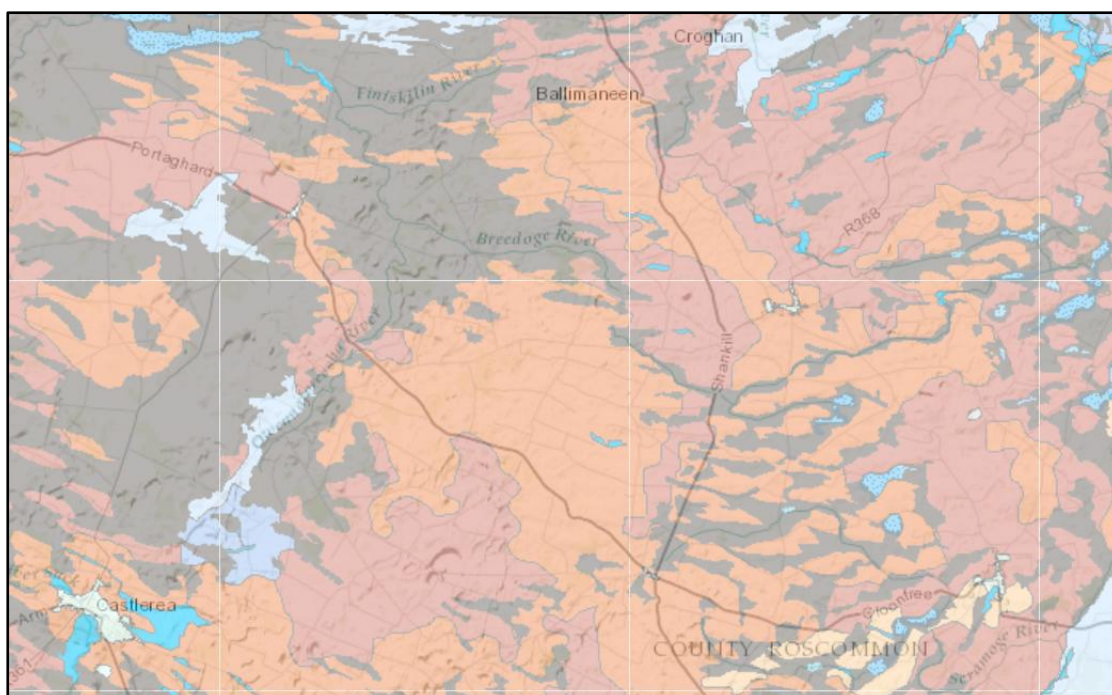
### 16.3.2 Agricultural Land in Co. Roscommon

The total agricultural area of Co. Roscommon is 172,747ha and when commonage and rough grazing are excluded there is 161,610ha grassland, 656ha cereals and 328ha of other crops, fruit and horticulture (CSO, 2012).

There are 6,313 farms with an average farm size of 27.1ha. The main agricultural enterprises are beef (71.1%), mixed grazing livestock (12.4%) sheep (7.4%), mixed field crops (6.6%) and dairy (1.4%) (CSO, 2012).

### 16.3.3 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 four soil associations found within the study area, principally Elton, Rathowen and Peat and to a lesser extent Kilrush. The Soil Associations within the study area are presented in Figure 16.1.



**Figure 16.1 Soil Associations (Teagasc, Cranfield University, 2014)**

The two main soils are within Soil Associations Elton and Rathowen and both are classified as Luvisols or soils with clay enriched subsoils.

The Elton soils are dispersed across the study area primarily from Bellanagare to Cregga, Elphin. They are Typical Luvisols with distinct topsoil and are described as fine loamy in texture and the parent material is drift with limestones. Elton soils are

associated with Surface water Gleys, Stagnic Brown Earths and Calcareous Brown Earths.

Rathowen soils are Stagnic Luvisols indicating the presence of a slowly permeable sub-surface. These soils are found at Portaghard, Bellanagare, Shankill and from Cregga to Scramoge. They are described as fine loamy in texture with a parent material of drift with limestones. Rathowen soils are associated with Surface water Gleys, Groundwater Gleys on drift with limestones and Peat.

Soil Association Kilrush soils are encountered at Turloughnamaddy and Scramoge. These are classified as a Typical Surface water Gley and are described as fine loamy drift with siliceous stones. They are associated with Luvisols, on drift with siliceous stones and Basin Peat.

A significant portion of the study area is represented by Soil Association Peat soils. These are predominantly to the west of the study area and are encountered by the proposed road development south of Frenchpark and northwest of Bellanagare. These soils are predominantly composed of organic material and depending on the level of organic carbon and sand are defined as either of Peat, Sandy Peat or Loamy Peat soils.

#### **16.3.4 Agriculture in the Study Area**

In the Frenchpark / Bellanagare area and extending east towards Elphin, the topography is flat to undulating with elevations between 70m to 100m. Lands comprise of wet mineral soils and are limited to grassland use due to drainage. The size of farm holdings along the proposed alignment ranges from <1ha to greater than 200ha and the average farm size is 22.8ha. Farming enterprises range from extensive to moderately intensive in nature and comprise predominantly of beef farming (42.3%) and mixed livestock (12%). There are a small number of farms (1.2%) in dairy farming or with dairy as part of a mixed livestock farm enterprises. There is a significant level (19.8%) of farm holdings rented out on a long term basis, annually or on a shorter term basis in this area. Commercial forestry (14.8%) is common along the proposed alignment and these are located in the Frenchpark area and also between Bellanagare and the R369 road. The alignment is in close proximity to peat bogs in the Frenchpark area and there are impacts upon peat soils and access to turbary and peat bogs in Corskeagh, Leggatinty, Ballaghcullia, Drummin, Peak, Carrigeenacreeha and Mullenduff townlands.

In the Elphin to Scramoge section there is drumlin type topography with elevations ranging between 50m to 120m. Lands comprise of drier mineral soils and are best suited to grassland use. Farm size along the proposed alignment ranges from <1ha to greater than 300ha and average farm size is higher at 27.5ha. Farming enterprises in this area are moderately intensive in nature and comprise predominantly of beef (32%), mixed livestock (14.8%) and to a lesser extent dairy farming (1.4%). The renting of farm holdings in this area is significantly higher (30.9%). There is no commercial forestry or woodland along this section. The alignment will impact on peat soils, turbary and peat bogs in Cloonradoon townland.

Summary details of baseline ratings for agricultural property along the proposed road development are presented in Table 16.5.



