

N52 TULLAMORE TO KILBEGGAN LINK

Option Selection Report

Volume F – Environmental Appendices Appendix F2 – Material Assets (Agriculture)

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1 INTRODUCTION

This report outlines the comparative assessment of options in relation to agriculture for the seven options for the N52 Tullamore to Kilbeggan Link Scheme. This section assesses the Stage 2 route options for the N52 Tullamore to Kilbeggan Link Road Scheme with particular reference to agricultural land use.

In relation to the assessment of agriculture at the Stage 2 Option Selection Stage, the assessment has had regard to the TII *'Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis'* (2016) (the 'TII MCA Guidelines' hereafter).

This assessment will form part of a Phase 2 – Option Selection Report which is a deliverable under Phase 2 – Options Selection of the TII PMG 2019. The purpose of the Option Selection Report is to present the project constraints and the assessments that were undertaken in order to identify the Preferred Option for the project.

This report assesses the potential impact of each option shortlisted for Stage 2 from an agricultural perspective. Specifically, this report evaluates the potential impacts associated with each of the options under consideration on agricultural properties.

The impacts for each of the options are identified so that those options with a greater potential impact on agriculture can be considered in the overall option assessment process.

2 PROJECT APPRAISAL GUIDELINES REQUIREMENTS

The TII ‘*Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis*’ (PAG) states that ‘*The degree to which a new road affects an agricultural property depends on a number of issues such as:*’

- Type of farm enterprises carried out;
- Farm size;
- Landtake;
- The degree of severance with mitigation;
- Viability; and
- Removal of buildings and / or facilities.

Each of the above elements is considered within this report; with the exception of viability which will be considered at Stage 3.

2.1 Guidance

This analysis was undertaken by means of a desktop assessment based on the following guidance and information sources:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft), EPA, August 2017;
- Guidelines on the Information to be Contained in Environmental Impact Statements, EPA, 2002;
- Guide to Process and Code of Practice for National Road Project Planning and Acquisition of Property for National Roads, March 2003 (revised 2005);
- EPA/ Teagasc/ GSI GIS Map of National Soil Types, 2006;
- Census of Agriculture 2010, final results;
- Environmental Impact Assessment of National Road Schemes – A Practical Guide, November 2008;
- Highways England (HE, 2019), LA 104, Sustainability and Environment, Environmental Assessment and Monitoring, Revision 1;
- Highways England (HE, 2019), LA 109, Sustainability and Environment, Appraisal, Geology and Soils, Revision 0;
- Highways England (HE, 2019), LA 112 Sustainability and Environment, Appraisal, Population and Human Health, Revision 0;
- Agricultural Land Classification of England and Wales, MAFF, 1988;
- Aerial Photography; and
- Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis, PE-PAG-02031, October 2016.

2.2 Assessment Criteria

2.2.1 General Criteria

The Stage 2 Appraisal Process was carried out using the full range of sub criteria recommended in PAG unit 7.0, and with regard to the objectives of the scheme, so as to take account of all the predicted impacts of each option or alternative. In many cases there is a strong overlap between the objectives of the scheme and one or more of the PAG sub criteria.

All appraisal criteria use a standard scale. Each impact is scored on a scale of 1 (major or highly negative impact) to 7 (major or highly positive impact). A score of 4 represents a neutral or not significant impact. Each impact is scored as per the system presented in **Table 2-1**.

Table 2-1: Project Appraisal Guidelines Scoring

Score	PAG Score
7	Major or highly positive
6	Moderately positive
5	Minor or slightly positive
4	Not significant or neutral
3	Minor or slightly negative
2	Moderately negative
1	Major or highly negative

All scores refer to impacts measured relative to the Do-Minimum. The Do-Minimum consists of doing nothing further to improve the N52 route. The Do- Minimum would therefore by definition be scored as Neutral (relative to itself) under all sub criteria.

PAG 7.0 notes that simply adding up the scores of the different sub-criteria gives an indication of the overall performance of each option under a given criterion, but this is not to be used in a mechanistic way as a decision process. The performance of each option in meeting the scheme objectives was then considered to be one of the criteria presented in **Table 2-2** below.

