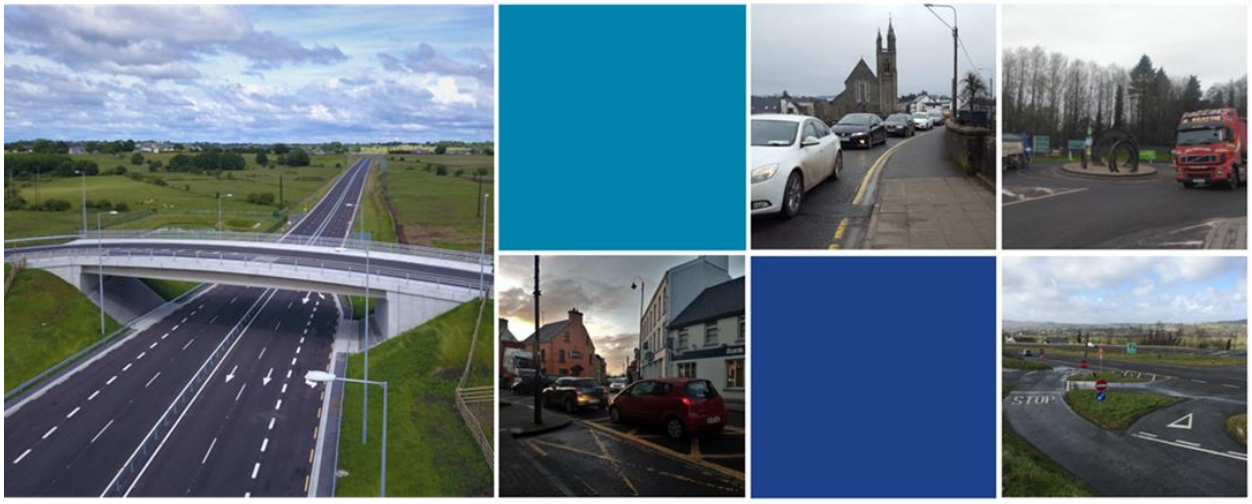
Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

TEN-T Priority Route Improvement Project, Donegal

Phase 2, Option Selection Report
Volume D3 – Section 3 Environmental Appendices



RPS BARRY TRANSPORTATION

Rialtas na hÉireann
Government of Ireland

Tionscadal Éireann
Project Ireland 2040

Co-financed by the Connecting Europe Facility of the European Union

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal
Document Title:	Volume D3 – Section 3 Environmental Appendices
Document No:	TT_Y16112-2JV-RS-EGN-S3 -VL-Z-01001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for Publication	TP / EC / ED	TP / EC / ED

Contents

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/ Strabane/A5 Link

Option Selection Report

Appendix D3.1 – Air and Climate

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunnigham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report – Technical Appendix D3.1 – Air and Climate
Document No. :	TT_Y16112-2JV-RS-MCA-S3 -RP-LA-00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	PC	ED

Table of Contents

List of Tables

1 INTRODUCTION

This report outlines the comparative assessment of options in relation to air quality and climate for nine options for Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link of the TEN-T Priority Route Improvement Project in Donegal. This assessment forms part of a Phase 2 – Option Selection Report.

This report assesses the air and climate impacts with reference to key sensitive receptor in proximity to the options. The impacts for each of the options are identified so that those with unacceptably high levels of impact can be avoided to the extent feasible as part of the overall option selection assessment process.

1.1 Methodology

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

- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011);
- National Roads Authority "Guidance for the Treatment of Air Quality during Planning and Construction of National Road Projects" (May 2011);
- Transport Infrastructure Ireland *"Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis"* (2016);
- EPA Air Quality Monitoring Database https://www.epa.ie/air/quality/reports/
- UK Highways Agency "*Design Manual for Roads and Bridges, Volume 11, Section 3, Air Quality Assessment*" (2007);
- Road traffic predictions for each option as supplied by the traffic expert for the project; and
- Geodirectory information on sensitive receptors for each option.

The National Roads Authority document "*Guidance for the Treatment of Air Quality during Planning and Construction of National Road Projects" (May 2011*) provides guidance on the assessment procedures utilised for air and climate of the option selection. The primary aspects of the assessment relate to existing ambient air quality and the proximity of sensitive locations to each option. The guidelines require that "*the total number of sensitive receptors within 50m of the carriageway of each feasible option should be recorded with a view to eliminating those options with the greater number of sensitive receptors likely to be impacted by the proposed scheme*".

1.1.1 Assessment Criteria

The comparative evaluation of options was assisted by scoring of impacts to sensitive receptors using the Stage 2 project appraisal matrix similar to that shown in *the Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis* (TII, 2016, p.21). An assessment will be undertaken on each option to include both quantitative and qualitative assessment. Each impact is scored based on the seven-point scale (TII, 2016, p.3) as below and an integer will be assigned according to the impact level.

Table 1-1: TII Impact Scoring Key (TII, 2016)

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

2 EXISTING ENVIRONMENT

2.1 Desk Study

Under the Clean Air for Europe Directive (2008/50/EC) EU Member States must designate "Zones" for the purpose of managing air quality. For Ireland, four Zones have been defined in the Air Quality Standards Regulations (2011); A, B, C and D. These zones are largely categorised based on population counts derived from 2016 CSO Census as follows;

- **Zone A**: Dublin
- **Zone B**: Cork
- **Zone C**: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- **Zone D**: Rural Ireland; i.e. the remainder of the State excluding Zones A, B and C.

Under Article 6 of the Regulations, the EPA must review the classification of zones at least every five years to reflect the results of the census and the changes made under separate regulation to the areas where bituminous coal is restricted. The most up to date zones can be viewed on the EPA's Envision Map at http://gis.epa.ie/Envision.

Air quality is classified using a four-band scale of; Good, Fair, Poor, and Very Poor. In terms of existing air quality, the study area is within an EPA Zone D area which covers rural Ireland. Air quality in Zone D is consistently "*Good*" as measured by the EPA monitoring network and there have been no recorded breaches of the statutory limits for the protection of human health in recent years. This is a result of the relative absence of air pollution sources in the area and those existing sources such as road traffic have a low impact given the low volumes and ongoing legislative changes to vehicle emissions and fuel requirements.

The number of sensitive receptors, in this case primarily residential properties located within 50m of the centreline for each of the proposed N14 Manorcunningham to Lifford / Strabane / A5 Link options are shown in **Table 2-1**. The projected operational year traffic patterns for each of the options are also presented in**Table 2-1**. Average speed is assumed as 80kph for all options.

Table 2-1: Sensitive Receptors and Operation Year Traffic Flows

Options	Receptors (50m)	Length (km)	AADT	%HGVs	Average Speed (kph)
3A1 (Blue)	7	17.9	6515	2.0	98
3A2 (Blue)	8	18.0	6515	2.0	98
3B1 (Red)	8	17.6	6560	2.0	98
3B2 (Red)	9	17.7	6560	2.0	98
3C1 (Orange)	8	17.5	6970	1.4	98
3C2 (Orange)	9	17.6	6970	1.4	98
3D (Purple)	3	17.7	8193	1.4	98
Cyan 3E	3	17.6	6485	2.3	98
Pink 3F	4	18.5	5890	1.2	98

3 OPTIONS ASSESSMENT

3.1 Assessment of Potential Impacts

The index exposure assessment was carried out using the methodology outlined in the NRA *Guidelines and the UK Highways Agency Design Manual for Roads and Bridges (UK DMRB 2007), Volume 11, Section 3, Air Quality Assessment*. The aim of the assessment is to estimate the overall change in people's exposure to the pollutants, in this case nitrogen dioxide, NO_2 and particulate matter, PM_{10}. The more negative the exposure score, the greater the improvement in air quality and hence, those with the lowest scores are the more preferred options. The overall changes in exposure for design year 2028 outlined in **Table 3-1** and **Table 3-2**. However, it should be noted that the scores are dimensionless and do not represent the extent of any impact.

Table 3-1: Overall Change in Exposure to NO_x for Design Year 2028

Options	Receptors within 50m	Link Length (km)	Predicted Emission NOx kg/year	Rate (kg/km/yr)	NOx Score	Impact Level	Impact Score	Preference
3A1 (Blue)	7	17.9	14479	808	5656	Minor or slightly negative	3	Intermediate
3A2 (Blue)	8	18.0	14564	808	6464	Minor or slightly negative	3	Intermediate
3B1 (Red)	8	17.6	14430	819	6552	Minor or slightly negative	3	Intermediate
3B2 (Red)	9	17.7	14516	819	7371	Minor or slightly negative	3	Intermediate
3C1 (Orange)	8	17.5	14409	822	6573	Minor or slightly negative	3	Intermediate
3C2 (Orange)	9	17.6	14494	822	7395	Minor or slightly negative	3	Intermediate
3D (Purple)	3	17.7	17151	966	2899	Minor or slightly negative	3	Intermediate
3E (Cyan)	3	17.6	14474	824	2471	Minor or slightly negative	3	Intermediate
3F (Pink)	4	18.5	12696	687	2749	Minor or slightly negative	3	Intermediate

Table 3-2: Overall Change in Exposure to PM_{10} for Design Year 2028

Options	Receptors within 50m	Link Length (km)	Predicted Emission PM_{10} kg/year	Rate (kg/km/yr)	PM_{10} Score	Impact Level	Impact Score	Preference
3A1 (Blue)	7	17.9	660	37	258	Minor or slightly negative	3	Intermediate
3A2 (Blue)	8	18.0	664	37	295	Minor or slightly negative	3	Intermediate
3B1 (Red)	8	17.6	654	37	297	Minor or slightly negative	3	Intermediate
3B2 (Red)	9	17.7	658	37	334	Minor or slightly negative	3	Intermediate
3C1 (Orange)	8	17.5	684	39	312	Minor or slightly negative	3	Intermediate

Options	Receptors within 50m	Link Length (km)	Predicted Emission PM_{10} kg/year	Rate (kg/km/yr)	PM_{10} Score	Impact Level	Impact Score	Preference
3C2 (Orange)	9	17.6	688	39	351	Minor or slightly negative	3	Intermediate
3D (Purple)	3	17.7	814	46	138	Minor or slightly negative	3	Intermediate
3E (Cyan)	3	17.6	647	37	110	Minor or slightly negative	3	Intermediate
3F (Pink)	4	18.5	607	33	132	Minor or slightly negative	3	Intermediate

Table 3-1 and **Table 3-2**. indicate that the 3C2 (Orange) and 3B2 (Red) options have the potential to impact on the greatest number of properties (9) relative to each of the other proposed options. Of these other options, 3D (Purple) (3), 3E (Cyan) (3) and 3F (Pink) (4) will impact the least number of properties relative to Options 3A1 (Blue) (7), 3A2 (Blue) (8), 3B1 (Red) (8) and C1 (Orange) (8). The predicted emissions between the various options show lower variation as expected given the similarities in the traffic patterns and option lengths.

Consequently, the air quality scores are largely dominated by the trend in receptor numbers. However, for this section, the variance in the number of properties affected is minimal and hence all options are considered to have a minor or slightly negative impact on air quality. As such, there is no clear preference for air quality amongst the options presented.

Climate impacts during the operation stage are based on total greenhouse gas (GHG) emissions associated with traffic on the road network as calculated by the DMRB regional model. These results are presented in Table 3-3 and illustrate no significant variation between the options which is unsurprising given the similarity in traffic patterns. Hence all options are classed as moderately negative for climate.

It is noted that at construction stage all proposed options will require material input (aggregates, concretes, etc.), material/personnel transport, energy use, etc. relative to the other proposed options. As the result there is the potential of a climate impact for the one-off construction stage event.

Table 3-3: Climate Impacts Associated with Options

Options	GHG (CO_{2eq}) (tonnes/year)	Impact Level	Impact Score	Preference
3A1 (Blue)	7777	Moderately negative	2	Intermediate
3A2 (Blue)	7821	Moderately negative	2	Intermediate
3B1 (Red)	7726	Moderately negative	2	Intermediate
3B2 (Red)	7773	Moderately negative	2	Intermediate
3C1 (Orange)	7931	Moderately negative	2	Intermediate
3C2 (Orange)	7979	Moderately negative	2	Intermediate
3D (Purple)	9438	Moderately negative	2	Intermediate
3E (Cyan)	7685	Moderately negative	2	Intermediate
3F (Pink)	7025	Moderately negative	2	Intermediate

3.2 Comparison of Options

Table 3-4 provides the summary of the overall combined assessment of both air quality and climate. For both parameters, the relative similarity in the number of receptors affected and option length has resulted in no material difference in the options presented for air and climate. Consequently, all options presented are considered to pose a similar minor or slightly negative impact and all are ranked as intermediate.

Table 3.4: Air Quality and Climate Option Scoring Matrix

Options	Quantitative Assessment			Qualitative Assessment	Impact Score	Overall Preference
	NO_x	PM	CO_2			
3A1 (Blue)	5656	258	7777	Minor or slightly negative	3	Intermediate
3A2 (Blue)	6464	295	7821	Minor or slightly negative	3	Intermediate
3B1 (Red)	6552	297	7726	Minor or slightly negative	3	Intermediate
3B2 (Red)	7371	334	7773	Minor or slightly negative	3	Intermediate
3C1 (Orange)	6573	312	7931	Minor or slightly negative	3	Intermediate
3C2 (Orange)	7395	351	7979	Minor or slightly negative	3	Intermediate
3D (Purple)	2899	138	9438	Minor or slightly negative	3	Intermediate
3E (Cyan)	2471	110	7685	Minor or slightly negative	3	Intermediate
3F (Pink)	2749	132	7025	Minor or slightly negative	3	Intermediate

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Options Selection Report

Appendix D3.2 – Noise

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham – Lifford/Strabane/A5 Link
Document Title:	Option Selection Report –Appendix D3.2- Noise
Document No. :	TT_MGT0337-RPS-00-ZZ-RP-Z-RP-0001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	EMcK	GMcE

Table of Contents

List of Figures

List of Tables

1 INTRODUCTION

This report assesses the noise impacts in reference to nine options for Section 3: Manorcunningham to Lifford/Strabane/A5 Link of the TEN-T Priority Route Improvement Project in Donegal and will form part of a Phase 2 – Option Selection Report to be issued by the National Roads Design Office, Donegal County Council. See Section 1.2 of the Option Selection Report for Project Description.

1.1 Methodology

The methodology of the option corridor assessment comprised of a desk study. The material sources consulted as part of the desk study consisted of the following;

- Review of Spatial data;
- Geodirectory data;
- A review of Ordnance Survey Ireland mapping and orthophotography;
- County Donegal Development Plan 2018-2024; and
- Donegal Local Authorities Noise Action Plan 2013 -2018.

In order to facilitate the use of the TII project appraisal matrix, spatial data selection was carried out using MapInfo software. Geodirectory data was used to identify the noise sensitivity and impacts of each proposed option in the Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link region.

1.1.1 Noise buffering zones

A buffering tool in MapInfo was used to facilitate the comparison of proposed options in the context of noise emissions. Each proposed option was assessed individually by applying a series of concentric ring buffers to the option centrelines. A total of four buffers were applied to each of the proposed options' centrelines. The first/innermost ring buffer captured an area of 0 – 50m from the centreline, and working outwards, the second captured 50 – 100m, the third 100 – 200m and the fourth/outermost captured 200 – 300m. This methodology allowed Geodirectory data to be captured in each ring buffer and analysed separately. Properties/buildings in the innermost buffers are likely to be affected by noise emissions in a more acute way, with noise sensitivity decreasing in the buffer zones furthest from the centrelines of each option. This approach allowed for the visual comparison of acutely affected properties within the scope of each option, and ultimately, provided the basis for more detailed analysis using the TII's project appraisal matrix as described in **Section 1.1.3**. See **Figure 1-1** for example of buffer zone assessments.

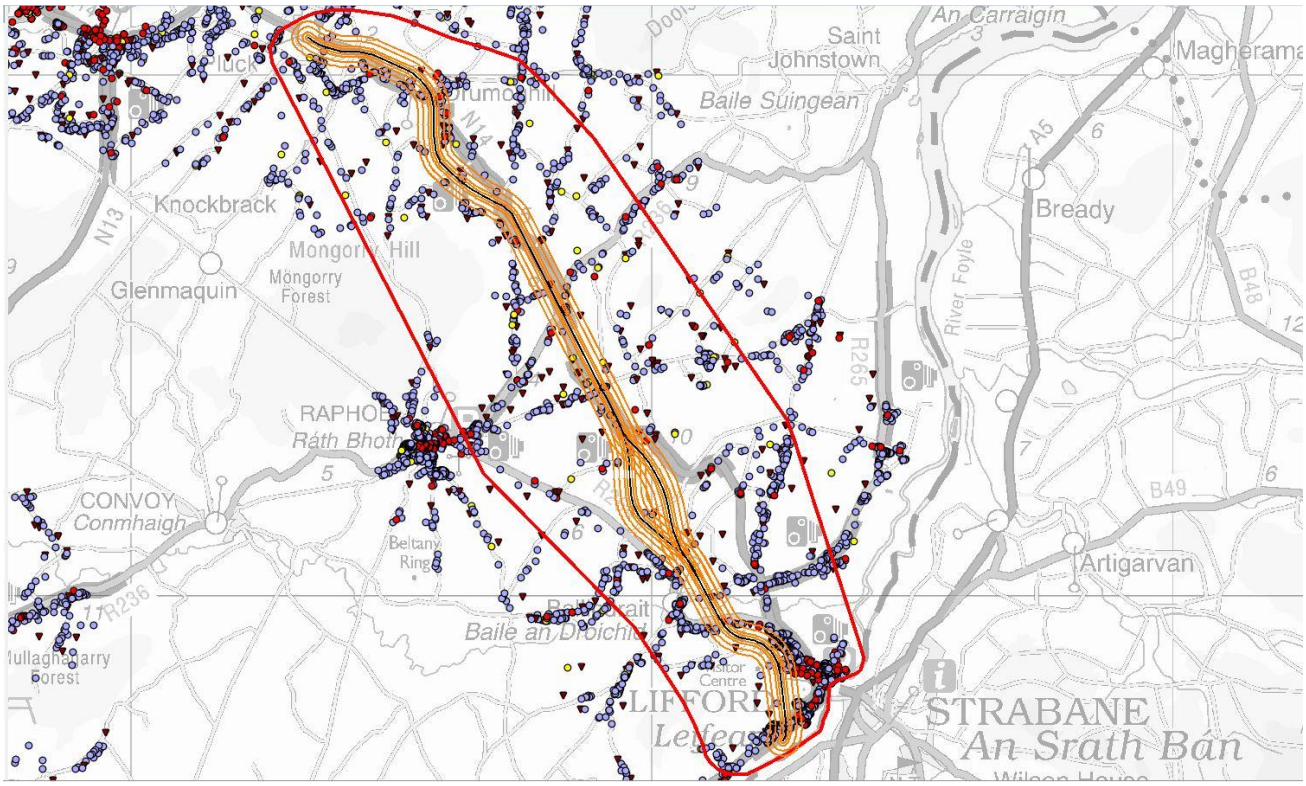


Figure 1-1:Sample buffer zones for Options 3C1/3C2 at Section 3 N14 Manorcunningham Lifford

1.1.2 Data output

MapInfo also facilitates the exportation of spatial data to other applications for further analysis. In this instance, SQL queries were carried out on Geodirectory addresses which fell within buffer zones for each of the proposed options. The resultant output provided detailed Geodirectory information for individual properties and essentially, the number of properties which could be affected in noise sensitive zones. The SQL queries for each option were exported as comma delimited (.csv) files for data filtering and analysis using Microsoft Excel. The data were subsequently arranged according to buffer zone (smallest to highest) and property/building use (commercial, residential, both or unknown). Finally, each address was then counted in each buffer zone. The same process was carried out for each option, culminating in a table which accounts for each property according to building use and proximity to the centrelines for each of the proposed options. This table was used as the data source when applying TII's potential impact rating (PIR) matrix.

The total number of properties in each band is then multiplied by a rating factor. The rating factor is as follows:

- 4 for Band 1,
- 3 for Band 2,
- 2 for Band 3 and
- 1 for Band 4.

The resultant values are summed for each option to give a single number for each option, termed the Potential Impact Rating (PIR). The PIR values are used to assess the potential impact of each option; the larger the PIR the greater the potential impact. This calculation is summarised in **Section 3**.

1.1.3 Assessment Criteria

The NRA documents *Guidelines for the Treatment of Noise and Vibration in National Road Projects* (NRA, 2004) and the *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes* (NRA, 2014) were followed for the assessment of noise and vibration, and has had regard to the TII MCA Guidelines (2016). The assessment of potential impact is based primarily upon property counts and the proximity of each alignment to those properties.

Objective rating based on property counts and proximity to the options is combined with an assessment of the changes in traffic flow and the likely need for mitigation measures to carry out an evaluation of the options.

A five-point scale was used for qualitative assessment based on the assessment of changes in traffic flow and the likely need for mitigation measures. Points are awarded at 100, 200, 300, 400 or 500 blocks and several options can receive the same rating. Lower scores are preferred.

The comparative evaluation of options was assisted by scoring of impacts to sensitive receptors using the impact scoring in **Table 1-1** taken from the *Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis* (TII 2016). An assessment will be undertaken on each option to include both quantitative and qualitative assessment. Each impact is scored based on the seven point scale as below and an integer will be assigned according to the impact level.

Table 1-1: Impact Scoring Key (TII, 2016)

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

2 EXISTING ENVIRONMENT

2.1 Desk Study

Section 3 of the TEN-T Priority Route Improvement Project, Donegal is located between the Manorcunnigham to Lifford stretch of the N14. All nine of the Section 3 options are relatively similar from an acoustic perspective. There are no significant acoustic constraints on any of the options. Noise sensitive locations contained in the options include a school and church as well as some sensitivity around the Oakfield Demesne.

Drumoghill village is located to the east of the Pluck roundabout and north of the N14 at the north-western end of the study area in which the options being assessed are located. It contains community facilities such as a church, school and playing pitches located around and near to a triangle of local roads, one of which leads to a separate cluster of residences and premises such as a second primary school south of the N14. The 3B1/3B2 (Red), 3C1/3C2 (Orange) and 3D (Purple) options will potentially impact on a playing pitch which is located within the corridor. The 3F (Pink) and 3A1/3A2 (Blue) options are located close to a church; the 3C1/3C2 (Orange), 3D (Purple) and 3B1/3B2 (Red) options to the school (Drumoghill N.S). The existing N14 runs close to the school in particular

Section 3 study area has more agricultural buildings of note, one of which is an abattoir (Edenmore Farm Meats) which is situated on the north of Lifford.

2.2 Description of Options

The 3A1/A2 (Blue) primarily follows the existing N14, diverting east of the N14 at Drumoghill and west towards Ballindrait, through pastoral land. The 3B1/B2 (Red) and 3C1/C2 (Orange) are similar to 3A1/A2, closely following the direction of the existing N14, again diverging westwards towards Ballindrait. The 3D (Purple) option traverses west of the N14, intersecting the existing N14 at one location only. 3E (Cyan) option is similar to 3D (Purple) located west of the N14, it does not intersect the existing routes, apart from commencing and terminating locations. The 3F (Pink) option diverts eastwards of the N14, crossing it westwards, traversing primarily pastoral land towards Ballindrait and Lifford.

2.3 Field Study

A site visit was carried out on 15th-17th August 2018 by Eugene McKeown, Senior Associate – Acoustics, RPS. The purpose of the inspection was to conduct a windshield survey of the study area. A preliminary list of noise sensitive locations was prepared and is presented in **Figure 2-1.**Ambient noise was checked at selected locations. Topography of the options and proximity to noise sensitive locations was noted.

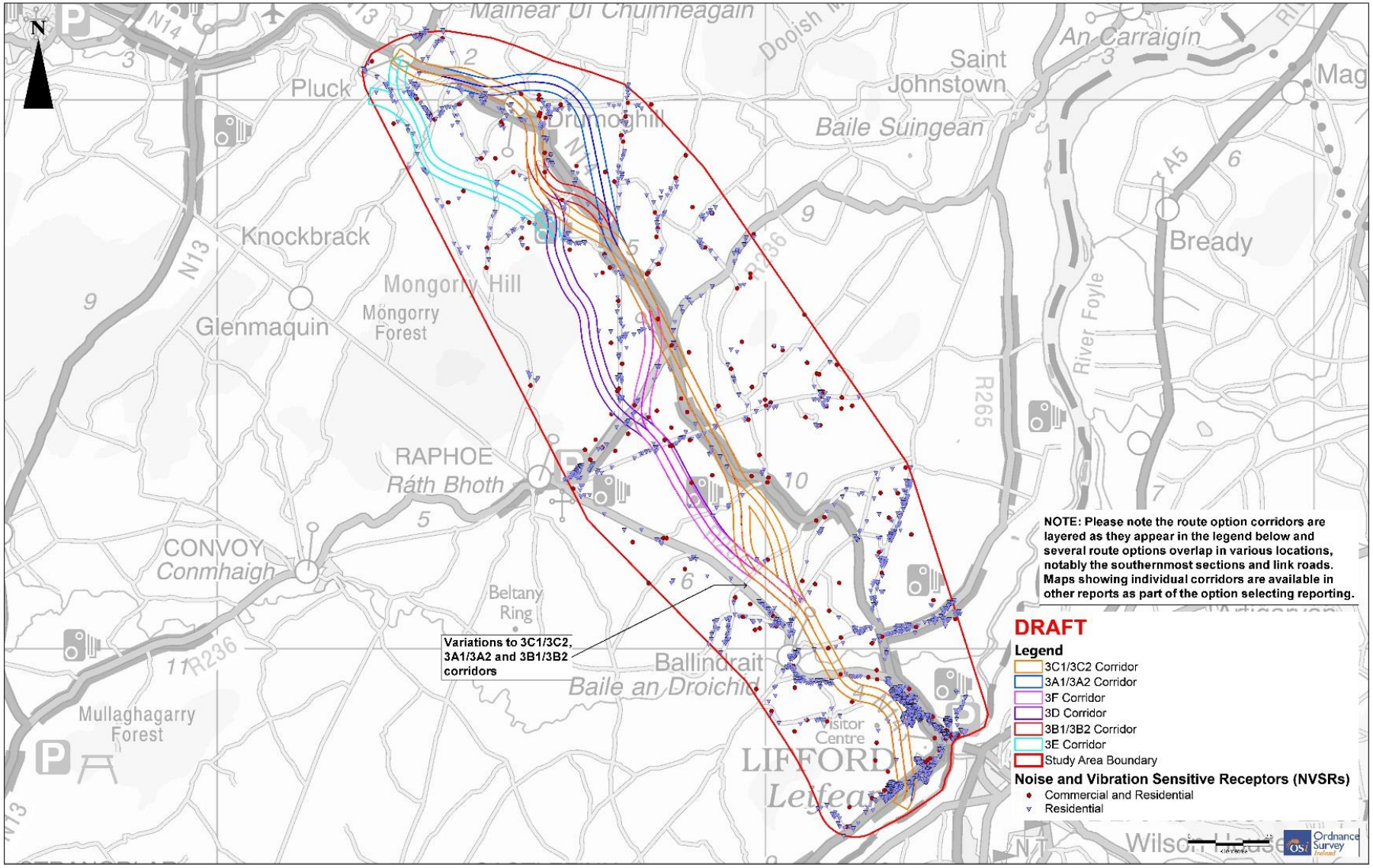


Figure 2-1: Noise and Vibration Sensitive Receptors (NVSRs)- Section 3

3 STAGE 2 OPTIONS ASSESSMENT

3.1 Quantitative Assessment of Potential Impact

All receptors within 300m of each option have been identified and put into one of four "bands". These bands are defined by their distance to either side of the centre line of each option. Band 1 is from 0 to 50m of the centre line, Band 2 is from 50 to 100m, Band 3 is from 100 to 200m and Band 4 is from 200 to 300m.

A receptor is defined as any dwelling house, hotel, hostel, health building, educational establishment, place of worship, entertainment venue or any other facility or area of high amenity which benefits from, or requires the absence of, high noise levels.

Property counts have been conducted using data from the Geodirectory. In order to include worst case scenarios commercial properties in urban areas are included as noise sensitive on the basis that the upper floors may have a residential content. Properties categorised as both residential and commercial and properties of unknown use have also been included in the property count analysis.

The property counts for each banding are summarised in **Table 3-1**. Based on the numbers of properties in each banding, a calculation of the potential impact rating (PIR) was undertaken as detailed in **Table 3-2**. This PIR number represents the quantitative assessment of each option in terms of noise impact.

3.2 Qualitative Assessment of Potential Impact

3.2.1 Assessment of Changes in Traffic Flow

Indicative traffic flow data has been made available in stick diagram format. For Section 3 the critical traffic changes are in the area of Node 5. The exiting traffic at Node 5 is 12,600 AADT and will increase to 13,600 AADT in the design year. Located south of Node 5, Node 1 north of Lifford Bridge, corresponding figures for the existing traffic are 17,800 and 18,000. All options divert traffic out of Lifford. Node 4 located south east of Manorcunningham roundabout has an existing traffic of 11,000 AADT, which will increase to 17,000 in design year.

All options will see a decrease in traffic at Node 5. South of Node 5, at Node 1 will see a slight decrease in traffic as result of all options. There will be a significant decrease in traffic at Node 4, south east of Manorcunningham as a result of all options. While there is no major difference from an acoustic perspective between the options, the 3E (Cyan) option diverts traffic away from Drumoghill and has no particularly sensitive locations along the option. The 3E (Cyan) option is therefore favoured under qualitative criteria.

3.2.2 Assessment of the Likely Need for Mitigation Measures

The existing N14 roads are all listed as ‘action planning areas’ in the Donegal Local Authority Noise Action Plan 2013 -2018. As such they need to be prioritised for further assessment and consideration of noise mitigation measures. The options outlined do not at this stage present any significant barrier to providing appropriate mitigation measures. See **Table 3-2** for the PIR for each option in Section 3.

3.2.3 Summary of Qualitative Assessment

There are no significant barriers to providing mitigation that would distinguish between the options at this stage of the project. The options are not significantly different from a subjective point of view other than the Cyan option which routes traffic away from the concentration of receptors in the Dromoghill area. This

option is scored at zero while the other options are scored at 100. This results in the ranking being predominantly on the PIR scores in a situation where there is little else to differentiate between them subjectively.

3.3 Comparison of Options

Table 3-3 summarises the impact score matrix for all options in Section 3. This overall impact has been determined based on the quantitative and qualitative assessments of each option and the receptors likely to be affected.

The quantitative assessment tab shows the PIR calculated from the Geodirectory counts. The method for calculating a final figure on the quantitative assessment (PIR) is discussed in **Section 1.1** of this report. The qualitative assessment is based on a site visit, analysis of changes in traffic flows, the construction requirements and the location of proximal noise sensitive locations.

The PIR rating shows the 3F (Pink) option has the lowest value, however the 3E (Cyan) option redirects traffic from the Drumoghill area and both have a beneficial impact on Lifford urban centre. Therefore, taking both the quantitative and qualitative assessments into account, 3E (Cyan) is the overall preferred option from a noise and vibration perspective.

Table 3-1: Section 3 Property Counts and Banding

Banding	Blue		Red		Orange		Purple	Cyan	Pink
	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
0-50m	**7**	**8**	**8**	**9**	**8**	**9**	**3**	**3**	**4**
Residential	4	5	5	6	5	6	2	2	3
Commercial	0	0	0	0	0	0	0	0	0
Both	3	3	3	3	3	3	1	1	1
Unknown	0	0	0	0	0	0	0	0	0
50-100m	**29**	**28**	**33**	**32**	**30**	**29**	**28**	**35**	**29**
Residential	25	24	29	28	27	26	24	32	26
Commercial	1	1	0	0	0	0	2	2	1
Both	2	2	2	2	1	1	1	1	2
Unknown	1	1	2	2	2	2	1	0	0
100-200m	**123**	**124**	**146**	**146**	**125**	**126**	**140**	**132**	**126**
Residential	116	117	133	133	110	111	119	113	110
Commercial	1	1	4	4	4	4	5	2	5
Both	3	3	5	5	6	6	13	12	10
Unknown	3	3	4	4	5	5	3	5	1
200-300m	**267**	**267**	**306**	**298**	**265**	**265**	**263**	**264**	**235**
Residential	240	243	276	270	236	239	242	240	212
Commercial	9	8	9	8	9	8	9	9	11
Both	14	12	16	15	16	14	10	10	10
Unknown	4	4	5	5	4	4	2	5	2

Table 3-2: Section 3 Potential Impact Rating

Option	Band	Multiplier	Receptors	Sub-Total	PIR (Quantitative Score)
3A1	0-50	4	7	28	628
	50-100	3	29	87	
	100-200	2	123	246	
	200-300	1	267	267	
3A2	0-50	4	8	32	631
	50-100	3	28	84	
	100-200	2	124	248	
	200-300	1	267	267	
3B1	0-50	4	8	32	729
	50-100	3	33	99	
	100-200	2	146	292	
	200-300	1	306	306	
3B2	0-50	4	9	36	722
	50-100	3	32	96	
	100-200	2	146	292	
	200-300	1	298	298	
3C1	0-50	4	8	32	637
	50-100	3	30	90	
	100-200	2	125	250	
	200-300	1	265	265	
3C2	0-50	4	9	36	640
	50-100	3	29	87	
	100-200	2	126	252	
	200-300	1	265	265	
3D	0-50	4	3	12	639
	50-100	3	28	84	
	100-200	2	140	280	
	200-300	1	263	263	
3E	0-50	4	3	12	645
	50-100	3	35	105	
	100-200	2	132	264	
	200-300	1	264	264	
3F	0-50	4	4	16	590
	50-100	3	29	87	
	100-200	2	126	252	
	200-300	1	235	235	

Table 3-3: Section 3 Noise Impact Score Matrix

Option	PIR (Quantitative Score)	Qualitative Score	Total Score	Impact level	Impact Score	Preference
3A1	628	100	728	Not Significant/ Neutral	4	Intermediate
3A2	631	100	731	Not Significant/ Neutral	4	Intermediate
3B1	729	100	829	Not Significant/ Neutral	4	Intermediate
3B2	722	100	822	Not Significant/ Neutral	4	Intermediate
3C1	637	100	737	Not Significant/ Neutral	4	Intermediate
3C2	640	100	740	Not Significant/ Neutral	4	Intermediate
3D	639	100	739	Not Significant/ Neutral	4	Intermediate
3E	645	0	645	Minor or slightly positive	5	Preferred
3F	590	100	690	Not Significant/ Neutral	4	Intermediate

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.3 - Landscape

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A4 Link
Document Title:	Option Selection Report – Technical Appendix D3.3 – Landscape and Visual Assessment
Document No. :	TT_Y16112-2JV-RS-MCA-S3 -RP-LE-00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	SA	PK

Table of Contents

List of Figures

List of Tables

1 INTRODUCTION

This Appendix of the Option Selection Report associated with Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link Route of the TEN-T Priority Route Improvement Project considers the constraints and aspects of the proposed project in relation to potential landscape and visual impacts at the option selection stage. This will form part of a Phase 2 – Option Selection Report to be issued by the National Roads Design Office, Donegal County Council. See Section 1.2 of the Option Selection Report for Project Description.

The project is being progressed in accordance with the phased approach to developing a major road scheme identified in the NRA National Roads Project Management Guidelines (2010) and follows the methodologies contained in the NRA document *Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (2016)*.

1.1 Methodology

The landscape and visual assessment is derived from the methods described in *the Design Manual for Roads and Bridges* Volume 11, Section 3 for Stage Two Assessment (UK DMRB, 1994), and *Guidelines for Landscape and Visual Impact Assessment, Third edition* (LI & IEMA, 2013) which has been referred to as appropriate for the level of assessment necessary at this Option Selection Stage.

The objective is to undertake sufficient assessment to identify the landscape and visual receptors and the likely effects upon them which are then taken into consideration in developing and refining the Options.

A desktop study was undertaken using the following sources of information:

- Ordnance Survey mapping.
- Aerial photography.
- County Donegal Development Plan (2018-2024) (CDDP).
- Map 6.2.1 Rural Area Types.
- Map 7.1.1 Scenic Amenity.
- Landscape Character Assessment of County Donegal (2016).
- Online digital mapping accessed through Donegal Maps.
- Northern Ireland Regional Landscape Character Assessment (NIRLCA); and
- Northern Ireland Landscape Character Assessment 2000 (NILCA 2000).

In addition, site visits were undertaken to establish an understanding of the landscape and visual context of the proposed Options

1.1.1 Assessment Criteria

Landscape and visual impact assessments are assessed as two discreet topics. Landscape impact assessment is concerned with the alteration to the physical landscape which can give rise to changes in its character, how it is experienced and the ascribed value of the landscape.

Visual impact assessment is concerned with changes that arise in the overall effect on the area's visual amenity. Visual change is the alteration to a view or the experience of the view, and visual impact is the assessment of the significance of that change. Visual receptors considered as part of the Option Selection Report include, but have not been limited to; residential receptors, tourists, receptors at identified Protected Views and Prospects and transitional receptors e.g. those traveling through the study area in road vehicles.

The capacity of a landscape to accept change of the type proposed is assessed. The key landscape components are landform, vegetation and historical and cultural components. Landform relates to topography and geology. Historical and cultural components include historic landscapes, listed buildings, conservation areas and historic designed landscapes.

The sensitivity of the landscape has been established using methods derived from the *Guidelines for Landscape and Visual Impact Assessment, Third edition* (LI & IEMA, 2013) and referenced from the County Donegal Development Plan (2018 – 2024) and the sensitivity rating criteria, listed in TII Guidelines *Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis (2016)*.

All of the Options, including the Do-Minimum scenarios, have been appraised in accordance with NRA/ TII Guidelines. The score has been based on the likely impact of each option under landscape and visual impact. Section 2 of the TII PAG provides a recommended scoring system. 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. The predicted impacts for landscape and visual, without mitigation, have been scored as outlined in **Table 1-1** below :

Table 1-1: Impact Scoring Key

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

2 EXISTING ENVIRONMENT

2.1 Landscape Character

A review of the Landscape Character Assessment accompanying the CDDP identified that the study area associated with Section 3 is restricted to two Landscape Character Areas (LCA); *Foyle Valley LCA 13* and *Laggan Valley LCA 12* (refer to **Figure 2-1** below)

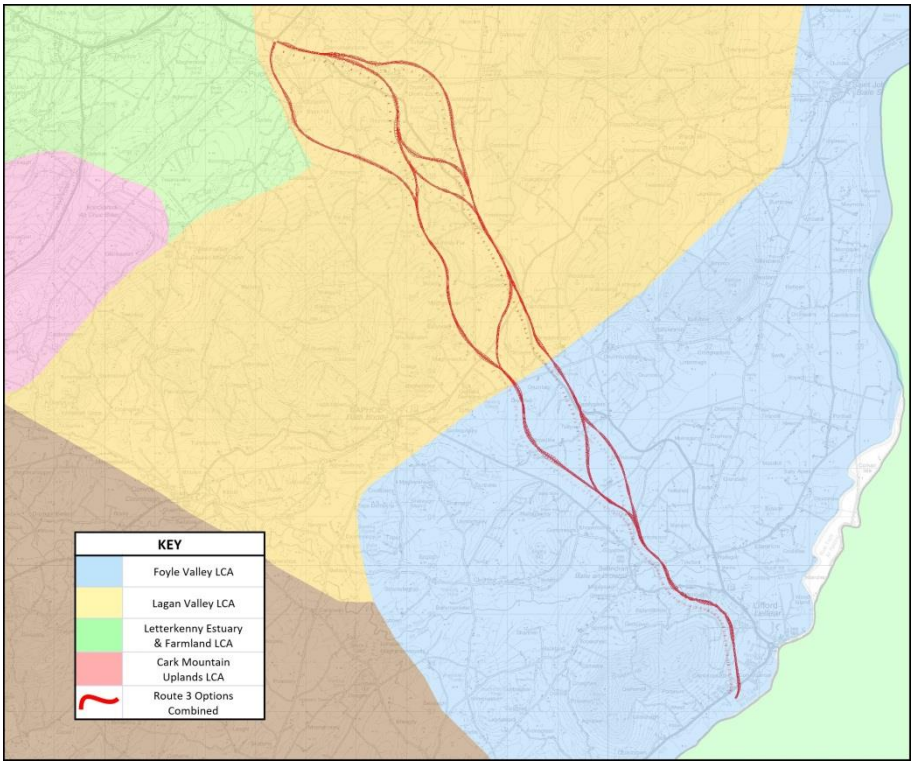


Figure 2-1 – Enhanced Landscape Character Area Map (Source – County Donegal Development Plan 2018 – 2024)

The landscape character assessment accompanying the CDDP states, under a variety of headings the following landscape characteristics for *Laggan Valley LCA 12*;

- *Laggan Valley LCA is a vast undulating agricultural landscape of good quality pasture and arable land characterised by large, geometric, hedge trimmed agricultural fields extending over a wide geographical area, with a long shore along Lough Swilly.*

- *Agricultural lands slope gently in a rolling form from the N13 towards the shore of Lough Swilly along the north of this LCA, and have a primarily schist bedrock with small areas of limestone to the west around Manorcunningham.*

- *Dominant pattern of straight sided rectilinear hedgerow bound fields over an undulating and rolling working agricultural landscape interspersed with farm houses and farm buildings.*

- *The Historic Landscape Characterisation report identifies that this highly productive agricultural area was "improved" in the 18th and 19th centuries following 17th-century plantation. It is characterised by a patchwork of square fields (Straight-sided and surveyed fields Generic HLC-type), with hedges, and late 20th-century plantation woods and forest on the higher ground.*

It is noted that the landscape assessment accompanying the CDDP does not provide any categorisation of the LCA with regards to sensitivity or condition, though does identify forces for change which include; pressure for urban generated housing development from Letterkenny and Derry, linear development along the rural road network and telecommunications and infrastructural development.

The landscape character assessment accompanying the CDDP states, under a variety of headings the following landscape characteristics for *Foyle Valley LCA 13*;

- *Foyle Valley LCA is a broad river valley extending along the River Foyle from outside Lifford in the south of the area to the border with Northern Ireland on the outskirts of Derry City in the north of this LCA including the 'border villages' of Ballindrait, Carrigans, Lifford and St. Johnston.*

- *This LCA is characterised by undulating fertile agricultural lands with a regular field pattern of medium to large geometric fields, bound by deciduous trees and hedgerow.*

- *This LCA has a strong visual connection to its mirror landscape on the opposite side of the River Foyle in Northern Ireland in terms of the similar landscape type and also that the Northern Ireland landscape inherently informs the views within and without of this LCA*

- *Undulating rural agricultural landscape with underlying schist geology in the north and Quartzite in the south that consists of one half of a large broad river valley that slopes gently towards the Foyle, the other half being in Northern Ireland.*

- *Hedge and deciduous tree bound fields are a dominant feature in this landscape providing biodiversity corridors throughout.*

- *Large areas of deciduous woodland particularly along the coast and along the river valleys.*

It is noted that the landscape assessment accompanying the CDDP does not provide any categorisation of the LCA with regards to sensitivity or condition, though does identify forces for change which include; pressure for urban generated housing development from the city of Derry, linear development along the rural road network, afforestation on higher ground within the north and west of the landscape unit and telecommunications and infrastructural development.

An appraisal of the Landscape Character Assessment carried out as part of the CDDP was undertaken by RPS and found to generally reflect an appropriate level of categorisation within the study area associated with the Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link Route.

2.2 Landscape Value

The landscape of the County has been categorised into three layers of value (illustrated on Map 7.1.1 of the CDDP), which have been classified as areas of 'Especially High Scenic Amenity', areas of 'High Scenic Amenity' and areas of 'Moderate Scenic Amenity', none of the landscapes of County Donegal have been classified as Low Value.

The definitions for each of the areas of landscape value and classification are as detailed below;

- **Areas of Especially High Scenic Amenity (EHSA)** deemed to have extremely limited capacity to assimilate additional development:

- **Areas of High Scenic Amenity (HSA)** deemed to have capacity to absorb sensitively located development of scale, design and use that will enable assimilation into the receiving landscape and

which does not detract from the quality of the landscape, subject to compliance with all other objectives and policies of the plan; and

- **Areas of Moderate Scenic Amenity (MSA)** deemed to have capacity to absorb suitable development.