**Table 16.5: Baseline Ratings for Agricultural Property**

Magnitude of Impact	No. of Farms	% of Total
High	36	21.2%
Medium	99	58.2%
Low	32	18.8%
Very Low	3	1.8%
	170	100%

Further detail on farm size, farm type and baseline rating for farms affected by the proposed road development are presented in Table 16.7.

## 16.4 Description of Likely Impacts on Agricultural Land

The proposed road development will involve a total landtake of approximately 349.4ha from agricultural holdings. This figure consists of permanent acquisition of 335.5ha agricultural lands, 0.9ha of other property and 13.0ha public road.

### 16.4.1 Impact on Agricultural Land Nationally

The permanent acquisition of approximately 335.5ha of agricultural land is not significant at a national level.

### 16.4.2 Impact on Agricultural land in County Roscommon

The proposed road development will involve the permanent acquisition of approximately 335.5ha of agricultural land from 170 agricultural properties. This area, which may be significant on some of the individual farms, is not significant at a county level.

### 16.4.3 Impact on Agricultural Land in the Study Area

The impact on agriculture is limited to those farm holdings directly impacted by the proposed road development. Measures to mitigate the adverse effects of the development are described in Section 16.5. The significance of the residual impact following the implementation of mitigation measures are described in Section 16.6.

A summary of the results of the impact on agriculture assessment is presented in Table 16.6.

**Table 16.6: Summary of the Impact on Agricultural Land**

Magnitude of Impact	No. of Farms	% of Total
Very High	6	3.6
High	35	20.6
Medium	64	37.6
Low	56	32.9
Very Low	9	5.3
	170	100%
Profound	2	1.2
Significant	30	17.7
Moderate	65	38.2
Slight	64	37.6

Magnitude of Impact	No. of Farms	% of Total
Imperceptible	9	5.3
	170	100%

The magnitude of impact on agricultural land and property ranges from Very Low to Very High. There are 41 agricultural properties (24.2%) where the magnitude of impact is High or Very High. On these properties the farm enterprise cannot continue or can only continue with significant management changes. Such management changes may involve changes to livestock type and numbers, areas of fodder / crop production and the use of farmyard facilities.

The significance of impact, which is determined by combining the magnitude of impact and the baseline rating for that farm, ranges from Imperceptible to Profound.

There are two farms (1.2% of all farms) on the proposed road development where the significance of impact is Profound due to the individual or combined impact of landtake, land severance and / or the impact on essential farm buildings or facilities.

- A Profound impact will occur on a mixed livestock farm where the primary farming operation is a dairy enterprise. The main impact involves central severance of the grazing platform for the dairy herd and a loss of direct access from this severed area to the farmyard. This farm has recently made a considerable investment in farmyard facilities including animal housing to allow for conversion to dairy and the planned expansion of the dairy enterprise.
- A Profound impact will occur on a beef farm enterprise where the impact involves the demolition of the dwelling house and associated farm buildings.

On 30 farms (17.7% of all farms), the significance of impact will be Significant and the farm enterprise(s) cannot continue without considerable management changes.

On 65 farms (38.2% of all farms), the significance of impact is Moderate and the farm enterprise(s) can be continued as before but will experience increased management difficulties.

Further detail of the impact assessment of the proposed road development on agriculture is presented in Table 16.7.

**Table 16.7 Assessment of the Impact of the Proposed Road Development on Agricultural Land**

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
1	100	9.8	Leased	0.000	0.078	0.000	Low	Reduction in area of lands. Impact on field access gate. Impact on external field boundary.	Low	Slight	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
2	105	12.1	Leased	0.000	0.256	0.000	Low	Reduction in area of lands. Impact on field access gate. Impact on external field boundary.	Low	Slight	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
3	110	6.1	Leased	0.103	0.459	0.000	Medium	Reduction in area of lands due to Sideroad 2 and attenuation pond. Impact on field access gate. Impact on external field boundary.	Low	Slight	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
4	115	13.5	Other - Grassland	0.104	0.000	0.000	Medium	Public road only	Very low	Imperceptible		Imperceptible
5	120	36.4	Mixed livestock - Beef & Sheep	0.000	1.734	0.081	High	Reduction in area of two plots due to main alignment and Sideroad 2. Impact on main farm entrance and internal access track. Severance of a small area on main plot. Landtake and field access gate impact on second plot located north of N5. Impact on external field boundaries.	Medium	Moderate	Restore main farm entrance and field access gates on remaining areas. Replace boundary with permanent stockproof boundary.	Moderate
6	125	8.1	Beef	0.021	0.809	0.000	Medium	Reduction in area of lands due to main alignment. Plot severed into two separate areas. Loss of access to severed area. Impact on external and internal field boundaries.	Medium	Moderate	Provide access to the severed areas. Replace boundary with permanent stockproof boundary.	Moderate

<sup>18</sup> Recommended boundary mitigation is a minimum boundary treatment and any other boundary treatments recommended in other chapters (Landscape & Visual, Noise & Air or Architectural, etc.) will be in addition to this recommendation or take precedence

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
7	135	30.4	Beef	0.091	1.026	0.000	Medium	Reduction in area of lands due to main alignment and Junction 3. Main plot severed into two separate areas. Impact on access to severed lands. Impact on access to the second farmyard. Impact on external field boundaries.	Medium	Moderate	Restore access to the severed areas. Replace boundary with permanent stockproof boundary.	Moderate
8	140	32.4	Beef	0.021	1.319	0.011	Medium	Significant reduction in area of plot. Impact on field access to remaining area. Impact on external field boundary. Impact on derelict building.	Medium	Moderate	Provide access to the remaining area. Replace boundary with permanent stockproof boundary.	Moderate
9	145	8.9	Beef	0.014	0.005	0.000	Medium	Reduction in area of lands due to Junction 3. Impact on field access gate. Impact on external boundary.	Low	Slight	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
10	155	5.7	Mixed livestock - Beef & Sheep	0.060	1.261	0.000	Medium	Reduction in area of lands due to main alignment and Junction 4A. Plot severed into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external and internal field boundaries.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
11	160	8.9	Mixed livestock - Beef & Sheep	0.031	1.536	0.000	Medium	Reduction in area of two plots of lands. Severance of both plots into two separate areas. Impact on access to severed areas. Loss of access to farmyard facilities from severed area. Impact on external boundaries.	High	Significant	Provide access to the severed areas. Replace boundary with permanent stockproof boundary.	Moderate
12	170	1.6	Leased	0.026	0.440	0.000	Medium	Reduction in area of lands. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
13	180	48.6	Beef	0.035	0.628	0.000	Medium	Reduction in area of lands. Plot severed into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external and internal field boundaries.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
14	185	32.4	Beef	0.000	1.162	0.000	Medium	Reduction in area of plot of land. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to animal handling facilities from severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
15	190	6.9	Leased	0.000	0.001	0.000	Medium	Reduction in area of lands. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
16	195	20.2	Beef	0.000	0.495	0.000	Medium	Reduction in area of plot of land. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to animal handling facilities from severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
17	200	10.9	Beef	0.000	1.102	0.000	Medium	Reduction in area of plot of land. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
18	205	13.8	Mixed livestock - Beef & Sheep	0.000	1.112	0.000	Medium	Reduction in area of plot of land. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
19	210	42.9	Mixed livestock - Beef & Sheep	0.000	0.995	0.000	Medium	Reduction in area of plot of land. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
20	214	8.5	Forestry	0.000	0.071	0.000	Low	Slight reduction in area of forestry lands. Impact on external boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
21	215	36.4	Forestry	0.099	5.991	0.007	Low	Reduction in area of two plots of commercial forestry due to main alignment and attenuation pond. Severance of both plots into two separate areas. Impact on main access point and internal forestry roads. Loss of access to severed areas. Impact on external field boundary. Impact on section of access track.	High	Moderate	Provide access to the severed area and restore access to remaining areas. Replace boundary with permanent stockproof boundary.	Slight
22	220	4.0	Leased	0.102	4.227	0.000	Low	Acquisition of affected plot.	Very high	Moderate		Moderate
23	225	24.8	Beef	0.010	0.000	0.000	Low	Public road only	Very low	Imperceptible		Imperceptible