Table 2-2: Qualitative Scoring

Score	PAG Score
Preferred	The choice which most fully meets the project objectives.
Good	Where project objectives are met notably better than with the intermediate choices but notably not as well as with the best choice.
Intermediate	Where project objectives are met considerably less well than with the best choice but considerably better than with the worst choice.
Poor	Where project objectives are met notably less well than with the intermediate choices but notably not as well as with the best option.
Least Preferred	The choice which does least to achieve the project objectives.


Having regard to the full range of impacts assessed in each case. This is a high level of ranking of the options or alternatives. The scoring process allows for options or alternatives to be identified as being ‘Good’, falling between ‘Intermediate’ and ‘Preferred’, or as ‘Poor’, falling between ‘Least Preferred’ and ‘Intermediate’.

For some options there will be very little between their impact scores and some may even have the same impact scores. In such circumstances, the author has applied expert judgement and evaluated each option comparatively against the other options, taking into account the quantitative and qualitative assessments. This has allowed the author to determine a preference for each option. In some instances, similar options may have the same preference.

2.2.2 Criteria Particular to Agriculture

In addition to the aforementioned tables in **Section 2.2.1**, **Table 2-3** considers the sensitivity of various agricultural operations in this comparative assessment of options. Value or sensitivity is described in EPA Guidelines of 2017, as the ‘*The potential of a receptor to be significantly affected*’. From an agricultural perspective, the sensitivity relates to the ability of the receptor, or farm in this case, to absorb the effects (landtake, severance and constraints) of a new road, and the change, if any, that this may entail.

Table 2-3: Assessment of Environmental Value - Agriculture

Value (sensitivity)	Descriptions
<p>High Sensitivity</p>  <p>Low Sensitivity</p>	<ul style="list-style-type: none"> • Stud farms; • Equine therapy facilities; and • Deer farms.
	<ul style="list-style-type: none"> • Riding stables; • Horse training facilities; and • Poultry units; • Farm facilities
	<ul style="list-style-type: none"> • Dairy; • Horticultural units; • Pig units; and • Forestry
	<ul style="list-style-type: none"> • Sheep farms; • Beef farms; • Tillage farms; and • Fodder conservation areas.
	<ul style="list-style-type: none"> • Fallow • Scrub land

In relation to sensitivity, the following specific aspects were considered in the comparative assessment for the option selection process from an agriculture perspective:

- **Land to be acquired** – Landtake is one of the more notable impacts that can occur from an agricultural perspective. At this stage of the project the exact landtake is not known. However, there is a strong correlation between length of a proposed option and landtake. Therefore, the longer an option the greater the landtake is likely to be, and consequently the least preferred from an agricultural perspective.
- **Area and orientation of lands severed** – Land severance can be a important impact particularly with dairy farms where milking facilities may be isolated from grazing paddocks due to a new scheme. While the extent of all land holdings may not be fully understood at this early stage of the project, the folios for each land parcel are available, and consideration of severance based on this land parcel data has been used in this option selection assessment.
- **Removal of farm buildings and/or facilities** – Removal of farm buildings and/or facilities can have a significant effect on an agricultural property. The significance of this effect is accentuated in dairy and high intensity facilities such as pig or poultry units. The removal of remote cattle/sheep handling facilities, while potentially significant, can generally be replaced and therefore be readily mitigated.
- **Farm enterprises** – Some farm enterprises are less able to absorb effects of a new road scheme. This can be particularly relevant for dairy farms and pig/poultry units but, depending on landtake and severance, may also significantly affect other enterprises such as beef and tillage.

Proposed options may affect different farm enterprises found in the vicinity of the proposed options as follows;

- **Drystock:** Drystock farming (sheep, beef and sucklers) is the most common farm enterprise in the vicinity of the proposed options. These animals, particularly the beef and sucklers, associated with this enterprise type are generally of a quiet disposition. These animals normally do not require moving on a daily basis but will require daily access and water, and facilities affected by a proposed option would have to be re-instated, even temporarily, as soon as is practicable unless otherwise agreed with the landowner.
- **Dairy:** Dairy farming is generally considered one of the more profitable farming enterprises in this country. Neither of the affected counties are considered as areas for large numbers of dairy farms but they are present. These farms require stock to be moved to and from the place of milking to the grazing area, usually close to the milking facilities, twice daily. Due to this frequency of animal movement the management of a dairy farm may be affected if access is restricted, even temporarily. Furthermore, landtake, even temporary, is potentially more significant on a dairy farm than other enterprises.