All new development within the County must have regard to the specific landscape classification, in terms of integration and assimilation of development into the receiving landscape.

A review of Map 7.1.1 accompanying the CDDP has identified that the study area associated with Section 3 is either classed as being of HSA or MSA (refer to **Figure 2-2** below).

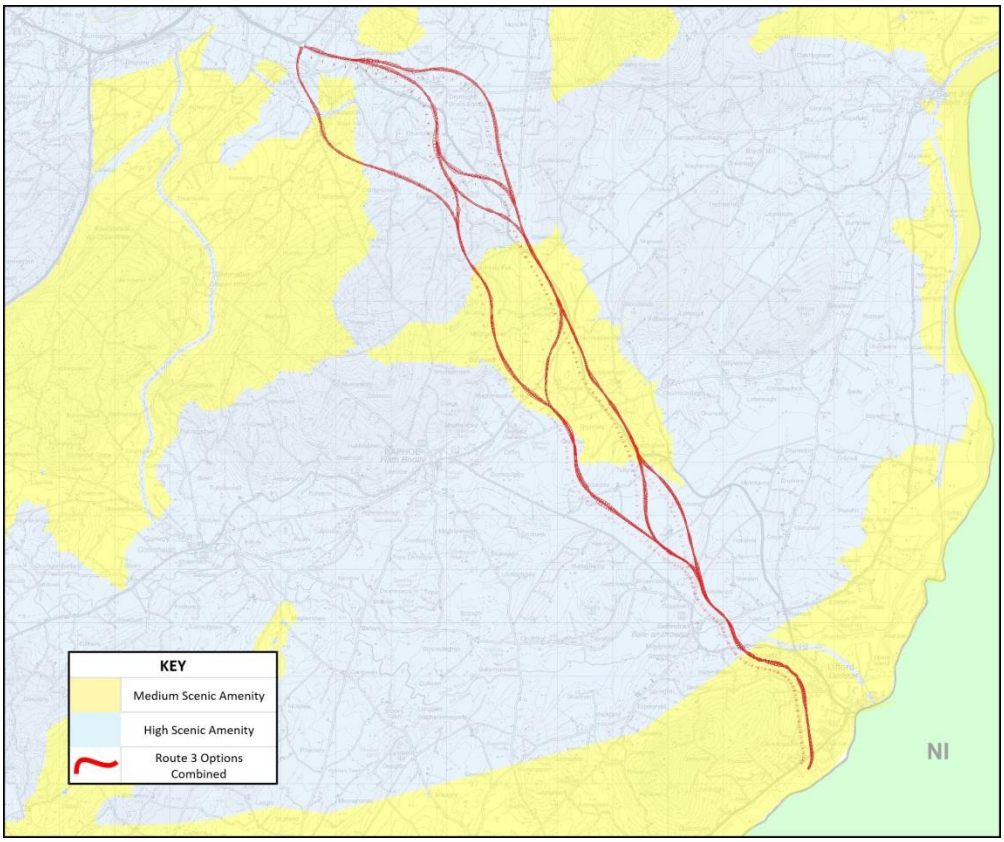


Figure 2-2 – Scenic Amenity (Source – County Donegal Development Plan 2018 – 2024)

2.2.1 Land Cover

Land cover within the study area associated with Section 3 is predominantly comprised of pastoral and arable agricultural land use of varying quality, whilst the urban fringe of Lifford creates a localised point of interest in the south-east. Much of the landscape to the north of the study area is often described as a 'Plantation Landscape' with field patterns and scale reminiscent.

Field patterns and scale vary across the study area, with the agricultural landscape defined by a medium to large field pattern within the northern portion of the study area whilst a medium to small scale field pattern becomes prevalent within the southern portion of the study area. Throughout the study area field boundaries are well defined by mature, mixed species hedgerows which are generally well maintained.

Tree cover forms a strong yet relatively sparse element of the landscape within the study area with mature trees in hedgerows acting as a visual link to the scattered mixed species woodlands that appear on more elevated slopes and less fertile land or that appear as shelterbelts surrounding the scattered farm dwellings and residential properties within the study area.

2.2.2 Visually Significant Vegetation

There is limited tree cover within the study area with potential to be affected by the proposed option options. This shortage of potentially visually significant vegetation results in increasing the value of such vegetation where it does occur in the study area. In summary the key areas of visually significant vegetation are as follows;

- Mixed species planting adjacent to N14 corridor to south-east of existing N13/ N14 roundabout junction.
- Scattered woodland blocks along dismantled railway between Pluck, to the west and Tullybogly to the east;
- Scattered mixed species woodland blocks to the immediate south of Drumoghill;
- Scattered mixed species woodland blocks on eastern facing slopes at Drumcarn;
- Mixed species woodland block adjacent to the N14, west of Sheskinapoll;
- Mixed species riparian woodland associated with streams and rivers between Mullafin to the south and Doorabble to the north;
- Mixed species woodland planting west of the N14 / R265 junction, north of the Deele River;
- Hedgerows and scattered tree copses on eastern facing slopes of Croaghan Hill to the immediate west of Lifford; and
- Tree lined hedgerows adjacent to the N15 along southern boundary of Lifford.

2.2.3 Existing Networks

The study area is well served by National, Regional and local road networks with the N14 forming the main arterial route between Lifford and Letterkenny in a generally north-south alignment through the relatively level landscape.

Regional roads such as the R236, R264 and R265 form links to Raphoe, Saint Johnstown and the wider context. Regional roads generally run through the study area in an east-west orientation, whilst networks of local roads are found throughout the study area and considered to fit well within the landscape.

2.2.4 Urban Form

There is generally a dispersed settlement pattern within the study area, comprised of scattered farm steadings and residential dwellings. Linear development along local roads is apparent, though not obvious in many views due to the undulating nature of the topography and screening provided by vegetation cover. More concentrated areas of residential development are located at junctions between local roads, within northern portions of the study area.

To the south, Lifford forms the main area of urban development within the study area, though is often well screened by roadside vegetation such that the urban form does not dominate southern views from the N14. Residential development has expanded along main arterial routes such as N14, R264 and R265 north of Lifford though such developments are often partially screened in views by intervening topographical changes and vegetation.

2.2.5 Northern Ireland Landscape

It is noted that the southern end of the proposed options terminate in close proximity the border with Northern Ireland, at a location west of Strabane and as such a review of the Northern Ireland Regional Landscape Character Assessment (NIRLCA) was also undertaken. This review has identified that the landscape character area adjacent to the study area within Northern Ireland is identified as *6 - Foyle Valley*.

A review of the Northern Ireland Landscape Character Assessment 2000 (NILCA 2000), which contains landscape briefs for each of the landscape character areas surveyed in 1999 and provides a baseline description of the landscape at a point in time based upon local patterns of geology, land form, land use,

cultural and ecological features has identified that the southern end of the option corridors is located in close proximity to *LCA 27 Foyle Valley.*

Landscape character descriptions contained within both the NIRLCA and NILCA 2000 describe the landscape as an extension to the *Foyle Valley* character area described within the CDDP landscape character assessment. In particular it is described as being a broad valley, running north from the hills of the Sperrins, and the landscape is dominated by open farmland with a geometric field pattern and that river embankments are prominent features.

2.3 Overall Landscape Sensitivity

The existing environment of the study area associated with Section 3 includes land between Connaghan's Bridge (existing N13/ N14 junction) to the north and Lifford to the south. The study area extends west to include land to the east of Raphoe and east to include lands west of Lismaghry, Brockagh and Drumleene.

The landscape associated with the Section 3 study area and the wider environs is primarily gently undulating and rolling in nature, with landform associated with the many valleys and smoothly rounded hills forming the Laggan Valley LCA.

Further south the landscape is generally characterised by the broad river valley systems associated with the River Foyle and River Deele found within the southern portion of the Section 3 study area.

Overall it is considered that the landscape within the study area is of a high sensitivity as it has a strong, distinctive character, largely devoid of landscape detractors, though does have the capacity to accommodate change to a certain degree.

2.4 Visual Context

Following a review of the CDDP and available information in relation to Protected Views and Prospects, it has been established that there are no Protected Views or Prospects contained within the study area associated with Section 3.

Views from within the study area are often expansive and panoramic in nature primarily as a result of the gently undulating landform associated with the broad valley systems associated with the Foyle River and the River Deele. Elevated land to the east of Strabane together with more elevated land at Croaghan Hill, to the west of Lifford form a backdrop to southern views.

Whilst views are considered to be open and expansive in nature, they often become foreshortened by intervening topographical changes, scattered woodland cover and trees within hedgerows defining field boundaries.

3 OPTION ASSESSMENT

3.1 Landscape Impact

The landscape impacts are summarised in **Table 3-1** below. The negative landscape impacts arising from each of the proposed Options relate to the quality and sensitivity of the landscape areas affected. It is the key characteristics of each landscape area crossed that will influence the option selection process.

This category assesses the following Options fit within the existing landscape character described above and identified on **Figure 2-1** and **Figure 2-2**. Using both the landscape sensitivity and the preliminary road Option design drawings, the impacts of each Option are appraised.

The text below discusses the differences between the landscape impacts of for each of the proposed Options in combination with the preferred Bridge Option across the Deele River and assumes a worst case scenario that does not include landscape mitigation.

3.1.1 Section 3 Option 3A1

Commencing at the roundabout forming the existing junction between the N13 and N14, to the north of the study area, this proposed Option traverses east, to the north of Ballyboe before the option turns south towards the R236 at Carrickadawson and does not follow the existing N14 corridor. The proposed Option will be primarily constructed on embankments for much of this section of the option, with localised instances of cuttings proposed to the north of Ballyboe and east of Drumaghill. All proposed sections of the option have the potential to impact on existing field boundary vegetation, existing roadside vegetation and mixed species woodland to the south-west of Castledowey.

Within the vicinity of the proposed junction between the R236 and proposed Option, new embankments and cuttings associated with road alignment and overbridge construction have the potential to impact on existing field boundary vegetation and mature trees adjacent to the N14 to the south of Slievebuck.

To the south of the proposed junction at Carrickadawson the proposed Option continues south-east towards the R264 on a series of embankments, with localised instances of cuttings at Gortin, Carnshannagh and Feddyglass. This portion of the proposed Option has the potential to impact on existing field boundary vegetation, riparian vegetation associated with numerous water courses including the Swilly Burn and areas of woodland adjacent to the N14, south of Feddyglass. New overbridge crossing at the R264 and Deele River has the potential to impact on field boundary vegetation and roadside vegetation.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.3km of the Foyle Valley LCA and 9.4km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 9.4km of MSA designation.

3.1.2 Section 3 Option 3A2

The northern portion of this option, between the existing N13/ N14 junction to the north and Feddyglass to the south follows the proposed Option 3A1, described above in 3.13 with potential impacts on field boundary

hedgerows, roadside vegetation and riparian vegetation as a consequence of new embankment and cutting formations along the proposed option as previously identified.

Between Feedyglass and Gortin the proposed option takes a more western alignment and is proposed to be constructed on embankments and cuttings, with proposed embankments predicted to impact on an area of coniferous woodland that occupies land to the east of the R264 before alignments similar to the previous option at Gortin. This section of the option will also impact on vegetation associated with watercourses due to the proposed embankment construction.

This option, between Gortin and the termination in the Finn River valley, follows the proposed Option 3A1 as previously described with potential impacts on woodland areas, garden boundary vegetation, roadside vegetation and field boundary vegetation as a consequence of the embankments and cuttings proposed.

With regard to Landscape Character Areas: this Option traverses through approximately 8.5km of the Foyle Valley LCA and 9.3km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.4km of MSA designation.

3.1.3 Section 3 Option 3B1

The northern portion of this option, between the existing N13/ N14 junction to the north and Carrickballydooey to the east follows the proposed Option 3A1, described previously with potential impacts on existing roadside vegetation, field boundary hedgerows and screening vegetation associated with the N14.

From Carrickballydooey the alignment of Option 3B1 is slightly further south than the Option 3A1 alignment, skirting the western edge of Ballyboe, before heading south towards Drumcarn and then heading east towards Doorable at which point it re-aligns with the proposed Option 3A1. Within this portion of the Option the alignment is proposed to be constructed on a series of embankments with localised instances of cuttings where levels vary. The option has the potential to impact upon field boundary vegetation, areas of mixed species woodland planting and shelterbelts to the west of Ballyboe with further impacts on roadside vegetation and field boundary hedgerows to the east of Drumcarn as the proposed alignment crosses agricultural fields.

Within the vicinity of the proposed junction between the R236 and proposed Option, new embankments and cuttings associated with road alignment and overbridge construction have the potential to impact on existing field boundary vegetation and mature trees adjacent to the N14 to the south of Slievebuck.

To the south of the proposed junction at Carrickadawson the proposed Option continues south-east towards the R264 on a series of embankments, with localised instances of cuttings at Gortin, Carnshannagh and Feddyglass. This portion of the proposed Option has the potential to impact on existing field boundary vegetation, riparian vegetation associated with numerous water courses including the Swilly Burn and areas of woodland adjacent to the N14, south of Feddyglass. New overbridge crossing at the R264 and Deele River has the potential to impact on field boundary vegetation and roadside vegetation.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.3km of the Foyle Valley LCA and 9.3km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.2km of MSA designation.

3.1.4 Section 3 Option 3B2

The northern portion of this option, between the existing N13/ N14 junction to the north and Carrickballydooey to the east follows the proposed Option 3A1, described previously with potential impacts on existing roadside vegetation, field boundary hedgerows and screening vegetation associated with the N14.

From Carrickballydooey the alignment of Option 3B2 is slightly further south than the Option 3A1 alignment, skirting the western edge of Ballyboe, before heading south towards Drumcarn and then heading east towards Doorabble at which point it re-aligns south towards the R236. Within this portion of the Option the alignment is proposed to be constructed on a series of embankments with localised instances of cuttings where levels vary. The option has the potential to impact upon field boundary vegetation, areas of mixed species woodland planting and shelterbelts to the west of Ballyboe with further impacts on roadside vegetation and field boundary hedgerows to the east of Drumcarn as the proposed alignment crosses agricultural fields.

From Doorabble to the proposed junction at Carrickadawson the proposed Option continues generally south-east on a series of embankments and cuttings which have the potential to impact upon field boundary hedgerows with mature trees, coniferous plantation, mixed species shelterbelt woodland and roadside vegetation associated with the existing N14 and local access roads adjacent. Within the vicinity of the proposed junction between the R236 and proposed Option, new embankments and cuttings associated with road alignment and overbridge construction have the potential to impact on existing field boundary vegetation and mature trees adjacent to the N14 to the south of Slievebuck.

As the proposed Option continues south-east between Carnshannagh and Feddyglass, the proposed alignment, constructed on a series of embankments and cuttings has the potential to impact on woodland copses and field boundary vegetation, including hedgerows with trees. South of Feddyglass the proposed Option travels south across more open, level agricultural land to the west of Mullnaveagh towards the Deele River crossing. The majority of this section of the option is constructed on embankments, with a cutting proposed between Tamnawood and Gortin. This portion of the proposed Option has the potential to impact on existing field boundary hedgerows, coniferous plantation and riparian vegetation associated with the Deele River and the Swilly Burn. New overbridge crossing at the R264 and Deele River have the potential to impact on field boundary vegetation and roadside vegetation.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.5km of the Foyle Valley LCA and 9.0km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.1km of MSA designation.

3.1.5 Section 3 Option 3C1

The northern portion of this option, between the existing N13/ N14 junction to the north and Carrickballydooey to the east follows the proposed Option 3A1, described previously with potential impacts

on existing roadside vegetation, field boundary hedgerows and screening vegetation associated with the N14.

From Carrickballydooey the alignment of the proposed Option is similar to that of Option 3B2, skirting the western edge of Ballyboe, before heading south towards Drumcarn and then heading east towards Doorabble, at a location further south than the proposed Option 3B2. South of Doorabble the proposed Option re-aligns south towards the R236. Within this portion of the Option the alignment is proposed to be constructed on a series of embankments with localised instances of cuttings where levels vary. The option has the potential to impact upon field boundary vegetation, areas of mixed species woodland planting and shelterbelts to the west of Ballyboe with further impacts on roadside vegetation and field boundary hedgerows to the east of Drumcarn as the proposed alignment crosses agricultural fields. Further south the proposed option alignment has the potential to impact upon existing field boundary hedgerows, shelterbelt planting and areas of coniferous and mixed species woodland, particularly to the south-west of Doorabble.

From Doorabble to the proposed junction at Carrickadawson the proposed Option continues generally south-east on a series of embankments and cuttings which have the potential to impact upon field boundary hedgerows with mature trees, coniferous plantation, mixed species shelterbelt woodland and roadside vegetation associated with the existing N14 and local access roads adjacent. Within the vicinity of the proposed junction between the R236 and proposed Option, new embankments and cuttings associated with road alignment and overbridge construction have the potential to impact on existing field boundary vegetation and mature trees adjacent to the N14 to the south of Slievebuck.

To the south of the proposed junction at Carrickadawson the proposed Option continues south-east towards the R264 on a series of embankments, with localised instances of cuttings at Gortin, Carnshannagh and Feddyglass. This portion of the proposed Option has the potential to impact on existing field boundary vegetation, riparian vegetation associated with numerous water courses including the Swilly Burn and areas of woodland adjacent to the N14, south of Feddyglass. New overbridge crossing at the R264 and Deele River has the potential to impact on field boundary vegetation and roadside vegetation.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.3km of the Foyle Valley LCA and 9.1km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.0km of MSA designation.

3.1.6 Section 3 Option 3C2

The northern portion of this option, between the existing N13/ N14 junction to the north and Carrickballydooey to the east follows the proposed Option 3A1, described previously with potential impacts on existing roadside vegetation, field boundary hedgerows and screening vegetation associated with the N14.

From Carrickballydooey the alignment of the proposed Option is to that of the Option 3B2 alignment, skirting the western edge of Ballyboe, before heading south towards Drumcarn and then heading east towards Doorabble, at a location further south than the proposed Option 3B2. South of Doorabble the proposed Option re-aligns south towards the R236. Within this portion of the Option the alignment is proposed to be constructed on a series of embankments with localised instances of cuttings where levels vary. The option has the potential to impact upon field boundary vegetation, areas of mixed species woodland planting and

shelterbelts to the west of Ballyboe with further impacts on roadside vegetation and field boundary hedgerows to the east of Drumcarn as the proposed alignment crosses agricultural fields. Further south the proposed option alignment has the potential to impact upon existing field boundary hedgerows, shelterbelt planting and areas of coniferous and mixed species woodland, particularly to the south-west of Doorabble.

From Doorabble to the proposed junction at Carrickadawson the proposed Option continues generally south-east on a series of embankments and cuttings which have the potential to impact upon field boundary hedgerows with mature trees, coniferous plantation, mixed species shelterbelt woodland and roadside vegetation associated with the existing N14 and local access roads adjacent. Within the vicinity of the proposed junction between the R236 and proposed Option, new embankments and cuttings associated with road alignment and overbridge construction have the potential to impact on existing field boundary vegetation and mature trees adjacent to the N14 to the south of Slievebuck.

To the south of the proposed junction at Carrickadawson the proposed Option continues south-east towards the R264 on a series of embankments, with localised instances of cuttings at Gortin, Carnshannagh and Feddyglass. This portion of the proposed Option has the potential to impact on existing field boundary vegetation, riparian vegetation associated with numerous water courses including the Swilly Burn and areas of woodland adjacent to the N14, south of Feddyglass. New overbridge crossing at the R264 and Deele River has the potential to impact on field boundary vegetation and roadside vegetation.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.5km of the Foyle Valley LCA and 9.3km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.4km of MSA designation.

3.1.7 Section 3 Option 3D

The northern portion of this option, between the existing N13/ N14 junction to the north and Carrickballydooey to the east follows the proposed Option 3A1, described previously with potential impacts on existing roadside vegetation, field boundary hedgerows and screening vegetation associated with the N14.

From Carrickballydooey the alignment of the proposed Option skirts the western edge of Ballyboe, before heading south towards Drumcarn and Magheestown, where it is proposed to cross the R236, west of the existing N14 / R236 junction at Carrickdawson. This section of the proposed Option is to be constructed on a series of embankments with localised cuttings proposed as levels dictate. Main embankments occur to the east of Drumcarn and at the proposed overbridge crossing at the R236. This portion of the proposed Option, between Drumcarn and the R236 has the potential to impact upon field boundary hedgerows, hedgerows with mature trees, roadside vegetation associated with crossings over local and rural access laneways and mixed woodland areas.

The proposed overbridge crossing at the R236 and associated re-alignment of local access roads has the potential to impact upon visually significant field boundary hedgerows containing mature trees, roadside vegetation and garden boundary vegetation as a consequence of the embankments proposed.

As the proposed Option traverses south-east towards the Deele River crossing the proposed Option is to be constructed on a series of embankments and cuttings which have the potential to impact upon visually

significant field boundary hedgerows containing mature trees, coniferous plantation, shelterbelt plantings and riparian vegetation associated with water courses and Deele River within the more open expansive river valley landscape.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.4km of the Foyle Valley LCA and 9.2km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 7.4km of the HSA designation and 10.4km of MSA designation.

3.1.8 Section 3 Option 3E

Commencing at the roundabout forming the existing junction between the N13 and N14, to the north of the study area, this proposed Option traverses west towards Pluck, with new bridge crossings over Corkey River, to the east of Pluck and west of elevated land at Black Hill. This portion of the option is primarily constructed on embankments which have the potential to impact on existing screen vegetation adjacent to the N14, riparian vegetation adjacent to the Corkey River and field boundary hedgerows with mature trees across a short section of the option.

To the south of the southern crossing of the Corkey River the proposed option traverses south-east, to the south-west of Black Hill, towards Mondooey before aligning south towards the proposed R236 crossing to the west of the existing N14 / R236 junction at Carrickdawson. This section of the proposed option, constructed on a series of embankments with minor cuttings where levels dictate has the potential to impact on existing field boundary hedgerows, hedgerows with mature trees, riparian vegetation associated with a number of drains and streams and instances of mixed species woodland and shelterbelt planting.

The proposed overbridge crossing at the R236 and associated re-alignment of local access roads has the potential to impact upon visually significant field boundary hedgerows containing mature trees, roadside vegetation and garden boundary vegetation as a consequence of the embankments proposed.

As the proposed Option traverses south-east towards the Deele River crossing the proposed Option is to be constructed on a series of embankments and cuttings which have the potential to impact upon visually significant field boundary hedgerows containing mature trees, coniferous plantation, shelterbelt plantings and riparian vegetation associated with water courses and Deele River within the more open expansive river valley landscape.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.4km of the Foyle Valley LCA and 9.0km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 6.3km of the HSA designation and 11.1km of MSA designation.

3.1.9 Section 3 Option 3F

Commencing at the roundabout forming the existing junction between the N13 and N14, to the north of the study area, this proposed Option traverses east adjacent to the existing N14 alignment towards Ballyboe where it is proposed to be constructed on a series of embankments. The proposed Option passes to the north of Ballyboe, where it will be contained within a new cutting before being constructed on embankments as it aligns south towards the R236 east of Drumoghill. This portion of the proposed Option has the potential to impact on existing screen vegetation adjacent to the N14, field boundary hedgerows with mature trees and visually significant portions of mixed species woodland to the north of Ballyboe. Proposed new embankments between Ballyboe and Drumoghill have the potential to impact on field boundary hedgerows, vegetation adjacent to local roads and access lanes and riparian vegetation associated with watercourses.

To the south of Drumaghill the proposed Option travels south towards Sleivebuck, before turning west and crossing the R236 to the west of the existing Carrickdawson junction. A series of embankments and cuttings are proposed for this section of the option, with large embankments proposed at river crossings and the proposed junction with the R236. The proposed option has the potential to impact upon riparian vegetation, field boundary hedgerows with mature trees and coniferous plantation to the south of Doorabble. To the west of Shekinapoll the proposed option alignment has the potential to impact on field boundary hedgerows and scattered vegetation adjacent to the existing N14 corridor. To the east of Slievebuck the proposed option is to be constructed on new embankments which have the potential to impact on field boundary hedgerows and a small coniferous plantation.

The proposed overbridge crossing at the R236, to the west of the existing Carrickdawson junction and associated re-alignment of local access roads has the potential to impact upon visually significant field boundary hedgerows containing mature trees, roadside vegetation and garden boundary vegetation.

As the proposed Option traverses south-east towards the Deele River crossing the proposed Option is to be constructed on a series of embankments and cuttings which have the potential to impact upon visually significant field boundary hedgerows containing mature trees, coniferous plantation, shelterbelt plantings and riparian vegetation associated with water courses and Deele River within the more open expansive river valley landscape.

South of the R264 crossing the proposed option has the potential to impact on visually significant areas of vegetation, including roadside hedgerows with trees, field boundary vegetation and areas of scrub vegetation and instances of mixed species woodland as the proposed option traverses the landscape to the immediate west of Lifford, before terminating within the River Finn valley landscape to the south-west. This section of the proposed option has the potential to impact on garden boundary vegetation, roadside vegetation associated with the N15 and field boundary vegetation as a consequence of the option being constructed on a series of embankments and cuttings.

With regard to Landscape Character Areas: this Option traverses through approximately 8.4km of the Foyle Valley LCA and 10.1km of the Laggan Valley LCA. With regards to Scenic Amenity the Option traverses through approximately 6.4km of the HSA designation and 12.1km of MSA designation.

Table 3-1 below outlines the predicted significance of landscape impact for each of the previously described Options.

Table 3-1: Landscape Character Impact

Option	Landscape Character Area	Landscape Character Area Sensitivity	Magnitude of change in landscape resource	Predicted significance of landscape impact
Option 3A1 Total Length: 17.1km	Foyle Valley	High	Large	Major or highly negative
	Laggan Valley	High	Medium	
Option 3A2 Total Length: 17.8km	Foyle Valley	High	Large	Major or highly negative
	Laggan Valley	High	Medium	
Option 3B1 Total Length: 17.6km	Foyle Valley	High	Medium	Moderately Negative
	Laggan Valley	High	Medium	
Option 3B2 Total Length: 17.5km	Foyle Valley	High	Medium	Moderately Negative
	Laggan Valley	High	Medium	
Option 3C1 Total Length: 17.4km	Foyle Valley	High	Medium	Moderately Negative
	Laggan Valley	High	Medium	
Option 3C2 Total Length: 17.8km	Foyle Valley	High	Medium	Moderately Negative
	Laggan Valley	High	Medium	
Option 3D Total Length: 17.6km	Foyle Valley	High	Large	Major or highly negative
	Laggan Valley	High	Large	
Option 3E Total Length: 17.4km	Foyle Valley	High	Large	Major or highly negative
	Laggan Valley	High	Large	
Option 3F Total Length: 18.5km	Foyle Valley	High	Large	Major or highly negative
	Laggan Valley	High	Large	

** Note lengths quoted include the mainline length plus link roads for the purposes of comparing total LCA traversed.*

In summary, as shown in **Table 3-1** above, when landscape impacts are considered the Options 3D, 3E and 3F are considered to have broadly similar landscape effects as they introduce new sections of road corridors within areas of the landscape that are currently not affected by such development. Proposed Options 3A1, 3A2, 3B1, 3B2, 3C1 and 3C2, are also considered to have a broadly similar landscape effect, though there

is a slight preference for Option 3B1 and Option 3C1 as these options use the existing N14 corridor for a greater proportion of their overall option length.

Table 3-2: Landscape Character Impact and Predicted TII Score

Option	TII Scoring (based on Table 3-1: Landscape Character Impact)
Option 3A1	1 (Major of highly negative)
Option 3A2	1 (Major of highly negative)
Option 3B1	2 (Moderately negative)
Option 3B2	2 (Moderately negative)
Option 3C1	2 (Moderately negative)
Option 3C2	2 (Moderately negative)
Option 3D	1 (Major of highly negative)
Option 3E	1 (Major of highly negative)
Option 3F	1 (Major of highly negative)

3.2 Visual Impact

The assessment of visual impacts has been based upon a desktop quantitative analysis of residential dwellings within 300m of the centre line of each Option as summarised in **Table 3-3** below.

A review of the available on-line information has identified that no Protected Views and Prospects are located within the study area associated with Section 1 and it is therefore considered that there will be no impacts on protected views as a result of the proposed options.

The following visual assessment assumes a worst case scenario, for each of the Options, and does not include landscape mitigation.

Table 3-3: Residential Property (Only) Counts

Option	Residential properties between 0–50m	Residential properties between 50–100m	Residential properties between 100–200m	Residential properties between 200–300m	Dwellings Total
Option 3A1	4	25	116	240	385
Option 3A2	5	24	117	243	389
Option 3B1	5	29	133	276	443
Option 3B2	6	28	133	270	437
Option 3C1	5	27	110	236	378
Option 3C2	6	26	111	239	382

Option 3D	2	24	119	242	387
Option 3E	2	32	113	240	387
Option 3F	3	26	110	212	351

Additional assessment of visual intrusion and obstruction on an individual property basis is not required at this Option appraisal stage and more detailed assessments are to be carried out at the full EIAR stage. **Table 3-4** below indicates the total number of properties lying within or between the specified distances in relation to the centre line of the Options and a calculation of the overall impact. The calculation of overall impact is based on the multiplication of the number of dwellings by 3, 2, 1 or 0.5 reflecting the severity of impact within 50 m, 50-100 m, 100-200 m and 200-300 m respectively.

Table 3-4: Index for Visual Impact on Residential Properties Only

Option	0-50m	50-100m	100-200m	200-300m	Dwellings Total	Impact Index	Visual Impact Rating
Option 3A1	12	50	116	120	385	298	4
Option 3A2	15	48	117	121.5	389	301.5	6
Option 3B1	15	58	133	138	443	344	9
Option 3B2	18	56	133	135	437	342	8
Option 3C1	15	54	110	118	378	297	3
Option 3C2	18	52	111	119.5	382	300.5	5
Option 3D	6	48	119	121	387	294	2
Option 3E	6	64	113	120	387	303	7
Option 3F	9	52	110	106	351	277	1

3.2.1 Section 3 Option 3A1

This Option has the third lowest overall potential for visual impacts on properties within the 0-50m distance band, second lowest potential for visual impacts on properties within the 50-100m distance band and fourth lowest potential for visual impacts on properties in the 100-200m and 200-300m distance bands which has resulted in an overall ranking of fourth.

3.2.2 Section 3 Option 3A2

This Option has a lower overall potential for visual impacts on properties within the 50-100m distance band when compared with other Options, fourth highest potential for visual impacts on properties within the 0-50m distance band and higher potential for visual impacts on properties in the 100-200m and 200-300m distance bands than Options 3C1, 3C2, 3E and 3F which has resulted in an overall ranking of sixth.

3.2.3 Section 3 Option 3B1

This Option has the fourth highest potential for visual impacts on properties within the 0-50m distance band when compared against other Options and has a higher potential for visual impacts on properties within the 50-100m, 100-200m and 200-300m distance bands than proposed options 3B2, 3C1, 3C2, 3D or 3F resulting in an overall ranking of ninth. It is noted that the majority of the properties within the 0-50m and 50-

100m distance banding predicted to be impacted upon by the option currently experience views of the existing N14.

3.2.4 Section 3 Option 3B2

This Option has a higher potential for visual impacts on properties within the 0-50m distance band than 3A1, 3A2, 3C1, 3C2, 3D, 3E or 3F Options, though it is considered that these properties are has a high potential for visual impacts on properties within the 50-100m distance band when compared with the 3A1, 3A2, 3C1, 3C2, 3D or 3F Options and has the highest potential for visual impacts on properties in the 100-200m and 200-300m distance bands, resulting in an overall ranking of eighth.

3.2.5 Section 3 Option 3C1

This Option has the lowest potential for visual impacts on properties within the 100-200m distance band, second lowest potential for visual impacts on properties within the 200-300m distance band, however has the fourth highest potential for visual impacts on properties in the 0-50m and 50-100m distance bands, resulting in an overall ranking of third.

3.2.6 Section 3 Option 3C2

This Option has a higher potential for visual impacts on properties within all distance bands 0-50m, distance band than 3A1, 3A2, 3D or 3F Options though has a lower potential for visual impacts on properties within the 50-100m , 100-200m and 200-300m distance bands than 3C1, 3B1 or 3B2 Options resulting in an overall ranking of fifth.

3.2.7 Section 3 Option 3D

This Option has the lowest potential for visual impacts on properties within the 0-50m and 50-100m distance bands when compared against other Options, though does have a higher potential for visual impacts on properties in the 100-200m and 200-300m distance bands than the 3C1, 3C2, 3E, 3F, or 3A1 Options, resulting in an overall ranking of second. It is noted that this option, whilst potentially impacting on lower in the 0-50m and 50-100m distance bands, does introduce new features within areas where such features are currently missing, and visual impacts on properties are considered to be of a greater impact then other options being considered.

3.2.8 Section 3 Option 3E

This Option has a lower potential for visual impacts on properties within the 0-50m distance band than all other options, though has the greatest potential for visual impacts on properties within the 50-100m distance band when compared against other options, resulting in an overall ranking of seventh. It is noted that this option, whilst potentially impacting on lower in the 0-50m and 50-100m distance bands, does introduce new features within areas where such features are currently missing, and visual impacts on properties are considered to be of a greater impact then other options being considered.

3.2.9 Section 3 Option 3F

This Option has a lower potential for visual impacts on properties within the 0-50m and 50-100m distance bands than 3B1, 3B2, 3C1 or 3C2 Options though has the lowest potential for visual impacts on properties within the 100-200m and 200-300m distance bands resulting in an overall ranking of first. It is noted that this option, whilst potentially impacting on lower in the 0-50m and 50-100m distance bands, does introduce new features within areas where such features are currently missing, and visual impacts on properties are considered to be of a greater impact then other options being considered.

Table 3-5: Visual Impact and Predicted TII Score

Option	TII Scoring (based on Table 3-1: Landscape Character Impact)
Option 3A1	1 (Major or highly negative)
Option 3A2	1 (Major or highly negative)
Option 3B1	2 (Moderately negative)
Option 3B2	2 (Moderately negative)
Option 3C1	2 (Moderately negative)
Option 3C2	2 (Moderately negative)
Option 3D	1 (Major or highly negative)
Option 3E	1 (Major or highly negative)
Option 3F	1 (Major or highly negative)

3.3 Summary and Preference

In summary as shown in **Table 3-6**, below, when landscape impacts are considered overall for the proposed Options there is a preference for Options 3B1, 3B2, 3C1 and 3C2 as these options utilise the existing N14 corridor for a greater proportion of their length when compared with other Options.

Proposed Options 3D, 3E and 3F are considered to have a greater potential impact on the landscape as these options are further removed from the existing N14 corridor and would introduce new features into portions of the landscape were such features are not apparent.

There is little difference between Options 3A1, 3A2, 3C2 and 3B2 with regards to potential landscape effects, however Options 3A1 and 3A2 introduce new features into the landscape to the east of Ballyboe, whilst proposed southern corridors associated with Option 3C2 and 3B2 are further west where embankments would be required as part of these options.

When visual impacts are considered, proposed Options 3D, 3E and 3F have the least number of residential properties within 0-50m distance band; however, Option 3E has the highest number of residential properties in the 50-100m distance band and all three options are considered to introduce embankments and cuttings into a portion of the landscape not currently affected by such features.

When considering potential visual impacts in regard to Options 3A1 and 3A2, it is considered that whilst these options share similarities in number of properties potentially being affected within 300m of the option, there is a larger degree of visual impact associated with new embankments and cuttings being formed to the north and east of Ballyboe in areas not already affected by such features.

When considering Options 3B1 and 3B2 it is considered that whilst these options have the potential to impact on larger property number within 300m of the proposed options, such affected properties are already impacted upon by the existing N14 road corridor. There is a slight preference for Option 3B1 as the proposed option is considered to have a slightly less visual impact in lower elevated land adjacent to the Swilly Burn.

When considering Options 3C1 and 3C2 it is considered that whilst these options have the potential to impact on larger property number within 300m of the proposed options, such affected properties are already impacted upon by the existing N14 road corridor. There is a slight preference for Option 3C1 as the proposed option is considered to have a slightly less visual impact in lower elevated land adjacent to the Swilly Burn.

Potential landscape and visual effects for the preferred option shall be mitigated by minimising the footprint of the new road in the landscape and by using carefully sited landscape screening and boundary treatments.

Table 3-6: Predicted Landscape and Visual Impacts Summary

Option	Summary of Impacts
Option 3A1	Shortest overall option length of 17.1km Traverses 7.4km of HSA designation Visual impact: 385 dwellings within 300m of Option Third lowest number of residential properties in 0-50m distance banding (4). Option traverses NE of Ballyboe with potential impacts on vegetation around settlement and on disused railway
Option 3A2	Overall option length of 17.8km Traverses 7.4km of HSA designation Visual impact: 389 dwellings within 300m of Option Second highest number of residential properties in 0-50m distance banding (5). Option traverses NE of Ballyboe with potential impacts on vegetation around settlement and on disused railway and on coniferous plantation south of Feddyglass.
Option 3B1	Overall option length of 17.6km Traverses 7.4km of HSA designation Visual impact: 443 dwellings within 300m of Option Second highest number of residential properties in 0-50m distance banding (5). Potential impacts on vegetation on disused railway line to west of Ballboe Option follows similar alignment to existing N14 corridor for majority of length
Option 3B2	Second shortest overall option length of 17.4km Traverses 7.4km of HSA designation Visual impact: 437 dwellings within 300m of Option Highest number of residential properties in 0-50m distance band (6) Potential impacts on vegetation along disused railway west of Ballyboe and impacts on coniferous plantation south of Feddyglass Option follows similar alignment to existing N14 corridor for majority of length though potential impacts for Swilly Burn crossing greater than Option 3B1
Option 3C1	Overall option length of 17.4km Traverses 7.4km of HSA designation Visual impact: 378 dwellings within 300m of Option Second highest number of residential properties in 0-50m distance band (5), though properties are considered to experience effects as a result of existing N14 corridor. Potential impacts on vegetation along disused railway west of Ballyboe

Option	Summary of Impacts
Option 3C2	Overall option length of 17.8m Traverses 7.4km of HSA designation Visual impact: 382 dwellings within 300m of Option High number of residential properties in 0-50m distance banding (6) Potential impacts on vegetation along disused railway west of Ballyboe, potential impacts on coniferous plantation south of Feddyglass, with potential for increased impacts for Swilly Burn crossing than Option 3C1
Option 3D	Overall option length of 17.6km Traverses 7.4km of HSA designation Visual impact: 387 dwellings within 300m of Option Low number of residential properties in 0-50m distance band (2), though impacts considered high due to introduction of features into views not currently affecting such views Potential for increased visual impacts as route introduces earthwork features into areas not currently experiencing such features.
Option 3E	Second shortest overall route length of 17.4km Traverses 6.3km of HSA designation Visual impact: 387 dwellings within 300m of Option Joint lowest number of residential properties in 0-50m distance band (2) Potential impacts on vegetation west of Ballyboe, south of Pluck and south of Feddyglass Potential for increased visual impacts as option introduces earthwork features into areas not currently experiencing such features.
Option 3F	Overall option length of 18.5km Traverses 6.4km of HSA designation Visual impact: 351 dwellings within 300m of Option Second lowest number of residential properties in 0-50m distance band (3) Potential impacts on vegetation on disused railway, plantations at Woodhill, Slievebuck and Feddyglass. Potential for increased visual impacts as option introduces earthwork features into areas not currently experiencing such features.

Table 3-7: Summary of assessment for N14 Manorcunningham to Lifford/Strabane/A5 Link

Option	Quantitative Assessment	Qualitative Assessment	Score	Order of Preference	Overall Preference
Option 3A1	**16**	Major or Highly Negative	1	5	Least Preferred
Option 3A2	**16**	Major or Highly Negative	1	5	Least Preferred
Option 3B1	**13**	Moderately negative	2	1	Preferred

Option	Quantitative Assessment	Qualitative Assessment	Score	Order of Preference	Overall Preference
Option 3B2	**13**	Moderately negative	2	2	Intermediate
Option 3C1	**13**	Moderately negative	2	1	Preferred
Option 3C2	**13**	Moderately negative	2	2	Intermediate
Option 3D	**15**	Major or Highly Negative	1	4	Least Preferred
Option 3E	**15**	Major or Highly Negative	1	3	Least Preferred
Option 3F	**15**	Major or Highly Negative	1	4	Least Preferred

Comhairle Contae Dhún na nGall
Donegal County Council

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix C3.4 – Biodiversity

December 2019

RPS BARRY TRANSPORTATION

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report – Technical Appendix Biodiversity (Aquatic and Terrestrial)
Document No. :	TT_Y16112-SC -RS-MCA-S3 -RP-EBD -00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	PM	ED

Table of Contents

List of Figures

List of Tables

1 BIODIVERSITY

1.1 Introduction

This report assesses and compares the potential impacts on Biodiversity (the terrestrial and aquatic natural environment) of 6 no. options for the Section 3 N14 Manorcunningham to Lifford/Strabane/A5 Link of the TEN-T Priority Route Improvement Project in Donegal and will form part of a Phase 2 - Option Selection Report.

The principal objectives of the study are to:

- Complete a desk study and field surveys to obtain relevant terrestrial ecological data for each option;
- Identify and describe sites of known potential ecological interest;
- Assess the significance of the likely impacts of the proposed road scheme on each of these environmental aspects along each option;
- To evaluate and compare each option based on ecological criteria, as per National Road Authority (NRA) 1 Guidelines for Assessment of Ecological Impacts of National Road Schemes (2009) hereafter NRA Guidelines 2006), taking into account interactions with other environmental disciplines;
- To assess each option in accordance with the TII Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis (2016); and
- Based on the above assessment, to assess, compare and rank the preferred option in order of preference

The report builds upon on the TEN-T Priority Route Improvement Project, Donegal Constraints Report (Volume B) which identified the main ecological constraints within the study area established for the scheme. The six options selected have been developed with the objective of minimising potential impacts on the full range of environmental, socio-economic and engineering constraints identified in the Constraints Study.

Each of the options have been assessed as a 300m wide corridor to determine potential impacts on the principle ecological receptors within or adjacent to the corridors, and also in relation to potential impacts arising from fragmentation or interference with species movement across the corridors.

1.2 Site Context

The landscape within the study area is predominantly gently undulating with scattered low drumlin hills. The majority of the land is intensively managed agricultural grasslands subdivided by hedgerows and treelines. The highest point is Mullafin Hill (205m) approximately 3km north of Raphoe, while Mullasawny (approximately 5km northeast of Raphoe) rises to 179m. Lands along the western side of Mullafin are elevated and primarily under coniferous plantation with some areas of heath and blanket bog. Some of the other elevated areas within the study area support small patches of heath, scrub and probably acid grassland. There are occasional small blocks and strips of deciduous woodland and scrub scattered throughout the study area, many of these occurring along watercourses and also along the two sections of dismantled railway lines.

In the north of the study area drainage is primarily to the north with the Lesliehill Stream and Corkey River joining to flow into Lough Swilly immediately west of Manorcunningham. Drainage to the south of Raphoe is primarily in an easterly direction with both the Swilly Burn and Deele Rivers flowing into the River Foyle in its estuarine reaches.

1.3 Methodology

The NRA Guidelines for the Assessment of Ecological Impacts of National Road Schemes (Revision 2, June 2009) specify that "*the Natural Environment section of the RCS [Route Corridor Selection] study involves the identification of ecological resources/receptors along each of the option corridors and a broad assessment of the likely impacts upon them. The zone(s) of influence for the options should take account of the range of impacts likely to arise from construction and operation of them. Following on from the earlier CS, the RCS study should involve a combination of desk study and field survey*."

In accordance with the Guidelines, the assessment has identified sites of potential biodiversity value along the various corridor options or within a potential zone of influence including:

- Designated conservation areas and sites proposed for designation,
- Inland surface waters and a description of their fisheries value and any relevant designations,
- Aquifers and dependent systems and turloughs and their subterranean water systems,
- Intertidal and marine areas,
- Known or potentially important sites for rare or protected flora or fauna,
- Any other sites of ecological value, that are not designated,
- Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.),
- Any other features of particular ecological or conservation significance.