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
24	235	23.5	Beef	0.165	3.128	0.033	Medium	Reduction in area of four grassland plots due to mainline and Junctions 6A and 6B. Impact on field access gates and an animal handling pen. Loss of access to farmyard facilities from remaining area. Impact on external field boundaries. Impact on section of access track.	Medium	Moderate	Provide access to the remaining areas. Replace boundary with permanent stockproof boundary.	Moderate
25	240	0.6	Other - Bog	0.000	0.015	0.000	Very low	Slight reduction in area of bog plot. Impact on access to plot.	Medium	Slight	Restore access to affected plot.	Imperceptible
26	245, 470, 500 & 505	445,000	Forestry	0.844	48.784	0.000	Low	Significant reduction in area six plots of commercial forestry due to main alignment, junctions (No. 6A, 10A, and 10C), attenuation ponds, proposed site compounds (No. 1 and 3) and material deposition areas. Affected plots are located at Corskeagh, Mullenduff, Corry West, Kilvoy, Raheen and Creeve. Impact on forestry access points and internal forestry roads. Impact on external field boundaries.	Medium	Slight	Provide suitable access for forestry management activity. Replace boundary with permanent stockproof boundary.	Slight
27	250	1.6	Leased	0.041	0.997	0.012	Low	Acquisition of affected plot.	High	Moderate		Moderate
28	255	1.1	Leased	0.014	0.977	0.044	Low	Acquisition of affected plot.	Very high	Moderate		Moderate
29	260	2.4	Leased	0.049	0.181	0.000	Low	Reduction in area of lands due to Junction 6B. Impact on field access gate. Impact on external boundary.	Low	Slight	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
30	265	14.2	Forestry	0.000	0.609	0.000	Low	Reduction in area of forestry lands. Impact on external boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

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31	270	34.0	Mixed enterprise - Beef & forestry	0.410	5.167	0.000	Medium	Reduction in area of one forestry and two grassland plots due to main alignment, Junction 7B and an attenuation pond. Severance of main grassland plot into two separate areas. Loss of access to farmyard facilities from severed grassland area. Impact on existing field access gate. Impact on external boundaries.	High	Significant	Provide access to the severed area and restore field access to remaining areas. Replace boundary with permanent stockproof boundary.	Moderate
32	275	18.8	Forestry	0.000	4.413	0.000	Low	Reduction in area of forestry plot. Impact on external field boundary.	Medium	Slight	Replace boundary with permanent stockproof boundary.	Slight
33	276	18.8	Beef	0.022	0.212	0.000	Low	Reduction in area of bog plot. Impact on external field boundary.	Medium	Slight	Replace boundary with permanent stockproof boundary.	Slight
34	280	7.3	Forestry	0.000	0.135	0.000	Low	Reduction in area of small commercial forestry plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
35	285	32.4	Beef	0.016	0.000	0.000	Medium	Public road only	Very low	Imperceptible		Imperceptible
36	290	16.2	Leased	0.021	1.753	0.000	Low	Reduction in area of grassland plot. Impact on external boundaries.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
37	300	15.6	Forestry	0.019	2.729	0.000	Low	Reduction in area of commercial forestry. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	High	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
38	305	22.3	Beef	0.009	1.025	0.000	Medium	Reduction in area of grassland plot. Impact on access to remaining grassland area. Impact on external boundaries.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
39	306	12.1	Beef	0.000	0.034	0.000	Very low	Slight reduction in area of lands.	Low	Imperceptible		Imperceptible



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40	309	10.1	Beef	0.025	0.024	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundaries.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
41	310 & 311	50.0	Beef	0.150	2.363	0.003	Medium	Reduction in area of two grassland plots at Leggatinty and Ballaghcullia due to main alignment and Junction 7A. Severance of Ballaghcullia plot into two areas. Loss of access to farmyard facilities from severed area. Impact on external boundaries. Impact on dwelling house garden.	Medium	Moderate	Provide access to the remaining area. Replace boundary with permanent stockproof boundary.	Moderate
42	315	21.4	Beef	0.000	0.591	0.000	Medium	Reduction in the area of lands. Severance of plot into two separate areas. Loss of access to severed area. Impact on external boundaries.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
43	320	17.0	Beef	0.005	2.370	0.000	Medium	Reduction in area of grassland plot and separate turbary plot. Severance of grassland plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external boundaries. Impact on access to turbary plot.	Medium	Moderate	Provide access to the severed areas. Replace boundary with permanent stockproof boundary.	Moderate
44	325	4.5	Beef	0.055	0.037	0.000	Medium	Reduction in the area of lands. Impact on house curtilage. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