- **Tillage:** This farm enterprise is generally better able to absorb the effects of a new road and again while these counties are noted for their tillage, it is present in the vicinity of these options and a number of tillage will be affected. Machinery can move from one land parcel to another although there are additional costs involved especially where the remaining areas are of a less efficient to operate in. Furthermore, the size of the remaining areas may be considered too small or awkward to operate large machinery and therefore may require a change in enterprise type. It is evident that tillage farming is undertaken in the vicinity of the proposed route options, and while tillage farms may not require daily or even weekly access, they do require regular access and do require access that is suitable for large machinery. Furthermore, effective operation of large machinery benefits from large square fields. Triangulation of a field due to severance or reduction in field size due to landtake may reduce the effective operation of large machinery.
- **Equine:** Horses, particularly thoroughbred horses are of a more nervous disposition than other stock types and are prone to stress caused by unaccustomed noise. Construction activities associated with a proposed road project may cause stress due to associated noise levels. Furthermore, landtake and severance of land parcels may result in fields of an irregular shape (e.g. triangular shaped fields with sharp/narrow corners). These fields may be less suitable for grazing with horses due to an increased risk of injury. There are no stud farms along the proposed options, but a number of farms do have sport horses and do partake in equine activities.
- **Intensity and viability of farming practices** – Intensity and viability of farming practices can vary considerably within a study area and while the intensity is commonly dependent on the farmer's ability, it is also dependent on area farmed, enterprise type, soil type, topography etc. Consequent to reviewing the EPA/Teagasc soil mapping, and from undertaking site surveys, there would appear to be very little difference in the intensity of many of drystock farms in the region. Significant landtake and/or severance of these properties will potentially affect the management of these properties and in some instances, where the landtake is such, farming may no longer be viable.

2.3 Information Sources Used

The following information sources were utilised:

- Census of Agriculture;
- EPA/ Teagasc/ GSI GIS Map of National Soil Types, 2006;
- Discussions with landowners during consultation events; and
- Aerial photography.

2.4 Field Surveys Undertaken

No in-field surveys were undertaken for this comparative assessment of different proposed corridor options.

2.5 Assumptions

The following assumptions were used for the comparative analysis between proposed options:

- As stated previously, there is a strong correlation between the length of a proposed option and landtake. Therefore, for comparative purposes, only the section of the option that went offline was considered for the route length comparison. Therefore, for Option 1 which is along the existing N52 it was assumed that the route length is 0; and
- Portions of severed land that were less than 0.25ha were assumed to be of little value to the landowner, even if access could be provided, and were therefore subsumed into the overall landtake for the project.

3 EXISTING ENVIRONMENT

3.1 Baseline - County

According to the Census of Agriculture 2010¹ County Offaly and County Westmeath have a similar number of farms (see **Table 3-1**). There are 3,462 farms in County Offaly and 3,459 farms in Westmeath, utilising in total 126,248 ha and 128,371 ha respectively.

The Census of Agriculture 2010 shows that the total number of farms and average farm sizes for the respective counties within the study area are above the national average of 32.7 ha, with County Offaly at 36.5 ha and County Westmeath at 37.1 ha respectively.

The most widespread type of farming in Offaly is beef production which represents 66.6% (2,305) of the farms compared, to a national average of 55.6%. Beef production is also the most widespread type of farming in County Westmeath, representing 69.5% (2,405) of farms in the county.

Dairy farms represent 274 of the farms in the County Offaly, which represents approximately 7.9% of the total number of farms. In County Westmeath, dairy farms represent 231 farms in which represents approximately 6.7% of the total number of farms in the county. Mixed grazing livestock is the second most widespread type of farming in Offaly and Westmeath, with 278 farms recorded in Offaly, and 324 in Westmeath, representing 8% and 9.4% of farms in respectively.