Existing sources of information examined to provide data on ecological receptors within the zone of influence of the various option corridors included:

- National Parks and Wildlife Service (NPWS) on-line Map viewer and databases.
- National Biodiversity Data Centre.
- Environmental Protection Agency (EPA) online Map Viewer database (Envision).
- Botanical Society of the British Isles (BSBI) online mapping database.
- Consultation with Bat Conservation Ireland (BCI) and BirdWatch Ireland (BWI).
- Review of previous studies carried out within the Constraints Study Area.
- Examination of recent aerial photography to identify sites of ecological potential.

Consultations

Consultations were undertaken with Inland Fisheries Ireland (IFI) and The Loughs Agency to determine the fisheries value of watercourses crossed by any of the options, and also with regard to the fisheries values of other waterbodies within the vicinity of any options. Consultations were also undertaken with the Developments Application Unit (National Parks and Wildlife Service) of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs to seek their views and concerns in relation to the various options.

Field Surveys

A suite of surveys were carried out in July 2018 targeting potential ecological receptors identified from the various data sources on or within the potential zone of influence of any of the option corridors. Surveys aimed at confirming the habitat classification on a suite of sites identified from a review of aerial photography undertaken in June 2018. This entailed identifying the dominant species present to enable a classification of the habitat (using the Heritage Council (Fossitt, 2000) classification), and assessing its potential to support protected fauna (based on a combination of evidence and potential suitability).

All major watercourses crossed by the various options were also surveyed in July 2018 to identify their fisheries value and determine the presence or suitability for protected aquatic species. This entailed a visual examination of water quality (based on abundance of macrophyte / algae, macroinvertebrate diversity and substrate), condition of aquatic and riparian habitat, and suitability for various life stages of aquatic species

(spawning, nursery, foraging, etc.). This information was bolstered with the information on records of protected species provided by IFI and NPWS, and the EPA database on water quality.

As there are no SPAs within the study area and the Lough Swilly SPA (004075) is located approximately 1.5km from the study area boundary, and the SACs in the vicinity of Section 3 occur at the extremities of the study area (River Finn SAC (002301), River Foyle and Tributaries SAC (UK003020) and Lough Swilly SAC (002287)), a full suite of dedicated wintering bird surveys was not undertaken as part of the Option Selection assessment for Section 3.

Nevertheless, regular observations were made on the Swilly Burn floodplain to establish if there was Whooper Swan activity at this location, as the environment here would typically be appropriate for winter foraging. This general area was previously mentioned in an Environmental Impact Statement for the N14 Letterkenny to Lifford/Strabane Road Improvement Scheme (Draft July 2009). The document states that observations of Whooper swans were made to the east and west of the existing N14 in 2006, 2007 and 2008. For the TEN-T Priority Route Improvement Project, Donegal, observations of Whooper Swans for the Option Selection assessment were made over the period November 2018 to April 2019.

Bat Assessment

An assessment of bat activity within the study area was undertaken as part of the Options Assessment. The assessment was based on existing data and records including the National Parks and Wildlife Service National Bat Roost Database and bat distribution records held by Bat Conservation Ireland. The approach detailed in the following guidelines was followed during the option selection phase to guide the selection of a preferred option:

- Hundt, L. 2012 in Bat Surveys: Best Practice Guidelines (2nd edition). Bat Conservation Trust
- National Roads Authority 2006 Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes

Fieldwork was undertaken in August and September 2018 to appraise the existing habitats and to assess bat activity in the overall area of the proposed options. At night, transects through bat favourable habitats were walked in several areas along each of the proposed road option corridors during which bat activity was recorded using heterodyne/frequency division (BatBox Duet - BatBox Electronics) and heterodyne/frequency division/time expansion (Echometer EM3+ - Wildlife Acoustics) detectors. The wider area of the proposed development was surveyed from a vehicle driven at 25 kph with a detector mounted on the hedge-side of the vehicle. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations and on computer by sound analysis of recorded echolocation and social calls with dedicated software (Kaleidoscope Viewer - Wildlife Acoustics). Static units were located at specific points along the proposed options Details of survey dates, survey locations and results of the static surveillance are presented in Table 1.1.

Table 1-1 Survey dates and locations of static recording units.

No.	Date & Time	Location - Chainage	Habitat Type	Bat Species (activity level)
A	31/08/2018 20:00hrs to 05:00 hrs BatLogger A+ Unit B	Slievebuck – online	On a tree along wooded laneway	CP (high) SP (medium) Leis (low)
B	31/08/2018 20:00hrs to 05:00 hrs SM2 Unit 2	Off N14 - online	On a tree adjacent tohedgerow and agricultural fields	CP (low) SP (low) Leis (low)
C	31/08/2018 20:00hrs to 05:00 hrs BatLogger A+ Unit A	Moondooey - online	On a tree adjacent to treelines, scrub, agricultural fields	Failed to record
D	31/08/2018 20:00hrs to 05:00 hrs SM2 BAT+ Unit 4	O'Callaghan Bridge downstream	On the riverbank in open agricultural section	CP (low) SP (low) My (present)
E	31/08/2018 20:00hrs to 05:00 hrs SM3 Unit 3	Corkey - bridge	On the riverbank in wooded area	CP (low) SP (low) Leis (low) My (present)
F	01/09/2018 20:00hrs to 05:00 hrs BatLogger A+ Unit A	Ballyholey Far - online	Farm laneway	Failed to record
G	01/09/2018 20:00hrs to 06:00 hrs SM2 Unit 4	White Cross - online	Adjacent to treeline and agricultural fields	CP (low) SP (low) Leis (low)
H	01/09/2018 20:00hrs to 05:00 hrs SM2 Unit 2	Feddyglass – between 2 proposed options	Riverbank	CP (low) SP (low) Leis (low) My (present)
I	01/09/2018 20:00hrs to 05:00 hrs SM2 Unit 4	Tamnawood - online	Adjacent to treeline and agricultural fields	CP (low) SP (low) Leis (low)
J	01/09/2018 20:00hrs to 05:00 hrs SM2 Unit 2	River Deele - online	Riverbank	CP (low) SP (low) Leis (low)

Species codes: CP = common pipistrelle; SP = soprano pipistrelle; Leis = Leisler's bat; My = Myotis spp. Activity level: Low = <10 bat passes/hr; Medium = >10 - <50 bat passes/hr; High = >50 bat passes/hr

1.4 Assessment Criteria

A broad assessment was undertaken of the likely impacts of each of the options on the sites of biodiversity value (ecological receptors) identified on or within the zone of influence, with an indication as to which, if any, of these are likely to be significant, and at what geographical level. The number of significant impacts at each geographic level associated with the various options are presented, characterized and compared in a tabulated format. The levels of impact assigned to particular options make the assumption that general mitigation measures will be implemented. The order of preference is determined on the basis of the number and significance of ecological receptors impacted by each option.

The evaluation of the ecological receptors and the criteria used to assess the significance of impacts are derived from the Transport Infrastructure Ireland (TII) "*Guidelines for Assessment of Ecological Impacts on National Road Schemes (June, 2009")* and the '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*' (Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). Table 1.2 presents the criteria used in the valuation of ecological receptors.

Table 1-2 Valuation Criteria for Ecological Receptors (Adapted from TII 2009)

Importance	Ecological Valuation
International Importance	▪ 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. ▪ Features essential to maintaining the coherence of the Natura 2000 Network. ▪ Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. ▪ Resident or regularly occurring populations (assessed to be important at the national level) of species of animal and plants listed in Annex II and/or IV of the Habitats Directive. ▪ Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988). ▪ Major salmon river fisheries.
National Importance	▪ Site designated or proposed as a Natural Heritage Area (NHA). ▪ Statutory Nature Reserve. ▪ Refuge for Fauna and Flora protected under the Wildlife Acts 1976 to 2012. ▪ National Park. ▪ Resident or regularly occurring populations (assessed to be important at the national level) of species protected under the Wildlife Acts 1976 to 2012; and/or; species listed on the relevant Red Data list. ▪ Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive. ▪ Major trout river fisheries. ▪ Commercially important coarse fisheries. ▪ Waterbodies with high amenity value.
County Importance	▪ Area of Special Amenity. ▪ Area of High Amenity, or equivalent, designated under a County Development Plan. ▪ Resident or regularly occurring populations (assessed to be important at the County level) of: ▪ species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ▪ species protected under the Wildlife Acts 1976 to 2012; and/or, ▪ species listed on the relevant Red Data list. ▪ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
Local Importance (Higher Value)	▪ Locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan (BAP), if this has been prepared; ▪ Resident or regularly occurring populations (assessed to be important at the Local level) of: ▪ species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ▪ species protected under the Wildlife Acts 1976 to 2012; and/or, ▪ species listed on the relevant Red Data list. ▪ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; ▪ Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. ▪ Sites of 'High' water quality status (Q4-5, Q5). ▪ Waterbodies with some fisheries value and potential salmonid habitat.
Local Importance (Lower Value)	▪ Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. ▪ Sites or features containing non-native species that are of some importance in maintaining habitat links. ▪ Waterbodies with no fisheries value and poor fisheries habitat.

2 EXISTING ENVIRONMENT

2.1 Desk Study

2.1.1 Designated Areas

A review of the National Parks and Wildlife Service (NPWS) website database was undertaken to identify designated and protected sites within and in the vicinity of the study area. The study area includes two Special Areas of Conservation (SAC) at the extremities of the zone of study, with an additional SAC located approximately 500m outside the study area. There is also a Special Protection Area (SPA) near the study area boundary, and a single proposed Natural Heritage Area (pNHA) within the area of consideration. These designated areas are listed in Table 2.1 and locations are mapped on Biodiversity Figure 2-1. There will be no direct impacts on any designated conservation areas by any of the proposed options though watercourses being crossed by all options ultimately drain to either the River Foyle and Tributaries SAC to the east, or the Lough Swilly SAC and SPA to the north. Thus, all watercourse crossings on all options would have the potential to impact on water quality within a European site during both the construction and operational phases without appropriate mitigation. Ex-situ occurrence of qualifying interest species within the various watercourses (including Atlantic salmon and otter) could also be impacted either through habitat loss, displacement, or reduced water quality.

Table 2-1 Designated conservation areas within and in the vicinity of the Study Area.

Site Name	Site Code	Status	Location	Description and Features
River Finn	002301	SAC	Within the Eastern Extremity of Study Area	The River Finn flows east between Ballybofey and Stranorlar to the confluence with the River Mourne at Lifford. The SAC runs longitudinally along the River Finn and the Northern Ireland border. Designated an SAC for the following habitats and/or species: Oligotrophic Waters containing very few minerals, Wet Heath, Blanket Bogs, Transition Mires, Atlantic Salmon, Otter
River Foyle and Tributaries	UK0030320	SAC	Within the Eastern Extremity of Study Area	The SAC runs longitudinally along the River Foyle and the Northern Ireland border. Designated an SAC for the following habitats and/or species: Atlantic Salmon, Otter and Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
Lough Swilly	002287	SAC	At the northern extremity of the Study Area	Lough Swilly is a sea lough that extends from Letterkenny to Buncrana. This SAC boundary covers a tributary, along the Isle Burn which runs under N13 near the N13/N14 junction at Pluck Roundabout. Designated an SAC for the following habitats and/or species: Estuaries, Costal Lagoons, Atlantic Salt Meadows, Molinia Meadows, Old Oak Woodlands, Otter
Lough Swilly	004075	SPA	C1.5km from Study Area	Overlaps with much of the Lough Swilly SAC area, including extensive sand and mud flats which are exposed at low tide, as well as salt marshes, lagoons, rivers and streams, grasslands, reedbeds and scrub. Conservation interests include a variety of waterbirds including Annex I listed Whooper swan and Greenland white-fronted goose
Feddyglass Woods	001129	pNHA	Within Study Area	Three areas of semi-natural woodlands approximately 500m from the existing N14 in the townland of Feddyglass.
Lough Swilly including Big Isle, Blanket Nook and Inch Lake	000166	pNHA	At the northern extremity of the Study Area	Combined area of Lough Swilly, Blanket Nook wildfowl sanctuary, Big Isle burn and Inch lake, which commonly have greylag geese

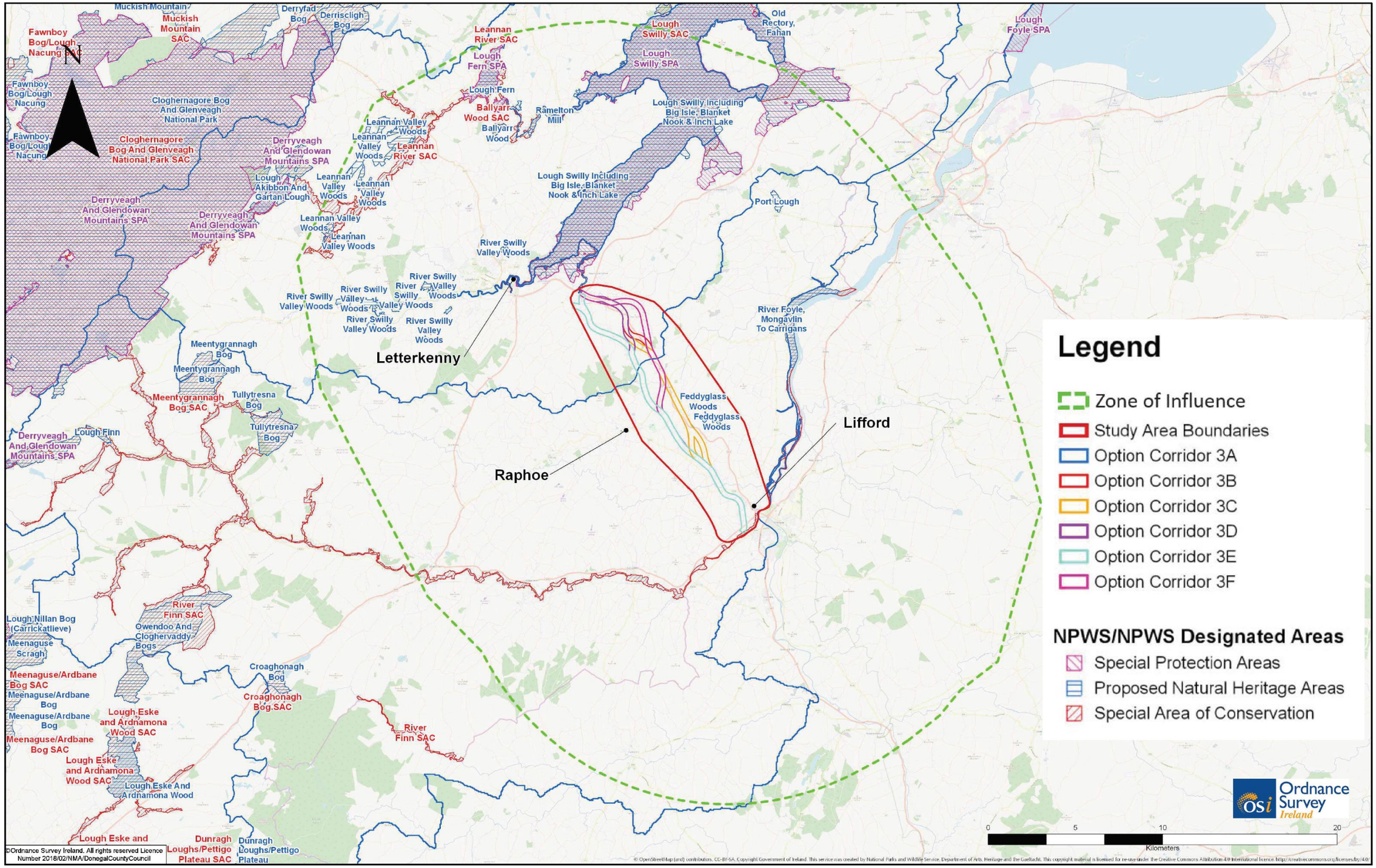


Figure 2-1 Designated Sites within Zones of Influence of Section 3

The only designated conservation area within the study area is the Feddyglass Woods proposed Natural Heritage Area (Site Code 001129), which comprises three separate blocks of woodland. The woodlands are located approximately 4.5km east of Raphoe in the townland of Feddyglass and they will not be impacted on by any of the options.

2.1.2 Protected Flora

The NPWS, National Biodiversity Data Centre (NBDC) and the Botanical Society of Britain and Ireland (BSBI) databases were used to identify the occurrence of protected plant species within the study area (see Table 2.2). A data request was also submitted to NPWS requesting records of rare or protected species from within the study area (Tetrads H29, H30, C20, C21 and C30). The only recently recorded protected plant species from the study area is the Globe flower (*Trollius europaeus*). This plant which occurs on lake shores, river banks, wet pastures, scrub and woodland (Curtis and McGough, 1988) has a very limited national distribution and is protected under the Flora Protection Order (2015). The NPWS database holds a record in hectad C20 at Convoy from 1998 while the BSBI hold a record from post 2010 in hectad C10 to the east of Convoy. Both records are likely to be along the banks of the Deele River, and despite the arterial drainage of the river, the species may be extant at other locations within the study area. The Swilly Burn, which has also been arterially drained, may support relic populations of Globe Flower in remnants of suitable habitat. The remaining records of rare plants are historic, and the various species are unlikely to persist due to changes in land use over the intervening century.

Table 2-2 Records of protected Plant species from within the Study Area.

Species	Location	First Record	Most Recent Record	Grid Ref.
Lolium temulentum	Finn River, near Clady	Done 1898	Done 1898	H229 396
Prunus padus	Lifford-Reelan Water	Hart 1885	Hart 1885	H229 400
Cardamine amara	Ballindrait	Hart 1893	Hart 1893	H230 400
Cardamine amara	Killikeen	Halpin 1864	Halpin 1864	H230 C402
Lathryus palustris	Cavan	Moore1859	Moore 1859	H230 C402
Trollius europaeus	Conroy	1994	1998	C20
Trollius europaeus	Conroy	-	Post 2010	C10

2.1.3 Protected Fauna

The NPWS and National Biodiversity Data Centre (NBDC) databases were used to identify the occurrence of protected faunal species within the study area. A data request was also submitted to NPWS requesting records of rare or protected faunal species from within the study area (Tetrads H29, H30, C20, C21 and C30). Otter (*Lutra lutra*) afforded protection under Annex II of the EU Habitats Directive, is recorded from within the study area on the NPWS database and is likely to occur on all watercourses within the study area. The NPWS database also lists red deer (*Cervus elaphus*) as occurring immediately west of the study area in tetrad C10.

Other species protected under the EU Habitats Directive occurring within the study area include Atlantic salmon (*Salmo salar*) and lamprey (unidentified species), both of which are present in the Deele River. The Loughs Agency (2011) undertook baseline lamprey surveys in the River Finn and Deele in 2010 and

recorded lamprey ammocoetes (unidentified to species level) from a number of locations along the River Deele. The River Finn SAC into which the Deele River flows, is designated for otter and salmon (along with other habitats as listed in Table 2.1 above) but not lamprey.

Kingfisher (*Alcedo athis*) which is protected under Annex I of the EU Birds Directive, is also present on the Deele River (Pers. obs.) and are likely to occur on all watercourses in the study area. Kingfisher are not a conservation interest for any of the SPA's linked by the watercourses within the study area.

The white-clawed crayfish (*Austropotamobius pallipes*), an Annex II listed species under the EU Habitats Directive, requires waters of a high alkalinity, typically only occurring in water with pH of 7.0 or greater with calcium concentrations of at least 5 mg/l (Reynolds, 1998). There are no records on any of the databases accessed (NPWS and NBDC) of white-clawed crayfish from any of the watercourses within the study area and the chemistry of the waters appears unsuited for this species.

There are no records of the Annex II listed freshwater pearl mussel (*Margaritifera margaritifera*) from any watercourses within the study area and the area is not designated as a Margaritifera Sensitive Area (NPWS database Version 8, 2017).

2.1.4 Fisheries

All watercourses within the study area have potential ecological value, particularly the Deele River, the Swilly Burn, the Lesliehill Stream and the Corkey River. The Deele and Swilly Burn both flow into the River Foyle which is a designated SAC. The River Finn marks the southern boundary of the study area and is also a designated SAC. The Lesliehill Stream and the Corkey River confluence is less than 1km upstream of the Lough Swilly SAC and pNHA.

The Deele River has good water quality within the study area, though upstream of the bridge at Carrickbrack (c1.5km downstream of Convoy) the water quality is considered poor (EPA Envision website). Brown trout (*Salmo trutta*) stocks are good in the Deele and it also has a run of sea trout in late summer and early autumn (O'Reilly, 2004). The River Deele is also likely to support spawning by salmon and contains a breeding population of at least one species of lamprey (Loughs Agency, 2011). Other species likely to occur include European eel (*Anguilla anguilla*), stone loach (*Barbatula barbatula*), three-spined stickleback (*Gasterosteus aculeatus*) and minnow (*Phoxinus phoxinus*).

The Swilly Burn currently has poor water quality downstream of Raphoe and is shown as poor status on the Environmental Protection Agency Envision map viewer from the bridge northeast of Cooladerry. While habitat is suitable for salmonids and lamprey, there appears to be no recent records of either group from the watercourse. There are ongoing proposals to upgrade the waste water treatment plant at Raphoe which may bring about a significant improvement in water quality.

The Lesliehill Stream and Corkey River system currently have good water quality (EPA Envision map viewer). While there is no current data on their fisheries status, the watercourses are likely to contain resident populations of brown trout and may support a run of sea trout.

The River Finn is one of Ireland's premier salmon waters and the Finn is important in an international context in that its populations of spring salmon appear to be stable, while they are declining in many areas of Ireland and Europe (O'Reilly, 2004). The salmon fishing season is 1st March to 15th September. Fishing for spring salmon is best east of Stranorlar while the grilse run through to the upper reaches. The grilse run peaks here, depending on water, usually in mid-June. The estimated rod catch from the Finn is approximately 500-800 spring salmon and 4,000 grilse annually, producing about 40% of the total Foyle count (ibid). The Loughs Agency has a management regime in place called the 'control of fishing regulations. This regulation permits the Agency to suspend angling and commercial fishing for set periods if enough salmon are not past the counter located at Killygordon by a certain key date.

2.1.5 Birds

Important areas for birds within and in the vicinity of the study area were identified from the BirdWatch Ireland and the National Biodiversity Data Centre databases, as well as from the NPWS Lough Swilly Special Protection Area (SPA) site synopses (2014). The most significant site within the vicinity of the study area (immediately north of the study area) is Lough Swilly which is designated as an SPA and an SAC primarily on account of its importance for wintering birds. Lough Swilly is of major ornithological importance for wintering waterbirds, with three species occurring in numbers of international importance and 18 species regularly occurring in numbers of national importance. The site is commonly used by more than 20,000 waterfowl and as such is of international importance. Additionally, it holds nationally important breeding populations of three species, i.e. Sandwich Tern (*Thalasseus sandvicensis*), Common Tern (*Sterna hirundo*) and Black-headed Gull (*Chroicocephalus ridibundus*). The site is used by a number of species that are listed on Annex I of the E.U. Birds Directive. Part of Lough Swilly SPA is a Wildfowl Sanctuary.

Lough Swilly supports internationally important numbers of Whooper Swan (*Cygnus cygnus*) (1,673 - mean peak for the five winters 1995/96-1999/2000), Greenland White- fronted Goose (*Anser albifrons*) (847 for the Lough Swilly flock - mean peak for the five winters 1994/95-1998/99) and Greylag Goose (*Anser anser*) (1,218 - mean peak for the five winters 1995/96-1999/2000). Both Greenland White-fronted Goose and Whooper Swan are listed on Annex I of the E.U. Birds Directive. The main areas of the site used by these species are at Big Isle, Farsetmore, Blanket Nook, Ballylawn and Inch Levels. The flock sizes for Whooper Swan and Greylag Goose are the highest in the country. Considerably higher numbers of Whooper Swan (peak of 1,946) have been recorded, especially early in the season, as this is the area where the swans make their Irish landfall in autumn on their return from breeding grounds in Iceland. Whooper swan are also known to utilise low-lying fields of improved agricultural grassland along the Swilly Burn floodplain in the townlands of Mulnaveagh and Tullyrap. During the winter period 2018 -2019 the maximum number of whooper swan observed at this site was 40 on the 8th March 2019.

Apart from the Swilly Burn floodplain, there are no important bird areas identified within the study area and the habitats present are unsuited to supporting significant aggregations of wintering birds or likely flyways for wintering species. Flocks of golden plover (*Pluvialis apricaria*), listed on Annex I of the EU Birds Directive) and lapwing (*Vanellus vanellus*), a Red Listed species on Birds of Conservation Concern 2014-2019, may utilise agricultural grasslands throughout the study area during the winter, but neither species is likely to breed within the study area.

Breeding species of note that are likely to occur in the study area include kingfisher (listed under Annex I of the EU Birds Directive) which is expected on all watercourses, and barn owl (*Tyto alba*) which is recorded from all 10km squares in the study area (NBDC database). Barn owl are listed as a Red Listed species (Birds of Conservation Concern 2014-2019) and have suffered dramatic losses in southern counties as a result of new road construction.

2.1.6 Bats

Bat Conservation Ireland (BCI) were contacted to determine if there are any known bat roosts within the study area and the BCI and NBDC website databases were also reviewed. BCI provided details of known bat roosts and records of bats within and adjacent to the study area.

There are two known roosts from the study area; a roost of soprano pipistrelle (*Pipistrellus pygmaeus*) is located at Drumoghill in the north of the study area, while a roost of Daubenton's bat (*Myositis daubentonii*) and an unidentified species is located near Dromore, approximately 1km east of Raphoe. There are five records of bats from other locations within the study area, all of which date from the period 2006 to 2009. Species recorded included Natterer's bat (*Myotis natterreri*), Leisler's bat (*Nyctalus leisleri*), brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, Daubenton's Bat and an unidentified bat (*Myotis* sp.).

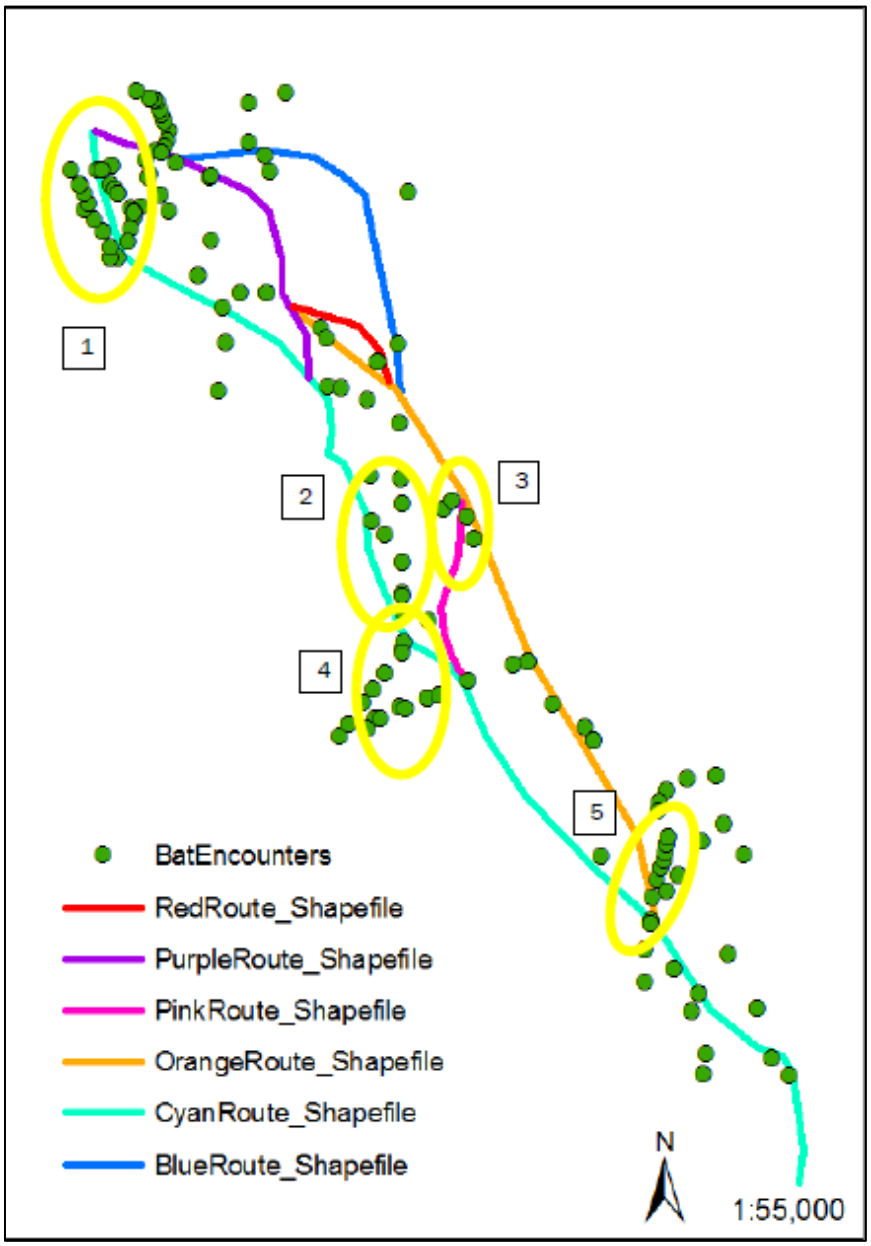


Figure 2-2 Results of bat surveys along the options.

The study area is likely to be of low to moderate value for bats on account of the habitats present. Hot-spots of bat activity recorded are shown in Figure 2-2 and are primarily associated with areas of suitable foraging habitat including areas of woodland and scrub, along watercourses and in the vicinity of Oakfield Park. Winter hibernation sites are also a critical requirement for bats, and these are typically in sites with uniform temperature regimes such as out-buildings, cellars, caves and souterrains. Only a small number of souterrains are known in Donegal, four of which occur in the study area in the townlands of Labbadish (DG062-009), Gillstown (DG062-012), Castledowey (DG062-013) and Listannagh (DG062-025). All of these structures have the potential to support wintering bats.

The highest number of bat encounters were recorded along Option 3E (Cyan). Areas of particular importance for foraging and commuting by Leisler's bats are identified at 1 and 3, while all 5 areas identified in Figure 4.2 are important areas for foraging and commuting common pipistrelles and soprano pipistrelles. From the current data, Options 3A (Blue) followed by 3C (Orange) have the least bat activity along their length.

2.1.7 Other Mammals

The study area is likely to support a full suite of terrestrial Irish mammals including otter along all watercourses, badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), pine marten (*Martes martes*), Irish hare (*Lepus timidus*), Irish stoat (*Mustela erminea hibernica*) and fox (*Vulpes vulpes*) along with various rodents and the pygmy shrew (*Sorex minutus*). Red deer (*Cervus elaphus*) have been recorded west of Ballindrait (tetrad C10) and a single record also occurs from Dromore (c2km east of Raphoe) in 2016 (NBDC database). The red deer population in Donegal has undergone a considerable range expansion in recent years and they are recorded from every tetrad in Donegal west of the study area NBDC; Hayden and Harrington, 2000). Non-native mammals likely to be present include the American mink (*Mustela vison*) and the brown hare (*Lepus europaeus*) which has been recorded along the Deele River to the south of Convoy just outside of the study area (NBDC database).

2.2 Field Survey

Following a review of aerial photography along each of the options, potential sites of biodiversity value were identified, and boundaries marked up on OSI 6" background maps. These sites were subsequently visited in July 2018 to determine their principle habitat types and determine an ecological evaluation using the methodology prescribed in the *Guidelines for the Assessment of Ecological Impacts of National Road Schemes* (TII, June 2009). The sites identified are detailed in Table 2.3 (shown on Figure 3) which provides a brief description of the habitats and attributes of note and their evaluation rating. The potential impacts of the various options on these sites is assessed in Section 3.

Table 2-3 Sites of Biodiversity Value identified along the Options.

Site no	Townland	Description	Evaluation
1	Cavanacor	River Deele crossing. Flood embankments on river. Possibly tidal. Abundant Himalayan balsam.	High Local
2A	Cavanacor	Old railway line with few scattered semi-mature ash trees and trimmed hedgerow.	Low local
2B	Cavanacor	Mosaic of woodland and parkland around old estate house	High Local
3	Mulnaveagh	Conifer plantation (owned by Fisheries Board). Dense canopy with no understorey.	Low local
4A	Mulnaveagh	Swilly Burn crossing. Flood embankments along river. Wet grassland and scrub along embankments.	High local
4B	Mulnaveagh	Swilly Burn Floodplain. Foraging area for wintering Whooper Swan	County (National)

Site no	Townland	Description	Evaluation
5A	Broadlea	Scrub woodland and conifer plantation. Conifer plantation with open area of disturbed ground (some spoil dumping) dominated by ruderals incl. some Himalayan Balsam. Japanese knotweed on west of track covering c4x10m.	Low local
5B	Tullyrap	Mature treeline of beech and sycamore along the existing N14 with linear mosaic of scrub-woodland and neglected grasslands to west.	High local
6	Dromore Little	Wet grassland - rush dominated and species poor.	Low local
7	Ballyholey	Gorse scrub and dry heath. Some clearance and species poor.	Low local
8	Slievebuck	Wet grassland and block of conifer plantation to south. Species poor rush pasture. Buzzard present in conifer plantation and possibly breeding.	Low local
9	Slievebuck	Scrub woodland along N14 road. Some mature trees to east of road, belt of scrub to west with occasional semi-mature ash trees.	Low local
10	Sheskinapoll	Stream crossing. Minor stream with very limited flow. Some willow scrub along banks.	Low local
11	Ballyholey Far	Mosaic of heath with extensive gorse and willow scrub and minor stream along eastern boundary.	High local
12	Mondooey	Mosaic of heath with extensive gorse and willow scrub. Some recent land reclamation in the southern part.	High local
13	Ballyholey Far	Conifer plantation with residual broadleaved wood, stream and wet grassland to N and NW. GS4 moderately species rich (including *Lythrum salicaria*, *Filipendula ulmaria*, *Juncus* spp., *Lotus uliginosum*). Frequent young willow forming thickets. Stream minor and iron rich with minimal flow.	High local
14	Doorabble	Minor stream with fringing ash, alder, willow and hawthorn along banks.	High local
15	Carricknamart	Small river (2m width) with gravel and cobble substrate and potential for trout. Alder, ash and willow along banks to 10-12m height.	High local
16	Carricknamart	Copse of broadleaved woodland on sloping ground dominated by ash, sycamore, with holly and cherry. Poor understorey dominated by grasses, nettle & briar.	High local
17	Corkey	Linear strip broadleaved woodland including ash, beech, larch, hazel and occasional conifer. 15-20m wide at base and in height.	High local
18	Corkey	Stream and fringe of trees with ash, sycamore, beech, alder and willow. Forming small block of woodland on steep slope downstream of Corkey Road bridge	High local
19	Pluck	Stream and riparian habitats (tidal to bridge). River 12m wide with flood embankment to west. *Phalaris* dominated banks with *Petasites hybridus*, dock, bindweed, and scattered alder and willow. Japanese knotweed downstream of bridge on east bank and Himalayan balsam upstream of bridge. Derelict house to east of river with potential for roosting bats.	High local
20	Drumcarn	Copse of woodland to east N14 on low hill. Dominated by mature beech with open grass dominated understorey.	High local
21	Drumcarn	Broad band of scrub along old railway line connecting to woodland along steep sided river valley downstream of Graveyard. Ash dominated with sycamore, and well-developed understorey of ferns and abundant ivy.	High local / county importance
22	Ballyboe	River within steep sided scrub-lined channel with very doubtful water quality based on visual assessment. Woodland downstream of graveyard, but scattered willow and alder along banks upstream and	High local

Site no	Townland	Description	Evaluation
		abundant Himalayan balsam. Japanese knotweed along north boundary of graveyard.	
23	Ballyboe	Low hedgerow like band of scrub along old railway line	Low local
24	Ballyboe	Scrub – active clearance ongoing.	Low local

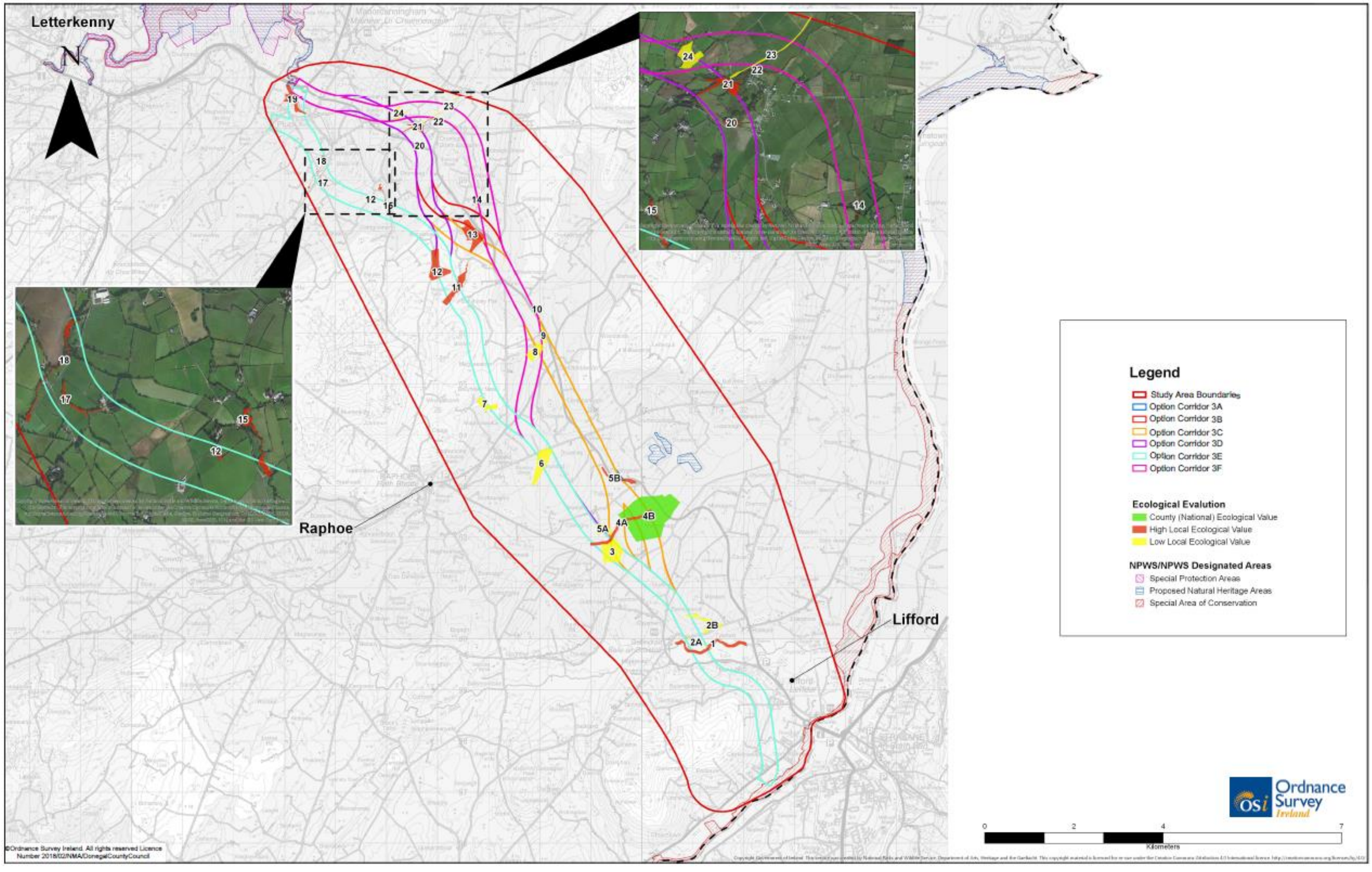


Figure 2-3 Sites of Biodiversity Value identified along the Options

3 OPTIONS ASSESSMENT

3.1 Comparison of Option Corridors

There are six main options for Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link. However, Options 3A, 3B and 3C have an eastern variant in the vicinity of Mulnaveagh and Tullyrap which would cross the Swilly Burn further to the west. The eastern options in this area (referred to as 3A1, 3B1 and 3C1) cross the Swilly Burn floodplain at a point known to be a foraging site for wintering flocks of whooper swan, while the western variants (referred to as 3A2, 3B2 and 3C2) avoid the foraging area.

A summary of the number of sites impacted by the various options is presented in Table 3.1. A description of each option and the sites affected is presented in Section 3.1.1 to 3.1.9 below. Table 3.2 presents a preferential ranking of options on the basis of the number of identified sites of biodiversity value and their evaluation impacted by the various options.

Table 3-1 Summary of sites of Biodiversity Value impacted by the various Options.

Site no	Townland	Evaluation	Impacts on Options								
			3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
			Blue	Blue	Red	Red	Orange	Orange	Purple	Cyan	Pink
1	Cavanacor	High Local	1	1	1	1	1	1	1	1	1
2A	Cavanacor	Low local	1	1	1	1	1	1	1	1	1
2B	Cavanacor	High Local	1	1	1	1	1	1	1	1	1
3	Mulnaveagh	Low local		1		1		1	1	1	1
4A	Mulnaveagh	High local	1	1	1	1	1	1	1	1	1
4B	Mulnaveagh	County (National)	1		1		1				
5A	Broadlea	Low local							1	1	1
5B	Tullyrap	High Local	1	1	1	1	1	1			
6	Dromore Little	Low local							1	1	1
7	Ballyholey	Low local							1	1	
8	Slievebuck	Low local									1
9	Slievebuck	Low local	1	1	1	1	1	1			
10	Sheskinapoll	Low local	1	1	1	1	1	1			1
11	Ballyholey Far	High local							1	1	
12	Mondooey	High local							1	1	
13	Ballyholey Far	High local			1	1	1	1			
14	Doorabble	High local	1	1							1
15	Carricknamart	High local								1	
16	Carricknamart	High local								1	
17	Corkey	High local								1	
18	Corkey	High local								1	
19	Pluck	High local								1	
20	Drumcarn	High local			1	1	1	1	1		

Site no	Townland	Evaluation	Impacts on Options								
			3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
			Blue	Blue	Red	Red	Orange	Orange	Purple	Cyan	Pink
21	Drumcarn	High local / county			1	1	1	1	1		
22	Ballyboe	High local	1	1							1
23	Ballyboe	Low local	1	1							1
24	Ballyboe	Low local	1	1							1
Total No of sites impacted			**12**	**12**	**11**	**11**	**11**	**11**	**12**	**15**	**13**

3.1.1 Option 3A1 – Blue Option

Option 3A1, along with all other options, entails a crossing of the River Deel at Cavanacor (site 1) where the river is contained within flood embankments and is tidal. The option corridor dissects a section of the dismantled railway to the north of the river (site 2A), where there are a few scattered semi-mature ash trees and trimmed hedgerow. The option corridor also extends into the fringes of a mosaic of parkland and woodland around Cavanacor House (site 2B). A short distance to the north, this variant on Option 3A runs to the east to cross the Swilly Burn (site 4A) in an area of low-lying open agricultural grassland on both sides of the river. This historic floodplain of the river (site 4B) area is utilised by wintering Whooper swan as a foraging ground. A maximum count of 30 swans was recorded to date during the winter period 2018-19. Regular occurrence of >130 swans would render the site of national importance for the species (Crowe et. al. 2008).

The option then follows the existing N14 corridor as far as Slievebuck where two separate swathes of scrub-woodland occur either side of the N14 (site 5B at Tullyrap and site 9 at Slievebuck). Immediately north Slievebuck is a minor watercourse (site 10) with willow dominated scrub along its banks. Further north at Doorabble the option runs along a stream corridor with scrub lined banks (site 14) before swinging to the west at Ballyboe where it crosses another stream (site 22). It then crosses a section of disused railway which is flanked by trimmed hedgerows (site 23) before crossing an area of recently reclaimed scrub (site 24).

The option corridor would impact on a total of twelve sites of biodiversity value, one rated of county (national) importance, six rated of high local importance, and five rated of low local importance.

3.1.2 Option 3A2 – Blue Option

Option 3A2, is a variant of Option 3A1 in which the Route crosses the Swilly Burn (site 4A) further to the west in the vicinity of the coniferous plantation at Mulnaveagh (site 3). In doing so it avoids the main area used by whooper swan for foraging to the east (site 4B). Both the variants converge at Tullyrap on the existing N14 corridor.

The option then follows the Options 3A1 corridor for the remainder of the scheme.