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45	330	40.5	Beef	0.309	3.394	0.000	Medium	Reduction in area of two grassland plots due to main alignment, Junctions 7B and 7C and proposed site compound (No. 2). Impact on existing field access gates and animal handling pen. Loss of access to farmyard facilities from remaining areas. Impact on external boundaries.	Medium	Moderate	Provide access to the remaining area. Replace boundary with permanent stockproof boundary.	Moderate
46	335	11.5	Beef	0.048	0.238	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundaries.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
47	340 & 354	3.6	Leased	0.001	1.465	0.000	Medium	Reduction in area of lands. Impact on field access gate. Impact on external boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
48	345	56.7	Mixed livestock - Dairy & beef	0.072	4.051	0.000	High	Reduction in area of two grassland plots at Ballaghcullia and Carrigeenacreeha. At Ballaghcullia, plot will be severed into two separate areas. Loss of access to farmyard facilities from severed area. Impact on external boundaries. At Carrigeenacreeha, the severance of local road (LS 5642) will impact on access to lands for the dairy herd.	High	Significant	Provide access accommodation tracks and shared underpass accommodation structures at approx. Ch. 13+950 and Ch. 15+600m. Replace boundary with permanent stockproof boundary.	Moderate
49	355	5.5	Beef	0.000	1.349	0.000	Medium	Reduction in area of grassland plot. Impact on external boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
50	360	10.9	Leased	0.000	0.606	0.000	Low	Reduction in area of grassland plot. Impact on external boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

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51	365	10.1	Beef	0.000	1.215	0.004	Medium	Reduction in area of grassland plot. Severance of plot into two areas. Loss of access to severed turbary area. Impact on external boundary. Impact on section of access track.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
52	370	3.2	Leased	0.000	0.286	0.000	Low	Reduction in area of grassland plot. Impact on external boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
53	375	9.0	Beef	0.000	2.343	0.080	Medium	Significant reduction in area of grassland plot due to main alignment and attenuation pond. Loss of access to remaining grassland area. Impact on access to turbary area. Impact on external boundary. Impact on section of access track.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
54	380	20.2	Leased	0.000	2.237	0.000	Low	Reduction in area of two plots. Impact on external boundary.	Medium	Slight	Replace boundary with permanent stockproof boundary.	Slight
55	385	10.1	Beef	0.016	2.699	0.000	Medium	Acquisition of affected plot.	Medium	Moderate		Moderate
56	390	50.6	Mixed livestock - Beef & Sheep	0.000	1.367	0.047	Medium	Reduction in area of grassland plot due to main alignment and attenuation pond. Impact on field access gate. Impact on external boundary. Impact on section of access track.	Medium	Moderate	Restore field access gate. Replace boundary with permanent stockproof boundary.	Slight
57	395	10.1	Leased	0.000	0.013	0.016	Medium	Reduction in area of grassland plot. Impact on external boundary. Impact on section of access track.	Very low	Imperceptible	Replace boundary with permanent stockproof boundary.	Imperceptible
58	405	2.6	Forestry	0.000	2.506	0.017	Low	Acquisition of affected plot.	Very High	Moderate		Moderate
59	410	8.5	Beef	0.000	2.238	0.028	Medium	Acquisition of affected plot.	Medium	Moderate		Moderate

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60	415	202.3	Beef	0.000	1.912	0.022	High	Acquisition of affected plot.	Low	Slight		Slight
61	416	7.5	Other - Grassland	0.010	0.000	0.000	Medium	Public road only	Very low	Imperceptible		Imperceptible
62	420 / 421	28.0	Beef	0.000	2.576	0.000	Medium	Acquisition of affected plot. Impact on an area of turbary plots.	Medium	Moderate		Moderate
63	425 / 431	52.6	Mixed livestock - Beef & Sheep	0.024	1.379	0.000	High	Acquisition of affected plot.	Low	Slight		Slight
64	426	20.2	Beef	0.000	0.148	0.000	Medium	Reduction in area of grassland plot due to accommodation access track. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
65	430	5.5	Forestry	0.180	5.448	0.000	Low	Acquisition of two plots of commercial forestry.	Low	Slight		Slight
66	435	1.7	Leased	0.005	1.639	0.000	Low	Acquisition of affected plot.	High	Moderate		Moderate
67	440	11.5	Equine	0.000	1.185	0.000	Medium	Acquisition of affected plot.	Medium	Moderate		Moderate
68	445	9.0	Other - Grassland	0.007	0.000	0.000	Medium	Public road only	Very low	Imperceptible		Imperceptible
69	450	46.1	Beef	0.108	4.605	0.000	Medium	Significant reduction in area of two grassland plots due to main alignment, junction (No. 8C) and material deposition area. Severance of one plot into two separate areas. Loss of direct access to severed area. Impact on external boundaries.	High	Significant	Provide access accommodation tracks and shared underpass accommodation structure at Ch. 15+600m. Replace boundary with permanent stockproof boundary.	Moderate

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70	455	18.6	Beef	0.000	1.059	0.000	Medium	Reduction in area of grassland plot due to main alignment and material deposition area. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
71	460	18.6	Beef	0.000	2.789	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to the severed area. Loss of access to farmyard facilities from severed area. Impact on external boundaries.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
72	465 / 475	18.6	Beef	0.000	0.304	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
73	466	0.7	Other - Bog	0.000	0.015	0.000	Very low	Reduction in area of bog plot.	Very low	Imperceptible	Replace boundary with permanent stockproof boundary.	Imperceptible
74	480 & 595	9.8	Forestry	0.060	0.998	0.000	Medium	Reduction in area of forestry plot (Mullenduff) and grassland plot (Cartronagor) due to main alignment and Junctions 9 and 12B. Impact on external boundary. Impact on external boundary of grassland plot.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
75	490	22.7	Mixed livestock - Beef & Sheep	0.077	0.474	0.002	Medium	Reduction in area of grassland plot due to main alignment and Junction 9. Impact on external field boundary. Impact on dwelling house driveway.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

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76	510	8.1	Beef	0.394	2.081	0.000	Medium	Significant reduction in area of plot due to main alignment and Junctions 10B and 10C Impact on existing access to lands. Impact on external field boundary.	Medium	Moderate	Restore access to the remaining lands. Replace boundary with permanent stockproof boundary.	Moderate
77	515	6.5	Forestry	0.013	0.000	0.000	Low	Public road only	Very low	Imperceptible		Imperceptible
78	520	40.5	Beef	0.118	2.224	0.000	Medium	Significant reduction in area of grassland plot. Impact on field access gate. Impact on external boundary.	Medium	Moderate	Restore field access gate. Replace boundary with permanent stockproof boundary.	Moderate
79	525	16.2	Beef	0.112	1.114	0.000	Medium	Reduction in area of grassland plot. Impact on on animal handling pen and field access gate. Impact on external boundary.	Medium	Moderate	Restore field access gate. Replace boundary with permanent stockproof boundary.	Moderate
80	530	7.5	Leased	0.201	1.515	0.000	Medium	Impact on three separate plots at Kilvoy, Kildallogge and Scramoge. At Kilvoy, reduction in area of grassland plot. Impact on on field access gates. Impact on external field boundary. At Kildallogge and Scramoge the impact will be on public roadbed only.	Medium	Moderate	At Kilvoy, replace field access gate. Replace affected plot boundaries with permanent stockproof boundary.	Moderate
81	535	111.3	Leased	0.222	5.693	0.000	Medium	Significant reduction in area of two grassland plots. Severance of one plot into two separate areas. Loss of direct access to the severed areas. Impact on field access gate. Impact on internal and external field boundaries.	Medium	Moderate	Replace field access gate. Replace boundary with permanent stockproof boundary.	Moderate