Table 3-1: Agricultural Enterprise by County – Offaly and Westmeath

Enterprise Type	Offaly		Westmeath	
	Number of Farms	Percentage of Total (%)	Number of Farms	Percentage of Total (%)
Specialist Tillage	133	3.8	61	1.8
Specialist Dairy	274	7.9	231	6.7
Specialist Beef Production	2305	66.6	2405	69.5
Specialist Sheep	99	2.9	157	4.5
Mixed Grazing Livestock	278	8.0	324	9.4
Mixed Crops and Livestock	133	3.8	44	1.3
Mixed Field Crops	217	6.3	209	6.0
Other	23	0.7	28	0.8
Total	3462	100	3459	100

3.2 Baseline - Electoral Division

The proposed options traverse five Electoral Divisions (ED)² namely:

- 12067 – Durrrow, Co. Offaly
- 12086 – Tinnycross, Co. Offaly
- 12087 – Tullamore Rural, Co. Offaly
- 13053 – Ardnaglew, Co. Westmeath
- 13079 – Kilbeggan, Co. Westmeath

¹ Central Statistics Office (2012) Census of Agriculture 2010 Final Results: <https://www.cso.ie/en/statistics/agriculture/censusofagriculture2010/>

² CSO – Census of Agriculture: Available at: <http://census.cso.ie/agrimap/>

The census for agriculture data (CSO, 2010) for these five EDs is shown in **Table 3-2**. From this table, it can be seen that grass production is the predominant crop for all the EDs and is consistent for the findings at county level shown in **Table 3-1**.

It can also be seen that beef cattle are the predominant stock enterprise across all EDs, with sheep featuring strongly in the ED of Tullamore Rural, Co. Offaly and in Ardnaglew, Co. Westmeath.

There is some tillage in all of the EDs but is most prevalent in the ED of Durrow, Co. Offaly.

Table 3-2: Census of Agriculture (ED level)

Electoral Division	12067 Durrow	12086 Tinnycross	12087 Tullamore	13053 Ardnaglew	13079 Kilbeggan
Area farmed (AAU)	1,879	726	1,059	818	1,340
Pasture	903	363	438	383	875
Hay	101	36	29	111	74
Grass silage	416	233	224	210	276
Total crops, fruit and horticulture	410	72	256	61	64
Potatoes	15	0	0	0	0
Total cereals	362	34	221	56	62
Rough grazing in use	48	21	112	52	51
Total cattle	2,162	1,676	922	1,094	2,281
Dairy cows	183	403	90	0	76
Other cows	197	255	213	197	362
Bulls	9	8	6	4	14
Other cattle	1,773	1,010	613	893	1,829
Total sheep	567	0	1,717	1,533	534
Ewes	274	0	830	704	248
Rams	11	0	18	40	5
Other sheep	282	0	869	789	281
Total horses and ponies	13	3	2	0	20

3.3 Study Area and Options

3.3.1 ‘Do-Something’ Options

This Options Assessment for the N52 Tullamore to Kilbeggan Link Road Scheme assesses the seven options taken forward to Stage 2, with particular reference to agricultural properties. Agricultural lands are present to the west and east of the existing N52 and along the local roads which intersect with the existing N52 between Tullamore and Kilbeggan. The options proposed all traverse rural and agricultural lands.

Each of the seven route options brought forward for Stage 2 assessment are described below:

- The Management Option follows the existing N52 Tullamore to Kilbeggan alignment (8.54km) and would involve upgrading a number of sections, mainly along the centre of the scheme. This would result in a single carriageway in each direction with roundabouts at junctions, including the following elements:
 - Three roundabouts proposed at R42-N52 junction, at Four Roads Cross / L2005, and Durrow Village / Balleek Beg;
 - Priority junctions at L2003-N52 Junction north of existing Silver River Bridge and at the L2006-N52 junction north of Durrow Village / Balleek Beg;
 - Carriageway to be upgraded to Type 1 Single Carriageway Cross Section (circa chainage 2500);
 - Proposed cul de sac at L2005-N52 Junction;

- Carriageway to be upgraded to Type 1 Single Carriageway Cross Section with localised green verge narrowing between proposed cul de sac at L2005-N52 Junction and Durrow Village / Balleek Beg.