The option corridor would impact on a total of twelve sites of biodiversity value, six rated of high local importance, and six rated of low local importance.

3.1.3 Option 3B1 – Red Option

Option 3B1 follows Option 3A1 as far as Ballyholey Far, entailing a crossing of the Swilly Burn through whooper swan foraging area (Site 4B) (see description in 3.1.1. above). At Ballyholey it swings to the north-west along the existing N14 corridor, running along the northern edge of Site 13, a block of coniferous woodland surrounding some residual broadleaved woodland, and with a stream and associated wet grassland to the north. The option runs to the west of Drumoghill where it crosses a section of disused railway with well-developed scrub woodland (site 21) and a watercourse to the north which is rated of high local to county importance. It re-joins the Option 3A corridor a short distance to the north at Carrickballydooey.

This option would impact on a total of eleven sites of biodiversity value, one rated of county (national) importance, one rated of high local to county importance, six rated of high local importance, and three rated of low local importance.

3.1.4 Option 3B2 – Red Option

Option 3B2 follows Option 3A2 to include the crossing of the Swilly Burn (site 4A) to the west of the Whooper swan foraging ground (site 4B). It re-joins option 3B1 at Ballyholey Far after which it follows the same corridor for the remainder of the scheme.

This option would impact on a total of eleven sites of biodiversity value, one rated of high local to county importance, six rated of high local importance, and four rated of low local importance.

3.1.5 Option 3C1 – Orange Option

Option 3C1 follows the 3A1 and 3B1 corridors to cross the Swilly Burn through whooper swan foraging area (Site 4B) (see description in 3.1.1. above). At Ballyholey Far the option swings to the north-west of the existing N14 corridor, running through the southern portion of Site 13. It then re-joins the Option 3A corridor at Mondooey and follows it to the northern termination point.

Option 3C1 would impact on a total of eleven sites of biodiversity value, one rated of county (national) importance, one rated of high local to county importance, six rated of high local importance, and three rated of low local importance.

3.1.6 Option 3C2 – Orange Option

Option 3C2 follows the 3A2 and 3B2 corridors to include the crossing of the Swilly Burn (site 4A) to the west of the Whooper swan foraging ground (site 4B). It re-joins option 3C1 at Ballyholey Far after which it follows the same corridor for the remainder of the scheme.

Option 3C2 would impact on a total of eleven sites of biodiversity value, one rated of high local to county importance, six rated of high local importance, and four rated of low local importance.

3.1.7 Option 3D – Purple Option

Option 3D deviates from the corridor of the three preceding options at Mulnaveagh where it crosses through a block of conifer plantation (site 3) to the south of the Swilly Burn (site 4A) and then along the western side

of site 5, a block of conifer plantation with some associated scrub-woodland. The option crosses an area of low-lying species –poor wet grassland (site 6) at Dromore Little, before skirting along the east of site 7 at Ballyholey, which consists of dry heath dominated by gorse scrub. Farther north at Ballyholey Far (site 11) and Mondooey (site 12), it crosses through mosaics of heath with extensive gorse and willow scrub. At Mondooey it swings north to re-join the option 3C corridor which it then follows to the northern termination point.

Option 3D would impact on a total of twelve sites of biodiversity value, one rated of high local to county importance, six rated of high local importance, and five rated of low local importance.

3.1.8 Option 3E – Cyan Option

Option 3E follows the Option 3D corridor as far as Mondooey where it swings north-east and crosses a small tree-lined river at Carricknamart (site 15). A short distance to the north it runs close to a small copse of broadleaved woodland (site 16). Further north again at Corkey, it runs along a linear belt of woodland (site 17) and then crosses a small watercourse with well-wooded banks (site 18). Immediately north of Corkey, a variant on the option swings to the west, while the main option swings north to the termination point for the other options. This would cross the lower reaches of the Isle Burn where it is tidal and enclosed by flood embankments (site 19).

This option would impact on a total of fifteen sites of biodiversity value, ten rated of high local importance, and five rated of low local importance.

3.1.9 Option 3F – Pink Option

Option 3F follows the 3D and 3E corridors as far as Dromore Little, after which it deviates to the north towards the existing N14 to join with the 3C and 3D corridors. Just before joining these options at Slievebuck it crosses through a block of conifer plantation with some adjacent wet grassland (site 8) and shortly the small stream corridor at Sheskinapoll (site 10). It then joins with and follows the 3A option Corridor which would impact on Sites 14, 22, 23 and 24.

The 3F option would impact on a total of thirteen sites of biodiversity value, five rated of high local importance, and eight rated of low local importance.

3.2 Ranking of Option Corridors

Table 3.2 presents a preferential ranking of options on the basis of the number of identified sites of biodiversity value and their evaluation impacted by the various options. Options 3A2 and 3F both come out as joint preferred options from the biodiversity perspective as neither option impacts on any sites greater than Local Importance (higher value).

Options 3B2, 3C2 and 3E are all equal as second preferences, while option 3D emerges as the sole third preference. Options 3A1, 3B1 and 3C1 are all the least preferred options, as they all impact on the Whooper Swan foraging grounds at Mulnaveagh.

Table 3-2 Option Scoring Matrix

Option	Colour	Quantitative Assessment	Qualitative Assessment	Impact Score *	Preference Ranking
3A1	Blue	12	One of County importance, six of high local and five of low local	1	4
3A2	Blue	12	Six of high local importance, and six of low local importance.	3	1
3B1	Red	11	One of county importance, one of high local / county importance, six of high local, and three of low local importance	1	4
3B2	Red	11	One rated of high local to county importance, six rated of high local, and four rated of low local importance	2	2
3C1	Orange	11	One of county importance, one of high local to county importance, six of high local, and three of low local importance	1	4
3C2	Orange	11	One of high local to county importance, six rated of high local, and four rated of low local importance	2	2
3D	Purple	12	One of high local to county importance, six of high local, and five of low local importance	1	3
3E	Cyan	15	Ten of high local and five of low local importance	2	2
3F	Pink	13	Five of high local importance, and eight of low local importance.	3	1

***Impact score Key**

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

References

Crowe, O., Austin, G.E., Colhoun, K., Cranswick, P., Kershaw, M. & Musgrove, A.J. 2008. *Estimates and trends of waterbird numbers wintering in Ireland, 1994/95-2003/04.* Bird Study 55: 66–77.

European Commission (2002). *Assessment of plans and projects significantly affecting Natura 2000 site – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* Impact Assessments Unit, School of Planning, Oxford Brooks University.

Fossitt, J. (2000). *A Guide to Habitats in Ireland.* The Heritage Council.

National Parks and Wildlife Service. National Parks and Wildlife Service Public Mapviewer.aspx

NPWS (2011). *Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075.* Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017). *Conservation Objectives: River Finn SAC 002301. Version 1*.National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

Parnell, J. and Curtis, T. (2012). An Irish flora (8th edn). Cork University Press.

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.5– Soils, Geology and Hydrogeology

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report – Technical Appendix D3.5- Land and Soils: Soils, Geology and Hydrogeology
Document No. :	TT_ Y16112-BT-RS-MCA-S3 -RP-LS -00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	DOH/KOD	ED

Table of Contents

List of Tables

Appendices

1 SOILS, GEOLOGY AND HYDROGEOLOGY

1.1 Introduction

This section examines and assesses the soils, geology and hydrogeology of the options in accordance with the 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' produced by the National Roads Authority.

It is proposed to improve the road between Lifford and Letterkenny. There are currently six main options, within which there are variations, the options are identified as 3A1, 3A2, 3B1, 3B2, 3C1, 3C2, 3D, 3E & 3F. This assessment examines the Land and Soils, specifically the soils, geology and hydrogeology attributes along each option in terms of their importance and the possible impacts resulting from the construction of a road. Drawings showing the options mapped on Geological and Hydrogeological backgrounds are available in Appendix A.

The options will be compared and ranked in order of preference (from a land and soils: soils, geology and hydrogeology perspective).

It should be noted that the optimum option corridor from land and soils: soils geology and hydrogeology perspective may not be the overall optimum corridor when other environmental, social or economic aspects are taken into account.

1.2 Methodology

1.2.1 Data Sources

The option corridor study was a desk study collating the soils, geological and hydrogeological information available. A drive by windshield survey and site visit was also undertaken. Information on the soils, geology and hydrogeology was obtained from the following sources:

- Geology of South Donegal, Sheet 3 and part of Sheet 4 and associated memoir.
- Donegal Groundwater Protection Scheme (GSI 2004)
- Geological Survey of Ireland (GSI) geological and hydrogeological data including online maps (www.gsi.ie), well database, aquifer classification data and groundwater vulnerability maps;
- Irish Soil Information System Online Maps (http://gis.teagasc.ie/soils/map.php);
- Aerial Photography (OSI, flown 2000 and 2005);
- CORINE (2012) Land Cover Mapping; and
- Ordnance Survey 1:50,000 Discovery Series.
- Verbal Communication with Donegal Co. Co.
- TEN-T Priority Route Improvement Project, Donegal. Constraints Study Report. (2017)

1.2.2 Assessment Criteria

Each of the options was assessed in relation to;

- Bedrock geology.
- Quaternary Geology
- Karst Features.
- Quarries and mineral resources
- Aggregate Potential
- Geological Heritage
- Landfills
- Geomorphology

- Aggregate potential for re-use
- The classification of the underlying aquifer.
- The vulnerability of the underlying aquifer
- The proximity to public groundwater supplies (within 500 metres) and the associated risk.
- The risk to groundwater dependant water bodies.

The overall environmental option selection is a combination of the above assessments.

Risk is a combination of the assessment of the presence of a sensitive receptor (groundwater abstraction, groundwater fed water bodies etc) and the pathway (proximity, vulnerability etc) by which the receptor can be affected. In the context of groundwater quality we also need the presence of a hazard.

The assessment is in line with Table 4.2 'Summary of Soil and Geology Impacts for Option Corridor Options' of the 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' except an extra category 'Major or Highly Positive' has been added, see Table 1-1 below.

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

Table 1-1: Impact Score Key

2 EXISTING ENVIRONMENT

2.1 Bedrock Geology

All the options and three variations are underlain by four rock types which are:

- Aghyaran & Killygordon Limestone Formation which comprises commonly dark coloured and graphitic. Marble and pelitic and psammitic schists with some quartzites and minor basic volcanics.
- Lough Foyle Succession, pelitic and psammitic schists and phyllites, graded grits and pebbly grits and thin marble units.
- Lifford Volcanic member, volcaniclastic green beds with pillow lava.
- Claudy Formation, psammitic schist with intercalated coarse psammitic and pebbly grit units, thin marble lenses and quartzite.

Option 3D & 3E also pass through the Killeter Quartzite, a fine grained, slightly impure quartzite with occasional graded pebbly beds.

2.2 Soils/Quaternary Geology

All the options are predominantly underlain by Tills derived chiefly from metamorphic rock. There are differing volumes of alluvium, at present the depth of the alluvium is unknown, it is also unknown if this alluvium is cohesive or granular as some of the alluvium mapping corresponds to areas identified as being gravel aquifers, or if the material will provide a suitable founding stratum. The difference in areas range from 100,000m^2 to 220,000m^2.

2.3 Karst Features

There are no karst features identified within the study area (within 500 m of any of the options). As there is no limestone present within the study area, there are unlikely to be any unknown karst features and therefore impacts associated with karstification have not been further considered in the option comparison assessment.

2.4 Quarries and Mineral Resources

The nearest quarry is in Convoy, south of the options, as a source of suitable road construction materials. The proximity of the quarry is similar to all the options.

Mineral locations identified by the GSI are located adjacent to the options, the details are discussed in the table below;

Table 2-1: Mineral Location Details

Mineral Location No.	Description	Discussion
1	Limestone with some pyrite	Described as a Quarry in fine-grained limestones with schistose partings identified as an historic quarry and is present in the historic OS mapping, not currently in use.
2	Camstone and Talc	50m long X 3m wide stream section showing camstone lenses, there is no evidence this was an historic quarry and it is not present in the historic OS mapping.

Mineral Location No.	Description	Discussion
3	Quartz vein	Quartz vein in Giants Grave of little or no interest, historic mapping identified a number of historic quarries and a more recent one, north of the mineral location, now disused at Mondooey Hill.
4	Greenstone	Inactive quarry-metadolerite for road material, wall rocks are quartz rich metasediments, 200 x 200 x 20m, bedrock is exposed in Termon Pelites, now disused.
5	Limestone	Quarry in fine grained limestone, identified as an historic quarry and present in the historic OS mapping, now disused.
6	Limestone	Quarry in fine grained limestone, identified as an historic quarry and present in the historic OS mapping, now disused.

2.5 Aggregate Potential

Crushed rock aggregate potential is identified in the GSI mapping and ranges from very high potential to very low potential along the proposed options. The volume of potentially high to very high crushed rock aggregate ranged from 500,000 m^3 to 950,000m^3.

2.6 Geological Heritage

There are no areas of Geological Heritage in the area, there will be no impact from any of the options. Consequently, geological heritage has not been further considered in the option comparison assessment.

2.7 Landfills

There is a licenced landfill at Churchtown, Lifford approximately 3km from the proposed N14 termination. There are no legacy landfills recorded in the area. There will be no impact from any of the options. Landfills have not been further considered in the option comparison assessment.

2.8 Geomorphology

Records show there has been no landslides along any of the proposed options. All options pass through areas of low to moderately high landslide susceptibility, none of the options pass through areas of high landslide susceptibility. Geomorphology has not been further considered in the option comparison assessment.

2.9 Aquifers

This area of Donegal does not have significant ground water potential. Well yields are generally very poor. The locals refer to the area as the Laggan Desert.

2.9.1 Groundwater Bodies

There are 5 groundwater bodies (GWB) underlying the options. These are listed in Table 2-2. The details are provided in the table below.

Table 2-2: -Groundwater Body Risk and Quality Status

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010-2015)	Objectives	Measures to Achieve Objectives
Ballybofey	Water Quality Status	Good	- Restore_2021 - Prevent Deterioration - Restore Good Status - Reduce Chemical Pollution - Achieve Protected Areas Objectives	**Basic Measures** - The Bathing Water Directive (2006/7/EC) - The Habitats Directive (92/43/EEC) - The Drinking Water Directive (98/83/EC) - The Major Accidents (Seveso) Directive (96/82/EC) - The Environmental Impact Assessment Directive (85/337/EEC) - The Sewage Sludge Directive (86/278/EEC) - The Urban Waste Water Treatment Directive (91/271/EEC) The Plant Protection Products Directive (91/414/EEC) - The Nitrates Directive (91/676/EEC) - The Integrated Pollution Prevention Control Directive (96/61/EEC). **Specific Measures** ▪ Cost recovery for water use - Promotion of efficient and sustainable water use - Protection of drinking water sources - Control of abstraction and impoundments - Control of point source discharges - Control of diffuse source discharges - Authorisation of discharges to groundwater - Controls on other activities impacting on water status Prevention or reduction of the impact of accidental pollution incidents
	Risk Category	Not at Risk		
Raphoe	Water Quality Status	Good		
	Risk Category	Not at Risk		
Manorcunninh-gham	Water Quality Status	Good		
	Risk Category	Not at risk		
River Foyle	Water Quality Status	Good		
	Risk Category	Not at Risk		
Foyle gravels	Water Quality Status	Good		
	Risk Category	Not at Risk		

In terms of risk (Not at Risk) and water quality status (Good) all the GWBs are the same. The aquifers associated are discussed below.

2.9.2 Aghyaran & Killygordon Limestone Formation. - Bedrock Aquifer

The aquifer is primarily composed of low transmissivity rock. Yields in this aquifer are generally low. Well yields above 100 m3/day would be regarded as the exception. Generally, the higher yielding wells recorded within the aquifer are associated with the Marble Unit to the east of the option corridors. Transmissivity values are not generally expected to be high (<20 m2/day) and storativity is also considered to be relatively low. Groundwater flow is via fractures and weathered zones.

The aquifer classification is Li: Locally important aquifer which is moderately productive only in local zones.

80% of the northern section of all the options are underlain this aquifer. There is no differentiation between any of the options.

Locally important aquifers are attributes of medium hydrogeological importance

2.9.3 Lough Foyle Succession – Bedrock Aquifer.

Recorded well yields vary from 9-30 m3/day. Storativity is expected to be low. The groundwater flow is generally within a weathered layer at the rock head.

The aquifer classification is Pl: Poor aquifer which is generally unproductive except for local zones.

20% of all the options are underlain by this aquifer.

Poor Aquifers are regarded as a low importance hydrogeological attribute.

2.9.4 Carrigans Alluvial Deposit – Sand/Gravel Aquifer.

This alluvial deposit is located along the floodplain of the River Foyle, extending as far south as Lifford, beyond which it becomes much narrower. The broader section of this deposit, including the adjoining alluvium associated with the lower reaches of the River Deele and Swilly Burn, is in the region of 20 km^2. Many of the steeper sided valleys in this part of Donegal are thought to be infilled with sand and gravel at depth and more superficial fines-dominated material. The transmissivity of the deposits is expected to be 400 m2/day or less. Aquifer thickness is expected to be approximately 10 metres.

All the options cross this unconfined aquifer in two places namely in the vicinity of the River Deele and Swilly Burn. It should be noted that proposed roads are all in fill at the crossings.

This gravel aquifer classification is Lg; A locally important gravel aquifer.

Locally important gravel aquifers have medium importance as a hydrogeological attribute.

2.10 Vulnerability

The GSI have developed a system to classify aquifer vulnerability (Table 2-3)

Table 2-3: GSI Vulnerability Mapping Guidelines

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type & Thickness)			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. sandy subsoil)	Low permeability (e.g. clayey subsoil, clay, peat)	(Sand / Gravel Aquifers only)	(<30m radius)
Extreme (E)	0 – 3.0m	0 – 3.0m	0 – 3.0m	0 – 3.0m	-
High (H)	>3.0m	3.0-10.0m	3.0 – 5.0m	>3.0m	N/A
Moderate (M)	N/A	>10.0m	5.0 – 10.0m	N/A	N/A
Low (L)	N/A	N/A	>10.0m	N/A	N/A

* Note A classification of High to Low indicates that there is insufficient data available to provide a more detailed classification.

The vulnerability classification within the vicinity of the options is shown in It must be noted that groundwater vulnerability classification is not a measure of the impact on groundwater quality but rather the degree of protection afforded to the underlying aquifer and consequently the risk to the groundwater quality in the event of a release of a contaminant. High and extreme vulnerable subsoils are a feature underlying a high proportion of the study area (particularly the southern sections). In sections of cut the vulnerability will be increased.

2.11 Groundwater Supplies

There is no public water supply well (or group scheme wells) within 500 metres of any the options. The only group scheme water supply wells are at Galdonagh which formerly supplied the Maherabeg Veagh Scheme. These are no longer in use. At this stage no domestic well survey has been undertaken. The NRA "Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes" suggests that little or no weighting should be given to the number of such wells along each option corridor and/or their distance from the centre line when assessing relative impacts. In the case of low yielding water supply wells ranking of level of potential impact is unnecessary, as wells will either have to be replaced or not. Groundwater supplies will have to be abandoned where they lie on the path of the proposed road. When this is the case the usual mitigation measure is the drilling of an alternative supply. The wells in the vicinity of the proposed corridors are shown in Table 2-4. As there no public groundwater supplies within 500 metres of any corridor these have not been further considered in the option corridor assessment.

Table 2-4: – GSI Groundwater Well Data

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m^3/day
1	2041SEW140	Borehole		Raymogh	Donegal County Council Manorcunningham PWS	Good	327
2	2014SEW049	Borehole	90	Raymogh	Donegal County Council exp. In Lagan area	Good	333
3	2014SEW137	Borehole	61	Tullybogly	Domestic use only	Excellent	1090
4	2039NEW018	Borehole	31.7	Drumoghill	Agri & domestic use	Moderate	66.0
5	2039NEW019	Borehole	22.2	Drumoghill	Agri & domestic use	Poor	31.4
6	2039NEW017	Borehole	30.5	Drumoghill	Agri & domestic use	Moderate	66.0
7	2039NEW052	Borehole	55	Drumcarn	Agri and domestic Use	Poor	10.9
8	2041SEW073	Borehole	60	Galdonagh	Magherabeg/Veagh PW1 Public Water Supply One of two wells the other being 2039NEW031 No longer in use.	Reportedly good, reportedly hard water	250
9	2039NEW026	Borehole	51.8	Galdonagh	Agri & domestic use	Poor	13.0
10	2039NEW027	Borehole	52	Galdonagh	Agri & domestic use	Poor	25.0
11	2037NEW030	Borehole	44	Doorabble	Donegal County Council. Trial Well Not in use	Good	150
12	2339NWW001	Dug Well	4.6	Momeen	Unknown	Poor	3.2
13	2039NEW011	Dug Well	4.6	Oakfield Demense	Unknown	Poor	19.6
14	2339NWW006	Dug Well	1.5	Drumleen	Unknown	Poor	5.1
15	2039NEW009	Dug Well	2.1	Sheercloon	Unknown	Poor	29.5
16	2339NWW002	Borehole	67	Cavan	Unknown	Moderate	45.7
17	2339NWW003	Borehole	45.7	Cavan	Unknown	Poor	4.4
18	2339NWW004	Borehole	91.4	Cavan	Unknown	Failure	1.6
19	2339NWW005	Dug Well	2.4	Glencash	Unknown	Poor	29.3

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m^3/day
20	2339SWW001	Dug Well	3.1	Portinure	Unknown	Poor	3.1
21	2339SWW002	Borehole	37	Lifford Common	Domestic use only	Poor	35

As no public groundwater supplies are located within 500 km of any of the options, further consideration of public groundwater supplies are not considered in the option comparison assessment.

2.12 Ecologically Protected Areas and Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

There are no documented groundwater dependent protected areas in the vicinity of any of the options and therefore these have not been further considered in the option comparison assessment.

2.13 Consultation Responses

The consultation responses did not raise any issues relating to hydrogeology.

3 ASSESSMENT OF OPTIONS

The assessment of the options has been made primarily on the basis of the environmental setting of each of the options the significance of potential impacts. Each option is then ranked with the least favourable receiving the highest score. The aggregate total for each option then provides an indication of which of the options is the more preferable.

Consequently, the assessment of the options will be assessed on the basis of:

- Geology:
- Soils:
- Quarries and mineral resources.
- Aggregate Potential
- Aquifer Classification: The importance of the underlying groundwater resource.
- Vulnerability: The ease at which a contaminant (accidental spill) can enter the aquifer.
- Extent of cuttings: Cuttings increase vulnerability and can alter the groundwater flow regime impacting on the performance of groundwater abstractions.

The following Attributes were not considered in the option comparison assessment.

- Karst features: None within study area.
- Geological Heritage: None within study area
- Landfills: None within study area.
- Geomorphology: No landslides within study area.
- Proximity to important non-domestic groundwater abstractions: None within 500 metres of any option.
- Proximity to groundwater dependent ecosystems: None within study area.

3.1 Geology

The solid geology underlying the site presents no reason to distinguish between the options. All options are equally preferable and have been classified as 4: Not significant or Neutral.

3.2 Unsuitable/Soft Soils

Option comparison is based on the area of alluvium underlying the options. The difference in areas range from 100,000m^2 to 220,000m^2. The option comparison was based on the area of alluvium underlying each option.

<160,000m^2: Neutral (more preferable)

>160,000m^2: Slight negative (less preferable)

Table 3-1: Area of soft soils

Option	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
<160,000m^2:		√	√	√	√			√	√
>160,000m^2	√					√	√		
Potential Impact Score	3	4	4	4	4	3	3	4	4
Preference	2	1	1	1	1	2	2	1	1

Options B, B1, C, C1 D and E classify as 4: Neutral and Options A, A1 and F classify as 3: minor or slightly negative.

3.3 Quarries/ Mineral Resources

The nearest quarry is in Convoy, south of the options, the proximity of the quarry is similar to all the options, locally accessible road construction material is a minor positive. There are six recorded mineral locations in the study area. All of these quarries are disused. No potential impacts are predicted.

The overall rating of the Quarries/Mineral Resources for all options is 5: Minor positive. All options are equally preferable.

3.4 Aggregate Potential

The volume of potentially high to very high crushed rock aggregate ranged from 500,000 m^3 to 950,000m^3. Accessibility on site to crushed rock of a high potential is a positive impact as it is beneficial to the sustainability of the existing quarries, such as the quarry in Convoy identified above. The table below estimates the volume of potentially high to very high crushed rock aggregate.

Table 3-2: Volume Estimate of High to Very High Aggregate Potential

	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
length	4100	4100	3160	3880	4620	3480	4100	3160	3160
Average maximum height	7	10	10	10	10	10.5	7	10	10
Estimated Volume	500,000	650,000	650,000	800,000	950,000	800,000	500,000	650,000	650,000
Potential Impact	**Neutral**	**Neutral**	**Neutral**	**Slightly Positive**	**Slightly Positive**	**Slightly Positive**	**Neutral**	**Neutral**	**Neutral**
Potential Impact Score	**4**	**4**	**4**	**5**	**5**	**5**	**4**	**4**	**4**
Preference	**3**	**2**	**2**	**1**	**1**	**1**	**3**	**2**	**2**

3.5 Aquifers

Bedrock Aquifers.

All of the options are underlain by approximately 80% locally important aquifer (Li) and 20% poor aquifer (Pi). No distinction can be made between any of the options. All options are equally preferable. The potential impact score for all options are not significant/neutral (4)

Gravel Aquifers

The length of each option that crosses the locally important gravel aquifer (Lg) is shown in Table 3-3. It should be noted that all the options will be in fill at the crossings over the gravel aquifers and therefore will be above the water table and consequently there will be no impact of the flow regime. On the sole basis of the amount of gravel aquifer crossed Options D, E and F would be marginally less preferable. However, the gravel aquifer as a percentage of the total route is only 4-8%. Taking this into account together with the fact that all the crossings will be in fill, the potential impact on the gravel aquifers will be slightly negative (3) and equally preferable.

Table 3-3: Length of Option crossing Gravel Aquifer

	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
crossing 1	800	800	800	1200	1200	1200	900	900	900
crossing 2	400	400	400	400	400	400	400	400	400
Total crossing	1200	1200	1200	1600	1600	1600	1300	1300	1300
Potential Impact	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**
Potential Impact Score	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Preference	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

3.5.1 Vulnerability

There will be no direct discharges to groundwater associated with the proposed road design. However, the transportation of potentially hazardous materials which can be released in the event of an accident is a risk that results from the construction of the road. It should be noted however that the existing road network constitutes a similar risk to the groundwater in the event of an accident, spill or leakage. During the construction phase accidental spillages can impact on the groundwater quality within the aquifer.

It must be stressed that aquifer vulnerability designation is not a measure of the impacts on groundwater quality but is a measure of the protection against the downward migration of a contaminant if such a contaminant were released. The proposed road design will incorporate drainage systems that are designed to the highest standards (including hydrocarbon interceptors and collection systems) that are not present on the existing roads in the area.

Ideally, construction of the road with the least length over high/extreme vulnerability would be more preferable as there is more protection to the underlying aquifer.

Table 3-4: Vulnerability Distribution for Options.

Vulnerability	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
moderate	31%	29%	31%	32%	28%	39%	30%	28%	31%
high	42%	44%	42%	41%	40%	42%	44%	45%	43%
Extreme	27%	27%	27%	27%	32%	19%	27%	27%	27%
Potential Impact	**Moderate Negative**	**Moderate Negative**	**Moderate Negative**	**Moderate Negative**	**Moderate Negative**	**Slightly Negative**	**Moderate Negative**	**Moderate Negative**	**Moderate Negative**
Potential Impact Score	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**2**
Preference	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**

Option F crosses less high and extremely vulnerable aquifer and would be the preferred option for this criterion. The potential impact relating to vulnerability is slightly negative (3) for Option F

There is little to distinguish the remaining options and their potential impact is assessed to be moderate negative (2).

3.5.2 Cuttings.

Roads constructed in deep cuttings can impact on the groundwater by causing dewatering of the groundwater in the vicinity. The deeper the cutting the more significant and more extensive the impact. In addition the removal of the soil and bedrock in the excavation will increase the vulnerability of the aquifer at that location. The maximum cutting is greater than 15 metres. In order to assess the comparative cutting along each option, the length of cuttings > 10 metres were compared. Potential Impacts based on the cuttings along Options D and E are considered moderately negative (2). The remaining options are assessed to be slightly negative (3).

Table 3-5 Comparison of Cuts >10 m Along Options

Route Option	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
Max Depth	15.7	16.5	15.7	15.7	15	15.7	15.7	16.5	15.7
Cutting Length	670	970	670	1400	1210	970	670	970	670
Potential Impact	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Moderate Negative**	**Moderate Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**	**Slightly Negative**
Potential Impact Score	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**
Preference	**1**	**2**	**1**	**3**	**3**	**2**	**1**	**2**	**1**

3.6 Overall Comparison

There are no significant receptors (important attributes) such as public supply wells, working quarries, karst features or groundwater dependent terrestrial ecosystems within the study area. The only receptor that has the potential to be impacted is the groundwater within the aquifer (rather than public supplies). The magnitude of impact on the water quality is estimated to be Small Adverse (Results in minor impact on integrity of attribute or loss of small part of attribute). Taking into account the importance of the aquifer attributes (medium) and the magnitude of the impact (small), the overall significance of the impact is assessed to be Slight Adverse for all options. There is no significant difference in the options in terms of Impact significance. Table 3-6 compares the options on the basis of the potential impact rating. The overall impact rating for all the options would be slightly negative.

Table 3-6: Option Potential Impact Score.

Option	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
Geology	4	4	4	4	4	4	4	4	4
Unsuitable/Soft Soils	3	4	4	4	4	3	3	4	4
Quarries/Mineral Resources	4	4	4	4	4	4	4	4	4
Aggregate Potential	4	4	4	5	5	5	4	4	4
Aquifer Classification	4	4	4	4	4	4	4	4	4
Vulnerability	2	2	2	2	2	3	2	2	2
Cuttings >10 m	3	3	3	2	2	3	3	3	3
TOTAL	**24**	**25**	**25**	**25**	**25**	**26**	**24**	**25**	**25**
Impact Score	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Table 3-7 below lists the overall option preference based on the preference for each category. The lowest score is the preferred Option. This simple scoring system is solely directed at establishing the relative ranking of the various Options. The relative difference in scores does not reflect the degree of impact of various options.

Table 3-7: Overall Option Preference

Option	3A1	3B1	3C1	3D	3E	3F	3A2	3B2	3C2
Geology	1	1	1	1	1	1	1	1	1
Unsuitable/Soft Soils	2	1	1	1	1	2	2	1	1
Quarries/Mineral Resources	1	1	1	1	1	1	1	1	1
Aggregate potential	**3**	**2**	**2**	**1**	**1**	**1**	**3**	**2**	**2**
Aquifer Classification	1	1	1	1	1	1	1	1	1
Vulnerability	2	2	2	2	2	1	2	2	2
Cuttings >10 m	1	2	1	3	3	2	1	2	1
TOTAL	**11**	**10**	**9**	**10**	**10**	**9**	**11**	**10**	**9**
Preference ranking	**3**	**2**	**1**	**2**	**2**	**1**	**3**	**2**	**1**

Table 3-8 below summarises the preferred Options in terms of Impacts and preference. The scaling is based on the potential of the road to impact.

Table 3-8: Geological/Hydrogeological Ranking of Options and Scaling Statements

Option	Potential Impact Risk Order	Impact Score	Preference Ranking
3C1	Least Potential Impact Risk	3	1
3C2		3	1
3F		3	1
3B1		3	2
3B2		3	2
3D		3	2
3E		3	2
3A1		3	3
3A2	Greatest Potential Impact Risk	3	3

The risk of potential impacts on the land and soils: soils geology and hydrogeological regime can be reduced by the incorporation of particular measures in the road design.

APPENDIX A: Soils, Geology and Hydrogeology drawings

Letterkenny

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Corridor Route 3A
- Corridor Route 3B
- Corridor Route 3C
- Corridor Route 3D
- Corridor Route 3E
- Corridor Route 3F

Bedrock Legend

- Aghyaran & Killygordon Limestone Formation
- Claudy Formation
- Killeter Quartzite Formation
- Lifford Volcanic Member
- Lough Foyle Succession
- Marble unit
- Mullyfa and Deele Formations

0 2 4 7
Kilometers

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.1 SECTION 3 - BEDROCK GEOLOGY

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03012_BEDROCK_GEOLOGY_100K	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03012	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name: \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Enviro\01.sketches\Y16112-BT-RS -EGT-S3 -SK-Z-03012_Bedrock_Geology_100K.dwg

Letterkenny

N

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Option Corridor 3A
- Option Corridor 3B
- Option Corridor 3C
- Option Corridor 3D
- Option Corridor 3E
- Option Corridor 3F

Groundwater Vulnerability

- X - Rock at or near surface or Karst
- E - Extreme
- H - High
- M - Moderate
- L - Low
- W - Water

Ordnance Survey Ireland

0 2 4 7

Kilometers

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.2 SECTION 3 - GROUNDWATER VULNERABILITY

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03011_GROUNDWATER_VUNREBILITY	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03011	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name : \\ETRAMFS02\projects\Hallcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00_WIP\00 - All Stages\07 - Enviro\01.sketches\Y16112-BT-RS- EGT-S3-SK-Z-03011_Groundwater_Vunrebility.dwg

Letterkenny

N

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Option Corridor 3A
- Option Corridor 3B
- Option Corridor 3C
- Option Corridor 3D
- Option Corridor 3E
- Option Corridor 3F

Bedrock Legend

- Aghyaran & Killygordon Limestone Formation
- Claudy Formation
- Killeter Quartzite Formation
- Lifford Volcanic Member
- Lough Foyle Succession
- Marble unit
- Mullyfa and Deele Formations

Ordnance Survey Ireland

0 2 4 7

Kilometers

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.3 SECTION 3 - BEDROCK GRAVEL AQUIFER

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03009_BEDROCK_GRAVEL_AQUIFER	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03009	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Enviro\01 sketches\Y16112-BT-RS -EGT-S3 -SK-Z-03009_Bedrock_Gravel_Aquifer.dwg

Letterkenny

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Option Corridor 3A
- Option Corridor 3B
- Option Corridor 3C
- Option Corridor 3D
- Option Corridor 3E
- Option Corridor 3F
- Quarries Active

Mineral Site Locations

- Both
- Metallic
- Non-metallic

0 2 4 7
Kilometers

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.4 SECTION 3 -MINERAL SITE LOCATIONS

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03008_MINERAL_SITE_LOCATION	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03008	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Envir\01.sketches\Y16112-BT-RS- EGT-S3 -SK-Z-03008_Mineral_Site_Location.dwg

Letterkenny

N

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Corridor Route 3A
- Corridor Route 3B
- Corridor Route 3C
- Corridor Route 3D
- Corridor Route 3E
- Corridor Route 3F

Quaternary Sediments

- A, Alluvium
- GMp, Gravels derived from Metamorphic rocks
- Rck, Bedrock outcrop or subcrop
- TMp, Till derived from Metamorphic rocks
- Urban

Ordnance Survey Ireland

0 2 4 7

Kilometers

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.5 SECTION 3 - QUATERNARY GEOLOGY

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03010_QUARTENARY_GEOLOGY
Drawn: UF	Scale at A1: N.T.S
Approved: EC	Date: 06.02.2019
Checked: ED	

Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03010

Rev: P01

File Name : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Enviro\01.sketches\Y16112-BT-RS -EGT-S3 -SK-Z-03010_Quartenary_Geology.dwg

Letterkenny

N

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Option Corridor 3A
- Option Corridor 3B
- Option Corridor 3C
- Option Corridor 3D
- Option Corridor 3E
- Option Corridor 3F

Crushed Rock Final Scores

- Very High potential
- High potential
- Moderate potential
- Low potential
- Very Low potential

0 2 4 7

Kilometers

GSI

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.6 SECTION 3 - AGGREGATE POTENTIAL

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03007_AGGREGATE_POTENTIAL	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03007	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Envir\01.sketches\Y16112-BT-RS -EGT-S3 -SK-Z-03007 _Aggregate_Potential.dwg

Letterkenny

N

Raphoe

Lifford

Strabane

Dublin

Northern Ireland Border

Legend

- Study Area Boundaries
- Option Corridor 3A
- Option Corridor 3B
- Option Corridor 3C
- Option Corridor 3D
- Option Corridor 3E
- Option Corridor 3F

Quaternary Sediments

- A, Alluvium
- GMp, Gravels derived from Metamorphic rocks
- Rck, Bedrock outcrop or subcrop
- TMp, Till derived from Metamorphic rocks
- Urban

Ordnance Survey Ireland

0 2 4 7

Kilometers

File Name: : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Enviro\01.sketches\Y16112-BT-RS_EGT-S3_SK-Z-03003_Subsoils.dwg

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.7 SECTION 3 - SUBSOILS

Designed: EC	File Name: Y16112-BT-RS-EGT-S3-SK-Z-03003_SUBSOILS	Drawing No. Y16112-BT-RS-EGT-S3-SK-Z-03003	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

Letterkenny

N

Raphoe

Lifford

Legend

- Study Area Boundaries
- Corridor Route 3A
- Corridor Route 3B
- Corridor Route 3C
- Corridor Route 3D
- Corridor Route 3E
- Corridor Route 3F

Landslides Susceptibility Classification

- Unclassified
- Low
- Low (inferred)
- Moderately Low
- Moderately Low (inferred)
- Moderately High
- Moderately High (inferred)
- High
- High (inferred)
- Made
- Water

0 2 4 7

Kilometers

GSI

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall
Donegal County Council

RPS
Lyrr 2, IDA Business & Technology Park, Mervue, Galway
T +353 91 400200
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

BARRY TRANSPORTATION
Unit 14C, N5 Business Park, Castlebar, Co Mayo, Ireland
Phone: +353 94 906 8950
Email: info@jbbarry.ie

Notes
DO NOT SCALE, use figured dimensions only.

All levels are referred to Ordnance Survey Datum, Malin Head.

Rev.	Date	Drawn	Description	Chk'd	Appr.
P01	06.02.2019	UF	FOR OPTION SELECTION REPORT	EC	ED

Project Title: TEN-T PRIORITY ROUTE IMPROVEMENT PROJECT, DONEGAL

Status: S4

Drawing Title: FIGURE 5.8: SECTION 3 - LANDSLIDE SUSCEPTIBILITY

Designed: EC	File Name: Y16112	Drawing No. Y16112-JBB-00-	Rev: P01
Drawn: UF			
Approved: EC	Scale at A1: N.T.S		
Checked: ED	Date: 06.02.2019		

File Name : \\ETRAMFS02\projects\Halcrow\Barry\Y16 Projects\Y16112 - TEN-T Priority Route provement Project Donegal\Civil-CAD\00. WIP\00 - All Stages\07 - Enviro\01.sketches\Y16112-BT-RS_ELS-S3 -SK-Z-03006_Landslide_Susceptibility.dwg

Comhairle Contae Dhún na nGall
Donegal County Council

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.6 – Hydrology

December 2019

RPS BARRY TRANSPORTATION

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report – Appendix D3.6 Section 3 Water / Hydrology
Document No. :	TT_Y16112-BT-RS-MCA-S3 -RP-WR -00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	RF	ED

Table of Contents

Water: Hydrology

1.0 Introduction

This assessment of the hydrological constraints for the Ten-T Priority Route Improvement Project Donegal Scheme (Section 3) has been prepared in accordance with the TII's *Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (2008) and the* TII publication *Project Appraisal Guidelines for National Roads Unit 7.0-Multi Criteria Analysis(Document Ref PE-PAG-02031-October 2016)*. The constraints study identifies the general hydraulic conditions over the study area and identifies any key features which may constrain the development of a new road.

A total of 9 No. options were assessed, which are shown in Appendix A. The details of the assessment are outlined below.

2.0 Methodology

This assessment was carried out further to a review of all the available information on the study area. The sources of information have been listed below.

- Aerial photography and mapping of study area (GSI, OSI and online sources)
- Environmental Protection Agency online mapping. (https://gis.epa.ie/EPAMaps)
- Environmental Protection Agency, (website www.epa.ie) – water quality data;
- Donegal County Development Plan 2018-2024
- Office of Public Works Historical Flood Reports (Website www.floodmaps.ie)
- Water Framework directive 2000 (website www.wfdireland.ie) – river status;
- Interactive CFRAM Mapping, (http://www.cfram.ie/pfra/interactive-mapping). Shown in Appendix A.
- OPW Flood information(https://www.floodinfo.ie)

3.0 Relevant Water Framework Directive Catchments

Starting at the roundabout where the N13 and N14 converge to the South of Manorcunningham, all nine options go in a South-South-East direction for approximately 18 kilometres, before converging approximately 2 kilometres West of Strabane town centre. Each of the proposed options passes through 4 No. WFD (Water Framework Directive) sub catchments. The 4 No. WFD sub catchments and their mayor catchments have been listed in Table 3.1 below. The distance in meters that each option travels through these 4 No. sub catchments has being indicated in table 3.2 below. It should be noted that the 9 No. options effect on the Deele and Finn sub catchments is the same for all nine option options.

Sub Catchment (WFD Reference)	Sub Catchment Water Body	Major catchment(WFD) Reference	Major catchment Water Body
Lesliehill(Stream)_SC_010	Leslie Hill Stream	39	Lough Swilly
johnstonstream_SC_010	Swilly Burn/Johnston Stream	1	Foyle
Deele(Donegal)_SC_010	Deele	1	Foyle
Finn(Donegal)_SC_040	Finn	1	Foyle

Table 3.1(Above): Relevant Catchments

WFD Catchment Ref	Lesliehill(Stream)_SC_010	johnstonstream_SC_010	Deele(Donegal)_SC_010	Finn(Donegal)_SC_040
Option 3A1	6394	6940	1352	3214
Option 3A2	6380	7067	1352	3214
Option 3B1	6103	6940	1352	3214
Option 3B2	5894	7067	1352	3214
Option 3C1	6020	6940	1352	3214
Option 3C2	6020	7067	1352	3214
Option 3D	5894	7272	1352	3214
Option 3E	5737	7272	1352	3214
Option 3F	6380	7528	1352	3214

Table 3.2(Above): Options lengths in meters through sub catchments

4.0 Existing Watercourse Network

The proposed option corridor is affected by a number of river systems. The river systems described below impact on the proposed options. River systems which are within the option corridor but do not impact on the proposed options have not being listed below. The naming convention and WFD codes have being obtained from the EPA'S website.

4.1 Leslie Hill Stream_020(WFD code: IE_NW_39L050660)

Leslie Hill Stream_020 does not relate to a singular watercourse but do a network of watercourses which drains the watershed formed by and to the North/North West of Mongorry Hill, Mullafin and the Dooish Mountains. Overall this stream network has the largest impact on the proposed options due to the high number of crossings. The streams are within relatively close proximity to each other suggesting that the landscape has limited absorption capacity. The watercourse network flows from South to North where it enters the Bay at Maghera More, and the distance from its furthest reach to where it enters the Bay is approximately 6.8 kilometres. The highest point of the stream network is approximately 180mOD, which drops to sea level at the point where it enters the bay. The average gradient of the landscape between the watercourse networks highest and lowest points is approximately 1:38. Due to the steep gradient of the landscape and the fact that it is draining mountainous terrain it is considered that during intense rainfall events the flow velocities in the

networks upper reaches will be quite high, however it is also noted that the contributory catchments to these upper reaches are relatively small, limiting the flow quantities. It is considered that where sections of the upper watercourses are culverted that scour protection should be carefully considered to counteract the scour effects of the fast-flowing waters. It is considered that due to the small catchments that the majority of crossings within this watercourse network will be culverts. For the final 3.8 kilometres (Approximate), the network consists of a singular river which flows through a relatively flat landscape (High points within the range of 3mOD to 13 mOD. On the 1:50,000 Scale Discovery Series map, this final 3.8-kilometre river is referred to as Isle Burn. The contributory catchments to the watercourses are essentially rural in nature, meaning pollutants will consist of animal waste, fertilisers (agricultural and forestry), effluent from septic tanks and road runoff. The water quality status and historic water quality monitoring data obtained from the EPA is covered in detail in Section 5.0 below.