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82	540	1.9	Leased	0.070	0.079	0.000	Medium	Reduction in area of grassland plot. Impact on field access gate. Impact on external boundary.	Low	Slight	Replace field access gate. Replace boundary with permanent stockproof boundary.	Slight
83	545	131.1	Mixed livestock - Beef & Sheep	0.557	2.242	0.000	High	Reduction in area of grassland plot. Impact on field access gate. Impact on external boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
84	555 & 560	52.6	Beef	0.176	2.908	0.000	Medium	Reduction in area of two grassland plots. Severance of one plot into two separate areas. Loss of access to severed area. Impact on external boundaries.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
85	565	14.5	Beef	0.000	11.375	0.000	Medium	Significant reduction in area of grassland plot due to main alignment and material deposition area. Impact on external boundaries.	High	Significant	Replace boundary with permanent stockproof boundary.	Significant
86	570	10.9	Forestry	0.046	10.928	0.000	Low	Significant reduction in area of forestry plot due to main alignment, attenuation pond and material deposition area. Impact on external boundaries.	High	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
87	575	14.6	Forestry	0.028	1.45	0.000	Low	Reduction in area of forestry plot due to main alignment and Junction 12A. Severance of plot into two separate areas. Loss of access to severed area. Impact on external boundary.	High	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight

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88	580	32.4	Dairy	0.534	1.852	0.000	High	Reduction in area of grassland plot due to main alignment and Junctions 12A, 12B and 12C. Severance of plot into two separate areas. Loss of direct access to the severed area. Impact on external boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
89	581 & 585	32.4	Beef	0.178	0.255	0.000	Medium	Reduction in area of grassland plot due to Junction 12C. Impact on existing farmyard access gate. Impact on external field boundary.	Medium	Moderate	Replace field access gate. Replace boundary with permanent stockproof boundary.	Slight
90	590	10.1	Leased	0.164	1.176	0.000	Low	Reduction in area of grassland plot due to main alignment and Junction 12B. Impact on existing field access gate. Impact on external boundary.	Medium	Slight	Replace field access gate. Replace boundary with permanent stockproof boundary.	Slight
91	600	60.7	Beef	0.046	1.897	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of direct access to the severed area. Loss of access to farmyard facilities from severed area. Impact on external boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
92	605	25.1	Mixed livestock - Beef & Sheep	0.000	3.597	0.000	Medium	Reduction in area of grassland plot due to main alignment, attenuation pond and material deposition area. Impact on external boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate



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93	610	44.5	Mixed livestock - Beef & Sheep	0.153	3.017	0.042	High	Reduction in area of grassland plot due to main alignment and Junction 13A. Impact on existing farm entrance. Impact on external field boundaries. Impact on dwelling house entrance, driveway and garden area.	High	Significant	Replace farm entrance. Replace boundary with permanent stockproof boundary. Replace house entrance on a like for like basis.	Moderate
94	615	30.8	Mixed enterprise - Beef & forestry	0.331	3.776	0.000	Medium	Reduction in forestry and grassland area of plot due to main alignment and Junction 13B. Severance of plot into two separate areas. Loss of direct access to severed area. Impact on farm and farmyard entrance. Impact on external field boundary.	Medium	Moderate	Replace farm entrance. Provide access on the severed area. Replace boundary with permanent stockproof boundary.	Moderate
95	620	3.2	Beef	0.114	0.214	0.000	Medium	Reduction in area of grassland plot due to Junction 13A. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
96	630	1.2	Leased	0.121	0.316	0.000	Low	Reduction in area of grassland plot due to Junction 13A. Impact on existing field access gate. Impact on external field boundary.	Low	Slight	Replace field access gate. Replace boundary with permanent stockproof boundary.	Slight
97	635	53.8	Leased	0.421	8.066	0.000	Medium	Reduction in area of grassland plot due to main alignment, N61 Roundabout, Junctions 13A and 13B, attenuation pond and site compound (No. 4). Severance of plot into two separate areas. Loss of direct access to the severed area. Impact on animal handling pen and existing field access gates. Impact on internal and external field boundaries.	High	Significant	Provide private underpass accommodation structure at Ch. 30+680. Replace field access gates on remaining areas. Replace boundary with permanent stockproof boundary.	Moderate

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98	650	24.3	Mixed livestock - Beef & Sheep	0.726	2.217	0.000	Medium	Reduction in area of grassland plot due to the Shankill Roundabout, N61 Link, Junctions 13E and 13F and an attenuation pond. Impact on external field boundaries. Impact on existing field access gates. Impact on animal handling pen.	Medium	Moderate	Provide access to the remaining area. Replace boundary with permanent stockproof boundary.	Moderate
99	652	10.5	Mixed livestock - Beef & Sheep	0.032	0.134	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary. Impact on existing field access gate.	Low	Slight	Replace field access gate. Replace boundary with permanent stockproof boundary.	Slight
100	655	18.2	Sheep	0.159	0.331	0.000	Medium	Reduction in area of grassland plot due to N61 Link. Impact on field access gate. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
101	656	0.5	Farmyard	0.030	0.000	0.000	Low	Public road only	Very low	Imperceptible		Imperceptible
102	657	56.7	Mixed livestock - Beef & Sheep	0.225	0.226	0.000	Medium	Reduction in area of grassland plot due to Junction 13C. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
103	659	32.4	Beef	0.498	0.327	0.000	Medium	Reduction in area of grassland plot due to Junction N61 Link and Junctions 13C and 13D. Impact on existing field access gates. Impact on external field boundary.	Low	Slight	Provide access to the remaining areas. Replace boundary with permanent stockproof boundary.	Slight
104	660	23.1	Mixed livestock - Beef & Sheep	0.000	2.234	0.000	Medium	Reduction in area of grassland plot due to main alignment and attenuation pond. Impact on external field boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate

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105	665	48.6	Mixed livestock - Beef & Sheep	0.043	5.312	0.000	High	Significant reduction in area of grassland plot. Severance of plot into three separate areas. Loss of access to two severed areas. Loss of access to farmyard facilities from the severed area. Impact on internal and external field boundaries.	High	Significant	Provide access to the severed areas. Replace boundary with permanent stockproof boundary.	Moderate
106	670	80.9	Mixed livestock - Beef & Sheep	0.000	1.172	0.000	High	Reduction in area of grassland plot. Severance of right of way access to the remaining area. Impact on external field boundaries.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
107	675	32.4	Leased	0.219	1.890	0.000	Medium	Reduction in area of grassland plot due to main alignment and Sideroad 14. Impact on existing field access gate. Impact on external field boundary.	Medium	Moderate	Provide access to the remaining areas. Replace boundary with permanent stockproof boundary.	Slight
108	680	28.3	Beef	0.257	1.890	0.055	High	Reduction in area of grassland plot due to main alignment and Sideroad 14. Severance of plot into two separate areas. Loss of direct access to severed area. Impact on farm building and farmyard facilities. Impact on existing field access gates. Impact on external field boundary.	High	Significant	Provide private underpass accommodation structure at Ch. 31+900. Replace field access gates. Replace boundary with permanent stockproof boundary.	Moderate
109	685	4.0	Leased	0.000	1.118	0.000	Medium	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight

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110	690	7.3	Mixed livestock - Beef & Sheep	0.000	0.849	0.000	Medium	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
111	695	18.6	Leased	0.000	2.259	0.000	Medium	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
112	700	62.7	Mixed livestock - Beef & Sheep	0.000	1.307	0.060	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary. Impact on section of access track.	High	Significant	Provide access via shared underpass accommodation structure at Ch. 33+300. Replace boundary with permanent stockproof boundary.	Moderate
113	705	10.1	Leased	0.016	2.808	0.000	Medium	Reduction in area of two grassland plots. Severance of one plot into two separate areas. Loss of access to severed area. Impact on field access gate. Impact on external field boundary.	High	Significant	Provide access via shared underpass accommodation structure at Ch. 33+300. Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
114	710	9.7	Leased	0.003	2.653	0.000	Medium	Reduction in area of grassland plot due to main alignment and attenuation pond. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from severed area. Impact on external field boundary.	High	Significant	Provide access via shared underpass accommodation structure at Ch. 33+300. Replace boundary with permanent stockproof boundary.	Moderate
115	745	52.6	Beef	0.000	4.685	0.000	High	Significant reduction in area of grassland plot due to main alignment and attenuation pond. Severance of plot into two separate areas. Loss of direct access to severed area. Loss of access to farmyard facilities from the severed area. Impact on internal and external field boundaries.	High	Significant	Provide access via shared underpass accommodation structure at Ch. 33+300. Replace boundary with permanent stockproof boundary.	Moderate
116	751	48.6	Mixed livestock - Beef & Sheep	0.001	0.157	0.000	Medium	Reduction in area of grassland plot due to drainage outfall. Impact on existing field access. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
117	757	8.9	Beef	0.025	0.614	0.000	Medium	Reduction in area of grassland plot. Impact on animal handling pen. Impact on external field boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
118	759 & 820	20.2	Leased	0.233	4.455	0.000	Medium	Significant reduction in area of two grassland plots due to main alignment and Junctions 15B and 15C. Remaining lands are severed into two separate areas. Impact on animal handling pen. Impact on existing field access gate. Impact on external field boundary.	Medium	Moderate	Provide access to the remaining areas. Replace boundary with permanent stockproof boundary.	Moderate
119	790	20.2	Beef	0.007	0.691	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
120	795	19.8	Leased	0.150	0.113	0.000	Medium	Reduction in area of grassland plot due to Junctions 15B and 15D. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Imperceptible
121	805	48.6	Beef	0.303	10.407	0.000	High	Significant reduction in area of grassland plot due to main alignment, Junctions 15A and 15B, an attenuation pond and proposed site compound (No. 5). Severance of plot into two separate areas. Loss of direct access to severed area. Loss of access to farmyard facilities from the severed area. Impact on existing field access gates. Impact on internal and external field boundaries.	High	Significant	Provide private underpass accommodation structure for livestock and machinery at Ch. 34+600m. Replace boundary with permanent stockproof boundary.	Moderate
122	806	68.8	Beef	0.000	0.040	0.000	High	Reduction in area of grassland plot due to drainage outfall. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
123	810 & 829	323.8	Beef	0.121	9.786	0.061	High	Reduction in area of grassland holding due to main alignment and Junctions 15B and 15D. Severance of lands at three separate locations in Cregga and Cuilrevagh. Loss of direct access to two severed areas. Loss of access to farmyard facilities from the severed areas. Impact on existing field access gates. Impact on right of way access. Impact on internal farm roadway / access track. Impact on external field boundary.	Medium	Moderate	Provide access to the severed areas including access via shared underpass accommodation structure at Ch. 36+700. Replace boundary with permanent stockproof boundary.	Moderate
124	815	34.4	Beef	0.041	0.242	0.000	High	Reduction in area of grassland plot. Impact on animal handling pen. Impact on dwelling house (vacant). Impact on existing field access gate. Impact on external field boundary.	Medium	Moderate	Replace access gate on affected area. Replace boundary with permanent stockproof boundary.	Moderate
125	825 & 826	36.4	Beef	0.031	1.261	0.000	High	Reduction in area of grassland plot. Impact on external field boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
126	830	22.3	Leased	0.000	0.904	0.035	Medium	Reduction in area of two grassland plots. Severance of right of way access to lands. Impact on external field boundary. Impact on section of access track.	Medium	Moderate	Provide access to the remaining area. Replace boundary with permanent stockproof boundary.	Slight
127	835	9.3	Beef	0.000	0.325	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
128	840	8.1	Beef	0.000	0.350	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
129	845	21.0	Leased	0.000	5.433	0.000	Medium	Significant reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area via shared underpass accommodation structure at Ch. 36+700. Replace boundary with permanent stockproof boundary.	Moderate
130	850	21.9	Leased	0.000	2.515	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
131	855	64.8	Mixed livestock - Dairy & Beef	0.000	3.130	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to dairy and farmyard facilities from the severed area. Impact on internal farm roadway. Impact on private well water supply. Impact on right of way access. Impact on external field boundary.	Very high	Profound	Provide access to the severed area and right of way via accommodation tracks and private underpass accommodation structure at Ch. 38+000m. Replace boundary with permanent stockproof boundary.	Significant
132	860	32.4	Beef	0.000	0.621	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate



No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
133	865	101.2	Mixed livestock - Beef & Sheep	0.000	1.048	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
134	870	44.5	Beef	0.000	0.586	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to animal handling pen from severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
135	875	8.7	Leased	0.000	0.613	0.000	Medium	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of direct access to severed area. Impact on external field boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
136	880	28.8	Leased	0.080	1.952	0.000	Medium	Reduction in area of grassland plot. Impact on existing field access gate. Impact on external field boundary.	Medium	Moderate	Replace field access gate. Replace boundary with permanent stockproof boundary.	Moderate
137	885	26.3	Beef	0.195	1.001	0.000	High	Reduction in area of two grassland plots in Lettrean and Kildallogge due to main alignment, Junction 17B and an attenuation pond. Impact on existing field access gates. Impact on external field boundaries.	Medium	Moderate	Replace field access gates. Replace boundary with permanent stockproof boundary.	Moderate
138	890	13.4	Leased	0.055	0.092	0.000	Medium	Reduction in area of grassland plot. Impact on farm entrance. Impact on external field boundary.	Low	Slight	Replace farm entrance. Replace boundary with permanent stockproof boundary.	Slight

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
139	895	28.3	Beef	0.550	5.039	0.000	High	Significant reduction in farmed area of three grassland plots at Lettreen, Kildalloge and Cloonradoon due to main alignment Junction 16B, 17B, 17C and Kildalloge Roundabout. Impact on existing field access gates. Impact on two animal handling pens. Impact on external field boundaries. Loss of access to severed area at Cloonradoon.	High	Significant	Provide access to the severed area. Replace field access gates. Replace boundary with permanent stockproof boundary.	Moderate
140	900	24.3	Mixed livestock - Beef, Horses & Sheep	0.060	0.177	0.000	High	Reduction in area of grassland plot due to Junction 16A. Impact on existing field access gate. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
141	901	17.0	Leased	0.048	0.658	0.000	Medium	Reduction in area of grassland plot due to drainage outfall. Severance of plot into two separate areas. Impact on external and internal field boundaries	Medium	Moderate	Replace boundary with permanent stockproof boundary. Provide access points across drainage channel.	Slight
142	905	13.4	Beef	0.030	0.303	0.000	High	Reduction in area of grassland plot. Impact on existing field access gate. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
143	910	16.2	Leased	0.000	1.421	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from the severed area. Impact on external field boundary.	High	Significant	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
144	915	12.1	Leased	0.000	0.105	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
145	920 & 925	63.5	Beef	0.000	3.402	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from the severed area. Impact on internal farm road. Impact on external field boundary.	High	Significant	Provide access accommodation tracks and shared underpass accommodation structure at Ch. 40+250m. Replace boundary with permanent stockproof boundary.	Moderate
146	930	16.2	Beef	0.186	4.800	0.008	Medium	Significant reduction in area of grassland plot due to main alignment, Strokestown Roundabout, Junctions 17A, 17B and proposed site compound (No. 6). Severance of plot into two separate areas. Loss of direct access to severed area. Loss of access to farmyard facilities from the severed area. Impact on animal handling pen. Impact on internal and external field boundaries. Impact on dwelling house driveway.	Very high	Significant	Provide access accommodation tracks and shared underpass accommodation structure at Ch. 40+250m. Replace boundary with permanent stockproof boundary.	Moderate
147	945	8.3	Leased	0.089	0.000	0.012	Medium	Reduction in area of holding. Impact on existing entrance, boundary and driveway.	Low	Slight	Replace property boundary and entrance on a like for like basis.	Slight
148	955	3.1	Leased	0.124	0.629	0.000	Medium	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of direct access to severed area. Impact on external field boundary.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
149	960	40.5	Beef	0.090	0.553	0.181	High	Reduction in area of grassland plot. Loss of access to remaining area. Impact on dwelling house and farmyard buildings. Impact on field access gates. Impact on external field boundary. Impact on derelict house.	Very high	Profound	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Profound
150	965 & 1025	20.2	Beef	0.163	2.058	0.000	High	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Loss of access to farmyard facilities from the severed area. Impact on internal and external field boundaries. Impact on roadside boundary wall.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
151	990	11.3	Other - Hay / Silage	0.211	0.398	0.000	High	Reduction in area of grassland plot. Impact on existing field access gate. Impact on external field boundary.	Low	Slight	Replace field access gates. Replace boundary with permanent stockproof boundary.	Slight
152	1030 & 1035	40.5	Beef	0.015	4.671	0.000	High	Reduction in area of grassland plot due to main alignment and an attenuation pond. Severance of plot into two separate areas. Loss of direct access to severed area. Loss of access to farmyard facilities from the severed area. Impact on external field boundary.	High	Significant	Provide private underpass accommodation structure at Ch. 50+900m. Replace boundary with permanent stockproof boundary.	Moderate
153	1040	11.3	Beef	0.000	0.358	0.000	Medium	Reduction in area of a bog plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
154	1045	0.3	Other - Bog	0.000	0.156	0.000	Very low	Reduction in area of bog plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
155	1050	4.0	Leased	0.000	0.173	0.000	Very low	Reduction in area of bog plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
156	1055	2.0	Leased	0.000	0.783	0.000	Low	Reduction in area of plot due to main alignment and attenuation pond. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
157	1056	0.7	Other - Bog	0.000	0.064	0.000	Low	Reduction in area of bog plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
158	1060	19.8	Leased	0.000	1.667	0.000	Low	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of direct access to severed area. Impact on internal and external field boundaries.	Medium	Slight	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
159	1065	12.1	Leased	0.000	1.390	0.000	Low	Reduction in area of grassland plot. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	Medium	Slight	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Slight
160	1070	26.7	Beef	0.000	1.909	0.000	Medium	Reduction in area of grassland plot due to main alignment and Junction 18. Severance of plot into two separate areas. Loss of access to severed area and right of way access to farmyard facilities. Loss of access to farmyard facilities from the severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
161	1075	62.7	Beef	0.067	0.378	0.000	High	Reduction in area of grassland plot. Impact on existing field access gate. Impact on fodder storage area. Impact on external field boundary.	Low	Slight	Replace field access gates. Replace boundary with permanent stockproof boundary.	Slight
162	1085	28.3	Beef	0.211	2.776	0.000	High	Reduction in area of grassland plot due to main alignment and an attenuation pond. Severance of plot into two separate areas. Loss of access to severed area. Impact on external field boundary.	Medium	Moderate	Provide access to the severed area. Replace boundary with permanent stockproof boundary.	Moderate
163	1090	25.9	Leased	0.000	0.300	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
164	1095	18.2	Mixed livestock - Beef, Horses & Sheep. Commercial knackery business	0.000	1.455	0.000	High	Reduction in area of two grassland plots due to mainline and attenuation pond. Impact on external field boundaries. Impact on local access for agricultural machinery.	High	Significant	Provide underbridge accommodation structure at Ch. 53+260m. Replace boundary with permanent stockproof boundary.	Moderate
165	1100	24.3	Beef	0.000	0.648	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
166	1105 & 1110	10.1	Beef	0.156	3.571	0.008	Medium	Significant reduction in area of grassland plot. Impact on external field boundary. Impact on section of access track.	Medium	Moderate	Replace boundary with permanent stockproof boundary.	Moderate
167	1115	56.7	Mixed livestock - Beef, Horses & Sheep	0.000	1.990	0.000	Medium	Acquisition of affected plot.	Medium	Moderate		Moderate