The proposed cross section will not require widening, and so will not require any agricultural landtake along the edges of the road.

- Option 1 (8.54km) follows existing N52 closely in horizontal and vertical alignment. The proposed cross section is wider than the existing carriageway in sections and will involve landtake along the edges of the road. Multiple existing field accesses along N52 will be joined by parallel collector roads or diverted to the local roads minimizing field access points to the new carriageway.
- Option 2 (8.17km) follows the existing N52 closely in horizontal and vertical alignment from the Tullamore Bypass roundabout until chainage 2050. At chainage 2050 it diverges east from the existing N52 and joins back to the existing alignment at chainage 6400. The 4350m new offline road allows for elimination of substandard junctions at Four Roads and Durrow Village. The Option 2 will cross Derrygolan Esker at chainage 5050 to 5200. Option 2 contains the shortest offline section, trying to utilise as much as possible of the existing road. Option 2 skirts to the left of the national monument of Meeneglish avoiding direct impact on the monument at chainage 5700. Four crossings of waterbodies will be required on Option 2 at chainages: 2150, 3850, 5900 and 7000.
- Option 3 (7.90km) diverges east from the existing N52 at chainage 600. It crosses Molloy's Quarry at chainage 1250-1600 and the source protection area at chainage 1000-2100. Three road crossings are proposed along the Option 3: at chainage 2240 with L2003, at chainage 3120 with L2005 and at chainage 4790 with L2006. Three crossing of waterbodies will be required on the Option 3 at chainages: 2150, 5780 and 6800. Option 3 joins the existing N52 alignment at chainage 7000 following to the M6 junction.
- Option 4 (8.09km) is an eastern option and diverges east from existing N52 at chainage 250. It crosses Molloy's Quarry at chainage 1750-1950 and the source water protection area at chainage 1000-2400. Two road crossings are proposed along Option 4: at chainage 3200 with L2005 and at chainage 4900 with L2006. Option 4 avoids crossing Derrygolan Esker passing it on the east at chainage 4900. It then goes north west passing west of Pallas forest at chainage 6000. Two crossings of waterbodies will be required on Option 4 at chainages: 2730 and 7050. Option 4 joins the existing N52 alignment at chainage 7850 and follows to the M6 interchange.
- Option 5 (8.05km) diverges east from the existing N52 at chainage 2300 making use of an already upgraded alignment of N52 up to this point. The proposed alignment east of the existing N52 replaces two substandard junctions at Four Roads and Durrow Village and substandard horizontal and vertical alignment of N52 at the middle section. Two road crossings are proposed at Option 5: at chainage 3480 with L2005 and at chainage 4990 with L2006. Option 5 crosses Derrygolan Esker at chainage 4900-5000. Two crossings of waterbodies will be required on Option 5 at chainages: 2150 and 7050. Option 5 joins the existing N52 alignment at chainage 7850 and follows to the M6 interchange.
- Option 2-3 (8.10km) was developed during the course of the scheme development and appraisal as a combination of Options 2 and 3 above. This option combines the southern part of Option 2 with the northern part of Option 3 and has been developed as a means of further minimising impact on the Ballybought Castle site identified for Option 2.

3.3.2 Management Option

As a result of the TII review process (July 2021), an additional 'Management Option' has been put forward for consideration/assessment within the Stage 2 Options Assessment Phase. The proposed 'Management Option' follows the existing N52 Tullamore to Kilbeggan alignment (8.54km) and would involve upgrading a number of sections, mainly along the centre of the existing scheme. This would result in a single carriageway in each direction with roundabouts at junctions, including the following elements:

- Three roundabout junctions proposed; at R42-N52 junction, at Four Roads Cross / L2005, and Durrow Village / Balleek Beg;
- Priority junctions at L2003-N52 Junction north of existing Silver River Bridge and at the L2006-N52 junction north of Durrow Village / Balleek Beg;
- Carriageway to be upgraded to Type 1 Single Carriageway Cross Section (circa chainage 2500);

- Proposed *cul de sac* at L2005-N52 Junction; and
- Carriageway to be upgraded to Type 1 Single Carriageway Cross Section with localised green verge narrowing between proposed *cul de sac* at L2005-N52 Junction and Durrow Village / Balleek Beg.