4.2 Leslie Hill Stream_010(WFD code: IE_NW_39L050600)

Leslie Hill Stream_010 does not relate to a singular watercourse but to a network of watercourses which drains the watershed to the North/North West of Mongorry Hill, Mullafin and the Dooish Mountains. Leslie Hill Stream_010 drains the area of the watershed immediately to the West of the area drained by Leslie Hill Stream_020. This watercourse network consists of 4 No. streams which have lengths within the range of 3-5 kilometres, which then combine to form a singular river (Named Croker River on 1:50,000 Scale Discovery Series Map). None of the 4 No. streams which drain the higher ground impact upon the proposed options. The only option affected by Leslie Hill Stream_010 is Option 3E, which crosses the Croker River twice. The Croker River is part of the Leslie Hill Stream_010 network. The contributory catchments to the watercourses are essentially rural in nature, meaning pollutants will consist of animal waste, fertilisers, effluent from septic tanks and road runoff. The water quality status and historic water quality monitoring data obtained from the EPA is covered in detail in Section 4.2 below.

4.3 Swilly Burn_020(WFD code: IE_NW_01S030250)

Swilly Burn_010 watercourse network consists of the Swilly Burn River (Discover Series 1:50,000) which flows from West to East across the Option corridor together with a number of feeder streams which flow the North and South. The section of the Swilly Burn which flows through the option corridor is along flat and low-lying land (2mOD to 7mOD typically), as such all options cross this river at some point. As the Swilly Burn flows through the option corridor it is within a flood plain approximately 1.0 kilometre wide. As all proposed options traverse the flood plain, the road embankments impact on the existing flow regime will need to be considered. It may be necessary that in addition to a bridge over the Swilly Burn itself that additional flood alleviation culverts will be required to allow continuity of flow across the flood plain. The contributory catchments to the watercourses are essentially rural in nature, meaning pollutants will consist of animal waste, fertilisers (agricultural and forestry), effluent from septic tanks and road runoff. To the North of Swilly Burns_020, upstream end is the town of Raphoe in suggesting a waste treatment plant may discharge to the river.

4.4 Swilly Burn_030(WFD code: IE_NW_01S030500)

This watercourse network is one of the larger contributory streams to Swilly Burn_020. It flows From North to South roughly parallel to the direction of the option corridor and consists of a central stream together with some smaller contributory streams. As the watercourse network runs parallel to the options, it impacts the proposed options at a number of locations. In some locations elements of this watercourse network run close to the proposed options, meaning watercourse diversions may be required. The contributory catchments to the watercourses are essentially rural in nature, meaning pollutants will consist of animal waste, fertilisers (agricultural and forestry), effluent from septic tanks and road runoff.

4.5 The Deele (Donegal)_050(WFD Code:IE_NW_01D010650)

The Deele (Discovery Series 1:50,000) flows across the option corridor from West to East and drains into the Foyle approximately 2.8 kilometres downstream of where it crosses the option corridor of the proposed N14. As the final 4.3 kilometres (Approximate) of all the options have the same alignment, the impact on the Deele is identical for all the options. The watercourse network as defined by the WFD code above includes 9.2 kilometres of the Deele's lower reaches together with a number of feeder streams. Through the study area the Deele flows through a low-lying flood plain (8-6mOD), approximately 600 meters wide. As all proposed options traverse the flood plain, the road embankments impact on the existing flow regime will need to be considered. It may be necessary that in addition to a bridge over the river Deele itself that additional flood alleviation culverts will be required to allow continuity of flow across the flood plain. The contributory catchments to the watercourses are essentially rural in nature, meaning pollutants will consist of animal waste, fertilisers (agricultural and forestry), effluent from septic tanks and road runoff.

5.0 EPA Water Quality Monitoring

A road which crosses a watercourse has the potential to negatively affect the water quality during both the construction and operational phases of the project. During the construction phase, when the bridge and any instream works are being carried out, there is the possibility of disturbance to the river bed and an associated increase in the quantity of silt in the water. There is also the possibility of fuel, silt and other pollutants from the site itself being washed into the river. When the road is operational, the pipe networks which provide drainage to the road's pavement, subbase and cuttings will be out falling to existing watercourses, meaning that at each road crossing of a watercourse there will typically be 1-2 outfalls. Mitigation works at these outfalls in the form of attenuation ponds, spillage containment bays and emergency shut off valves will reduce the risk to watercourses water quality, but a residual risk to the water quality will always remain. As such all road crossings of watercourses are considered to have a negative impact on water quality, the impacts severity generally based on the sensitivity and importance of the watercourse.

Biological water quality monitoring of rivers and streams across Ireland is carried out by the EPA using the Q-rating system. This rating system is used to monitor the ecological quality of rivers and streams using the macro-invertebrate communities within the river/stream channel. The Q-rating ranges from Q5-Q1 depending on the quality of the water as detailed in Tables 3.5 and 3.6 below:

Q Value (Biotic Index)	Quality Status	Quality Class	Condition
Q5, Q4-5, Q4	Unpolluted	Class A	Satisfactory
Q3-4	Slight Pollution	Class B	Transitional
Q3, Q2-3	Moderately Polluted	Class C	Unsatisfactory
Q2, Q1-2, Q1	Seriously Polluted	Class D	Unsatisfactory

Table 3.5: Q Value Rating System

The EPA website was referenced when collating the status and Q-Values of the Rivers. The results of

Reference	WFD code:	River Waterbody Status 2010-2015	Q Values	Comments
Swilly Burn_020	IE_NW_01S030250	Unassigned	None:No sampling points	N.A
Swilly Burn_030	IE_NW_01S030500	Unassigned	Poor:Typically, 2-3	It is noted that the Swilly Burn_010 which is the section immediately upstream of Swilly Burn_030, has a poor River Waterbody Status and has typical recorded Q values of Q2-Q3.
Leslie Hill_020	IE_NW_39L050660	Unassigned	None:No sampling points	N.A
Leslie Hill_010	IE_NW_39L050600	Good	Good: Q4-Q5	N.A
Deele(Donegal)_050	IE_NW_01D010650	Unassigned	Good:Q4-Q5	N.A

Table 3.6: Q Values and WFD codes of Watercourses within Section 3.

It is considered that the most sensitive watercourses affected by the road project are the Swilly Burn the River Deele and the River Finn. As these watercourses outfall into the Foyle, which is an important Salmon river, it is important that its water quality is kept at as high a level as possible. Following a review of the results, the Swilly burn consistently records Q values of Q2-Q3 against values of Q4-Q5 for the Deele. As both these watercourses cross flow perpendicular to the option corridor, all the proposed options cross these watercourses. As such, it is considered that from a water quality perspective the impact on these watercourses will be similar for all options.

It is noted that all the options, apart from Option 3E, have 2 No. significant river crossings. Option 3E has 2 No. additional crossings of the Croker River, meaning there is a total of 4 No. river crossings for option, against 2 No. crossings for the other 8 options.

6.0 Flooding

The recorded flooding events within the study area have been detailed in table 3.7 below. These historical results were obtained from the OPW website floodmaps.ie. It was recorded that the Swilly burn and the River Deele overflow their banks during heavy rain. Both rivers are set within wide floodplains that all option options cross. It will be necessary to ensure that the design does not aggravate any of the current flooding. It is noted that the options which run along the Eastern side of the corridor could be susceptible to overland flooding due to the large hill (Highbank) which overlooks Manorcunningham. This risk will need to be mitigated by an adequate drainage system to intercept overland flow.

Table 3.7(Above): Historical Flood Events

Townland	Easting (ITM)	Northing (ITM)	Comments	Flood ID
Raymoghy	624017	911144	Runoff from high ground causes flooding once approx. every 5-10 years, after heavy rain. The road and properties are liable to flooding. News report mentions ESB being cut during flood event in 2000.	4057
Kincraigy	622735	907962	River Corkey overflows its banks every year after heavy rain.	4045
Mullnaveagh	629425	901971	River Swilly Burn overflows its banks every year after heavy rain.	4050
Ballindrait	630359	899793	River Deele overflows its banks every year after heavy rain. Road Liable to flooding approx. every 5 years.	4051
Rossgeir	632124	900130	Properties, Agricultural Land and roads are liable to flooding. Surrounding lands were part of the Deele & Swillyburn Drainage Scheme in 1960's. A survey was conducted, evaluating the applicability of the scheme in 2001	N. A
Lifford	633483	898394	River Foyle overflows its banks approx. every 30 years, due to heavy rain and high tides. Properties are liable to flooding	4052
Carricknaslate	633897	896901	River Finn overflows banks its banks every year after heavy rain, from Lifford to Stranolar	4053

7.0 Methodology (Individual Impacts)

In accordance with Paragraph 2.4 of PE-PAG-02031 the impact each option had on the existing hydrological regime within the catchment was assessed. As part of the assessment the locations and severity of each impact was recorded, and these are listed in tables 3.10 to 3.18 below. In the tables below each impact was assigned an impact rating from 1 to 7, with 1 being Major or Highly Negative and 7 being Major or Highly Positive. Table 3.8 below indicates the full impact rating scale. The number of impacts and their relative severity was then collated in Table 3.8. Based on the assessment procedure described above and the results of the qualitative and quantitative assessment preferences from 1 to 9 were assigned to the options.

8.0 Conclusion

The majority of the impacts are at locations where the options cross existing watercourses. The impact scores assigned to the crossing points, were based on the overall impact the road project will have throughout its construction and maintenance phase. As described above, a bridge/culvert crossing of an existing watercourse has the potential to impact both the existing flow/flood regime along with the water quality. The impact scores on watercourses are based on both of these considerations. Where an option impacted on a significant flood plain this was included as a separate impact.

Due to its option on more elevated ground and the fact that it avoids floodplains, which affects other options, Option 3D is the most preferred option. Options B2 and C2 are second and third preference respectively.

Option	Severity of Impact						
	7. Major or Highly Positive	6. Moderately Positive	5. Minor or Slightly Positive	4. Not Significant/ Neutral	3. Minor or slightly negative	2. Moderately negative	1. Major or Highly negative
Blue 3A1					16	5	3
Blue 3A2					16	6	2
Red 3B1					19	5	1
Red 3B2					19	6	
Purple 3D					14	3	
Cyan 3E					12	3	2
Orange 3C1					18	5	1
Orange 3C2					18	6	
Pink 3F					15	5	2

Table 3.8(Above): Quantitative and qualitive assessments of each option.

Option	Impact Score	Preference
3D	3	1
3B2	3	2
3C2	3	2
3B1	3	3
3C1	3	3
3A2	2	4
3E	2	5
3F	2	6
3A1	2	7

Table 3.9(Above): Impact score and preference ranking of each option

Appendix A

Appendix B

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
6	1+150	Stream Crossing	Leslie Hill Stream_020	3
8	2+880	Stream Crossing	Leslie Hill Stream_020	3
9	3+500	Stream Crossing	Leslie Hill Stream_020	3
11	3+800-4+600	Watercourse Diversion	Leslie Hill Stream_020	1
12	3+800-4+600	Flooding Plain Encroachment	Leslie Hill Stream_020	1
13	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+900	Stream Crossing	Swilly Burn_020	3
23A	7+850	Stream Crossing	Swilly Burn_020	3
27	9+800	Stream Crossing	Swilly Burn_020	3
28	9+800 - 10+600	Watercourse Diversion	Swilly Burn_020	2
29	9+800 - 10+600	Flood Plain Encroachment	Swilly Burn_020	2
30	10+600	Stream Crossing	Swilly Burn_020	3
31	10+800	Stream Crossing	Swilly Burn_020	3
33	11+450	Flood Plain Encroachment	Swilly Burn_020	3
34	11+800	Swilly Burn River Crossing	Swilly Burn_030	2
34A	12+000	Flood Plain Encroachment	Swilly Burn_030	1
42	14+700	Deele River Crossing	Deele (Donegal)_050	2
43	15+200	Stream Crossing	Deele (Donegal)_050	3
44	15+450	Stream Crossing	Deele (Donegal)_050	3
45	15+850	Stream Crossing	Deele (Donegal)_050	3
46	14+650	Flood Plain Encroachment	Deele (Donegal)_050	2
50	12+000	Stream Crossing	Swilly Burn_030	3

Table 3.10(Above): Impacts of Option 3A1

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
6	1+150	Stream Crossing	Leslie Hill Stream_020	3
8	2+880	Stream Crossing	Leslie Hill Stream_020	3
9	3+500	Stream Crossing	Leslie Hill Stream_020	3
11	3+800-4+600	Watercourse Diversion	Leslie Hill Stream_020	1
12	3+800-4+600	Flooding Plain Encroachment	Leslie Hill Stream_020	1
13	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+900	Stream Crossing	Swilly Burn_020	3
23A	7+850	Stream Crossing	Swilly Burn_020	3
27	9+800	Stream Crossing	Swilly Burn_020	3
28	9+800 - 10+600	Watercourse Diversion	Swilly Burn_020	2
29	9+800 - 10+600	Flood Plain Encroachment	Swilly Burn_020	2
30	10+600	Stream Crossing	Swilly Burn_020	3
31	10+800	Stream Crossing	Swilly Burn_020	3
35	12+000	Flood Plain Encroachment	Swilly Burn_030	2
36	11+800	Swilly Burn River Crossing	Swilly Burn_030	2
37	12+000	Stream Crossing	Swilly Burn_030	3
38	12+300	Stream Crossing	Swilly Burn_030	3
42	14+800	Deele River Crossing	Deele (Donegal)_050	2
43	15+300	Stream Crossing	Deele (Donegal)_050	3
44	15+500	Stream Crossing	Deele (Donegal)_050	3
45	16+000	Stream Crossing	Deele (Donegal)_050	3
46	14+800	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.11(Above): Impacts of Option 3A2

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
7	1+175	Stream Crossing	Leslie Hill Stream_020	3
8	2+080	Stream Crossing	Leslie Hill Stream_020	3
10	2+630	Stream Crossing	Leslie Hill Stream_020	3
51	3+200	Stream Crossing	Leslie Hill Stream_020	3
14	4+600	Stream Crossing	Leslie Hill Stream_020	3
15	4+200	Stream Crossing	Leslie Hill Stream_020	3
18	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+650	Stream Crossing	Swilly Burn_020	3
23A	7+600	Stream Crossing	Swilly Burn_020	3
27	9+400	Stream Crossing	Swilly Burn_020	3
28	9+500-10+300	Watercourse Diversion	Swilly Burn_020	2
29	9+500-10+300	Flood Plain Encroachment	Swilly Burn_020	2
30	10+300	Stream Crossing	Swilly Burn_020	3
31	10+500	Stream Crossing	Swilly Burn_020	3
33	11+200	Flood Plain Encroachment	Swilly Burn_020	3
34	11+400	Swilly Burn River Crossing	Swilly Burn_030	2
50	11+700	Stream Crossing	Swilly Burn_030	3
34A	11+800	Flood Plain Encroachment	Swilly Burn_030	1
42	14+400	Deele River Crossing	Deele (Donegal)_050	2
43	14+900	Stream Crossing	Deele (Donegal)_050	3
44	15+150	Stream Crossing	Deele (Donegal)_050	3
45	15+600	Stream Crossing	Deele (Donegal)_050	3
46	14+400	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.12(Above): Impacts of Option 3B1

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
7	1+175	Stream Crossing	Leslie Hill Stream_020	3
8	2+080	Stream Crossing	Leslie Hill Stream_020	3
10	2+630	Stream Crossing	Leslie Hill Stream_020	3
51	3+200	Stream Crossing	Leslie Hill Stream_020	3
14	4+600	Stream Crossing	Leslie Hill Stream_020	3
15	4+200	Stream Crossing	Leslie Hill Stream_020	3
18	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+650	Stream Crossing	Swilly Burn_020	3
23A	7+600	Stream Crossing	Swilly Burn_020	3
27	9+400	Stream Crossing	Swilly Burn_020	3
28	9+500-10+300	Watercourse Diversion	Swilly Burn_020	2
29	9+500-10+300	Flood Plain Encroachment	Swilly Burn_020	2
30	10+300	Stream Crossing	Swilly Burn_020	3
31	10+500	Stream Crossing	Swilly Burn_020	3
35	12+000	Flood Plain Encroachment	Swilly Burn_030	2
36	11+600	Swilly Burn River Crossing	Swilly Burn_030	2
37	11+800	Stream Crossing	Swilly Burn_030	3
38	12+000	Stream Crossing	Swilly Burn_030	3
42	14+500	Deele River Crossing	Deele (Donegal)_050	2
43	15+000	Stream Crossing	Deele (Donegal)_050	3
44	15+300	Stream Crossing	Deele (Donegal)_050	3
45	15+605	Stream Crossing	Deele (Donegal)_050	3
46	14+500	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.13(Above): Impacts of Option 3B2

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
7	1+175	Stream Crossing	Leslie Hill Stream_020	3
8	2+080	Stream Crossing	Leslie Hill Stream_020	3
10	2+630	Stream Crossing	Leslie Hill Stream_020	3
51	3+200	Stream Crossing	Leslie Hill Stream_020	3
16	4+080	Stream Crossing	Leslie Hill Stream_020	3
21	5+000	Stream Crossing	Leslie Hill Stream_020	3
21A	6+600	Stream Crossing	Swilly Burn_020	3
23A	7+450	Stream Crossing	Swilly Burn_020	3
27	9+400	Stream Crossing	Swilly Burn_020	3
28	9+400-10+400	Watercourse Diversion	Swilly Burn_020	2
29	9+400-10+400	Flood Plain Encroachment	Swilly Burn_020	2
30	10+200	Stream Crossing	Swilly Burn_020	3
31	10+400	Stream Crossing	Swilly Burn_020	3
33	11+000	Flood Plain Encroachment	Swilly Burn_020	3
34	11+400	Swilly Burn River Crossing	Swilly Burn_030	2
50	11+600	Stream Crossing	Swilly Burn_030	3
34A	11+800	Flood Plain Encroachment	Swilly Burn_030	1
42	14+300	Deele River Crossing	Deele (Donegal)_050	2
43	14+850	Stream Crossing	Deele (Donegal)_050	3
44	15+050	Stream Crossing	Deele (Donegal)_050	3
45	15+480	Stream Crossing	Deele (Donegal)_050	3
46	14+300	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.14(Above): Impacts of Option 3C1

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
7	1+175	Stream Crossing	Leslie Hill Stream_020	3
8	2+080	Stream Crossing	Leslie Hill Stream_020	3
10	2+630	Stream Crossing	Leslie Hill Stream_020	3
51	3+200	Stream Crossing	Leslie Hill Stream_020	3
14	4+600	Stream Crossing	Leslie Hill Stream_020	3
15	4+200	Stream Crossing	Leslie Hill Stream_020	3
18	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+650	Stream Crossing	Swilly Burn_020	3
23A	7+600	Stream Crossing	Swilly Burn_020	3
27	9+400	Stream Crossing	Swilly Burn_020	3
28	9+500-10+300	Watercourse Diversion	Swilly Burn_020	2
29	9+500-10+300	Flood Plain Encroachment	Swilly Burn_020	2
30	10+300	Stream Crossing	Swilly Burn_020	3
31	10+500	Stream Crossing	Swilly Burn_020	3
35	12+000	Flood Plain Encroachment	Swilly Burn_030	2
36	11+600	Swilly Burn River Crossing	Swilly Burn_030	2
37	11+800	Stream Crossing	Swilly Burn_030	3
38	12+000	Stream Crossing	Swilly Burn_030	3
42	14+500	Deele River Crossing	Deele (Donegal)_050	2
43	15+000	Stream Crossing	Deele (Donegal)_050	3
44	15+300	Stream Crossing	Deele (Donegal)_050	3
45	15+605	Stream Crossing	Deele (Donegal)_050	3
46	14+500	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.15(Above): Impacts of Option 3C2

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+600	Stream Crossing	Leslie Hill Stream_020	3
5	0+700	Stream Crossing	Leslie Hill Stream_020	3
7	1+170	Stream Crossing	Leslie Hill Stream_020	3
8	2+000	Stream Crossing	Leslie Hill Stream_020	3
10	2+630	Stream Crossing	Leslie Hill Stream_020	3
16	4+100	Stream Crossing	Leslie Hill Stream_020	3
19	5+400	Stream Crossing	Leslie Hill Stream_020	3
20	5+700	Stream Crossing	Leslie Hill Stream_020	3
32	7+250	Stream Crossing	Swilly Burn_020	3
39	11+600	Swilly Burn River Crossing	Swilly Burn_030	2
40	11+400	Stream Crossing	Swilly Burn_030	3
41	12+000	Stream Crossing	Swilly Burn_030	3
42	14+550	Deele River Crossing	Deele (Donegal)_050	2
43	15+000	Stream Crossing	Deele (Donegal)_050	3
44	15+300	Stream Crossing	Deele (Donegal)_050	3
46	14+550	Flood Plain Encroachment	Deele (Donegal)_050	2
51	3+230	Stream Crossing	Leslie Hill Stream_020	3

Table 3.16(Above): Impacts of Option 3D

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
1	0+275	Corker River Crossing	Leslie Hill Stream_020	1
2	0+600	Stream Crossing	Leslie Hill Stream_020	3
3	1+700	Croker River Crossing	Leslie Hill Stream_010	1
52	3+400	Stream Crossing	Leslie Hill Stream_020	3
53	3+400	Watercourse Diversion	Leslie Hill Stream_020	3
17	4+150	Stream Crossing	Leslie Hill Stream_020	3
19	5+200	Stream Crossing	Leslie Hill Stream_020	3
20	5+500	Stream Crossing	Leslie Hill Stream_020	3
32	7+100	Stream Crossing	Swilly Burn_020	3
39	11+450	Swilly Burn River Crossing	Swilly Burn_030	2
40	11+300	Stream Crossing	Swilly Burn_030	3
41	11+900	Stream Crossing	Swilly Burn_030	3
42	14+400	Deele River Crossing	Deele (Donegal)_050	2
43	14+900	Stream Crossing	Deele (Donegal)_050	3
44	15+100	Stream Crossing	Deele (Donegal)_050	3
45	15+500	Stream Crossing	Deele (Donegal)_050	3
46	14+400	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.17(Above): Impacts of Option 3E

Impact Ref	Mainline Chainage Impact	Impact	WFD Reference	Impact Score
4	0+580	Stream Crossing	Leslie Hill Stream_020	3
5	0+720	Stream Crossing	Leslie Hill Stream_020	3
6	1+150	Stream Crossing	Leslie Hill Stream_020	3
8	2+880	Stream Crossing	Leslie Hill Stream_020	3
9	3+500	Stream Crossing	Leslie Hill Stream_020	3
11	3+800-4+600	Watercourse Diversion	Leslie Hill Stream_020	1
12	3+800-4+600	Flooding Plain Encroachment	Leslie Hill Stream_020	1
13	4+600	Stream Crossing	Leslie Hill Stream_020	3
21A	6+900	Stream Crossing	Swilly Burn_020	3
22	8+000	Stream Crossing	Swilly Burn_020	3
23	8+000	Flood Plain Encroachment	Swilly Burn_020	3
24	9+100	Stream Crossing	Swilly Burn_020	3
25	8+850	Watercourse Diversion	Swilly Burn_020	2
26	8+850	Flood Plain Encroachment	Swilly Burn_020	2
39	12+375	Swilly Burn River Crossing	Swilly Burn_030	2
40	12+200	Stream Crossing	Swilly Burn_030	3
41	12+770	Stream Crossing	Swilly Burn_030	3
42	15+200	Deele River Crossing	Deele (Donegal)_050	2
43	15+800	Stream Crossing	Deele (Donegal)_050	3
44	16+000	Stream Crossing	Deele (Donegal)_050	3
45	16+400	Stream Crossing	Deele (Donegal)_050	3
46	15+200	Flood Plain Encroachment	Deele (Donegal)_050	2

Table 3.18(Above): Impacts of Option F

TEN-T Priority Option Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.7 – Cultural Heritage

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Option Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report –Appendix D3.7 – Cultural Heritage
Document No. :	TT-MGT0337-RPS-00-03-RP-E-EN-1020

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	KR	ED

Table of Contents

Appendices

List of Figures

No table of figures entries found.

List of Tables

1 INTRODUCTION

This report examines the cultural heritage aspects of the study area for nine options for Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link of the TEN-T Priority Option Improvement Project in Donegal (see **Appendix 3: Cultural Heritage Option Corridor Mapping**) and will form part of a Phase 2 – Option Selection Report to be issued by the National Roads Design Office, Donegal County Council (see . See Section 1.2 of the Option Selection Report for Project Description. The term 'Cultural Heritage' includes all archaeological and built (architectural) heritage elements including (but not limited to) recorded archaeological sites and monuments, areas of archaeological potential (incl. areas of peatland and underwater environments), artefact findspots, place name evidence, field patterns and associated stone/earthen walls and boundaries, folklore and tradition, public, religious and vernacular architecture and industrial heritage.

The study area contains a number of predominantly prehistoric sites however a large majority of the recorded archaeological sites have been noted by the Archaeological Survey of Ireland as having no visible trace, which may attest to the impact of more intensive agricultural practices and land improvement works during the 20th century. Despite this, the environment is one of rich riverine lowlands and rolling drumlin terrain of excellent quality lands and soils. As such, there is high potential for the survival of sub-surface archaeological features, deposits and artefacts at such locations as well as within the wider greenfield environs.

The study area contains a number of important river networks, including the Corkey River at Manorcunningham; the Swilly Burn at Mullnaveagh; the River Deele at Tyleford, and the River Finn at Lifford as well as the confluence of the Deele, Finn and River Foyle north-east of Lifford town. The strategic significance of these rivers from earliest times, in terms of transport, food, political and social use, would have been fundamental to the local inhabitants to the area. This is demonstrated by the archaeological record, particularly the presence of an extraordinarily large volume of standing stone sites a high volume of prehistoric finds from the area (stone and metal axe heads; flint tools; bronze age burials (cists) and food vessels etc.).

In addition to the riverine environment, there is a landscape of rolling well-drained drumlin terrain, which would have been very conducive to past human settlement. Although the overall early medieval record of ringfort/enclosure sites are not abundant within the study area, it is possible that later post-medieval plantation period agricultural practices may have levelled same. Previous studies undertaken by Brian Lacey (2006) highlight the significance of Croaghan Hill (located at the southern terminus of the proposed scheme), and the associated border lands of the *Cenél Eoghain* and *Cenél Conaill*, a much-contested area of political and territorial control during the early medieval period. Similarly, early ecclesiastical sites are not widely distributed throughout the study area although the medieval church and graveyard site at Clonleigh, north-east of Lifford, does have 6th century origins and associations with the *Cenél Conaill* and *Cenél Eoghain* (Lacy, 2004) whilst a church and graveyard at Raymoghy has later and post-medieval fabric and remains. As such, it is likely that hitherto unrecorded medieval settlement sites exist in a sub-surface state throughout the study area as well as the possibility of unknown burial grounds/church sites.

During the sixteenth century, Lifford Castle was built in 1527 by Maghnus O'Donnell, and was to become a much-contested fortification throughout the late medieval period. Circa 1600, the O'Donnells are recorded in the Annals of the Four Masters has having battled with the English forces and those of Niall Garbh occupying Lifford, at the Deele Valley, on the banks of the river Deele, in the townland of Murlough. Today, nothing remains of Lifford castle nor of the 'good strong fort of lime and stone' that succeeded it, built in 1611 by Sir Richard Hansard, who established Lifford town and the village of Ballindrait along the banks of the River Deele.

The study area has associations with King James II and the siege of Derry, 1689. There is reference to King James II having spent some time at Cavanacor House before marching onwards to Derry and it seems that this event ultimately saved the house from destruction as the army destroyed all remaining Protestant houses in the locality upon their retreat.

The 18th and 19th centuries brought the development of high and low status housing and urban settlements throughout Ireland. In particular local landlords improved their estates and built residences for themselves. This is demonstrated in the environs of the proposed study area by several country houses such as Croaghan House and Cavanacor House as well as a series of well-built farmsteads and mill houses.

Unfortunately, as well as having some of the best land and one of the greatest concentrations of archaeological monuments in Donegal, this area also has some of the highest rates of monument destruction. The area was extensively colonised in the early seventeenth century and has been intensively cultivated since then. Even if some perception of its ancient significance had survived in the locality until the time of the Plantations, much of it would have been swept away by the cultural dislocation. This, together with the fact that the *Cenél Conaill* had been driven south at the end of the eighth century, guaranteed that its ancient importance as an ancestral and ritualised landscape was largely lost in the local memory.

1.1 Methodology

1.1.1 Assessment Criteria

The criteria for site evaluation at Stage 1 Preliminary Options Assessment outlined in *TII Project Management Guidelines (2010)*, and *TII Project Appraisal Guidelines (2016)* refer to a consideration of Archaeology and Cultural Heritage (comparative impact on Recorded Monuments and Places (RMPs), areas of archaeological potential, Architectural Heritage, and any other areas of cultural significance) as per *TII Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes (2005)* and *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes (2005)*.

The comparative evaluation of each overall option corridor was assisted by scoring of impacts to the overall presence of sensitive receptors using the Preference Rating Key in **Table 1-1** per the *Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis* (TII, 2016). An impact assessment was undertaken on each option to include both quantitative and qualitative assessment. Each option is scored based on the seven-point scale per below and an integer was assigned according to the overall impact level. Finally, an overall order of preference score from a Cultural Heritage perspective was assigned for each of the 7 no. options.

Table 1-1: Impact Scoring Key (TII, 2016)

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

A 500m wide corridor of each of the options (250m either side of centre-line) has been utilised as a study area with an extension of land area(s) where required at junction layouts and/or upgrade of side roads. Due cognisance has also been taken of site types and potential groupings/complexes and inter-associations across a given landscape.

Methodological principles applied in this assessment have been both desk and field-based.

- **Desk-Study**: further expansion of information gathered during the Constraints Study, including the examination of historical cartographic sources, NMI files, aerial mapping/photography and relevant published information.
- **Field-Study**: primarily a windshield survey of the environs, topography and landscape and observations therein with a view to identifying significant cultural heritage impacts and/or areas of archaeological potential. This has been coupled with site specific visits, as required, in order to determine level of impact and extent and condition of the heritage asset.

The compilation of a Cultural Heritage Constraints Inventory has been undertaken to include core locational and descriptive data, as well as identification of the distance to the option and the type of impact (direct/indirect).

The compilation of Impact Assessment Tables for each option includes assessment of the level of impact for each constraint per EPA Guidelines (2003) *Appendix 4, Glossary of Terms* as well as having due regard for the assessment of impacts contained within the *Draft EPA Guidelines on the Information to be contained in EIARs* (2017). Mapping of Cultural Heritage Constraints, accompanies each option.

The compilation of the Comparison Options Table presents the results of each option and provides both a quantitative and qualitative assessment in order to determine an emerging preferred option from a Cultural Heritage perspective. This includes a review of the nature and magnitude of the impact to include assessment of the quality, duration and type of impact per EPA Guidelines provided in *Advice Notes on Current Practice in the preparation of Environmental Impact Statements* (2003).

1.1.2 Relevant Legislation

The management and protection of cultural heritage in Ireland is achieved through a framework of international conventions and national laws and policies (*Framework and Principles for the protection of the Archaeological Heritage*, Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the 'European Convention on the Protection of the Archaeological Heritage' (the Valletta Convention, ratified in 1997) and 'European Convention on the Protection of Architectural Heritage' (Grenada Convention, ratified in 1997).

The Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs and Transport Infrastructure Ireland (TII) (2017) provides *'a framework within existing legislation (National Monuments Act 1930 to 2014 and Roads Act 2015) and policy to enable TII to progress with its programme of work in accordance with the Government's transport strategy, whilst carrying out appropriate archaeological assessment and mitigation having regard to a set of principles and actions agreed by both parties'*. Due cognisance of the agreed principles in the *Code of Practice* (2017) has been taken in the preparation of this assessment report.

The Minister for Culture, Heritage and Gaeltacht the is presently responsible for the statutory functions and the administration of the national policy in relation to archaeological heritage management. The National Monuments Act 1930 (as amended), the Heritage Act 1995 and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring the satisfactory protection of archaeological remains, which are held to include all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

There are a number of mechanisms under the National Monuments Act that are applied to secure the protection of archaeological monuments. These include designating sites of national significance as National Monuments, or entering them on the Register of Historic Monuments, the Record of Monuments and Places (RMP), the Sites and Monuments Record or placing Preservation Orders and Temporary Preservation Orders on endangered sites. Donegal County Council's policies and objectives for the protection of the archaeological resource within the county are also presented below.

National Monuments

The term 'national monument' as defined in Section 2 of the National Monuments Act (1930) refers to a monument '*the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto*...'. National Monuments may be acquired by the Minister by agreement or by compulsory order and the State or Local Authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the Local Authority as guardian of that monument if the State or Local Authority agrees. Once the site is in ownership or guardianship of the State it may not be interfered with without the written consent of the Minister. Archaeological monuments within lands in Local Authority ownership are also designated as National Monuments and this may often apply to features such as historic graveyards and their associated church ruins as well as town defences.

Preservation Orders

Recorded archaeological sites that have been deemed to be in danger of damage or destruction can be allocated Preservation Orders under the National Monuments Act 1930 which make any interference to these sites illegal. Temporary Preservation Orders can also be attached under the 1954 National Monuments (Amendment) Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation relevant to the site must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders by the written consent, and at the discretion, of the Minister.

Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP)

The Sites and Monument Record was compiled in the 1980s and early 1990s and comprises lists of all known archaeological sites within the country. The SMR formed the basis of the Record of Monuments and Places (RMP) which was established under Section 12(1) of the 1994 National Monuments (Amendment) Act. The SMR and RMP both comprise lists of monuments and relevant places with accompanying maps that show the recorded archaeological monuments and places for each county within the State. The 1994 Act provides statutory protection to monuments listed in the RMP under the provision that:

> *'where the owner or occupier (other than the Minister for Environment and Local Government) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister for Environment and Local Government to carry out work and shall not, except in the case of urgent necessity and with the consent of the Minister, commence the work until two months after the giving of notice.'*

Register of Historic Monuments

Historic monuments and archaeological areas listed on the register are afforded statutory protection under the 1987 National Monuments (Amendment) Act. The register was made largely redundant with the establishment of the Record of Monuments and Places (RMP) under the National Monuments (Amendment) Act, 1994.

County Development Plan 2018-2024

The relevant development plan at the time of writing is the *County Donegal Development Plan 2018-2024*. This outlines the Council's policies for the protection of the archaeological resource within the administrative area and the policies relevant to this study comprise the following:

AH-P-1 It is a policy of the Council to protect and enhance the integrity of Archaeological Monuments and their settings and to secure the preservation in-situ of all archaeological monuments included in the Record of Monuments and Places.

AH-P-3 It is the policy of the Council to protect the character, settings of and views from National Monuments/ Recorded Monuments and to manage development which would be considered to (visually or physically) intrude upon or inhibit the enjoyment of the amenities of these sites.

AH-P-4 It is a policy of the Council to protect where appropriate, the character and setting of any unrecorded archaeological object or site.

AH-P-5 It is the policy of the Council to protect and preserve archaeological sites, their characters and the settings which have been identified subsequent to the publication of the Record of Monuments and Places.

AH-P-7 It is the policy of the Council to protect and preserve underwater archaeological sites in rivers, lakes, intertidal and sub-tidal locations.

AH-P-8 It is the policy of the Council to protect known battlefield sites and their settings.

Architectural Heritage

Protection of the architectural heritage in Ireland is provided for through a range of legal instruments that include the Heritage Act, 1995, the Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act, 1999, and the Local Government (Planning and Development) Act 2000.

Section 2.1 of the Heritage Act, 1995, describes architectural heritage as:

'all structures, buildings, traditional and designed, and groups of buildings including streetscapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents, and, without prejudice to the generality of the foregoing, includes railways and related buildings and structures and any place comprising the remains or traces of any such railway, building or structure'.

Under the Local Government (Planning and Development) Act, 2000, all Planning Authorities are obliged to keep a 'Record of Protected Structures' (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. As of the 1st January 2000, all structures listed for protection in current Development Plans, have become 'protected structures'. Since the introduction of this legislation, planning permission is required for any works to a protected structure that would affect its character. If a protected structure is endangered, planning authorities may issue a notice to the owner or occupier requiring works to be carried out. The Act contains comprehensive powers for local authorities to require the owners and occupiers to do works on a protected structure if it is endangered, or a protected structure or a townscape of special character that ought to be restored. The Architectural Heritage Act, 1999, requires the Minister to establish a survey to identify; record and evaluate the architectural heritage of the country. The function of the National Inventory of Architectural Heritage (NIAH) is to record built heritage structures within the Republic of Ireland and to advise local authorities in relation to structures of interest within their areas.

The relevant development plan at the time of writing is the *County Development Plan 2018-2024*. This outlines the Council's policies for the protection of the architectural heritage resource within the administrative area and the examples relevant to this study include the following:

BH-P-1 It is a Policy of the Council to conserve and protect all structures (or parts of structures) and sites contained in the Record of Protected Structures that are of special architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

BH-P-2 It is a policy of the Council to review the RPS on an ongoing basis, and to add structures (or parts of structures) of special interest as appropriate.

BH-P-3 It is a policy of the Council to ensure retention of historic structures (and parts of structures), including their functional and decorative details…[in accordance with current conservation guidelines and best practice].

BH-P-4 It is a policy of the Council to ensure the repair, reuse and appropriate refurbishment of vernacular/historic buildings, which make a positive contribution to the built heritage of the area including those as referred to on any National Inventory of Architectural Heritage listing.

BH-P-5 It is a policy of the Council to protect and preserve vernacular and/or historic industrial and maritime buildings.

BH-P-17 It is a policy of the Council to require that any historic structures that have to be demolished or significantly altered are photographed and recorded (using scaled drawings) to agreed professional standards.

BH-P-18 It is a policy of the Council to preserve the integrity of Historic Gardens and Designed Landscape sites in County Donegal identified in the National Inventory of Architectural Heritage.

Landscape Character Assessment, County Donegal (2016)

The Landscape Character Assessment of County Donegal was actioned as a result of the following objective, NH-0-7, of the *County Donegal Development Plan 2012-2018*:

"To prepare a Landscape Character Assessment that shall provide a framework for identification, assessment, protection, management and planning of the landscape (and including seascape) of County Donegal in accordance with current legislation and ministerial guidelines, and having regard to the European Landscape Convention 2000".

Current legislation and guidance documents refers to *The Planning and Development Act 2011*; *Planning Policy Statement 2015* (Dept of Env, Community & Local Government); 'A National Landscape Strategy for Ireland 2015-2025 (Dept of Arts, Heritage and the Gaeltacht*); Regional Planning Guidelines (2010-2022)* of the Border Regional Authorities; and *County Donegal Development Plan 2018-2024*.

The Landscape Character Assessment of Co. Donegal describes the study area as being located within LCA 12 Laggan Valley and LCA 13 Foyle Valley. Within LCA 12, which encompasses the study area from south-west of Raphoe to Manorcunningham roundabout at Pluck, the landscape is described as *'a vast undulating agricultural landscape of good quality pasture and arable land characterised by large, geometric, hedge trimmed agricultural fields extending over a wide geographical area…often described as a 'Plantation Landscape', this good quality farming land was confiscated from Gaelic Lords in the early 1600s and colonised by settlers from England and Scotland as part of the wider colonisation of Ulster.'* Within LCA 13, which encompasses the study area broadly from Lifford to Raphoe, the landscape is described as '*characterised by undulating fertile agricultural lands with a regular field pattern of medium to large geometric fields, bound by deciduous trees and hedgerow…the River Foyle is an ecologically, strategically and historically (including the fishing economy) important feature in this landscape'*.

2 EXISTING ENVIRONMENT

2.1 Desk Study

The proposed options for Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link comprises 9 no. options: Blue 3A1, Blue 3A2, Red 3B1, Red 3B2, Orange 3C1, Orange 3C2, Purple 3D, Cyan 3E and Pink 3F (see **Appendix 3: Cultural Heritage Option Corridor Mapping**). The proposed N14 project commences to the east of Letterkenny at its junction with the N13 at Pluck Roundabout, to the south of Manorcunningham, crossing the Corkey River, and extends in a generally south-easterly direction for *c.*15 kms towards Lifford town, crossing the Deele River and linking with the R236, R265 and R264 Regional Roads.

The principal source reviewed for the assessment of the known archaeological resource is the online form of the *Archaeological Survey of Ireland* (ASI). Between 1984 and 1992, the ASI compiled a Site and Monument Record (SMR) which comprises a published series of lists and maps that identify the recorded archaeological resource within each county in the State. The SMR formed the basis for the statutory Record of Monuments and Places (RMP) established under Section 12 of the National Monuments (Amendment) Act 1994. The ASI has continued to record and add entries to the SMR and has developed an online "Historic Environment Viewer" (www.archaeology.ie) which facilitates online access to the SMR databases as well as the National Inventory of Architectural Heritage (NIAH).

The principal sources for the identification of the architectural heritage resource within the study area were the Record of Protected Structures (RPS), as published in the *Donegal County Development Plan 2018-2024*, and the *National Inventory of Architectural Heritage* (NIAH). It is noted that Annie Tourish's pub, formerly located at White Cross-Roads (currently listed both on the RPS and NIAH – reference 40906203) was previously subject to fire damage and is now levelled, with no upstanding remains. As such, it has been excluded from the options assessment where relevant (Options 3A1, 3A2, 3B1, 3B2, 3C1 and 3C2).

A number of other sources were consulted in order to collate a preliminary assessment for the potential presence of unrecorded archaeological sites within the study areas. This included various literary sources in order to assess the written archaeological, historical and architectural record of the study area.

The *Database of Irish Excavation Reports* contains summary accounts of excavations carried out in Ireland from 1970 to 2017. It has been compiled from the published Excavations Bulletins and an online database (www.excavations.ie). An analysis of same for the study area has been undertaken with a view to determining the level of archaeological potential for hitherto undiscovered sites.

The *National Museum of Ireland* (NMI), Kildare Street, Dublin holds an archive of Topographical Files which record the townlands in which the artefacts within their collections were discovered. This is an important resource as the discovery of apparently stray artefacts can be an early indicator for the presence of unrecorded archaeological sites within an area. The Kildare Street archive was inspected on the 20th October and the 8th November 2017 and the information on the archaeological artefacts discovered within townlands in the study area are presented in Appendix 1.

The detail on *historical cartographic sources* can indicate past settlement and land-use patterns and may also highlight the increased impact of modern developments and land improvement works. This information can aid in the identification of the location and extent of unrecorded, or partially levelled, features of archaeological or architectural heritage interest. The cartographic sources examined for the study area included various editions of the Ordnance Survey (OS) maps, including the 1st editions of the 6-inch and 25-inch maps surveyed during the 19th and early 20th centuries.

The *Place-names Branch* (Department of Arts, Heritage and the Gaeltacht) provides a comprehensive management system for data, archival records and place names research conducted by the State. Its primary function is to undertake research in order to establish the correct Irish language forms of the place names of Ireland and in collaboration with Fiontar at the Dublin City University to publish them on a public website (www.logainm.ie). The Irish language origins of many place names can provide information on the presence of sites of archaeological interest and thereby act as indicators of known and/or unknown archaeological sites.

A full inventory of Cultural Heritage Items (RMPs/SMRs, NIAH/RPS structures, excavations, NMI finds, historic cartographic items, placenames and literary references) located within the 500m wide corridor of each of the options for Section 3 is included in Appendix 1. Summarised data of the Cultural Heritage items located within a 500m wide corridor for each of the proposed options is presented in the Tables below.

2.2 Field Survey

The study area extends southeast of the Manorcunningham N13/N14 roundabout at Pluck for a distance of *c.*15km (largely offline alignment) towards Lifford town, linking with the N15 to Stranorlar. The entire study area consists of excellent undulating agricultural land in both the 'Laggan' valley and on those lands associated with the Foyle valley to the south-east. Of good quality, well-drained terrain, the undulating landscape was subject to Plantation in the 1600s and with that came a number of land improvements within the area. The Deele River extends west/east at the southerly portion of the study area at Ballindrait village before joining at a confluence *c.* 3 km further east at the River Foyle and River Finn, east of Lifford town.

The area has a long history of human settlement, as demonstrated by the archaeological and historical record. There is a particularly high density of recorded prehistoric archaeological sites within the study area, not least due to the fact that the terrain is very favourable to farming as well as the proximity to the navigable Rivers Deele, Finn and Foyle and ultimately Lough Foyle and to sea, all of which would have been strategically important to social and political economics as well as transport and food resources.