No.	CPO Ref.	Size (ha)	Farm Enterprise Type	Public Road (ha)	Agri / Land (ha)	Other (ha)	Baseline Rating	Impact Details	Magnitude of Impact	Impact Significance	Mitigation Measures <sup>18</sup>	Residual Impact Significance
168	1125	18.2	Beef	0.069	0.116	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
169	1145	36.4	Beef	0.052	0.028	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight
170	1150	10.1	Beef	0.000	0.673	0.000	Medium	Reduction in area of grassland plot. Impact on external field boundary.	Low	Slight	Replace boundary with permanent stockproof boundary.	Slight

## 16.5 Mitigation Measures

This section describes the measures that when implemented will mitigate the adverse impact on agricultural land. The assessment does not consider at this stage measures such as compensation for land acquisition and disturbance. These matters will be agreed with landowners or their representative(s) once approval for the proposed road development has been granted. In the event that agreement is not possible, such compensation will be decided upon by a property arbitrator.

The following general mitigation measures will be provided:

- Access will be restored to lands where it is removed or restricted. The location of such access will be at a suitable location and, where possible, with the agreement of the landowner.
- In general, permanent fencing will be timber post and rail fence with chain-link wire mesh in accordance with TII Standard Construction Details (SCDs) and referenced as CC-SCD-00301. Alternatively, permanent fencing may consist of timber post and tension mesh fencing in accordance with CC-SCD-00320. Where permanent fencing occurs within the clearzone area it will be in accordance with CC-SCD-00320. Attenuation ponds will also be securely fenced. Where permanent fencing is erected on the boundary of the proposed N5 national road mainline or the associated attenuation ponds, it will be maintained by the Local Authority.
- For farm holdings with equestrian livestock, permanent fencing will be timber post and rail fence with chain-link wire mesh in accordance with NRA Road Construction Details Drawing No. CC-SCD-00302. Alternatively, permanent fencing may consist of timber post and tension mesh fencing in accordance with CC-SCD-00321. Where permanent fencing occurs within the clearzone area it will be in accordance with CC-SCD-00321. Where permanent fencing is erected on the boundary of the proposed N5 national road mainline or the associated attenuation ponds, it will be maintained by the Local Authority.
- In general, on non-national road side road tie-ins with the proposed development, the permanent fencing will be timber post and rail fence with chain-link wire mesh in accordance with NRA Road Construction Details Drawing No. CC-SCD-00301 unless otherwise agreed with the landowner and will be maintained by the landowner.
- All existing land drains and watercourses severed by the proposed road will either be directed to a culvert under the proposed road and / or associated side road realignments or will be incorporated into the new road drainage system. The new drainage system will be designed to ensure that the current drainage situation will not be made any worse and there will be no increased risk of flooding as a consequence of the proposed road development.
- Any services that are interfered with as a result of the proposed road development will be repaired / replaced without unreasonable delay.
- Ducting for the restoration of water and power supply services will be provided, as necessary, at a suitable location with the agreement of the landowner.

Details of mitigation measures for individual farms affected by the proposed road development are presented in Table 16.7.



## 16.6 Residual Impacts

The significance of the residual impact on agricultural land has been assessed following the implementation of general mitigation measures as outlined in Section 16.5. A summary of the residual impact on agriculture is presented in Table 16.8.

**Table 16.8: Summary of the Residual Agricultural Impact**

Significance of Impact	No. of Farms	% of Total
Profound	1	0.6%
Significant	2	1.2%
Moderate	82	48.2%
Slight	74	43.5%
Imperceptible	11	6.5%
	170	100%

On one farm holding (0.6%) the proposed road development will have a Profound significance of impact. On this farm holding the dwelling house and a number of farm buildings will be acquired.

On two farms (1.2%), the significance of impact will be rated as Significant. The first farm is a mixed livestock farm where the primary farming operation is a dairy enterprise and the main residual impact is the level of landtake involved. The second farm is a beef farm enterprise and the main residual impact is the level of landtake due to the proposed road alignment and an associated material deposition area.

## 16.7 Construction Impacts and Mitigation Measures

### 16.7.1 Construction Impact

The assessment of the impact on agricultural land includes the effects of the construction impacts of the proposed road development. Construction activity associated with the proposed road development will give effect to further impacts on agricultural property such as:

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

The nature of each specific impact is discussed below.

#### 16.7.1.1 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 road construction. 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. Blasting activity can be of particular concern with certain farm enterprises such as breeding and training of horses. Intermittent noises close to farm buildings can distress livestock.

## **Mitigation**

Measures to mitigate noise impacts on sensitive receptors are detailed within Chapter 12 Noise and Vibration. 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 valuable livestock sensitive to noise can be moved away from the construction work during critical times.

### **16.7.1.2 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, particularly on equestrian farms.

## **Mitigation**

Measures to control the production of dust will be put in place by the contractor (refer Chapter 13 Air Quality and Climate 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 valuable livestock are kept as far as possible from the construction work during critical times.

### **16.7.1.3 Restricted Access to Land**

Access to land will be required to be maintained during the road construction process (i.e. following the commencement of construction but before the accommodation works have been completed).

## **Mitigation**

Access will be restored to lands where it is removed or restricted by the proposed road 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 the permanent access arrangements are in place.

### **16.7.1.4 Disturbance of Field Drainage**

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

## **Mitigation**

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

### **16.7.1.5 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.

Mitigation

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