Regarding the context of this additional option, this is a Management Option as opposed to a Do-Minimum option. This option sits between a Do-Minimum and the Do-Something options proposed. This Management Option considers a short to medium term solution that may be able to achieve some of the objectives of the scheme.

In comparison to Option 1 (Brown), while the Management Option will follow the same centre line (i.e. the existing N52 Tullamore to Kilbeggan alignment), it is proposed as a single carriageway (Type 1 single) rather than a dual-carriageway as per the other Do-Something options. This option provides at-grade roundabouts at the key junctions, rather than grade separated junctions. However, this Management Option does not address the significant private accesses onto the N52 while Option 1 (Brown) requires a significant number of parallel roads to accommodate private accesses.

The southern and northern sections will require only minimal intervention as these have been recently upgraded, and it is essentially the middle section of the route that requires the most intervention (from the R421 junction to a point approx. halfway between the L2006 High Road and the M6 interchange). Across this section there is still likely to be hedge line loss to accommodate the wider carriageway (on both sides), although the extent of this loss will be considerably lower than Option 1.

In terms of impacts on Durrow Demesne, while Option 1 will potentially directly impact on the boundary at Durrow Demesne with tree and hedge line loss and the design can try to reduce the impacts on the wall, there is potential that there would be direct impact to the boundary wall with Option 1. This tree and hedge line loss impact would be more limited for the Management Option with less road widening and no impact on the boundary walls.

4 OPTION SELECTION

A number of specific aspects were considered in determining the preferred option. These aspects related to landtake, severance and constraints.

While the concept of landtake is self-explanatory, severance is more complex and is considered in relation to the area severed, the relevance of the severed portion, and the orientation of the severance.

Consideration of constraints also covers those aspects that increase the sensitivity of a farm to the effects of the proposed development and are also described in **Section 2.2.2**.

Therefore, in the selection of the preferred option from an agricultural perspective, the effects are considered across the three aforementioned aspects and the option that has the least significant effect, is then considered the preferred one.

4.1 Management Option

- **Landtake:** This option is along the existing N52. There will be no widening of the alignment, as such there will be a very limited requirement to undertake works beyond the existing footprint and no requirement for agricultural landtake.
- **Severance:** There are 120 land parcels along the existing N52 but these will remain unaffected by the Management Option and this option will require no severance. Some current access points to farm properties onto the N52 will potentially be affected by works taking place in the vicinity. As a result, some farms/fields if impacted, would require temporary access to be provided during construction (unless otherwise agreed with the landowner) and full re-instatement post construction. The large number of land parcels (120) is typically reflective of lands contiguous of a national primary road that has seen upgrades in the recent past.
- **Constraining factors:** No sensitive farms were identified in this section.
- **Conclusion:** This option is the maintenance/management and upgrading of the existing N52, and as such has no off-line section. There is a very limited requirement/level for/of severance, and while this option has the potential to result in some impact to existing farm property access points onto the N52 where works are required, this option does not require agricultural landtake and therefore the least effect on agriculture. The number of significantly severed properties is the lowest of the options proposed.

4.2 Option 1

- **Landtake:** This option is along the existing N52. There will be a requirement to undertake some works beyond the existing footprint, in particular at the junction for L2006.
- **Severance:** This option will affect 120 land parcels along the existing N52 and will significantly sever 6 of these land parcels. Furthermore, the current access points to many of the farm properties onto the N52 will potentially be affected and will require temporary access to be provided during construction (unless otherwise agreed with the landowner) and full re-instatement post construction. The large number of land parcels (120) is typically reflective of lands contiguous of a national primary road that has seen upgrades in the recent past.
- **Constraining factors:** No sensitive farms were identified in this section.
- **Conclusion:** This option is along the existing N52, and therefore has no off-line section. The number of significantly severed properties is one of the lowest of the options proposed, and while this option has the potential to impact existing farm property access points onto the N52 this option will likely have the lowest landtake and therefore the least effect on agriculture.