Field survey was undertaken within the study area during September 2018 and consisted of a windshield survey and site visits by a team of suitably qualified archaeologists per TII Guidelines 2005. The topography within the study area consists of rolling undulating farmland, largely of a pastural nature.

The offline options extend from Pluck townland at the northerly (Manorcunningham) terminus, crossing the Corkey River, and lowlands at Labbadish, and traversing south-easterly towards gradually rising ground at Ballyholey Far (150m OD) and Sheskinapoll (100m OD), crossing the R236 (to Raphoe) onto lower ground interspersed with drainage and small streams including the Swilly Burn, passing through Tamnawood (65m OD) and the Deele River (east of Ballindrait) before skirting around the lower south-easterly slopes (70m OD) of Croaghan Hill (184m OD) before terminating at the N15, on the northern banks of the River Finn, south-west of Lifford.

Although the study area for Section 3 is of excellent terrain and holds a high density of archaeological sites throughout, and in turn is generally of good archaeological potential throughout, a number of areas of high archaeological potential were identified following a review of the local topography, river crossings, recorded archaeological records and locational data, historic cartographic sources and aerial mapping which was supplemented by observations in the field. These areas of high archaeological potential have been identified at 5 no. locations and have been abbreviated as Section 3 Area of Archaeological Potential_01 to 03 (S3AAP_01 to S3AAP_05) and presented in **Figure 2-1** (see also **Appendix 3: Cultural Heritage Option Corridor Mapping** for more detail).

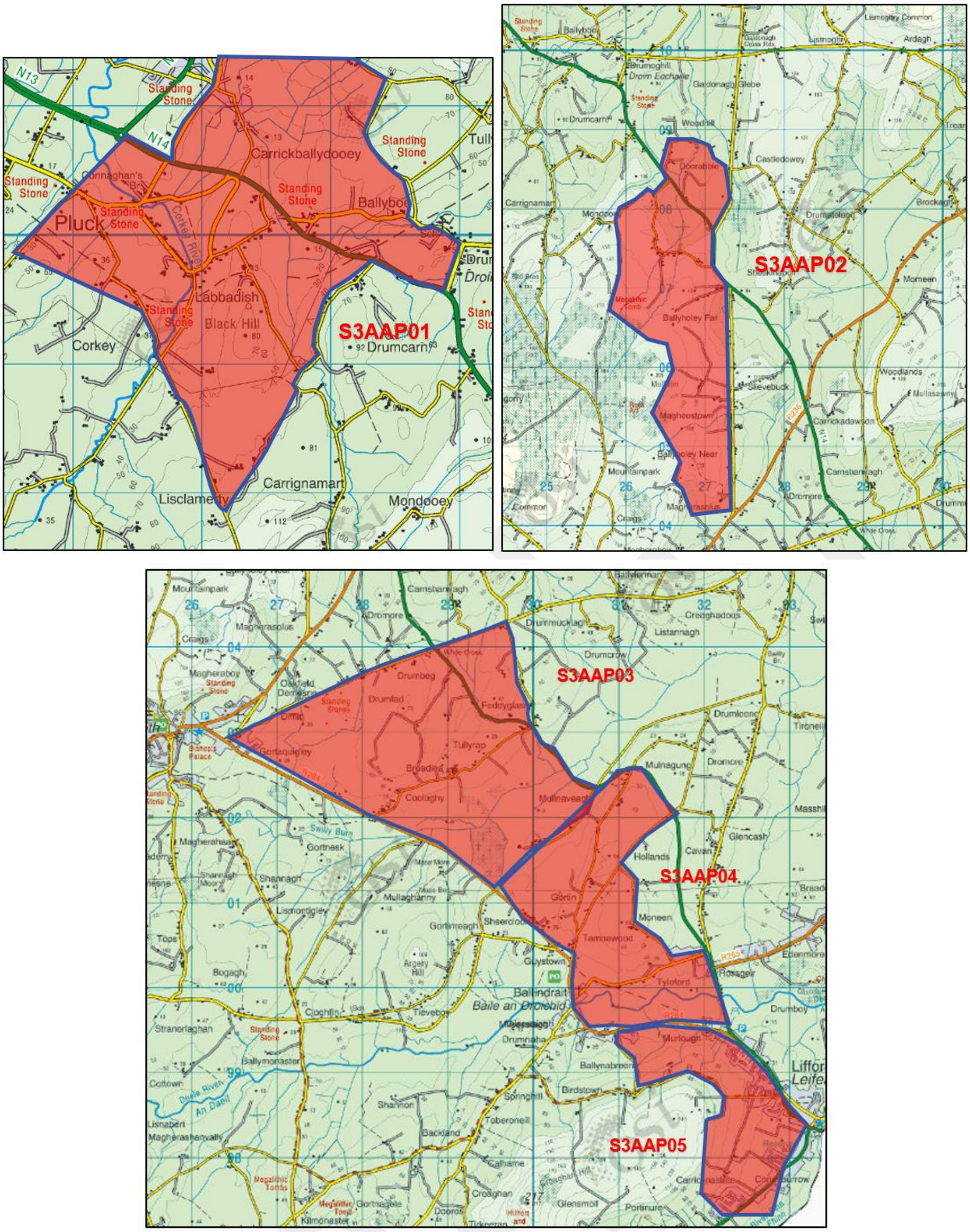


Figure 2-1: Areas of high archaeological potential

S3-AAP01

This area of high archaeological potential is located at the northern terminus of the proposed options at Pluck and extends south-west along the Corkey River crossing and associated river banks and low-lying ground. There is a particularly high amount of prehistoric archaeological sites in this location, including National Monument No. 453 at Pluck (a standing stone DG054-038---) as well as a cist burial at Carrickballydooley (with skeleton and flint knife), NMI find of a food vessel, numerous other standing stones in the wider area. Given the riverine environment, and the Bronze Age landscape of recorded sites there is a high potential to reveal associated artefacts and/or sites of a prehistoric nature at this location. Both the landscape terrain including the river crossing, as well as the natural 'highway' corridor that traverses this region extending southwest through the county at the mountainous valley in Barnesmore and beyond would have been strategic settlement factors for political, territorial and social purposes.

S3-AAP02

This area of high archaeological potential is located on the eastern slopes (80m – 170m OD) of Mongorry Hill (284m OD) including the eastern slopes of a drumlin ridge at Mullafin (205m OD), north of Oakfield demesne. Within the townlands of Doorable, Ballyholey Far and Ballyholey Near, there is a high density of standing stones, megalithic tombs and rock art, as well as the findspot of a bronze dagger. The well-drained, good-quality east-facing slopes would have been very attractive to past settlement, as demonstrated by the recorded archaeological record in the area.

S3-AAP03

This area of high archaeological potential is located south-east of Raphoe and Oakfield Demesne extending from White Cross Roads to Feddyglass and Tullyrap, crossing the Swilly Burn and its associated low-lying banks to the local road network at Mullnaveagh and the rising drumlin good quality lands at Gortin North overlooking the river below. At a small drumlin ridge (73m OD) at Drumfad, the terrain slopes generally towards the Swilly Burn at the south-east and contains a high density of recorded standing stones. Further west of the R264 is a museum findspot of a stone ring along the Swilly Burn, near Gortnesk. The drumlin ridge in close proximity to the riverine environment create very favourable siting factors for past human settlement, as attested by the recorded archaeological record.

S3-AAP04

This area of potential is located at a drumlin ridge (65m OD) at Moneen in Tamnawood, east of Ballindrait, falling towards Tyleford and the Deele River, including both its northern and southern banks. There are two prehistoric standing stones immediately north of the area in Gortin North, as well as historical associations of Ballindrait village, Cavanacor house and Tyleford. Drumlin terrain and riverine environments are very attractive locations for past human settlement, as demonstrated by the archaeological and historical record, and is considered an area of high archaeological potential. In addition, this area at Tyleford at a bend on the River Deele, is associated with the historical temporary encampment site of King James and his army prior to the Siege of Derry (1689). As such, there is a possibility of stray finds and/or finds of late medieval date to be located in this area.

S3-AAP05

This area of potential is located along the south-eastern slopes of Croaghan Hill (184m OD) at Murlough, south of the Deele River and west of the urban environs of Lifford town. Similar to the other areas of archaeological potential, this area has a very high density of standing stone sites, along the area of the southern terminus of the proposed options, at the lower eastern slopes of Croaghan Hill at a height of *c.* 40m to 80m OD. The area is located north of the banks of the River Finn which joins an important confluence

with the Deele and Foyle rivers *c.* 1.5km to the east. Croaghan Hill has significant associations with the early medieval territories of the *Cenel Eoghain* dating from the early medieval period, all of which, coupled with the historical establishment of the town of Lifford suggest that this area has high potential for encountering archaeological features and/or artefacts. In addition, there are associations with the townland of Murlough and the site of a sixteenth century battlefield. Here it is noted in the Annals of the Four Masters that a battle took place in 1600 between the O'Donnells, the local Gaelic chiefs and the British garrison based at Lifford in an attempt to re-gain Gaelic control. It is not known where exactly this battlefield is located however local tradition and AFM records of this event suggests that it is an area of good archaeological potential with the possibility of discovering stray finds and/or random burials.

2.3 Options: Cultural Heritage Environment

Below are tabulated all cultural heritage assets that are located within a 500m wide corridor (250m either side of centre-line) for each of the proposed options for Section 3. Details of these recorded assets are contained in **Appendix 1**. For assessment purposes a 300m wide corridor (150m either side of centre-line) has been allocated to each option in order to consider design elements (cut and fill) of the project; whilst for purposes of Cultural Heritage (and in accordance with current TII Guidelines) a 500m corridor has been assessed in order to determine whether further indirect impact(s) may occur, in order to inform both a quantitative and qualitative assessment.

It is important to note that it is the option corridor that has been subject to assessment and review, and at this stage, the centre-line is an arbitrary line only, and not representative of a preferred alignment(s) in itself. Furthermore, any identified site(s) located within the 300m option corridor(s) are considered 'direct' impacts at this stage of the design process; however, such identified 'direct' impacts may be avoided completely, or significantly reduced, as the design process refines from option assessment analyses to designed preferred option alignment.

To facilitate option assessment, distance measurements have been taken from the centre-line of the proposed options to the representative ITM location per Historic Environment Viewer datasets managed by the Department of Culture, Heritage and the Gaeltacht. Where visible extant remains/structures exist, measurements have been taken from the proposed option's centre-line to the edge of the closest extant perimeter remains.

2.3.1 Option 3A2 Corridor (Blue): 500m Cultural Heritage Constraints

The 3A2 (Blue) option has a total of 42 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-1**: Cultural Heritage Items located within 500m wide Option 3A2 Corridor (Blue)) including three sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 13 no. archaeological sites consist of eleven standing stones (within an overall area of a high density of this site type), a cist at Labbadish and an enclosure at Carnshannagh. The built heritage sites consist of 18 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3_AP01 to S3_AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3A2 (Blue) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-1: Cultural Heritage Items located within 500m wide Option 3A2 Corridor (Blue)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	90m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	280m
DG054-042001-	TULLYBOGLY	Standing stone	224m
DG054-042002-	TULLYBOGLY	Standing stone	249m
DG062-024---	CARNSHANNAGH	Enclosure	95m
DG070-032---	GORTIN NORTH	Standing stone	211m
DG070-033---	GORTIN NORTH	Standing stone	149m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	39m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	142m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	208m
DG071-005---	LIFFORD	Standing stone	124m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	248m
40906216	BALLYHOLEY FAR	Metal Building	244m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40905407	DRUMOGHILL (KINCRAIGHY)	St. Columba's Catholic Church	214m
40905445	DRUMOGHILL (KINCRAIGHY)	Drumoghill House	86m
40905447	DRUMOGHILL (KINCRAIGHY)	Rail bridge	235m
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	266m
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	142m
40835028	CARRICKNASLATE	Croaghan House	128m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m
40834003 (incl RPS)	LIFFORD COMMON	St Patrick's Church	210m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St. Patrick's Bell tower/stand	215m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Windmill	246m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m
40834017	BALLINDRAIT	Goods shed	141m
40906262	CARNSHANNAGH	House	161m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	292m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	373m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.2 Option 3B1 Corridor (Red): 500m Cultural Heritage Constraints

Option B1 (Red) has a total of 41 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-2**) including three sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 12 no. archaeological sites consist of nine standing stones (within an overall area of a high density of this site type), a cist at both Labbadish and Carrickballydooley and an enclosure at Carnshannagh. The built heritage sites consist of 18 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3_AP01 to S3_AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3B1 (Red) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-2: Cultural Heritage Items located within 500m wide Option 3B1 Corridor (Red)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	111m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	189m
DG054-041---	CARRICKBALLYDOOEY	Cist	227m
DG062-024---	CARNSHANNAGH	Enclosure	105m
DG070-032---	GORTIN NORTH	Standing stone	161m
DG070-033---	GORTIN NORTH	Standing stone	104m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	37m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	144m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	204m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	250m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40906216	BALLYHOLEY FAR	Metal building	243m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	189m
40905452	BALLYBOE (KINCRAIGY)	Bridge	241m
40835028	CARRICKNASLATE	Croaghan House	133m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	House	250m
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	209m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Bell tower	211m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Mill (wind)	244m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m
40906245	MONDOOEY LOWER	Outbuilding	70m
40834017	BALLINDRAIT	Goods shed	145m
40906262	CARNSHANNAGH	House	148m
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	141m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	267m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	377m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
40905457	DRUMCARN	Railway Station (visual)	286m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.3 Option 3A1 Corridor (Blue): 500m Cultural Heritage Constraints

The A1 (Blue) option has a total of 42 no. Cultural Heritage assets located within the 500m wide assessment corridor (see Table 2.1) including three sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 13 no. archaeological sites consist of eleven standing stones (within an overall area of a high density of this site type), a cist at Labbadish and an enclosure at Carnshannagh. The built heritage sites consist of 18 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3-AP01 to S3-AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3A1 (Blue) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-3: Cultural Heritage Items located within 500m wide Option 3A1 Corridor (Blue)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	90m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	280m
DG054-042001-	TULLYBOGLY	Standing stone	224m
DG054-042002-	TULLYBOGLY	Standing stone	249m
DG062-024---	CARNSHANNAGH	Enclosure	95m
DG070-032---	GORTIN NORTH	Standing stone	162m
DG070-033---	GORTIN NORTH	Standing stone	103m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	39m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	142m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	208m
DG071-005---	LIFFORD	Standing stone	124m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	248m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40835028	CARRICKNASLATE	Croaghan House	128m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40905407	DRUMOGHILL (KINCRAIGHY)	St. Columba's Catholic Church	214m
40905445	DRUMOGHILL (KINCRAIGHY)	Drumoghill House	86m
40905447	DRUMOGHILL (KINCRAIGHY)	Rail bridge	235m
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	266m
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	142m
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m
40834003 (incl RPS 40907020)	LIFFORD COMMON	St Patrick's Church	210m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St. Patrick's bell tower/stand	215m
40906216	BALLYHOLEY FAR	Metal Building	244m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m
40834005	MURLOUGH	Ballindrait Windmill	246m
40834017	BALLINDRAIT	Goods shed	141m
40906262	CARNSHANNAGH	House	161m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	292m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	373m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.4 Option 3B2 Corridor (Red): 500m Cultural Heritage Constraints

The 3B2 (Red) option has a total of 41 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-4**) including four sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), a railway station (house) (NIAH) at Drumcarn, Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 12 no. archaeological sites consist of nine standing stones (within an overall area of a high density of this site type), a cist at both Labbadish and Carrickballydooley and an enclosure at Carnshannagh. The built heritage sites consist of 18 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3_AP01 to S3_AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3B2 (Red) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-4: Cultural Heritage Items located within 500m wide Option 3B2 Corridor (Red)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	111m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	189m
DG054-041---	CARRICKBALLYDOOEY	Cist	227m
DG062-024---	CARNSHANNAGH	Enclosure	105m
DG070-032---	GORTIN NORTH	Standing stone	224m
DG070-033---	GORTIN NORTH	Standing stone	141m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	37m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	144m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	204m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	250m
40906216	BALLYHOLEY FAR	Metal building	243m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	189m
40905452	BALLYBOE (KINCRAIGY)	Bridge	241m
40835028	CARRICKNASLATE	Croaghan House	133m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40834002	MURLOUGH (CLONLEIGH SOUTH)	House	250m
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	209m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Bell tower	211m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	244m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m
40906245	MONDOOEY LOWER	Outbuilding	70m
40834017	BALLINDRAIT	Goods shed	145m
40906262	CARNSHANNAGH	House	148m
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	141m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	267m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	377m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
40905457	DRUMCARN	Railway Station (visual)	286m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.5 Option 3C1 Corridor (Orange): 500m Cultural Heritage Constraints

Option 3C1 (Orange) has a total of 44 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-5**) including four sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), a railway station (house) at Drumcarn (NIAH), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 13 no. archaeological sites consist of ten standing stones (within an overall area of a high density of this site type), a cist at both Labbadish and Carrickballydooley and an enclosure at Carnshannagh. The built heritage sites consist of 20 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3_AP01 to S3_AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3C1 (Orange) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-5: Cultural Heritage Items located within 500m wide Option 3C1 Corridor (Orange)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	109m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	187m
DG054-041---	CARRICKBALLYDOOEY	Cist	229m
DG062-015---	BALLYHOLEY FAR	Standing stone	120m
DG062-024---	CARNSHANNAGH	Enclosure	92m
DG070-032---	GORTIN NORTH	Standing stone	159m
DG070-033---	GORTIN NORTH	Standing stone	105m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	39m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	145m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	210m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	250m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40906216	BALLYHOLEY FAR	Building	246m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	190m
40905452	BALLYBOE (KINCRAIGY)	Bridge	243m
40906215	BALLYHOLEY FAR	House	240m
40835028	CARRICKNASLATE	Croaghan House	126m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	House	250m
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	213m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Church bell tower	214m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Mill (wind)	243m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m
40906245	MONDOOEY LOWER	Outbuilding	123m
40834017	BALLINDRAIT	Goods shed	138m
40906262	CARNSHANNAGH	House	153m
40906242	BALLYHOLEY FAR	Bridge	236m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
40827011	GLEBE (MANORCUNNINGHAM)	House	148m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	266m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
40905457	DRUMCARN	Railway Station (visual)	294m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.6 Option 3C2 Corridor (Orange): 500m Cultural Heritage Constraints

The 3C2 (Orange) Option has a total of 44 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-6**) including four sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), a railway station (house) at Drumcarn (NIAH), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 13 no. archaeological sites consist of ten standing stones (within an overall area of a high density of this site type), a cist at both Labbadish and Carrickballydooley and an enclosure at Carnshannagh. The built heritage sites consist of 20 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 4 no. identified possible aerial sites (S3_AP01 to S3_AP04) within the option: two possible enclosures, a possible burnt spread and a possible 18th/19th century farmstead.

Finally, the 3C2 (Orange) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-6: Cultural Heritage Items located within 500m wide Option 3C2 Corridor (Orange)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	109m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	187m
DG054-041---	CARRICKBALLYDOOEY	Cist	229m
DG062-015---	BALLYHOLEY FAR	Standing stone	120m
DG062-024---	CARNSHANNAGH	Enclosure	92m
DG070-032---	GORTIN NORTH	Standing stone	206m
DG070-033---	GORTIN NORTH	Standing stone	142m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	39m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	145m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	210m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	250m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40906216	BALLYHOLEY FAR	Building	246m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	190m
40905452	BALLYBOE (KINCRAIGY)	Bridge	243m
40906215	BALLYHOLEY FAR	House	240m
40835028	CARRICKNASLATE	Croaghan House	126m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	House	250m
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	213m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Church bell tower	214m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	243m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m
40906245	MONDOOEY LOWER	Outbuilding	123m
40834017	BALLINDRAIT	Goods shed	138m
40906262	CARNSHANNAGH	House	153m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
40906242	BALLYHOLEY FAR	Bridge	236m
40827011	GLEBE (MANORCUNNINGHAM)	House	148m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	266m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
40905457	DRUMCARN	Railway Station (visual)	294m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone	435m
S3-AP01	Carnshannagh	Possible enclosure	0m
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m
S3-AP03	Drumbeg	Possible burnt spread	239m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.7 Option 3D Corridor (Purple): 500m Cultural Heritage Constraints

The 3D (Purple) Option has a total of 36 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-7**) including four sites beyond the corridor that have been included for visual impact purposes (Pluck standing stone (National Monument), a railway station (house) at Drumcarn (NIAH), Cavanacor House (RPS) and a water mill house at Drumoghill (NIAH). The 11 no. archaeological sites consist of nine standing stones (within an overall area of a high density of this site type), a cist at both Labbadish and Carrickballydooley. The built heritage sites consist of 17 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Cavanacor House and Croaghan House are located within the corridor. There are 1 no. identified possible aerial site (S3_AP04) within the option: a possible 18th/19th century farmstead.

Finally, the 3D (Purple) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-7: Cultural Heritage Items located within 500m wide Option D Corridor (Purple)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	113m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	190m
DG054-041---	CARRICKBALLYDOOEY	Cist	225m
DG070-032---	GORTIN NORTH	Standing stone	208m
DG070-033---	GORTIN NORTH	Standing stone	133m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	38m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	141m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	212m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	247m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	193m
40905452	BALLYBOE (KINCRAIGY)	Bridge	243m
40835028	CARRICKNASLATE	Croaghan House	125m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	House	248m
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	212m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	214m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	244m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	113m
40907064	COOLAGHY GLEBE	House	183m
40906245	MONDOOEY LOWER	Outbuilding	120m
40834017	BALLINDRAIT	Goods shed	146m
40827011	GLEBE (MANORCUNNINGHAM)	House	148m
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	264m
40905457	DRUMCARN	Railway Station (visual)	298m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	385m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.8 Option 3E Corridor (Cyan): 500m Cultural Heritage Constraints

The 3E (Cyan) Option has a total of 35 no. Cultural Heritage assets located within the 500m wide assessment corridor (see**Table 2-8**) including four sites beyond the corridor that have been included for visual impact purposes: a standing stone and a Worker's house (NIAH) at Corkey, Cavancor House and a souterrain at Corkey (unknown sub-surface extent). The 12 no. archaeological sites consist of nine standing stones (within an overall area of a high density of this site type), a stone row at Labbadish, a souterrain at Corkey and a ringfort at Lisclamerty. The built heritage sites consist of 15 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Croaghan House and Cavanacor House are located within the corridor. There are 1 no. identified possible aerial site (S3_AP04) within the option: a possible 18th/19th century farmstead.

Finally, the 3E (Cyan) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-8: Cultural Heritage Items located within 500m wide Option 3E Corridor (Cyan)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-038--- (Nat Mon 453)	PLUCK	Standing stone	76m
DG062-001---	CORKEY	Souterrain	331m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG062-002---	CORKEY	Standing stone	260m
DG062-003---	LABBADISH	Stone row	175m
DG062-008---	LISCLAMERTY	Ringfort - rath	104m
DG070-032---	GORTIN NORTH	Standing stone	207m
DG070-033---	GORTIN NORTH	Standing stone	140m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	37m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	142m
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	212m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	246m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40906225	CARRICKNAMART	Bridge	103m
40835028	CARRICKNASLATE	Croaghan House	123m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	260m
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	211m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	214m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	123m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m
40907064	COOLAGHY GLEBE	House	183m
40906244	DRUMCARN	Bridge	118m
40834017	BALLINDRAIT	Goods shed	144m
40906204 (incl. RPS)	CORKEY	Leslie Hill House	160m
40906234	CORKEY	Worker's House	277m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

2.3.9 Option 3F Corridor (Pink): 500m Cultural Heritage Constraints

The F (Pink) Option has a total of 36 no. Cultural Heritage assets located within the 500m wide assessment corridor (see **Table 2-9**) including four sites beyond the corridor that have been included for visual impact purposes (a standing stone at Carrickballydooley, Ballindrait Presbyterian Manse (NIAH), Cavanacor House (RPS/NIAH) and a bridge at Ballyboe (NIAH). The 11 no. archaeological sites consist of ten standing stones (within an overall area of a high density of this site type), and a cist at Labbadish. The built heritage sites consist of 17 no. structures of ecclesiastical (church), industrial (mills), railway and domestic (houses), including St Patrick's RC church at Murlough and the windmill at Ballindrait. In addition, the demesne lands associated with Croaghan House and Cavanacor House are located within the corridor. There are 1 no. identified possible aerial site (S3_AP04) within the option: a possible 18th/19th century farmstead.

Finally, the F (Pink) option also traverses through five areas of archaeological potential: S3AAP-01 to S3AAP-05.

Table 2-9: Cultural Heritage Items located within 500m wide Option 3F Corridor (Pink)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG054-039---	LABBADISH	Cist	90m
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	280m
DG054-042001-	TULLYBOGLY	Standing stone	247m
DG054-042002-	TULLYBOGLY	Standing stone	225m
DG070-032---	GORTIN NORTH	Standing stone	210m
DG070-033---	GORTIN NORTH	Standing stone	138m
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone	37m
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone	141m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	201m
DG071-005---	LIFFORD	Standing stone	123m
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone	247m
40834011	BALLINDRAIT	Station Master's House	112m
40834014	TAMNAWOOD	Worker's House/Level crossing	250m
40906216	BALLYHOLEY FAR	Metal Building	251m
40905407	DRUMOGHILL (KINCRAIGHY)	Church	208m
40905445	DRUMOGHILL (KINCRAIGHY)	House	89m
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	238m
40905452	BALLYBOE (KINCRAIGY)	Bridge	269m
40907064	COOLAGHY GLEBE	House	183m
40835028	CARRICKNASLATE	Croaghan House	131m
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	254m
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	214m
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	217m
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait wind mill	243m
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m
40834017	BALLINDRAIT	Goods shed	133m
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian House	130m
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m

3 OPTIONS ASSESSMENT

3.1 Option Impact Assessment

In order to prepare a quantitative and qualitative comparison of the options, an impact assessment table has been prepared for each option in **Table 3-1** to **Table 3-9.**

TII Guidelines, for the *Assessment of Archaeological Heritage Impacts on National Road Schemes* (2005a) note that as the archaeological component of the option corridor selection process largely involves a desk-survey, it can be difficult to assess the exact level of potential of an archaeological site and therefore impact, due to (a) possible associated below ground remains with a recorded monument, (b) unknown extent of a recorded monument, (c) potential to reveal archaeological sites given the type of terrain or (d) possible recorded and newly identified sites may prove natural when tested or excavated.

An extensive desktop and windshield survey of the proposed option corridors have identified (a) known and recorded Cultural Heritage sites (b) potential Cultural Heritage sites (from aerial photography and historic cartographic sources) and (c) areas of high archaeological potential (based on a number of factors including terrain, proximity to recorded sites and topography).

The quality, significance, extent, duration and type of effect on all likely impacts on the Cultural Heritage resource has been considered per EPA EIA Guidelines and Advice Notes (2002 and 2003) as well as more recent EPA draft EIAR Guidelines and Advice Notes (2015 and 2017).

The project design corridors are 300m wide (as opposed to the 500m wide corridor assessed for this Cultural Heritage study, per TII Guidelines, 2005a & 2005b). Likely impacts have been defined as Negative, and either Direct, Indirect, or Potential Direct.

Direct/potential direct impacts have been categorised as any asset falling <150m of the centre-line (i.e. within the designed 300m corridor). Indirect impacts have been categorised as any asset falling >150m and <250m of the centre-line (i.e. beyond the designed 300m corridor but within an overall 500m assessment corridor). (In some instances, recorded extant assets located outside the 500m assessment corridor have been considered in order to take due cognisance of the landscape setting and visual amenity therein.)

In addition, the Zone of Notification for each RMP site can average between *c.* 20m - 60m or more in overall diameter, depending on the site type (e.g. a 'site of' a recorded burial ground could be much more extensive), and as such, due cognisance has been taken of the zone and the impact therein when considering the Level of Impact on the recorded archaeological site.

It is important to note that the centre-line is an arbitrary line for design purposes, at option assessment stage and may be subject to change, in order to avoid unacceptably high-level negative magnitude impact(s) on the known cultural heritage resource. Furthermore, any impacts identified as 'direct' in **Tables 3-1 to 3-9** below are classified as such by virtue of the site(s) being located within the 300m wide designed option corridor. These identified direct impacts may be avoided and/or reduced, as the design process refines from option corridor analyses to designed preferred option alignment, for purposes of the overall *TEN-T Priority Route Improvement Project, Donegal, Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link.*

The level of impact is determined based on the significance (value) of the asset having due regard to an overall assessment of the condition/preservation/quality of the asset; and the duration and extent of the quality of impact on that asset.

3.1.1 Option 3A1 Corridor (Blue): Cultural Heritage Option Assessment

Table 3-1 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3A1 (Blue) Option.

Table 3-1: Impact Assessment on Cultural Heritage, Option 3A1 Corridor (Blue)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	90m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone (visual)	280m	Indirect	Imperceptible
DG054-042001-	TULLYBOGLY	Standing stone (site of)	224m	Indirect	Imperceptible
DG054-042002-	TULLYBOGLY	Standing stone	249m	Indirect	Slight
DG062-024---	CARNSHANNAGH	Enclosure	95m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	162m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	103m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	39m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	142m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	208m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	124m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	248m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	128m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40905407	DRUMOGHILL (KINCRAIGHY)	St. Columba's Catholic Church	214m	Indirect	Slight
40905445	DRUMOGHILL (KINCRAIGHY)	Drumoghill House	86m	Direct	Moderate
40905447	DRUMOGHILL (KINCRAIGHY)	Rail bridge	235m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	266m	Indirect	Imperceptible
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	142m	Direct	Moderate

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl RPS 40907020)	LIFFORD COMMON	St Patrick's Church	210m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St. Patrick's bell tower/stand	215m	Indirect	Moderate
40906216	BALLYHOLEY FAR	Metal Building	244m	Indirect	Imperceptible
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m	Direct	Moderate
40834005	MURLOUGH	Ballindrait Windmill	246m	Indirect	Slight
40834017	BALLINDRAIT	Goods shed	141m	Direct	Moderate
40906262	CARNSHANNAGH	House	161m	Indirect	Imperceptible
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	292m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	373m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038--- (Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.2 Option 3A2 Corridor (Blue): Cultural Heritage Option Assessment

Table 3-2 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3A2 (Blue) Option.

Table 3-2: Impact Assessment on Cultural Heritage, Option 3A2 Corridor (Blue)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	90m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone (visual)	280m	Indirect	Imperceptible
DG054-042001-	TULLYBOGLY	Standing stone (site of)	224m	Indirect	Imperceptible
DG054-042002-	TULLYBOGLY	Standing stone	249m	Indirect	Slight
DG062-024---	CARNSHANNAGH	Enclosure	95m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	211m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	149m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	39m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	142m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	208m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	124m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	248m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Metal Building	244m	Indirect	Imperceptible
40905407	DRUMOGHILL (KINCRAIGHY)	St. Columba's Catholic Church	214m	Indirect	Slight
40905445	DRUMOGHILL (KINCRAIGHY)	Drumoghill House	86m	Direct	Moderate
40905447	DRUMOGHILL (KINCRAIGHY)	Rail bridge	235m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Road Bridge (visual)	266m	Indirect	Imperceptible
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	142m	Direct	Moderate
40835028	CARRICKNASLATE	Croaghan House	128m	Direct	Moderate

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl RPS)	LIFFORD COMMON	St Patrick's Church	210m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St. Patrick's Bell tower/stand	215m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Windmill	246m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	141m	Direct	Moderate
40906262	CARNSHANNAGH	House	161m	Indirect	Imperceptible
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	292m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	373m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.3 Option 3B1 Corridor (Red): Cultural Heritage Option Assessment

Table 3-3 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3B1 (Red) Option.

Table 3-3: Impact Assessment on Cultural Heritage, Option 3B1 Corridor (Red)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	111m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	189m	Indirect	Slight
DG054-041---	CARRICKBALLYDOOEY	Cist	227m	Indirect	Imperceptible
DG062-024---	CARNSHANNAGH	Enclosure	105m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	161m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	104m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	37m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	144m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	204m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	250m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Metal building	243m	Indirect	Imperceptible
40905447	DRUMOGHILL (KINCRAIGHY)	Rail Bridge	189m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Bridge	241m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	133m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	209m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Bell tower	211m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	244m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m	Direct	Moderate
40906245	MONDOOEY LOWER	Outbuilding	70m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	145m	Direct	Moderate
40906262	CARNSHANNAGH	House	148m	Direct	Moderate
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	141m	Direct	Moderate
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	267m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	377m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40905457	DRUMCARN	Railway Station (visual)	286m	Indirect	Imperceptible
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.4 Option 3B2 Corridor (Red): Cultural Heritage Option Assessment

Table 3-4 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the B2 (Red) Option.

Table 3-4: Impact Assessment on Cultural Heritage, Option 3B2 Corridor (Red)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	111m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	189m	Indirect	Slight
DG054-041---	CARRICKBALLYDOOEY	Cist (site of)	227m	Indirect	Imperceptible
DG062-024---	CARNSHANNAGH	Enclosure	105m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	224m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	141m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	37m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	144m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	204m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	250m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Metal building	243m	Indirect	Imperceptible
40905447	DRUMOGHILL (KINCRAIGHY)	Rail Bridge	189m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	241m	Indirect	Imperceptible

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
40835028	CARRICKNASLATE	Croaghan House	133m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	209m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Bell tower	211m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	244m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m	Direct	Moderate
40906245	MONDOOEY LOWER	Outbuilding	70m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	145m	Direct	Moderate
40906262	CARNSHANNAGH	House	148m	Direct	Moderate
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	141m	Direct	Moderate
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	267m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	377m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40905457	DRUMCARN	Railway Station (visual)	286m	Indirect	Imperceptible
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038---(Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.5 Option 3C1 Corridor (Orange): Cultural Heritage Option Assessment

Table 3-5 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3C1 (Orange) Option.

Table 3-5: Impact Assessment on Cultural Heritage, Option 3C1 Corridor (Orange)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	109m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	187m	Indirect	Slight
DG054-041---	CARRICKBALLYDOOEY	Cist (site of)	229m	Indirect	Imperceptible
DG062-015---	BALLYHOLEY FAR	Standing stone (site of)	120m	Direct	Slight
DG062-024---	CARNSHANNAGH	Enclosure	92m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	159m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	105m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	39m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	145m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	210m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	250m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Metal Building	246m	Indirect	Imperceptible

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
40905447	DRUMOGHILL (KINCRAIGHY)	Rail Bridge	190m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	243m	Indirect	Imperceptible
40906215	BALLYHOLEY FAR	House	240m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	126m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	213m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Church bell tower	214m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Mill (wind)	243m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m	Direct	Moderate
40906245	MONDOOEY LOWER	Outbuilding	123m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	138m	Direct	Moderate
40906262	CARNSHANNAGH	House	153m	Indirect	Imperceptible
40906242	BALLYHOLEY FAR	Bridge	236m	Indirect	Imperceptible
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	148m	Direct	Moderate
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	266m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40905457	DRUMCARN	Railway Station (visual)	294m	Indirect	Imperceptible
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
	Tamnawood, Moneen, Tyleford and Ballindrait				
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038---(Nat Mon 453)	Pluck	Standing Stone	435m	Indirect	Imperceptible
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.6 Option 3C2 Corridor (Orange): Cultural Heritage Option Assessment

Table 3-6 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3C2 (Orange) Option.

Table 3-6: Impact Assessment on Cultural Heritage, Option 3C2 Corridor (Orange)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	109m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	187m	Indirect	Slight
DG054-041---	CARRICKBALLYDOOEY	Cist (site of)	229m	Indirect	Imperceptible
DG062-015---	BALLYHOLEY FAR	Standing stone (site of)	120m	Direct	Slight
DG062-024---	CARNSHANNAGH	Enclosure	92m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	206m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	142m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	39m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	145m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	210m	Indirect	Slight

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	250m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Building	246m	Indirect	Imperceptible
40905447	DRUMOGHILL (KINCRAIGHY)	Rail Bridge	190m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Road Bridge	243m	Indirect	Imperceptible
40906215	BALLYHOLEY FAR	House	240m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	126m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl. 40907020 RPS)	LIFFORD COMMON	St Patrick's Church	213m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patrick's Church bell tower	214m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	243m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m	Direct	Moderate
40906245	MONDOOEY LOWER	Outbuilding	123m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	138m	Direct	Moderate
40906262	CARNSHANNAGH	House	153m	Indirect	Imperceptible
40906242	BALLYHOLEY FAR	Bridge	236m	Indirect	Imperceptible
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	148m	Direct	Moderate
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	266m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40905457	DRUMCARN	Railway Station (visual)	294m	Indirect	Imperceptible
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038--- (Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible
S3-AP01	Carnshannagh	Possible enclosure	0m	Potential Direct	Potential Moderate
S3-AP02	Dromore Big	Possible bi-vallate enclosure	275m	Potential Indirect	Potential Imperceptible
S3-AP03	Drumbeg	Possible burnt spread	239m	Potential Indirect	Potential Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.7 Option 3D Corridor (Purple): Cultural Heritage Option Assessment

Table 3-7 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3D (Purple) Option.

Table 3-7: Impact Assessment on Cultural Heritage, Option 3D Corridor (Purple)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	113m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone	190m	Indirect	Slight
DG054-041---	CARRICKBALLYDOOEY	Cist (site of)	225m	Indirect	Imperceptible
DG070-032---	GORTIN NORTH	Standing stone (site of)	208m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	133m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	38m	Direct	Slight

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	141m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	212m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	247m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	193m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Bridge	243m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	125m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	248m	Indirect	Slight
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	212m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	214m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	244m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	113m	Direct	Moderate
40907064	COOLAGHY GLEBE	House	183m	Indirect	Imperceptible
40906245	MONDOOEY LOWER	Outbuilding	120m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	146m	Direct	Moderate
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian Manse	148m	Direct	Moderate
40905446	DRUMOGHILL (KINCRAIGHY)	Mill House (water) (visual)	264m	Indirect	Imperceptible
40905457	DRUMCARN	Railway Station (visual)	298m	Indirect	Imperceptible
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	385m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
DG054-038--- (Nat Mon 453)	Pluck	Standing Stone (visual)	435m	Indirect	Imperceptible
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.8 Option 3E Corridor (Cyan): Cultural Heritage Option Assessment

Table 3-8 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3E (Cyan) Option.

Table 3-8: Impact Assessment on Cultural Heritage, Option 3E Corridor (Cyan)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-038--- (Nat Mon 453)	PLUCK	Standing stone	76m	Direct	Profound
DG062-001---	CORKEY	Souterrain (site of)	331m	Indirect	Imperceptible
DG062-002---	CORKEY	Standing stone (site of)	260m	Indirect	Imperceptible
DG062-003---	LABBADISH	Stone row	175m	Indirect	Slight
DG062-008---	LISCLAMERTY	Ringfort - rath	104m	Direct	Moderate
DG070-032---	GORTIN NORTH	Standing stone (site of)	207m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	140m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	37m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	142m	Direct	Slight

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	212m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	246m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906225	CARRICKNAMART	Bridge	103m	Direct	Moderate
40835028	CARRICKNASLATE	Croaghan House	123m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	260m	Indirect	Imperceptible
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	211m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	214m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Wind Mill	123m	Direct	Moderate
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	115m	Direct	Moderate
40907064	COOLAGHY GLEBE	House	183m	Indirect	Imperceptible
40906244	DRUMCARN	Bridge	118m	Direct	Moderate
40834017	BALLINDRAIT	Goods shed	144m	Direct	Moderate
40906204 (incl. RPS)	CORKEY	Leslie Hill House	160m	Indirect	Moderate
40906234	CORKEY	Worker's House	277m	Indirect	Imperceptible
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.1.9 Option 3F Corridor (Pink): Cultural Heritage Option Assessment

Table 3-9 sets out both the quantitative and qualitative impacts identified on the Cultural Heritage resource for the 3F (Pink) Option.

Table 3-9: Impact Assessment on Cultural Heritage, Option 3F Corridor (Pink)

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
DG054-039---	LABBADISH	Cist (site of)	90m	Direct	Slight
DG054-040---	CARRICKBALLYDOOEY	Cross-inscribed stone (visual)	280m	Indirect	Imperceptible
DG054-042001-	TULLYBOGLY	Standing stone (site of)	247m	Indirect	Imperceptible
DG054-042002-	TULLYBOGLY	Standing stone	225m	Indirect	Slight
DG070-032---	GORTIN NORTH	Standing stone (site of)	210m	Indirect	Imperceptible
DG070-033---	GORTIN NORTH	Standing stone (site of)	138m	Direct	Slight
DG070-048---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	37m	Direct	Slight
DG070-049---	MURLOUGH (Clonleigh South ED)	Standing stone (site of)	141m	Direct	Slight
DG070-050---	MURLOUGH (Clonleigh South ED)	Standing stone	201m	Indirect	Slight
DG071-005---	LIFFORD	Standing stone (site of)	123m	Direct	Slight
DG071-007---	TOWNPARKS (Clonleigh South ED)	Standing stone (site of)	247m	Indirect	Imperceptible
40834011	BALLINDRAIT	Station Master's House	112m	Direct	Moderate

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
40834014	TAMNAWOOD	Worker's House/Level crossing	250m	Indirect	Imperceptible
40906216	BALLYHOLEY FAR	Metal Building	251m	Indirect	Imperceptible
40905407	DRUMOGHILL (KINCRAIGHY)	St Columba's Church	208m	Indirect	Slight
40905445	DRUMOGHILL (KINCRAIGHY)	Drumoghill House	89m	Direct	Moderate
40905447	DRUMOGHILL (KINCRAIGHY)	Bridge	238m	Indirect	Imperceptible
40905452	BALLYBOE (KINCRAIGY)	Bridge	269m	Indirect	Imperceptible
40835028	CARRICKNASLATE	Croaghan House	131m	Direct	Moderate
DG0040	CARRICKNASLATE	Croaghan House Garden & Demesne	0m	Direct	Moderate
40834001 (incl RPS)	CAVANACOR	Cavanacor House (visual)	374m	Indirect	Slight
DG0028	CAVANACOR	Cavanacor House Garden & Demesne	0m	Direct	Moderate
40834002	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait Presbyterian Manse	250m	Indirect	Slight
40834003 (incl. RPS 40907020)	LIFFORD COMMON	St Patricks Church	214m	Indirect	Moderate
40834004	MURLOUGH (CLONLEIGH SOUTH)	St Patricks bell tower	217m	Indirect	Moderate
40834005	MURLOUGH (CLONLEIGH SOUTH)	Ballindrait wind mill	243m	Indirect	Slight
40834006	MURLOUGH (CLONLEIGH SOUTH)	Outbuilding	116m	Direct	Moderate
40907064	COOLAGHY GLEBE	House	183m	Indirect	Imperceptible
40834017	BALLINDRAIT	Goods shed	133m	Direct	Moderate
40827011	GLEBE (MANORCUNNINGHAM)	Gort Presbyterian House	130m	Direct	Moderate
S3-AAP01	Corkey River crossing and Pluck hinterland	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP02	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP03	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/ Mullnaveagh	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AAP04	Deele River crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound

Monument Reference Number	Townland	Type	Approx. Distance (m) from centre-line	Type of Impact	Impact Level (Significance)
S3-AAP05	South-eastern slopes of Croaghan Hill, and northern banks of the River Finn/urban environs of Lifford town	Area of High Archaeological Potential	0m	Potential Direct	Potential Profound
S3-AP04	Lifford Common	Possible 18th/19th C farmstead	242m	Indirect	Imperceptible

3.2 Comparison of Options

The following tables set out an Option Appraisal based on both a qualitative and quantitative assessment of the Cultural Heritage assets affected by each option. A comparison of the options has been considered in terms of the level of impact(s) identified in Table 3-12 and the archaeological potential of each corridor. However, it should be noted (and TII Guidelines 2005a refer) that the Appraisal does have certain limitations in that it is difficult to ascertain the exact level of impact due to the potential to reveal, in the future, previously unknown and buried archaeological sites as part of an archaeological testing strategy. As such, the Appraisal and comparison is based on data available at the time of writing. In addition, it is important to note that the assessed option design corridors may be open to change and augmentation, in order to avoid unacceptably high magnitude negative impacts on the known cultural heritage resource.

The study area for all option alignments traverse an environment considered to be of high archaeological potential. A total of five extensive areas have been identified (S3-AAP01 – S3-AAP05) throughout, which are common to all nine proposed options. As such, when assessed on a comparative basis, at the time of writing, the hitherto unknown archaeological potential of the proposed options carries equal level and weighting of potential profound impact throughout.

The Purple (3D) option is considered the 1st preferred option, has 36 identified impacts and is marginally preferred to the Pink (3F) option which has the same quantity of constraints. The Purple (D) option has 8 no. direct (moderate) impacts: Croaghan House and gardens NIAH 40835028/DG0040, Cavanacor House gardens DG0028, outbuilding NIAH 40834006, Railway Goods Shed NIAH 40834017, Railway Station Master's House NIAH 40834011, Outbuilding NIAH 40906245, and Gort Presbyterian Manse NIAH 40827011. These direct (moderate) impacts are the same as the Pink (3F) option save for omission of Drumoghill House and addition of Outbuilding NIAH 40906245. The latter, Drumoghill House, which is relevant to the Pink (3F) option is identified as a building complex (house plus outbuildings). In addition, the Purple (3D) option also has one less identified direct (slight) impact overall across the alignment, when compared to the Pink (3F) option. As such it is considered the marginal preferred 1st option.

Option Pink (3F) is considered the 2nd preferred option from a Cultural Heritage perspective, marginally less preferred over the Purple (3D) option. This option (along with the Purple (3D) option) has the least amount of identified impacts (36 sites) of the proposed options, except for the Cyan (3E) option. The Pink option has 8 no. direct (moderate) impacts: Drumoghill House NIAH 40905445, Croaghan House and gardens NIAH 40835028/DG0040, Cavanacor House gardens DG0028, outbuilding NIAH 40834006, Railway Goods Shed NIAH 40834017, Railway Station Master's House NIAH 40834011 and Gort Presbyterian Manse NIAH 40827011. The Pink (3F) Option has one more indirect (slight) impact than that compared with the Purple (3D) option and as such is marginally less preferred.

The 3A1 (Blue) and 3A2 (Blue) options retain the same identified cultural heritage impacts (total no. 42 sites) as well as the same magnitude of impact on each site. Both options have 9 no. identified direct (moderate)

impacts on: an enclosure site DG062-024---, Croaghan House and demesne NIAH 40835028/DG0028, Cavanacor House demesne DG0028, Drumoghill House NIAH 40905445, Gort Presbyterian Manse NIAH 40827011, Outbuilding NIAH 40834006, Railway Station Master's House NIAH 40834011 and Goods Shed NIAH 40834017. In addition, these options have marginally less direct (slight) impact on the cultural heritage resource than options 3C1 (Orange) and 3C2 (Orange). As such, both options 3A1 (Blue) and 3A2 (Blue) are ranked equally as 3rd preference.

The 3C1 (Orange) and 3C2 (Orange) options retain the same identified cultural heritage impacts (total no. 44 sites) as well as the same magnitude of impact on each site. Both options have 9 no. identified direct (moderate) impacts, the same as that identified for options 3A1 (Blue) and 3A2 (Blue). However, the 3C1 (Orange) and 3C2 (Orange) options have 1 no. additional direct (slight) impact on a standing stone site DG062-015--- as well as 2 no. additional indirect (imperceptible) impacts on the cultural heritage resource. As such, the 3C1 (Orange) and 3C2 (Orange) options are ranked equally as 4th preference.

The 3B1 (Red) and 3B2 (Red) options retain the same identified cultural heritage impacts (total no. 41 sites) as well as the same magnitude of impact on each site. Despite having overall less quantity of constraints when compared with 3C1 (Orange) and 3C2 (Orange); the 3B1 (Red) and 3B2 (red) options have an additional direct (moderate) impact on a house NIAH 40906262 at Carnshannagh. As such, the 3B1 (Red) and 3B2 (Red) options are ranked equally as 5th preference.

Finally, the 3E (Cyan) option is considered the least preferred from a Cultural Heritage perspective. Although it has the least amount of quantitative impacts on the Cultural Heritage resource (35 identified impacts), it is considered to have the most qualitative (negative) impact on same. This option is the only option to have direct (profound) impact on National Monument No. 453, a standing stone at Pluck. This National Monument site is located within the 300m design corridor for option 3E (Cyan) (although it should be noted that the corridor is subject to change, where required, at options stage assessment, in order to avoid unacceptably high magnitude level impacts). The 3E (Cyan) option also has 10 no. direct (moderate) impact on a ringfort DG062-008---, bridge NIAH 40906225, Croaghan House and demesne NIAH 40835028/DG0040, Cavanacor demesne DG0028, Ballindrait wind mill NIAH 40834005, bridge NIAH 40906244, outbuilding NIAH 40834006, Railway Station Master's house NIAH 40834011 and railway goods shed NIAH 40834017; and an indirect (moderate) impact on Leslie Hill House and demesne which is listed on the RPS 40906204 (and a constraint only for the 3E (Cyan) option). A such, option 3E (Cyan) is ranked 6th (and least preferred) from a cultural heritage perspective.

A full consideration of the other direct and indirect impacts of a slight and imperceptible level across all the options and the qualitative effects therein has been undertaken and contributes to the results per the ranking of preference outlined above.

Table 3-10: Option Appraisal: Cultural Heritage (A)

	3A1 (Blue) Option	3A2 (Blue) Option	3B1 (Red) Option	3B2 (Red) Option	3C1 (Orange) Option	3C2 (Orange) Option
Negative Profound	-	-	-	-	-	-
Negative Significant	-	-	-	-	-	-
Negative Moderate	**11 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH	**11 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH	**12 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH	**12 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH	**11 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH	**11 Sites:** DG062-024--- Enclosure (direct) Croaghan House NIAH

	3A1 (Blue) Option	3A2 (Blue) Option	3B1 (Red) Option	3B2 (Red) Option	3C1 (Orange) Option	3C2 (Orange) Option
	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) Drumoghill House NIAH 40905445 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) Drumoghill House NIAH 40905445 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) House NIAH 40906262 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Outbuilding NIAH 40906245 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) House NIAH 40906262 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Outbuilding NIAH 40906245 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Outbuilding NIAH 40906245 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Outbuilding NIAH 40906245 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)
Negative Slight	**11 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- (direct)	**11 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- (direct)	**10 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- (direct)	**10 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- (direct)	**11 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- DG062-015--- (direct)	**11 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005---

	3A1 (Blue) Option	3A2 (Blue) Option	3B1 (Red) Option	3B2 (Red) Option	3C1 (Orange) Option	3C2 (Orange) Option
	Sites of Standing Stones DG054-042002- DG070-050--- (indirect) St Columba's Church NIAH 40905407 (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	Sites of Standing Stones DG054-042002- DG070-050--- (indirect) St Columba's Church NIAH 40905407 (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	Sites of Standing Stones DG054-040-- DG070-050--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	Sites of Standing Stones DG054-040-- DG070-050--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	Sites of Standing Stones DG054-040-- DG070-050--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	DG062-015--- (direct) Sites of Standing Stones DG054-040-- DG070-050--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)
Negative Imperceptible	**12 Sites:** DG054-040--- Standing Stone (indirect) Site of Standing Stones DG054-042001- DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Metal Building NIAH 40906216 (indirect) House NIAH 40906262 (indirect) Mill House NIAH 40905446 (indirect) Pluck Standing Stone National Monument 453 (indirect)	**12 Sites:** DG054-040--- Standing Stone (indirect) Site of Standing Stones DG054-042001- DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Metal Building NIAH 40906216 (indirect) House NIAH 40906262 (indirect) Mill House NIAH 40905446 (indirect) Pluck Standing Stone National Monument 453 (indirect)	**11 Sites:** DG054-041--- Cist (indirect) Site of Standing Stones DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Metal Building NIAH 40906216 (indirect) Mill House NIAH 40905446 (indirect) Railway Station NIAH	**11 Sites:** DG054-041--- Cist (indirect) Site of Standing Stones DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Metal Building NIAH 40906216 (indirect) Mill House NIAH 40905446 (indirect) Railway Station NIAH	**14 Sites:** DG054-041--- Cist (indirect) Site of Standing Stones DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Bridge NIAH 40906242 (indirect) House NIAH 40906215 (indirect) Metal Building NIAH 40906216 (indirect) House NIAH 40906262 (indirect) Mill House NIAH 40905446 (indirect)	**14 Sites:** DG054-041--- Cist (indirect) Site of Standing Stones DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) Road Bridge NIAH 40905452 (indirect) Bridge NIAH 40906242 (indirect) House NIAH 40906215 (indirect) Metal Building NIAH 40906216 (indirect) House NIAH 40906262 (indirect) Mill House NIAH 40905446 (indirect)

	3A1 (Blue) Option	3A2 (Blue) Option	3B1 (Red) Option	3B2 (Red) Option	3C1 (Orange) Option	3C2 (Orange) Option
	S3-AP04 Possible 18/19C farmstead (indirect)	S3-AP04 Possible 18/19C farmstead (indirect)	40905457 (indirect) Pluck Standing Stone National Monument 453 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)	40905457 (indirect) Pluck Standing Stone National Monument 453 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)	Railway Station NIAH 40905457 (indirect) Pluck Standing Stone National Monument 453 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)	Railway Station NIAH 40905457 (indirect) Pluck Standing Stone National Monument 453 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)
Potential Negative Profound	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)
Potential Negative Significant	0	0	0	0	0	0
Potential Negative Moderate	**1 site:** S3-AP01 AP Site (direct)	**1 site:** S3-AP01 AP Site (direct)	**1 site:** S3-AP01 AP Site (direct)	**1 site:** S3-AP01 AP Site (direct)	**1 site:** S3-AP01 AP Site (direct)	**1 site:** S3-AP01 AP Site (direct)
Potential Negative Slight	0	0	0	0	0	0
Potential Negative Imperceptible	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)	**2 sites:** S3-AP02 – 03 Possible Aerial Photo sites (indirect)
Preference Level	**3rd Preference** **42 sites**	**3rd Preference** **42 sites**	**5th Preference** **41 sites**	**5th Preference** **41 sites**	**4th Preference** **44 sites**	**4th Preference** **44 sites**

Table 3-11: Option Appraisal: Cultural Heritage (B)

	3D (Purple) Option	3E (Cyan) Option	3F (Pink) Option
Negative Profound	-	**1 Site:** DG054-038--- Pluck National Monument (direct)	-
Negative Significant	-	-	-
Negative Moderate	**10 Sites:** Croaghan House NIAH 40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct) Cavanacor Garden Demesne DG0028 (direct)	**13 Sites:** Ringfort DG062-008--- (direct) Bridge NIAH 40906225 (direct) Croaghan House NIAH 40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct)	**10 Sites:** Drumoghill House NIAH 40905445 (direct) Croaghan House NIAH 40835028 (direct) DG0040 Croaghan Hse Garden demesne (direct)

	3D (Purple) Option	3E (Cyan) Option	3F (Pink) Option
	Gort Presbyterian Manse NIAH 40827011 (direct) Outbuilding NIAH 40834006 (direct) Outbuilding NIAH 40906245 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	Cavanacor Garden Demesne DG0028 (direct) Ballindrait Windmill NIAH 40834005 (direct) Bridge NIAH 40906244 (direct) Outbuilding NIAH 40834006 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) Leslie Hill House RPS 40906204 (indirect) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)	Cavanacor Garden Demesne DG0028 (direct) Outbuilding NIAH 40834006 (direct) Goods Shed NIAH 40834017 (direct) Station Master's House NIAH 40834011 (direct) Gort Presbyterian Manse NIAH 40827011 (direct) St. Patrick's Church RPS 40907020 (indirect) & St Patrick's Tower NIAH 40834004 (indirect)
Negative Slight	**10 Sites**: DG054-039--- Site of Cist (direct) Sites of Standing Stones DG070-033--- DG070-048--- DG070-049--- DG071-005--- (direct) Sites of Standing Stones DG054-040-- DG070-050--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait Windmill NIAH 40834005 (indirect) Cavanacor House RPS 40834001 (indirect)	**7 Sites:** Stone row DG062-003--- (indirect) Site of Standing Stones DG070-033--- DG070-048---, DG070-049---, DG071-005--- (direct) Standing stones DG070-050--- Cavanacor House RPS 40834001 (indirect)	**11 Sites**: DG054-039--- Site of Cist (direct) Site of standing stone DG070-033---, DG070-048---, DG070-049---, DD071-005--- Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Ballindrait windmill NIAH 40834005 (indirect) St Columba's Church NIAH 40905407 (indirect) Standing stone DG054-042002-DG070-050--- (indirect) Cavanacor House RPS 40834001 (indirect)
Negative Imperceptible	**11 Sites:** DG054-041--- Cist (indirect) Site of Standing Stones DG070-032--- DG071-007--- (indirect) Rail Bridge NIAH 40905447 (indirect) Road Bridge NIAH 40905452 (indirect) Mill House NIAH 40905446 (indirect) Railway Station NIAH 40905457 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) House NIAH 40907064 (indirect) Pluck Standing Stone National Monument 453 (indirect)	**9 Sites:** Site of Souterrain DG062-001--- (indirect) Site of standing stone DG062-002---, DG070-032--- DG071-007--- (indirect) Ballindrait Presbyterian Manse NIAH 40834002 (indirect) Worker's House NIAH 40906234 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) House NIAH 40907064 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)	**10 Sites:** Standing Stone DG054-040--- (indirect) Site of Standing stone DG054-042001-, DG070-032--- DG071-007--- Metal Building NIAH 40906216 (indirect) Rail Bridge NIAH 40905447 (indirect) Road Bridge NIAH 40905452 (indirect) Level Crossing Worker's House NIAH 40834014 (indirect) House NIAH 40907064 (indirect) S3-AP04 Possible 18/19C farmstead (indirect)

	3D (Purple) Option	3E (Cyan) Option	3F (Pink) Option
	S3-AP04 Possible 18/19C farmstead (indirect)		
Potential Negative Profound	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)	**5 sites:** Areas of Archaeological Potential S3-AAP01 – 05 (direct)
Potential Negative Significant	0	0	0
Potential Negative Moderate	0	0	0
Potential Negative Slight	0	0	0
Potential Negative Imperceptible	0	0	0
Preference Level	**1st Preference 36 sites**	**6th Preference 35 sites**	**2nd Preference 36 sites**

Table 3-12: Option Appraisal: Cultural Heritage

Option	Quantitative Assessment	Qualitative Assessment	Overall Impact Score*	Order of Preference Score
3A1 (Blue)	42 No. Identified Impacts	5 no. Major/Highly Negative 12 no. Moderately Negative 11 no. Slightly Negative 14 no. Not Significant No direct (significant) impacts. 9 no. direct (moderate) impacts on the *known recorded* resource: of the 42 identified impacts the level of impact and significance of same is less than that for 3C1 and 3C2 (Orange), 3B1 and 3B2 (Red) and 3D (Cyan) Option. Ranked equally 3rd with 3A2 (Blue).	1 Highly Negative	3rd Preference
3A2 (Blue)	42 No. Identified Impacts	5 no. Major/Highly Negative 12 no. Moderately Negative 11 no. Slightly Negative 14 no. Not Significant No direct (significant) impacts. 9 no. direct (moderate) impacts on the *known recorded* resource: of the 42 identified impacts the level of impact and significance of same is less than that for 3C1 and 3C2 (Orange), 3B1 and 3B2	1 Highly Negative	3rd Preference

Option	Quantitative Assessment	Qualitative Assessment	Overall Impact Score*	Order of Preference Score
		(Red) and E (Cyan) Option. Ranked equally 3rd with 3A1 (Blue).		
3B1 (Red)	41 No. Identified Impacts	5 no. Major/Highly Negative 13 no. Moderately Negative 10 no. Slightly Negative 13 no. Not Significant No direct (significant) impacts. 10 no. direct (moderate) impacts on the *known recorded* resource: of the 41 identified impacts the level of impact and significance of same is less than that for 3E (Cyan) Option. Ranked equally 5th with 3B2 (Red) option.	1 Highly Negative	5th Preference
3B2 (Red)	41 No. Identified Impacts	5 no. Major/Highly Negative 13 no. Moderately Negative 10 no. Slightly Negative 13 no. Not Significant No direct (significant) impacts. 10 no. direct (moderate) impacts on the *known recorded* resource: of the 39 identified impacts the level of impact and significance of same is less than that for 3E (Cyan) Option. Ranked equally 5th with 3B1 (Red) option.	1 Highly Negative	5th Preference
3C1 (Orange)	44 No. Identified Impacts	5 no. Major/Highly Negative 12 no. Moderately Negative 11 no. Slightly Negative 16 no. Not Significant No direct (significant) impacts. 9no. direct (moderate) impacts on the *known recorded* resource: of the 44 identified impacts the level of impact and significance of same is less than that for 3B1 (Red), 3B2 (Red) and 3E (Cyan) Options. Ranked equally 4th with 3C2 (Orange) option.	1 Highly Negative	4th Preference
3C2 (Orange)	44 No. Identified Impacts	5 no. Major/Highly Negative 12 no. Moderately Negative 11 no. Slightly Negative 16 no. Not Significant No direct (significant) impacts. 9 no. direct (moderate) impacts on the *known recorded* resource: of the 44 identified impacts the level of impact and significance of same is less than that for 3B1	1 Highly Negative	4th Preference

Option	Quantitative Assessment	Qualitative Assessment	Overall Impact Score*	Order of Preference Score
		(Red), 3B2 (Red) and 3E (Cyan) Options. Ranked equally 4th with 3C2 (Orange) option.		
3D (Purple)	35 No. Identified Impacts	5 no. Major/Highly Negative 10 no. Moderately Negative 10 no. Slightly Negative 7 no. Not Significant No direct (significant) impacts. 8 no. direct (moderate) impacts on the *known recorded* resource: of the 35 identified impacts the level of impact and significance of same is less than all of the other options, thereby ranking this option as 1st preference.	2 Moderately Negative	1st Preference
3E (Cyan)	34 No. Identified Impacts	6 no. Major/Highly Negative 13 no. Moderately Negative 7 no. Slightly Negative 8 no. Not Significant 1 direct (profound) impact on National Monument: Pluck Standing Stone. 10 no. direct (moderate) impacts on the *known recorded* resource: although quantitatively the least amount of impacts of all options, of the 34 identified impacts the level of impact and significance of same is more than all the other options and is considered 6th/least preferred.	1 Highly Negative	6th preference
3F (Pink)	35 No. Identified Impacts	5 no. Major/Highly Negative 10 no. Moderately Negative 11 no. Slightly Negative 9 no. Not Significant No direct (significant) impacts. 8 no. direct (moderate) impacts on the *known recorded* resource: the least of all the options. Of the 35 identified impacts the overall level of impact and significance of same is marginally more thatn that for the Purple (3D) option and is considered 2nd preferred option	2 Moderately Negative	2nd Preference

4 CONCLUSIONS

The impacts on each of these options: 3A1 (Blue), 3A2 (Blue), 3B1 (Red), 3B2 (Red), 3C1 (Orange), 3C2 (Orange), 3D (Purple), 3E (Cyan) and 3F (Pink) are detailed above in Section 3. From a Cultural Heritage perspective and based on a quantitative and qualitative assessment; the 3D (Purple) option is the preferred option, followed by, in order of preference: 3F (Pink), 3A13/A2 (Blue), 3C1/3C2 (Orange), 3B1/3B2 (Red), 3B1 (Red) and 3E (Cyan).

One of these options, 3E (Cyan), has a direct (profound) impact on National Monument 453, a standing stone DG054-038--- at Pluck townland, which is located within the proposed 300m design corridor pertaining to same.

5 REFERENCES

Department of Arts, Heritage, Gaeltacht and the Islands (1999) *Framework and Principles for the protection of the Archaeological Heritage*

Donegal County Development Plan 2012-2018

Donegal County Development Plan 2018-2024

Draft Historic Landscape Characterisation of County Donegal. Donegal County Council Central Planning Unit (February 2014)

EPA (2002) *Guidelines on the Information to be contained in Environmental Impact Statements*

EPA (2003) *Advice Notes on Current Practice on the preparation of Environmental Impact Statements*

EPA (2015) *Draft Advice Notes for preparing Environmental Impact Statements*

EPA (2017) *Draft Guidelines on the Information to be contained in EIARs*

Landscape Character Assessment of County Donegal. Planning & Policy Unit, Community, Enterprise & Planning Services, Donegal County Council (May 2016)

TII (2005a) *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes*

TII (2005b) *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes*

TII (2010) *Project Management Guidelines*

TII (2016) *Project Appraisal Guidelines for National Roads Unit 7.0 – Multi-Criteria Analysis*

TII (2017) *Code of Practice for Archaeology* agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs

Online Sources

Irish Heritage Council Map: www.heritagemaps.ie

National Excavations Database: www.excavations.ie

National Monuments Service: www.archaeology.ie

Ordnance Survey of Ireland: www.osi.ie/mapviewer

Placename index of Ireland: www.logainm.ie

Appendix 1: Inventory of Cultural Heritage

Recorded Archaeological Artefacts within Section 3 study area

Townland	NMI ref.	Artefact	Notes
Labbadish	1964:25	Bronze Age tripartite food vessel	Found in cist grave in Comé Hills
Errity	1930:29, 30, 70	Three stone axes	Found in field
Carrickballydooey	1976: 10, 11	Flint plano-covex knife and human remains	Found in wall
Ballyholey Far	1962:20	Bronze dagger	
Magherasollus	1992C1:16	Polished stone axe	
Gortaquigley	1936:2003	Hammerstone	Found in field
Galdonagh	1930:55 1962:54	Two stone axes	1930:55 found in plot attached to cottage 1962:54 found in bog
Mullaghanny	1931:156-9 1934:255-6 1936:2005-7 1937:3638 1992C1:52-7 1992C1:12, 13, 15	Four flint blades/scrapers Flint blade, scraper Three flint blades/scrapers Flint point Six flint blades/scrapers Three polished stone axes	Various lithic artefacts found in fields and bog land
Guystown	1992C1:9 1992C1:43	Polished stone axe Retouched flint flake	
Woodlands Lower	1962:11-3	Three stone heads	Built into garden wall
Mulnaveagh	1931:208	Polished hammerstone	Found in “The Mullan” garden
Lettergull	1992C1:44	Flint convex end scraper	
Ballindrait	P1948:187	Polished stone axe	
Ballynabreen	1972:158	Polished flint discoidal blade	Found 3 feet deep during drain digging
Murlough	2010C2:269-99	Collection of flints	Rev. L.M. Hewson collection
Creaghadoos	1985:1, 2	Two worked flints	Found in potato field
Edenmore	1932:7037	Socketed bronze axe-head (decorated)	
Braade	1967:61 1967:62 1967:166 1967:167	Copper alloy pin Polished stone adze head Copper alloy stick pin Copper alloy needle	Artefacts found in Carrickfin Sandhills. 1967:166/167 found by E. Rynne in blackish soil layer
Lifford	1939:387 1992C1:3	Rubbing stone Polished stone axe	1992C1:3 was found in the Belmont area
Tieveboy	1934:247	Broken flint javelinhead	Presented by Mr. Andrew Lowry, Argry, ballinadrait
Gortnesk	1931:149 1992C:42	Stone ring Flint convex end scraper	Purchased from Andrew Lowry, found in sandy ford across river Purchased at auction

Townland	NMI ref.	Artefact	Notes
Lismontigley	1931:151	Tracked stone	Purchased from Mr Andrew Lowry
	1931:152	Flint scraper	Purchased from Mr Andrew Lowry
	1934:251	Flint knife fragment	Purchased from Mr Andrew Lowry
	1934:252	Flint hollow scraper	Purchased from Mr Andrew Lowry
	1936:1998	Polished stone axehead	Found in field, purchased from Mr Lowry
	1936:1999	Tracked stone	Found in field, purchased from Mr Lowry
	1992C1:46	Flint flake	Fragment of leaf-shaped blade, proximal end, butt-trimmed. Purchased at auction, Lowry collection
	1992C1:47	Flint convex side scraper	Purchased at auction, Lowry collection
	1992C1:80	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:81	Flint convex end and side scraper	Purchased at auction, Lowry collection
	1992C1:82	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:83	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:84	Flint convex end scraper	Continuous semi-abrupt to abrupt retouch along edges, probably to shape rather than a tool edge – slightly uneven apart from distal end. Purchased at auction, Lowry collection.
	1992C1:85	Flint convex end scraper	Scraper edge is incomplete, possibly unfinished. Purchased at auction, Lowry collection
	1992C1:86-88	Flint convex end scrapers	Purchased at auction, Lowry collection
	1992C1:89	Invasively retouched flint flake	Sub-triangular flake with invasive retouch one lateral edge, also a bifacial retouch on distal point. Possible unfinished arrowhead or a type of knife. Purchased at auction, Lowry collection
	1992C1:90	Retouched flint blade	Pointed blade with discontinuous very short retouch, small notch on one edge towards distal point. Purchased at auction, Lowry collection
Possibly Lismontigley	1992C1:127-9, 134, 138	Flint convex end scrapers	Purchased at auction, Lowry collection
	1992C1:137	Retouched plano-convex flake	Purchased at auction, Lowry collection

Townland names with potential archaeological associations within Section 3 study area

Townland	Irish	Translation	Notes on SMR entries
Raymoghy	-	'Ringfort of the plain'	No listing for any ringforts within this townland

Townland	Irish	Translation	Notes on SMR entries
Glebe	An Glaidhb	'Church land'	No listing for church sites within this townland
Carricknamart	-	'Rock of the burial mound or cairn'	No listing for any cairns within this townland
Raphoe Demesne	Ráth Bhoth	'Ringfort of the huts, cells'	No listing for any recorded ringforts in this townland
Galdonagh Glebe	Gléib Ghallánaí	'lands of the white church'	No listing for a church site within this townland
Galdonagh	Gallánach	'white church'	No listing for church site within this townland although the presence of a bullaun stone (DG054-043----) is indicative of early ecclesiastical activity
Carnshannagh	Carn na Seanach	'the cairn of the foxes'	No listing for any cairn within this townland
Ballindrait	Baile an Droichid	'Town of the bridge'	SMR lists a bridge within this townland (DG070-081----)
Castletown	Baile an Chaisleáin	Townland of the castle	No listing for any cashels or castles within this townland

Cultural Heritage Constraints within 500m Option Corridors for Section 3 Study Area

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-038---
Address/Townland	Pluck
Site Type	Standing Stone (visual)
ITM	623314, 910283
Description	This standing stone (National Monument No. 453) is 1.75m high × 1.7m wide × 0.95m thick; NNE-SSW. Situated on low-lying level ground close to the Isle Burn river.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	435m (A1 Blue) 435m (A2 Blue) 435m (B1 Red) 435m (B2 Red) 435m (C1 Orange) 435m (C2 Orange) 435m (D Purple) 76m (E Cyan)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red)

	Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Direct & Profound (E Cyan)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-039---
Address/Townland	Labbadish
Site Type	Cist
ITM	624343, 910582
Description	In 1964 while excavating for sand and gravel a slab-lined cist with a capstone was found. A food vessel found within is now in the National Museum of Ireland. (JRSAI 1967, 8)
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	90m (A1 Blue) 90m (A2 Blue) 111m (B1 Red) 111m (B2 Red) 109m (C1 Orange) 109m (C2 Orange) 113m (D Purple) 90m (F Pink)
Type of Impact	Direct & Slight (A1 Blue) Direct & Slight (A2 Blue) Direct & Slight (B1 Red) Direct & Slight (B2 Red) Direct & Slight (C1 Orange) Direct & Slight (C2 Orange) Direct & Slight (D Purple) Direct & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-040---
Address/Townland	Carrickballydooey
Site Type	Cross-inscribed stone (visual)
ITM	624719, 910164
Description	A standing stone 1.65m high × 1m wide × 0.7m thick; NNW-SSE. A previous account (Kinahan 1885-6, 427) records two crosses inscribed on it. Only one badly weathered cross is now visible, on the W face. Situated

	in a prominent position, c. 36m W of a cist (DG054-041) discovered in 1976.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	280m (A1 Blue) 280m (A2 Blue) 189m (B1 Red) 189m (B2 Red) 187m (C1 Orange) 187m (C2 Orange) 190m (D Purple) 280m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-041---
Address/Townland	Carrickballydooey
Site Type	Cist
ITM	624674, 910140
Description	A hexagonal cist 1.1m × 0.8m in width and 0.35m in depth was excavated here in 1976. It contained the skeleton of a middle-aged male and a flint, plano-convex knife. It was dated to the earlier bronze age (M. Ryan 1977). It was situated in good farmland
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	227m (B1 Red) 227m (B2 Red) 229m (C1 Orange) 229m (C2 Orange) 225m (D Purple)
Type of Impact	Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange)

	Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-042001-
Address/Townland	Tullybogly
Site Type	Standing Stone
ITM	625717, 910570
Description	A standing stone 2.4m high × 1.8m wide × 1.2m thick; NNW-SSE. The 2nd edition of the OS 6-inch map shows two stones here but the 3rd edition notes a 'Standing stone' and a 'Standing stone (site of)'. There are no visible remains of the 2nd stone. Situated on the SW slope of a NE-SW running ridge.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	224m (A1 Blue) 224m (A2 Blue) 247m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG054-042002-
Address/Townland	Tullybogly
Site Type	Standing Stone
ITM	625716, 910547
Description	A standing stone 2.4m high × 1.8m wide × 1.2m thick; NNW-SSE. The 2nd edition of the OS 6-inch map shows two stones here but the 3rd edition notes a 'Standing stone' and a 'Standing stone (site of)'. There are no visible remains of the 2nd stone. Situated on the SW slope of a NE-SW running ridge.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	249m (A1 Blue) 249m (A2 Blue) 225m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue)

	Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG062-001---
Address/Townland	Corkey
Site Type	Souterrain
ITM	623081, 909766
Description	There is no trace of the 'cave' marked on the 1st and 2nd editions of the OS 6-inch maps. It was situated on good land sloping to NW.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	331m (E Cyan)
Type of Impact	Indirect & Imperceptible (E Cyan)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG062-002---
Address/Townland	Corkey
Site Type	Standing Stone
ITM	623129, 909824
Description	Kinahan (1885-6, 428) records that 'somewhere to N or NE' of the souterrain (1462) 'there is said to be a stone, having a number of flint chips buried by its side; the exact place, however, could not be ascertained.' No trace of this could be found.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	260m (E Cyan)
Type of Impact	Indirect & Imperceptible (E Cyan)

Unique Identification No.	
Legal Status	RMP

Reference No.	DG062-003---
Address/Townland	Labbadish
Site Type	Stone row
ITM	623820, 909342
Description	Three stones stand beside one another in a roughly N-S alignment. The middle one is a standing stone 1.25m high and 0.8m square in plan. The other two are granite boulders and their archaeological significance is uncertain, Situated on rough pasture land.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	175m (E Cyan)
Type of Impact	Indirect & Slight (E Cyan)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG062-008---
Address/Townland	Lisclamerty
Site Type	Ringfort - rath
ITM	623997, 908629
Description	A very destroyed 'fort' surviving only as a subcircular platform 20m to 25m in diameter raised about 2m above field level. There is a short stretch of bank (probably modern) on the NE side. Here also the platform drops steeply 4m to level ground beside a stream. It is situated in good rolling land.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	104m (E Cyan)
Type of Impact	Direct & Moderate (E Cyan)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG062-015---
Address/Townland	Ballyholey Far
Site Type	Standing stone (site of)
ITM	626786, 907518

Description	The 'Standing Stone' marked on the 2nd and 3rd editions of the OS 6-inch map was destroyed c. 1970. Situated in good land sloping steeply down in a NW direction.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	120m (C1 Orange) 120m (C2 Orange)
Type of Impact	Direct & Slight (C1 Orange) Direct & Slight (C2 Orange)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG062-024---
Address/Townland	Carnashannagh
Site Type	Enclosure
ITM	628523, 904427
Description	None available.
Sources	http://webgis.archaeology.ie/historicenvironment/ www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	95m (A1 Blue) 95m (A2 Blue) 105m (B1 Red) 105m (B2 Red) 92m (C1 Orange) 92m (C2 Orange)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG070-032---
Address/Townland	Gortin North
Site Type	Standing Stone (site of)
ITM	630611, 901048
Description	Marked as 'Standing Stone' on the 1st and 2nd editions of the OS 6-inch map and as 'Standing Stone (site of)' on the 3rd edition. There are no visible remains. Situated on good pasture land falling away to S and W.

Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	162m (A1 Blue) 211m (A2 Blue) 161m (B1 Red) 224m (B2 Red) 159m (C1 Orange) 206m (C2 Orange) 208m (D Purple) 207m (E Cyan) 210m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Indirect & Imperceptible (E Cyan) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG070-033
Address/Townland	Gortin North
Site Type	Standing Stone (site of)
ITM	630570, 900977
Description	Marked as 'Standing Stone' on the 2nd edition of the OS 6-inch map and as 'Standing Stone (site of)' on the 3rd edition. There' are no visible remains. Situated on good pasture land falling away to S and W.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	103m (A1 Blue) 149m (A2 Blue) 104m (B1 Red) 141m (B2 Red) 105m (C1 Orange) 142m (C2 Orange) 133m (D Purple) 140m (E Cyan) 138m (F Pink)

Type of Impact	Direct & Slight (A1 Blue) Direct & Slight (A2 Blue) Direct & Slight (B1 Red) Direct & Slight (B2 Red) Direct & Slight (C1 Orange) Direct & Slight (C2 Orange) Direct & Slight (D Purple) Direct & Slight (E Cyan) Direct & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG070-048---
Address/Townland	Murlough (Clonleigh South ED)
Site Type	Standing Stone (site of)
ITM	631630, 899335
Description	There is no trace of the 'Standing Stone' marked on the 1st edition of the OS 6-inch map. Situated on the side of a hill, on good land falling away to N and W.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	39m (A1 Blue) 39m (A2 Blue) 37m (B1 Red) 37m (B2 Red) 39m (C1 Orange) 39m (C2 Orange) 38m (D Purple) 37m (E Cyan) 37m (F Pink)
Type of Impact	Direct & Slight (A1 Blue) Direct & Slight (A2 Blue) Direct & Slight (B1 Red) Direct & Slight (B2 Red) Direct & Slight (C1 Orange) Direct & Slight (C2 Orange) Direct & Slight (D Purple) Direct & Slight (E Cyan) Direct & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP

Reference No.	DG070-049---
Address/Townland	Murlough (Clonleigh South ED)
Site Type	Standing Stone (site of)
ITM	631595, 899154
Description	There is no trace of the 'Standing Stone' marked on the 1st edition of the OS 6-inch map. Situated on the side of a hill, on good land falling away to N and W.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	142m (A1 Blue) 142m (A2 Blue) 144m (B1 Red) 144m (B2 Red) 145m (C1 Orange) 145m (C2 Orange) 141m (D Purple) 142m (E Cyan) 141m (F Pink)
Type of Impact	Direct & Slight (A1 Blue) Direct & Slight (A2 Blue) Direct & Slight (B1 Red) Direct & Slight (B2 Red) Direct & Slight (C1 Orange) Direct & Slight (C2 Orange) Direct & Slight (D Purple) Direct & Slight (E Cyan) Direct & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG070-050---
Address/Townland	Murlough (Clonleigh South ED)
Site Type	Standing Stone
ITM	631564, 899095
Description	None Available
Sources	http://webgis.archaeology.ie/historicenvironment/ www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	208M (A1 Blue) 208M (A2 Blue) 204m (B1 Red) 204m (B2 Red)

	210m (C1 Orange) 210m (C2 Orange) 212m (D Purple) 212m (E Cyan) 201m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Indirect & Slight (E Cyan) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG071-005---
Address/Townland	Lifford
Site Type	Standing Stone (site of)
ITM	632525, 898541
Description	Marked as 'Standing Stone' on the 1st edition of the OS 6-inch map and shown untitled on the 2nd edition. There are no visible remains. Situated on good land with extensive views.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	124m (A1 Blue) 124m (A2 Blue) 123m (B1 Red) 123m (B2 Red) 123m (C1 Orange) 123m (C2 Orange) 123m (D Purple) 123m (E Cyan) 123m (F Pink)
Type of Impact	Direct & Slight (A1 Blue) Direct & Slight (A2 Blue) Direct & Slight (B1 Red) Direct & Slight (B2 Red) Direct & Slight (C1 Orange) Direct & Slight (C2 Orange) Direct & Slight (D Purple) Direct & Slight (E Cyan) Direct & Slight (F Pink)

Unique Identification No.	
Legal Status	RMP
Reference No.	DG071-007---
Address/Townland	Townparks (Clonleigh South ED)
Site Type	Standing Stone (site of)
ITM	632654, 898504
Description	Marked as 'Standing Stone' on the 1st edition of the OS 6-inch map and shown untitled on the 2nd edition. There are no visible remains. Situated on good land with extensive views.
Sources	The above description was derived from the 'Archaeological Survey of County Donegal. A description of the field antiquities of the County from the Mesolithic Period to the 17th century.' Compiled by: Brian Lacey with Eamon Cody, Claire Cotter, Judy Cuppage, Noel Dunne, Vincent Hurley, Celie O'Rahilly, Paul Walsh and Seán Ó Nualláin (Lifford: Donegal County Council, 1983). In certain instances the entries have been revised and updated. http://webgis.archaeology.ie/historicenvironment/
Approx. Distance from Corridor(s) Centre-line	248m (A1 Blue) 248m (A2 Blue) 250m (B1 Red) 250m (B2 Red) 250m (C1 Orange) 250m (C2 Orange) 247m (D Purple) 246m (E Cyan) 247m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Indirect & Imperceptible (E Cyan) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AAP01
Address/Townland	Corkey River Crossing and Pluck hinterland
Site Type	Area of High Archaeological Potential
ITM	
Description	This area of high archaeological potential is located at the northern terminus of the proposed options at Pluck and extends south-west along the Corkey River crossing and associated river banks and low-lying ground. There is a particularly high amount of prehistoric archaeological sites in this location, including National Monument No. 453 at Pluck (a standing stone DG054-038---) as well as a cist burial at Carrickballydooley (with skeleton and flint knife), NMI find of a food vessel, numerous other standing stones in the wider area.

	Given the riverine environment, and the Bronze Age landscape of recorded sites there is a high potential to reveal associated artefacts and/or sites of a prehistoric nature at this location. Both the landscape terrain including the river crossing, as well as the natural 'highway' corridor that traverses this region extending southwest through the county at the mountainous valley in Barnesmore and beyond would have been strategic settlement factors for political, territorial and social purposes.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Potential Direct & Potential Profound (A1 Blue) Potential Direct & Potential Profound (A2 Blue) Potential Direct & Potential Profound (B1 Red) Potential Direct & Potential Profound (B2 Red) Potential Direct & Potential Profound (C1 Orange) Potential Direct & Potential Profound (C2 Orange) Potential Direct & Potential Profound (D Purple) Potential Direct & Potential Profound (E Cyan) Potential Direct & Potential Profound (F Pink)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AAP02
Address/Townland	Drumlin ridge at Mullafin Doorable and Ballyholey Near/Far
Site Type	Area of High Archaeological Potential
ITM	
Description	This area of high archaeological potential is located on the eastern slopes (80m – 170m OD) of Mongorry Hill (284m OD) including the eastern slopes of a drumlin ridge at Mullafin (205m OD), north of Oakfield demesne. Within the townlands of Doorable, Ballyholey Far and Ballyholey Near, there is a high density of standing stones, megalithic tombs and rock art, as well as the findspot of a bronze dagger. The well-drained, good-quality east-facing slopes would have been very attractive to past settlement, as demonstrated by the recorded archaeological record in the area.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)

Type of Impact	Potential Direct & Potential Profound (A1 Blue) Potential Direct & Potential Profound (A2 Blue) Potential Direct & Potential Profound (B1 Red) Potential Direct & Potential Profound (B2 Red) Potential Direct & Potential Profound (C1 Orange) Potential Direct & Potential Profound (C2 Orange) Potential Direct & Potential Profound (D Purple) Potential Direct & Potential Profound (E Cyan) Potential Direct & Potential Profound (F Pink)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AAP03
Address/Townland	Drumlin terrain and riverine environment of the Swilly Burn at Drumfad/Tullyrap/Mullnaveagh
Site Type	Area of High Archaeological Potential
ITM	
Description	**S3-AAP03** This area of high archaeological potential is located south-east of Raphoe and Oakfield Demesne extending from White Cross Roads to Feddyglass and Tullyrap, crossing the Swilly Burn and its associated low-lying banks to the local road network at Mullnaveagh and the rising drumlin good quality lands at Gortin North overlooking the river below. At a small drumlin ridge (73m OD) at Drumfad, the terrain slopes generally towards the Swilly Burn at the south-east and contains a high density of recorded standing stones. Further west of the R264 is a museum findspot of a stone ring along the Swilly Burn, near Gortnesk. The drumlin ridge in close proximity to the riverine environment create very favourable siting factors for past human settlement, as attested by the recorded archaeological record.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Potential Direct & Potential Profound (A1 Blue) Potential Direct & Potential Profound (A2 Blue) Potential Direct & Potential Profound (B1 Red) Potential Direct & Potential Profound (B2 Red) Potential Direct & Potential Profound (C1 Orange) Potential Direct & Potential Profound (C2 Orange) Potential Direct & Potential Profound (D Purple) Potential Direct & Potential Profound (E Cyan) Potential Direct & Potential Profound (F Pink)

Unique Identification No.	