4.3 Option 2

- **Landtake:** This option is the shortest of the options that go offline and tie-in to the northern and southern sections of the existing N52. The off-line section is 3.8km.

- **Severance:** This option will affect 89 land parcels. This includes affected land parcels at the tie-in sections along both ends of the existing N52. The option will significantly sever 14 land parcels and access will need to be provided to these severed plots.

This option will sever the entrance to a farm north of the L2006 that will require considerable mitigation to reduce effects. The option will also sever a group of tillage fields in the townland of Acantha which appear to be the one holding. The severance of these fields will reduce the agricultural value of this property and will affect the management of these fields.

- **Constraining factors:** No sensitive farms were identified in this section.
- **Conclusion:** This option has the shortest off-line section, therefore having a lower landtake and while it affects a considerable number of land parcels, the number of land parcels significantly severed is relatively low by comparison to the other options that have off-line sections.

4.4 Option 2-3

- **Landtake:** This option is a combination of options 2 and 3. The option is the 2nd shortest off-line option at 4.7km.
- **Severance:** This option affects 74 land parcels and includes land parcels affected by the northern and southern tie-in points that are on-line. This option will significantly sever 18 land parcels and access will need to be provided to these severed plots. Furthermore, this option severs one farm located before the northern tie-in point which when the location and orientation of the severance are considered, will require extensive mitigation to reduce effects.

This option will also sever the same group of tillage fields as option 2 in the townland of Acantha which appear to be the one holding. The severance of these fields will reduce the agricultural value of this property and will affect the management of these fields.

- **Constraining factors:** No sensitive farms were identified in this section.
- **Conclusion:** While the off-line section for this option is relatively short, the option does have a considerable number of significantly severed land parcels and in particular this option badly severs one farm located before the northern tie-in point.

4.5 Option 3

- **Landtake:** This option has the 2nd longest off-line section at 6.2km and will likely have a large landtake when compared to the previous options.
- **Severance:** This option significantly severs the largest number of land parcels at 21. This option also badly severs the same farm as option 2/3 located before the northern tie-in point. This option affects 70 land parcels in total. This lower number of affected land parcels is possibly attributable to the orientation of the tie-in points to the existing N52.
- **Constraining factors:** No sensitive farms identified in this section.
- **Conclusion:** This option has the 2nd longest off-line section and significantly severs the greatest number of land parcels. The option also badly severs one farm in particular located before the northern tie-in point.

4.6 Option 4

- **Landtake:** This option has the longest off-line section at 7.4km and is therefore is likely to have the largest landtake and will significantly affect the largest number of farms.
- **Severance:** The option significantly severs 18 land parcels and affects 68 land parcels in total. The option affects the least number of land parcels and, similar to option 3, this is possibly attributable to orientation of the tie-in points north and south.
- **Constraining factors:** No sensitive farms were identified in this section.

- **Conclusion:** Considering the length of the off-line section, and the likely landtake required for this option, it is the opinion of this author that this option is comparable to option 3 for its effects on agriculture.

4.7 Option 5

- **Landtake:** This option has the 4th longest off-line section at 5.2km.
- **Severance:** The option significantly severs 17 land parcels and affects 58 land parcels in total. This option badly severs one particular farm, west of the L2005 in the townland of Balleek. This farm will require considerable mitigation in the form of accommodation works to reduce effects.
- **Constraining factors:** No sensitive farms were identified in this section.
- **Conclusion:** This option has a moderately long off-line section. The orientation of this option in relation to a number of likely landholdings would indicate that this option will require considerable mitigation in the form of accommodation works to reduce effects.

Table 4-1 provides a quantified overview of each of the options showing the comparative length of off-line sections, the number of sensitive farms potentially affected, the number of land parcels intersected and the number of land parcels significantly severed.

Table 4-1: Summary of Comparative Assessment

Route Option	Length of off-line section (km)	Sensitive farm affected	Land parcels significantly severed	No. of folios intersected	Quantitative Assessment ³
Management Option	0	0	0	120	120
Option 1	1.1	0	6	120	191
Option 2	3.8	0	14	89	267
Option 2/3	4.7	0	18	74	301
Option 3	6.2	0	21	70	342
Option 4	7.4	0	18	68	322
Option 5	5.2	0	17	58	280

³ The following parameters were considered in this quantitative assessment of the different options:

- Length of off-line sections;
- Number of sensitive farms potentially affected;
- Number of land parcels intersected; and
- Number of land parcels significantly severed.

5 OPTION SUMMARY

Given the largely identical alignment to the existing N52, and the low number of significantly severed land parcels, the Management Option is the ‘preferred’ option from an agricultural perspective. Option 1 is the optimum ‘Do-Something’ option and is classed as ‘good’ as this route has the lowest impact on agricultural properties other than the Management Option.

Options 2, 2-3 and 5 all have moderate off-line sections. These options have similar numbers of significantly severed land parcels but Option 2 has the lowest number. Option 2 also has the shortest off-line section of the three and while it has a moderately negative score, it is the more preferred of this group of three options. Options 2-3 and 5 badly sever one farm each that will both require considerable mitigation to reduce effects. While all three options are classed as moderate negative and ‘intermediate’ preference, Option 2 is the least negative of these options.

Options 3 and 4 have the longest off-line sections, with 6.2km and 7.4km, respectively. While Option 4 is longer than Option 3, Option 3 does badly sever a farm just before the northern tie-in point. Again both of this options are predicted to have a moderate negative impact and given the relatively higher impact that Options 2-3 and 5, these are classed as ‘poor’.

Table 5-1 provides a summary of the appraisal of each of the route options in terms of Agricultural Land Use.

Table 5-1: Agriculture Impact Score Matrix

Option	Potential for Impact	Impact Level	Impact Score	Preference
Management Option	<ul style="list-style-type: none"> Completely online with minimal landtake required except for upgraded junctions and some off-line works. Considerable number of land parcels along this route (120) but this is reflective of the land parcels contiguous to a major road that has seen upgrades in the recent past. Limited no land parcels severed. 	Neutral	4	Preferred
Option 1	<ul style="list-style-type: none"> Completely online with minimal landtake required except for upgraded junctions and some off-line works. Considerable number of land parcels affected (120) but this is reflective of the land parcels contiguous to a major road that has seen upgrades in the recent past. 6 land parcels significantly severed. 	Minor or slightly negative	3	Good
Option 2	<ul style="list-style-type: none"> Short off-line section of 3.8km requiring the 2nd least landtake. Considerable number of land parcels affected (89) but these are primarily associated with the online section of this option. 14 significantly severed land parcels. 	Moderately negative	2	Intermediate
Option 3	<ul style="list-style-type: none"> 2nd longest off-line section at 6.2km. Significantly severs the largest number of land parcels and affects 70 land parcels in total. 1 farm located before the northern tie-in will require considerable mitigation to reduce the effects of severance. 	Moderately negative	2	Poor
Option 4	<ul style="list-style-type: none"> Longest off-line section at 7.4km. 18 land parcels significantly severed and 68 land parcels affected in total. 	Moderately negative	2	Poor
Option 5	<ul style="list-style-type: none"> Moderately long off-line section when compared to the others at 5.2km. Significantly severs 17 land parcels and a total of 58 land parcels are affected. 	Moderately negative	2	Intermediate

Option	Potential for Impact	Impact Level	Impact Score	Preference
	<ul style="list-style-type: none"> 1 farm located west of the L2005 in the townland of Balleek will require considerable mitigation to reduce the effects of severance. 			
Option 2-3	<ul style="list-style-type: none"> Relatively short section off-line (4.7km). 74 land parcels affected and 18 significantly severed. 1 farm located before the northern tie-in will require considerable mitigation to reduce the effects of severance. 	Moderately negative	2	Intermediate