Legal Status	N/A
Reference No.	S3-AAP04
Address/Townland	Deele river crossing and drumlin terrain at Tamnawood, Moneen, Tyleford and Ballindrait
Site Type	Area of High Archaeological Potential
ITM	
Description	**S3-AAP04** This area of potential is located at a drumlin ridge (65m OD) at Moneen in Tamnawood, east of Ballindrait, falling towards Tyleford and the Deele River, including both its northern and southern banks. There are two prehistoric standing stones immediately north of the area in Gortin North, as well as historical associations of Ballindrait village, Cavanacor house and Tyleford. Drumlin terrain and riverine environments are very attractive locations for past human settlement, as demonstrated by the archaeological and historical record, and is considered an area of high archaeological potential. In addition, this area at Tyleford at a bend on the River Deele, is associated with the historical temporary encampment site of King James and his army prior to the Siege of Derry (1689). As such, there is a possibility of stray finds and/or finds of late medieval date to be located in this area.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Potential Direct & Potential Profound (A1 Blue) Potential Direct & Potential Profound (A2 Blue) Potential Direct & Potential Profound (B1 Red) Potential Direct & Potential Profound (B2 Red) Potential Direct & Potential Profound (C1 Orange) Potential Direct & Potential Profound (C2 Orange) Potential Direct & Potential Profound (D Purple) Potential Direct & Potential Profound (E Cyan) Potential Direct & Potential Profound (F Pink)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AAP05
Address/Townland	South eastern slopes of Croaghan Hill and northern banks of the river Finn/urban environs of Lifford Town
Site Type	Area of High Archaeological Potential
ITM	
Description	**S3-AAP05** This area of potential is located along the south-eastern slopes of Croaghan Hill (184m OD) at Murlough, south of the Deele River and west of the urban environs of Lifford town. Similar to the other areas of archaeological potential, this area has a very high density of standing stone sites, along the area of the southern terminus of the proposed options, at the lower eastern slopes of Croaghan Hill at a height of *c.* 40m to 80m OD. The area is located north of the banks of the River Finn which joins an important confluence with the Deele and Foyle rivers *c.* 1.5km to the east. Croaghan Hill has significant associations with the early

	medieval territories of the *Cenel Eoghain* dating from the early medieval period, all of which, coupled with the historical establishment of the town of Lifford suggest that this area has high potential for encountering archaeological features and/or artefacts. In addition, there are associations with the townland of Murlough and the site of a sixteenth century battlefield. Here it is noted in the Annals of the Four Masters that a battle took place in 1600 between the O'Donnells, the local Gaelic chiefs and the British garrison based at Lifford in an attempt to re-gain Gaelic control. It is not known where exactly this battlefield is located however local tradition and AFM records of this event suggests that it is an area of good archaeological potential with the possibility of discovering stray finds and/or random burials.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Potential Direct & Potential Profound (A1 Blue) Potential Direct & Potential Profound (A2 Blue) Potential Direct & Potential Profound (B1 Red) Potential Direct & Potential Profound (B2 Red) Potential Direct & Potential Profound (C1 Orange) Potential Direct & Potential Profound (C2 Orange) Potential Direct & Potential Profound (D Purple) Potential Direct & Potential Profound (E Cyan) Potential Direct & Potential Profound (F Pink)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AP01
Address/Townland	Carnshannagh
Site Type	Possible Enclosure
ITM	628627, 904434
Description	Dark circular area in tillage adjacent (same field) enclosure site DG062-024---. There are no details of the latter on ASI – possible that this is the actual location, or, a new enclosure site.
Sources	
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange)
Type of Impact	Potential Direct & Potential Moderate (A1 Blue) Potential Direct & Potential Moderate (A2 Blue) Potential Direct & Potential Moderate (B1 Red) Potential Direct & Potential Moderate (B2 Red)

	Potential Direct & Potential Moderate (C1 Orange) Potential Direct & Potential Moderate (C2 Orange)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AP02
Address/Townland	Dromore Big
Site Type	Possible bi-vallate enclosure
ITM	628376, 904292
Description	Possible enclosure site, bi-vallate, visible as darkened earth in tillage. Close to DG062-024--- in Carnshannagh townland (across N14).
Sources	
Approx. Distance from Corridor(s) Centre-line	275m (A1 Blue) 275m (A2 Blue) 275m (B1 Red) 275m (B2 Red) 275m (C1 Orange) 275m (C2 Orange)
Type of Impact	Potential Indirect & Potential Imperceptible (A1 Blue) Potential Indirect & Potential Imperceptible (A2 Blue) Potential Indirect & Potential Imperceptible (B1 Red) Potential Indirect & Potential Imperceptible (B2 Red) Potential Indirect & Potential Imperceptible (C1 Orange) Potential Indirect & Potential Imperceptible (C2 Orange)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AP03
Address/Townland	Drumbeg
Site Type	Possible Burnt spread
ITM	628795, 903751
Description	Possible burnt spread visible in tillage, south of White Cross Roads and NW of Drumbeg school.
Sources	
Approx. Distance from Corridor(s) Centre-line	239m (A1 Blue) 239m (A2 Blue) 239m (B1 Red) 239m (B2 Red) 239m (C1 Orange) 239m (C2 Orange)
Type of Impact	Potential Indirect & Potential Imperceptible (A1 Blue) Potential Indirect & Potential Imperceptible (A2 Blue) Potential Indirect & Potential Imperceptible (B1 Red)

	Potential Indirect & Potential Imperceptible (B2 Red) Potential Indirect & Potential Imperceptible (C1 Orange) Potential Indirect & Potential Imperceptible (C2 Orange)

Unique Identification No.	
Legal Status	N/A
Reference No.	S3-AP04
Address/Townland	Lifford Common
Site Type	Possible 18th/19th c farmstead
ITM	632162, 898450
Description	Remains of possible 18th C/Early 19th Century farmstead. Distinct kink in roadway and possible sub-surface foundation undulations. Marked on 1st ed OS, partially removed by 25-in 2nd ed OS.
Sources	
Approx. Distance from Corridor(s) Centre-line	242m (A1 Blue) 242m (A2 Blue) 242m (B1 Red) 242m (B2 Red) 242m (C1 Orange) 242m (C2 Orange) 242m (D Purple) 242m (E Cyan) 242m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Indirect & Imperceptible (E Cyan) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40827011
Address/Townland	Glebe (Manorcunningham)
Site Type	Gort Presbyterian Manse
ITM	623693, 910767
Description	Detached three-bay two-storey former Presbyterian manse, built c. 1885, having two-storey extension to the rear (west). Now in use as a house. Hipped artificial slate roof (fibre cement) having overhanging eaves with paired moulded brackets on rendered stringcourse, cast-iron rainwater goods including ogee moulded gutters, and with a central pair of stepped red brick chimneystacks with rendered copings and decorative clayware pots over. Hipped artificial slate roof to extension. Smooth rendered ruled-and-lined walls over projecting smooth rendered plinth. Paired of segmental-headed window openings to front elevation (east) at ground floor having painted stone sills and two-over-two timber sliding sash windows. Square-headed

	window openings at first floor level having stone sills and with two-over-two pane timber sliding sash windows. Central square-headed doorway to the main elevation (east) having timber panelled double-doors with bolection mouldings, overlight, and with rendered doorcase comprising pilasters (on square-plan) supporting entablature over with pronounced cornice. Doorway served by flight of concrete steps. Set back from road in mature grounds in the rural countryside to the south-west of Manorcunningham. Detached three-bay single-storey outbuilding with dormer attic level to the west having hipped artificial slate roof, pebbledashed walls and square-headed openings with timber sheeted entrance doors and replacement timber window. Formal garden to south-east. Approached from tree-lined laneway to east with gateway to the east comprising a pair of smooth rendered gate piers (on square-plan) having chamfered corners, projecting plinths, stepped capstones over, and with pair of metal gates. Gateway flanked to either side by curved sections of smooth rendered boundary wall and terminated with smooth rendered gate piers (on square-plan) having chamfered corners, projecting plinths, and with stepped capstones over.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	142m (A1 Blue) 142m (A2 Blue) 141m (B1 Red) 141m (B2 Red) 148m (C1 Orange) 148m (C2 Orange) 148m (D Purple) 130m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	RPS/NIAH
Reference No.	40834001
Address/Townland	Cavanacor
Site Type	Cavanacor House (visual)
ITM	631319, 900238
Description	Detached five-bay two-storey country house on L-shaped plan, built c. 1770 and possibly containing earlier fabric c. 1610, having single-bay single-storey centre porch to the centre of the front elevation (south-east), added c. 1850 reusing doorcase of c. 1820, and having two-storey return and extensions to the rear (north-west). Modern single-bay single-storey flat-roofed entrance porch to the south-west side elevation. Pitched artificial slate roof with eaves course, and with pair of smooth rendered chimneystacks to the gable ends (south-west and north-east) having moulded ashlar coping and terracotta pots over. Mono-pitched felt roof to entrance porch with timber fascia to eaves. Roughcast rendered walls over smooth rendered plinth course; smooth rendered walls to rear extension and entrance porch (ruled-and-lined). Square-headed window openings to front elevation having painted stone sills and six-over-six pane timber sliding sash windows (apparently installed in 1823). Square-headed window openings to side elevations of porch having painted stone sills and six-over-six pane timber sliding sash windows. Square-headed door opening to porch with timber panelled door, doorcase comprising Tuscan pilasters supporting entablature over with dentilated cornice and with floral motifs to frieze, and with square-headed overlight with spider's web fanlight. Doorway approached by flight of cut stone steps. Former segmental-headed carriage-arch to the south-west side of return to rear; now infilled with modern glazed door and windows. Set back from road in extensive mature landscaped grounds to the north-west of Lifford and to the east\north-east of Ballindrait. Section of hooped

	wrought-iron railings to the south side of house. Complex of outbuildings arranged around a yard to the north of house. Detached single-bay two-storey outbuilding to west having pitched natural slate roof with projecting eaves course, cast-iron rainwater goods and chimneystack to the west gable end. Roughcast rendered walls with square-headed window openings with painted stone sills and six-over-six pane timber sliding sash windows, and square-headed doorway with battened timber door. Detached multiple-bay two-storey outbuilding to the north-west, now converted for use as an art gallery, having three-bay two-storey section to the north and two-storey section to the south with loop hole openings at first floor level. Single-bay single-storey addition to the north having mono-pitched roof over. Pitched natural slate roof with projecting eaves course and central brick chimneystack. Lime washed rubble stone walls. Square-headed window openings with stone sills and with eight-over-eight pane timber sliding sash windows to ground floor level (block to north) and four-over-eight pane timber sliding sash windows at first floor level; square-headed window opening at ground floor level to block to the south having fixed-pane multi-pane timber window with loop hole openings with brick reveals over at first floor level. Central square-headed doorway to block to north having battened timber door; square-headed doorway to single-bay lean-to extension having battened timber door. Multiple-bay two-storey outbuildings to the north having pitched and hipped slate roofs, some surviving sections of cast-iron rainwater goods, lime washed rubble stone walls, square-headed window openings with timber multiple-pane and replacement windows, square-headed doorways with battened timber doors, and square-headed carriage-arch with battened timber double doors. Detached single-storey outbuilding to the west of house having pitched slate roof, rubble stone walls and square-headed openings with cast-iron lattice window and battened timber doors. Courtyard to site having rubble stone boundary walls. Gateway to courtyard having rubble stone gate piers (on square-plan) and wrought-iron double gates. Remains of former walled garden to the south-west of house having three surviving sides with rubble stone walls. Main gateway to the east of house comprising a pair of rubble stone gate piers (on square-plan) having a pair of wrought-iron gates. Gateway flanked by sections of rubble stone walling with terminating rubble stone gate piers (on square-plan). Redundant gateway to the west of house comprising a pier of cast-iron gate posts, rubble stone gate piers (on square-plan) and a pair of hooped wrought-iron gates. Derelict three-bay two-storey gate-lodge with single-storey extension to rear located to the south of main entrance gateway to the east having pitched artificial slate roof with overhanging eaves and with central red brick chimney with stepped coping. Roughcast rendered walls. Square-headed window openings with painted stone sills and replacement timber casement windows, and with central square-headed doorway with timber panelled door and overlight.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	373m (A1 Blue) 373m (A2 Blue) 377m (B1 Red) 377m (B2 Red) 374m (C1 Orange) 374m (C2 Orange) 385m (D Purple) 374m (E Cyan) 374m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Indirect & Slight (E Cyan) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834002

Address/Townland	Murlough (Clonleigh South)
Site Type	Ballindrait Presbyterian Manse
ITM	631819, 899516
Description	Detached three-bay two-storey Presbyterian manse, built c. 1830 and altered or rebuilt c. 1880, having single-bay single-storey porch to the centre of the front elevation (north), added c. 1880, and with single-storey extension to the rear (south). Now in use as a house or manse. Pitched natural slate roof with stone ridge tiles, overhanging bracketed eaves with exposed rafter ends, cast-iron rainwater goods, timber bargeboards to the gable ends, and with four red brick chimneystacks having cornice copings and clay-ware pots over. Flat felt roof to entrance porch with smooth rendered eaves course. Roughcast rendered walls over projecting smooth rendered plinth course, and with raised smooth rendered block-and-start quoins to corners of main body of building. Square-headed window openings with stone sills, moulded smooth rendered architraved surrounds, and with replacement six-over-six pane timber sliding sash windows. Square-headed window openings to sides of porch having smooth rendered surrounds and four-over-four pane timber sliding sash windows. Round-headed door opening to front face of porch (north) having timber panelled door, sidelights and plain overlight, and with smooth rendered surround comprising fluted pilasters with capitals, and architraved head with keystone motif. Set back from road in own grounds in the rural countryside to the south-east of Ballindrait and to the north-west of Lifford. Mature garden to front of site (north). Associated Presbyterian church (see 40834013) located at Ballindrait. Detached three-bay two-storey outbuilding with two-bay two-storey attached extension located to east having pitched purple slate roof, smooth rendered eaves course, and cast-iron rainwater goods. Outbuilding now converted for use as a doctor's surgery (since 1997). Rubble stone walls with segmental-headed and square-headed openings with red brick headers and reveals with concrete sills, and having replacement windows and doors throughout. Roughcast rendered boundary wall to north. Gateway to the north-west corner of site comprising a pair of red brick gate piers (on square-plan) having roughcast rendered central panels and with stepped red brick coping, and with a pair of decorative wrought-iron gates.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	250m (A1 Blue) 250m (A2 Blue) 250m (B1 Red) 250m (B2 Red) 250m (C1 Orange) 250m (C2 Orange) 248m (D Purple) 260m (E Cyan) 250m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Indirect & Imperceptible (E Cyan) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	RPS/NIAH
Reference No.	40834003 (Incl RPS 40907020)
Address/Townland	Lifford Common
Site Type	St. Patrick's Church

ITM	631972, 899460
Description	Freestanding Catholic church on polygonal cruciform-plan, built 1962-4 and altered 1994, comprising double-height seven-bay hall with canted corner to the east, transepts with canted gables to the north and south, two-storey accommodation\offices to south-west end of transept to the south, detached bell tower (on square-plan) with spire over to the north-east linked to main body of church by covered open walkway, chancel with canted gable to the west, single-storey former baptistery (on heptagonal-plan) attached to the south-east side of nave (now converted for use as confessional boxes), and single-storey single-bay porches to the east faces of transepts. Shallow pitched copper-sheeted or copper-like roofs with roof lantern (on octagonal-plan) to junction of nave and transepts with metal cross finial over; copper-sheeted pyramidal spire to bell tower with metal crucifix finial over. Shallow hipped pinched zinc roof to former baptistery. Roughcast rendered walls. Mosaic panels beneath window openings to the ends of the north south transept and to the east end of nave depicting the four evangelists in Gaelic style, named in Irish, Mata (Matthew), Marc (Mark), Lúcás (Luke), and Eóin (John), each depicted in their traditional zoomorphic symbols of man, lion, ox and eagle, respectively. Plain grey mosaic beneath window opening to the south end of south transept. Shallow pointed or chevron-headed window openings to sides of nave with cement rendered reveals and concrete structures, and containing leaded stained glass windows. Shallow pointed or chevron-headed window openings to ends of transepts and to the nave gable with cement rendered reveals and concrete structures, and containing leaded coloured glass windows. Two stories of shallow pointed or chevron-headed window openings to offices? to the south-west corner of transept to the south with replacement windows. Long narrow square-headed openings to each face of bell tower having louvered fittings. Shallow pointed or chevron-headed doorways (main doorway to the north-east corner at end of walkway) having glazed timber double-doors with decorative frosted panels. Secondary entrance doors to porches to east elevations of transepts, and at south-east corner of nave having glazed timber double-doors. Dual-pitched timber-clad ceiling, raked away from crossing with lantern over, having octagonal crossing lantern over. Interior walls clad in bare rock-faced concrete blockwork except for cream-painted rendered wall at rear of sanctuary (to west). Original timber bench and steel-framed pews throughout. Stations of the Cross to nave walls; Carrara marble monolithic altar stone, Kilkenny limestone altar panels behind and timber crucifix behind altar. Located in the rural countryside to the south-east of Ballindrait and to the north-west of Lifford. Rubble stone bell tower of former parish church to site located in grounds to the west (see 40834004). Modern stone-clad boundary walls and gate piers to the north; tarmacadam car parks to site. Modern graveyard to the south.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	210m (A1 Blue) 210m (A2 Blue) 209m (B1 Red) 209m (B2 Red) 213m (C1 Orange) 213m (C2 Orange) 212m (D Purple) 211m (E Cyan) 214m (F Pink)
Type of Impact	Indirect & Moderate (A1 Blue) Indirect & Moderate (A2 Blue) Indirect & Moderate (B1 Red) Indirect & Moderate (B2 Red) Indirect & Moderate (C1 Orange) Indirect & Moderate (C2 Orange) Indirect & Moderate (D Purple) Indirect & Moderate (E Cyan) Indirect & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834004

Address/Townland	Murlough (Clonleigh South)
Site Type	St. Patrick's Bell tower/stand
ITM	631913, 899459
Description	Freestanding three-stage bell tower (on square-plan), erected c. 1828 or c. 1860, formerly part of Catholic church to site (now demolished c. 1965). Stepped crenellated rubble stone parapet having cut stone coping and central cut stone cross finials over, ashlar pyramid pinnacles to corners, ashlar stone stringcourse to base of parapet, and with cast-iron downpipes. Random rubble stone walls with cut stone stringcourse delineating stages. Pointed-arch window openings having slightly raised tooled ashlar surround, stone sills and metal or timber louvers. Pointed-arched doorway to front face (west) having tooled ashlar surround, and modern metal-sheeting. Set back from road in grounds shared with St. Patrick's church (see 40834003) to the east. Tower enclosed by low rubble stone walls. Located to the south-east of Ballindrait and to the north-west of Lifford.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	215m (A1 Blue) 215m (A2 Blue) 211m (B1 Red) 211m (B2 Red) 214m (C1 Orange) 214m (C2 Orange) 214m (D Purple) 214m (E Cyan) 217m (F Pink)
Type of Impact	Indirect & Moderate (A1 Blue) Indirect & Moderate (A2 Blue) Indirect & Moderate (B1 Red) Indirect & Moderate (B2 Red) Indirect & Moderate (C1 Orange) Indirect & Moderate (C2 Orange) Indirect & Moderate (D Purple) Indirect & Moderate (E Cyan) Indirect & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834005
Address/Townland	Murlough (Clonleigh South)
Site Type	Ballindrait Windmill
ITM	631548, 899064
Description	Freestanding six-stage former windmill (on circular-plan), dated 1874(?), having walls tapering from base. Now ruinous (unused since 1932). Ashlar coping over tower having remains of timber rotating sail mechanism over. Rubble stone walls with remnants of lime render over. Cut stone date plaque (on diamond-plan) to second stage having Masonic square and divider motif to head and text reading 'Erected 1874(?) Charles Robinson(?)'. Projecting timber trusses\supports around tower at third stage level, formerly supporting timber walkway\gantry. Square-headed window openings, doors or loading bays to north having concrete sills red brick surrounds and voussoirs; window fittings now gone. Opening at ground floor level now infilled with brick. Millstones survive to interior at second stage level. Located in farm complex to south of Ballindrait on elevated ground close to summit of Croghan\Croghan Hill. Set in concrete paved yard and surrounded by modern house (to west) and modern or heavily altered outbuildings. Approached via laneway from road to the south.

Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	246m (A1 Blue) 246m (A2 Blue) 244m (B1 Red) 244m (B2 Red) 243m (C1 Orange) 243m (C2 Orange) 244m (D Purple) 123m (E Cyan) 243m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Direct & Moderate (E Cyan) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834006
Address/Townland	Murlough (Clonleigh South)
Site Type	Outbuilding
ITM	631362, 899576
Description	Detached eight-bay two-storey outbuilding, built c. 1910, having external flight of stone steps to the south gable end giving access to doorway at first floor level. Pitched natural slate roof with terracotta tiles, raised rendered coping to gables, projecting eaves course, and with cast-iron rainwater goods. Random rubble stone walls with flushed roughly squared quoi ns to the corners, and with remains of rendered finish to south gable end. Square-headed window, door, and loading bay openings having flush red brick block-and-start reveals and voussoirs, concrete sills and with battened timber and\or metal shutters\doors over. Some openings at ground floor level now blocked. Series of ocular windows with red brick surrounds at ground floor level to the south end of the west elevation. Square-headed doorway opening to south gable having metal track with sliding metal door. Set perpendicular to roadway to the south. Located in the rural countryside to the south-east of Ballindrait and to the north-west of Lifford. Forms the east range of a complex of single- and two-storey outbuildings arranged around a central courtyard. Detached three-bay two-storey outbuilding to the south end of courtyard, built c. 1910, having flight of rubble stone stairs to the south elevation giving access to doorway at first floor level. Pitched natural slate roof, clay and terracotta ridge tiles, rendered copings to gable ends and cast-iron rainwater goods. Rubble stone walls with flush roughly squared stone quoins to the corners. Square-headed openings with concrete sills and flush red brick reveals and voussoirs and battened timber fittings. Detached two-storey outbuilding to the east side of complex having pitched natural slate roof, rubble stone walls (rendered to south), and square-headed openings with red brick surrounds. Single-storey outbuilding to the north end of courtyard (adjoining main building at north end) having pitched roof , rendered walls, and square-headed openings. Wrought-iron flat bar gates to site.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	116m (A1 Blue) 116m (A2 Blue) 115m (B1 Red) 115m (B2 Red)

	116m (C1 Orange) 116m (C2 Orange) 113m (D Purple) 115m (E Cyan) 116m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834011
Address/Townland	Ballindrait
Site Type	Station Master's Railway House
ITM	630863, 900014
Description	Detached three-bay two-storey former station master's house associated with the former Ballindrait railway station (now demolished), built c. 1909, having single-bay single-storey gable-fronted entrance porch to the centre of the front elevation (south), half-dormer window opening to the south elevation, and with later single-storey addition to the east gable end. Later in use as a house. Now disused. Pitched natural slate roof with decorative terracotta ridge tiles\combing, overhanging eaves having timber bargeboard and fascia, remains of cast-iron rainwater goods, and with smooth rendered chimneystack to the west gable end with cornice coping and clay-ware pots over. No roof to eastern extension with chamfered coping forming parapet. Smooth rendered ruled-and-lined walls with smooth rendered block-and-start quoins to the corners. Segmental-headed window openings at ground floor level having smooth rendered block-and-start surrounds, painted concrete sills, and remains of timber fittings; windows now blocked. Square-headed window opening to half-dormer opening; now blocked. Square-headed window openings to the side elevations at first floor level having smooth rendered block-and-start surrounds, painted concrete sills, and remains of timber fittings; windows now blocked. Square-headed door opening to porch having battened timber and overlight. Set back from road in own grounds to the east\north-east of Ballindrait, and to the north of former railway line. Former railway goods shed (see 40834017) to the west. Former railway station now demolished (possibly replaced by modern house to the west. Detached three-bay single-storey former railway building to the west having pitched corrugated metal roof, blockwork walls, and square-headed openings (fittings now gone).
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	112m (A1 Blue) 112m (A2 Blue) 112m (B1 Red) 112m (B2 Red) 112m (C1 Orange) 112m (C2 Orange) 112m (D Purple) 112m (E Cyan) 112m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue)

	Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834014
Address/Townland	Tamnawood
Site Type	Worker's House – Level Crossing
ITM	630397, 900308
Description	Detached two-bay single-storey with attic level former railway level crossing keeper's\guard's house, built c. 1909, having projecting single-storey entrance porch to north-west elevation and two-bay single-storey extension to east. Later in use as a house, now disused. Pitched natural slate roof with terracotta ridge tiles, overhanging eaves with timber painted fascia and soffit, remains of cast-iron rainwater goods, and with smooth rendered chimneystack with rendered coping and clay-ware pots. Pitched natural slate roof with terracotta ridge tiles to projecting porch. Smooth rendered ruled-and-lined walls with raised smooth rendered block-and-start quoins to corners. Segmental-headed window openings to ground floor with raised smooth rendered block-and-start surrounds, concrete sills, and remains of timber windows. Square-headed window openings to east and west gables at first floor first floor level having painted concrete sill, and replacement timber casement windows. Segmental-headed door opening to porch with timber panelled entrance door and overlight. Set in overgrown site adjacent to road junction with wire boundary fencing, mature trees to east and located to north-west of Ballindrait village. Former Strabane and Letterkenny Railway line adjacent to the east.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	250m (A1 Blue) 250m (A2 Blue) 250m (B1 Red) 250m (B2 Red) 250m (C1 Orange) 250m (C2 Orange) 250m (D Purple) 250m (E Cyan) 250m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (B1 Red) Indirect & Slight (B2 Red) Indirect & Slight (C1 Orange) Indirect & Slight (C2 Orange) Indirect & Slight (D Purple) Indirect & Slight (E Cyan) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40834017
Address/Townland	Ballindrait
Site Type	Goods Shed
ITM	630816, 900024
Description	Detached double-height former railway goods shed associated with the former Ballindrait railway station (demolished), built c. 1909, having projecting cantilevered canopy over loading bay to the north end. Now out of use, in use as outbuilding with modern house adjacent to the east. Pitched natural slate roof with terracotta ridge tiles, timber fascia to eaves and remains of cast-iron rainwater goods. Corrugated-metal roof to overhanging canopy to north. Squared and mildly rock-faced rubble stone walls with cement rendered block-and-start quoins to the corners. Round-headed window openings to the gable apexes to the west and east gable ends having rusticated cement rendered surrounds, concrete sills, and remains of metal radial windows. Square-headed loading bays to the centre of the north and south elevations having rusticated cement rendered block-and-start surrounds, and battened timber sliding doors with metal railed sliding mechanism. Set back from road in own grounds to the east of Ballindrait and adjacent to the north of the former Strabane and Letterkenny railway line. Former railway stationmaster's house (see 40834011) and site of former railway station to the east, ancillary railway structure to the west.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	141m (A1 Blue) 141m (A2 Blue) 145m (B1 Red) 145m (B2 Red) 138m (C1 Orange) 138m (C2 Orange) 146m (D Purple) 144m (E Cyan) 133m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40835028
Address/Townland	Carricknaslate
Site Type	Croaghan House
ITM	632331, 897999

Description	Detached two-bay two-storey over basement house, built c. 1850, having single-storey projecting open porch to south elevation, and with later two-storey rendered extension to west. Hipped artificial slate roof with overhanging eaves having timber brackets rafter ends with timber sheeted soffit, and a pair of smooth rendered chimneystacks (to north and south ends) with stepped ashlar sandstone coping and clayware pots. Mono-pitched artificial slate roof to porch and hipped artificial slate roof to rear extension. Smooth rendered walls having chamfered ashlar sandstone plinth course above basement openings, ashlar sandstone sill course at first floor level, and with projecting ashlar sandstone block quoins to the corners of the original block. Three ashlar sandstone piers or channelled smooth rendered piers (on square-plan) supporting porch. Square-headed window openings at ground and first floor levels having with sandstone sills and replacement windows. Segment-headed window openings to basement level having wrought-iron security bars and replacement windows. Two square-headed doorways to porch to south having replacement double-doors and replacement overlights. Set back from road in extensive mature grounds to the south-west of Lifford. Section of rendered boundary wall to the south-west corner over basement level having iron railings over. Mature trees to site. Complex of altered two-storey outbuildings to the rear (west). Gateway to the east at start of long approach avenue to house.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	128m (A1 Blue) 128m (A2 Blue) 133m (B1 Red) 133m (B2 Red) 126m (C1 Orange) 126m (C2 Orange) 125m (D Purple) 123m (E Cyan) 131m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40905407
Address/Townland	Drumoghill (Kincraighy)
Site Type	St. Columba's Catholic Church
ITM	625812, 910087
Description	Freestanding Catholic chapel on T-shaped plan, built c. 1830, comprising five-bay hall with attached transept or wing to the centre of the north elevation having later single-bay single-storey addition to the north gable end, and with single-bay single-storey gable-fronted sacristy to the centre of the south elevation, c. 1900. Confessional projection to the north-east side of main block. Pitched natural slate roofs to main body of building having projecting eaves course, and with raised rendered verges to the gable ends having kneeler stone detail of eaves with gable-fronted faces, and with cross finials over gable apexes. Pitched natural slate roof to sacristy with terracotta ridge tiles and with yellow brick chimneystack to south gable end having stringcourse, cornice coping with and clay ware pot over. Smooth rendered ruled-and-lined walls over projecting smooth plinth course. Pointed-arched window openings to main body of building having painted stone sills, and having replacement windows with coloured glass in cast-iron frames. Pointed-arched window

	openings to the south gable end with stone sills, and having timber multi-paned casement windows with intersecting glazing bars to top light. Pointed-arched doorways to the east and west gable ends of main block having timber doors and plain overlight. Square-headed doorway to the east side of sacristy having timber panelled door with plain overlight. Square-headed openings to modern addition to the north end of north transept having modern fittings. Set back from road in elevated site in the rural countryside to the south-east of Manorcunningham. Car parks to site, modern graveyard to the north. Site bounded to the south by rendered boundary wall with modern railings over. Gateway to the south comprising a pair of smooth rendered gate piers (on square-plan) with cross finials over. Cast-iron bell tower to the south-east corner of site comprising four metal columns supporting bell housing with bell metal bell. Modern car park to the south.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	214m (A1 Blue) 214m (A2 Blue) 208m (F Pink)
Type of Impact	Indirect & Slight (A1 Blue) Indirect & Slight (A2 Blue) Indirect & Slight (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40905445
Address/Townland	Drumoghill (Kincraighy)
Site Type	Drumoghill House
ITM	626296, 910046
Description	Detached three-bay two-storey house, built c. 1890, having single-storey modern glazed conservatory extension to the centre of the front elevation (east). Hipped natural slate roof with overhanging eaves with some surviving cast-iron rainwater goods, two central yellow brick chimneystacks with rendered cornice copings over. Smooth rendered walls. Square-headed window openings with painted stone sills, and with six-over-six pane timber sliding sash windows at ground floor level and six-over-three-pane timber sliding sash windows over at first floor level. Modern doorway to conservatory porch. Set back from road in extensive grounds to the south-east of Manorcunningham. Complex of single-storey outbuildings arranged around a courtyard to the west having single-bay single-storey gable-fronted entrance porch to the south side of the range to the north, pitched natural slate roofs with cast-iron rainwater goods, limewashed rubble stone walls, segmental-headed door openings having red brick reveals and voussoirs and battened timber doors and half-doors, and with square-and segmental-headed carriage-arches with battened timber doors. Detached multiple-bay two-storey outbuilding to south-west having pitched natural slate roof, partially rendered random rubble stone walls, segmental-headed window openings at first floor level with red brick reveals and voussoirs over (openings now boarded), loop hole openings at ground floor level; with red brick reveals, segmental-headed doorway with red brick reveals and voussoirs (doorways now boarded), and with segmental-headed carriage-arch to the east gable end with brick reveals and voussoirs, and remains of sliding door mechanism; modern outbuilding attached to the north. Detached two-storey outbuilding to the south of house having pitched corrugated-metal roof, partially rendered rubble stone walls, square- and segmental-headed openings with red brick reveals and voussoirs, and with remains of timber fittings. Gateway to the south of house having a pair of rubble stone gate piers (on circular plan) with wrought-iron gates. Rendered rubble stone boundary walls to either side of gateway.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	86m (A1 Blue) 86m (A2 Blue) 89m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40905446
Address/Townland	Drumoghill (Kincraighy)
Site Type	Mill House (water) (visual)
ITM	625741, 910033
Description	Detached four-bay single-storey former flax mill, erected c. 1910 and possibly retaining fabric from earlier mill structure to site. Pitched corrugated metal roof with projecting eaves course. Partially rendered random rubble stone walls. Central segmental-headed Three-centred carriage-arch to north elevation having red brick block-and-start reveals and voussoirs, and with replacement double corrugated-metal clad gates. Loop hole openings having red brick reveals. Set parallel to road with grass verge to roadside and with overgrown hedgerows to east and west. Stream and bridge adjacent to the east. Located in the rural countryside to the south of Manorcunningham.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	292m (A1 Blue) 292m (A2 Blue) 267m (B1 Red) 267m (B2 Red) 266m (C1 Orange) 266m (C2 Orange) 264m (D Purple)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40905447
Address/Townland	Drumoghill (Kincraighy)
Site Type	Rail Bridge
ITM	625616, 910074
Description	Single-arch rail bridge, c. 1883, formerly carrying the former Burt Junction to Letterkenny narrow gauge railway line over small stream\former millrace. Now overgrown and out of use. Railway out of use and tracks removed (since 1953). Segmental-headed arch with brick voussoirs and with brick construction to arch barrel; coursed and squared mildly rock-faced rubble stone construction to piers and to arch below springing point. Squared rubble stone construction to spandrels and to parapets. Rubble stone coping to parapets. Rubble stone retaining walls to either side. Overgrown deck. Located in the rural countryside to the south-east of Manorcunningham.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	235m (A1 Blue) 235m (A2 Blue) 189m (B1 Red) 189m (B2 Red)

	190m (C1 Orange) 190m (C2 Orange) 193m (D Purple) 238m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40905452
Address/Townland	Ballyboe (Kincraighy)
Site Type	Road Bridge
ITM	625702, 910052
Description	Double-arched bridge carrying road over unnamed stream/mill race, built c. 1800, having V-profile rubble stone cutwater to the central pier to the south and south elevations. Segmental-headed arches having roughly dressed cut stone voussoirs; rubble stone construction to the arch barrel. Random rubble stone construction to pier, spandrels, and parapets; cut stone stringcourse at road deck level. Some repairs to parapets in places; rendered coping over parapets. Tarmacadam deck with grass verges. Located in the rural countryside to the south-east of Manorcunningham, and a short distance to the west of Drumoghill Catholic church (see 40905407).
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	266m (A1 Blue) 266m (A2 Blue) 241m (B1 Red) 241m (B2 Red) 243m (C1 Orange) 243m (C2 Orange) 243m (D Purple) 269m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple) Indirect & Imperceptible (F Pink)

Unique Identification No.	

Legal Status	NIAH
Reference No.	40905457
Address/Townland	Drumcarn
Site Type	Railway Station (visual)
ITM	625153, 909836
Description	Detached three-bay two-storey former railway station, built c. 1883. Now in use as a private house (line closed 1953) with later single-bay extension to the east gable end and with modern porch extension to the rear (north). Pitched artificial slate roof (fibre cement) having overhanging eaves exposed decorative rafter ends to eaves, grey clay ridge tiles , smooth rendered chimneystacks to gable ends (east and west) with red clay pots over, decorative pierced timber bargeboards to gable ends with trefoil perforations, and with metal rainwater goods. Rubble stone walls, formerly smooth rendered and ruled-and-lined, with flush red brick quoins to the corners, smooth rendered plinth course, horizontal smooth rendered stringcourse at first floor level, and with moulded rendered stringcourse at ground floor level brought over window heads as architrave. Square-headed window openings with smooth rendered reveals, painted stone sills, and with replacement timber casement windows having margin glazing bars. Central square-headed door opening to front elevation (south) with smooth rendered reveals, replacement timber door, replacement square-headed sidelights, and with timber lintel over. Set back from road with gravel drive running to roadway to the north-east. Located in the rural countryside to the south-east of Manorcunningham. Former railway goods shed adjacent to the east. Wrought-iron gates and metal railings to the north of site.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	286m (B1 Red) 286m (B2 Red) 294m (C1 Orange) 294m (C2 Orange) 298m (D Purple)
Type of Impact	Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (D Purple)

Unique Identification No.	
Legal Status	RPS/NIAH
Reference No.	40906204
Address/Townland	Corkey
Site Type	Leslie Hill House
ITM	623699.4, 909730.9
Description	Detached three-bay two-storey house built, c. 1820 and extended c. 1860, having two-storey split-level extension to rear and with projecting single-bay single-storey flat-roofed entrance porch to north-east built c. 1860. Possibly originally a mill manager's or mill owner's house. Now out of use. Hipped natural slate roof with central leaded valley to south-west having projecting cut stone eaves course, smooth rendered chimneystacks with ashlar copings over, and with remains of cast-iron rainwater goods. Clipped gablet over stairs to south-west (rear elevation). Flat roof to entrance porch (now overgrown). Remains of roughcast lime render over rubble stone construction with smooth rendered ruled-and-lined walls to porch. Square-headed window openings with stone sills, red brick reveals and voussoirs, and having six-over-six pane hornless timber sliding sash windows to ground floor openings and six-over-three pane timber sliding sash windows to first floor openings; timber louvered shutters to first floor openings. Square-headed doorway to the front face (north-east) of porch having timber panelled entrance door with bolection mouldings, overlight, and sidelights. Round-headed opening to interior of porch having square-headed half-glazed timber panelled door flanking with half-glazed sidelights with decorative geometric glazing bars, moulded timber lintel, and with spider's web fanlight over. Timber panelled doors and architraves, cornices and ceilings roses with cast-

	iron and stone fireplaces to interior. Set back from road in own grounds in the rural countryside to the south of Manorcunningham. Complex of outbuildings arranged around a courtyard to the rear (south-west); now ruinous having pitched natural slate and corrugated-metal roofs, rubble stone walls, and square-headed openings. Set in overgrown gardens with mature hedgerows and trees surrounding. Modern field gateway to the north-west at site of original entrance.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	160m (E Cyan)
Type of Impact	Indirect & Moderate (E Cyan)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906215
Address/Townland	Ballyholey Far
Site Type	House
ITM	626914, 907306
Description	Detached three-bay two-storey with attic level house, built c. 1820, having projecting single-bay single-storey flat-roofed entrance porch to the centre of the east elevation, added c. 1890. Now out of use and derelict. Pitched natural grey slate roof with projecting eaves course, cast-iron rainwater goods, and with smooth rendered chimneystacks to the gable ends (north and south). Flat felt roof to porch with timber fascia board. Remains of roughcast render over random rubble stone walls. Square-headed openings with stone sills and remains of six-over-three pane timber sliding sash windows to front elevation at first floor level; square-headed window openings to ground floor having red brick reveals (openings now blocked with modern blockwork). Square-headed window opening to the north end of the rear elevation at first floor level having paired four-over-two pane timber sliding sash windows; ground floor openings now blocked. Square-headed doorway to porch, now blocked with modern blockwork. Square-headed doorway to the centre of the rear elevation (west) having battened timber door. Set back from road in own grounds in the rural countryside to the north of Raphoe. Complex of single-storey outbuildings to the rear having pitched corrugated-metal and slate roofs, rubble stone walls, and square-headed openings. Main gateway to the south, now disused, having a pair of roughcast rendered gate piers (on square-plan) and a pair of wrought-iron gates with spear finials. Gateway flanked to either side by curved sections of roughcast rendered boundary wall. Sections of roughcast rendered boundary wall to road-frontage to the south.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	240m (C1 Orange) 240m (C2 Orange)
Type of Impact	Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906216
Address/Townland	Ballyholey Far
Site Type	Metal Building
ITM	627149, 907007
Description	Detached two-bay single-storey corrugated-metal building, erected c. 1900, having single-bay single-storey gable-fronted corrugated-metal entrance porch to east. Now out of use or in use as outbuilding. Pitched

	corrugated-metal roof to main body of building and porch. Corrugated-metal sheeting to walls. Square-headed window openings with painted concrete sills, and having two-over-two timber sliding sash windows. Square-headed doorway to the north face of porch having corrugated-metal door. Set back from road to north and used as part of storage for private house adjacent. Located in the rural countryside to the north of Raphoe.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	244m (A1 Blue) 244m (A2 Blue) 243m (B1 Red) 243m (B2 Red) 246m (C1 Orange) 246m (C2 Orange) 251m (F Pink)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Indirect & Imperceptible (B1 Red) Indirect & Imperceptible (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906225
Address/Townland	Carricknamart
Site Type	Bridge
ITM	623592, 909092
Description	Single-arched bridge carrying road over Corkey River, built c. 1800. Segmental-headed arch with dressed stone voussoirs; squared rubble stone construction to arch barrel. Squared and rubble stone construction to spandrels and abutments. Rubble stone construction to parapet to the south-west with modern repairs in places' parapet to the north-east now removed. Tarmacadam deck with grass verges. Located in the rural countryside to the south of Manorcunningham.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	103m (E Cyan)
Type of Impact	Direct & Slight (E Cyan)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906234
Address/Townland	Corkey
Site Type	Worker's House
ITM	623831, 909666

Description	Semi-detached three-bay two-storey house, built c. 1825, having single-storey extension to west, and with modern two-storey houses or altered earlier buildings attached to the east. Pitched natural slate roof with overhanging eaves, cast-iron rainwater goods and one smooth rendered chimneystack to the east gable end. Flat felt roof to west extension. Roughcast rendered rubble stone walls. Square-headed window openings with stone sills, smooth rendered reveals, and with eight-over-eight pane timber sliding sash windows. Square-headed doorway to the west end of the front elevation (north) having timber door. Set back from road in own grounds to the south of Manorcunningham. Former corn mill and probable flax mill to the north-west (see 409062560) and Leslie Hill (see 40906204) located a short distance to the east.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	277m (E Cyan)
Type of Impact	Indirect & Imperceptible (E Cyan)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906242
Address/Townland	Ballyholey Far
Site Type	Bridge
ITM	626611, 907458
Description	Single-arched bridge carrying road over small unnamed stream, built c. 1820. Segmental-headed arch with roughly dressed stone voussoirs; squared rubble stone construction to arch barrel. Squared and rubble stone construction to spandrels and abutments. No parapets visible. Tarmacadam deck with grass verges. Located in the rural countryside to the north of Raphoe.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	236m (C1 Orange) 236m (C2 Orange)
Type of Impact	Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906244
Address/Townland	Drumcarn
Site Type	Bridge
ITM	625013, 908475
Description	Double-arched bridge carrying road over small unnamed stream, built c. 1800, having V-profile rubble stone cutwater to the central pier to both the upstream and downstream elevations (north and south). Round-headed arches having dressed rubble stone voussoirs; rubble stone construction to the arch barrel. Coursed rubble stone construction to pier, spandrels, and parapets with rendered coping over parapets. Some damage to parapet to the north. Sides now partially overgrown with vegetation. Tarmacadam deck with grass verges. Located in the rural countryside to the north of Raphoe.
Sources	www.buildingsofireland.ie

Approx. Distance from Corridor(s) Centre-line	118m (E Cyan)
Type of Impact	Direct & Moderate (E Cyan)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906245
Address/Townland	Mondooey Lower
Site Type	Outbuilding
ITM	625893, 908742
Description	Complex of single- and two-storey outbuildings, built c. 1820 and c. 1860. Detached two-bay two-storey outbuilding to the north-west having pitched natural slate roof, limewashed rubble stone walls, square-headed doorways and loading bays with battened timber doors, segmental-headed carriage-arch with rubble stone voussoirs and wrought-iron flat bar gate, and with external staircase to the south gable end giving access to doorway at first floor level. Detached two-bay single-storey outbuilding to the south having pitched corrugated-metal roof, rendered rubble stone walls with modern blockwork repairs, square-headed window openings with eight-over-eight pane timber sliding sash windows, and with square-headed carriage-arch to the gable end with metal sliding door. Detached two-bay single-storey outbuilding to the north having pitched natural slate roof with raised rendered verges to gable ends, limewashed rubble stone walls, square-headed doorways with timber and corrugated-metal doors, and with single-bay addition to the south gable end. Set back from road in own grounds with modern or altered house to the south-east. Located in the rural countryside to the north-east of Raphoe.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	70m (B1 Red) 70m (B2 Red) 123m (C1 Orange) 123m (C2 Orange) 120m (D Purple)
Type of Impact	Direct and Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40906262
Address/Townland	Carnashallagh
Site Type	House
ITM	628673, 904128
Description	Detached three-bay single-storey vernacular house, built c. 1870, having central projecting windbreak porch to the front elevation (south-east), and with single-bay single-storey outbuilding attached to the north-east gable end Pitched corrugated-metal roof with raised rendered verges and rendered chimneystacks to the gable ends (north-east and south-west). Smooth rendered walls. Square-headed window openings with two-over-two pane timber sliding sash windows. Square-headed doorway to porch having timber door. Set

	slightly back from road in own grounds in the rural countryside to the north-east of Raphoe. Aligned at a right angle to the road-alignment. Yard to front (south-east) and modern gate to road-frontage to the east.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	161m (A1 Blue) 161m (A2 Blue) 148m (B1 Red) 148m (B2 Red) 153m (C1 Orange) 153m (C2 Orange)
Type of Impact	Indirect & Imperceptible (A1 Blue) Indirect & Imperceptible (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Indirect & Imperceptible (C1 Orange) Indirect & Imperceptible (C2 Orange)

Unique Identification No.	
Legal Status	NIAH
Reference No.	40907064
Address/Townland	Coolaghy Glebe
Site Type	House
ITM	628366, 902310
Description	
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	183m (D Purple) 183m (E Cyan) 183m (F Pink)
Type of Impact	Indirect & Imperceptible (D Purple) Indirect & Imperceptible (E Cyan) Indirect & Imperceptible (F Pink)

Unique Identification No.	
Legal Status	
Reference No.	DG0028
Address/Townland	Cavanacor
Site Type	Cavanacor House Garden & Demesne
ITM	
Description	Modest sized demesne for early 17th century house set on high ground above the Deele River and laid out as a landscape park in a style much later than the house. There is said to be evidence of a small formal layout, possibly an earlier garden contemporary with the house, adjacent to the house on the southwest side.
Sources	www.buildingsofireland.ie

Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan) Direct & Moderate (F Pink)

Unique Identification No.	
Legal Status	
Reference No.	DG0040
Address/Townland	Carricknaslate
Site Type	Croaghan House Garden & Demesne
ITM	
Description	Site of historic interest, as the home of the Rev. William Patton from 1636. The straight approach drive is an early feature. This site no longer constitutes an historic garden, demesne or ornamental designed landscape of interest.
Sources	www.buildingsofireland.ie
Approx. Distance from Corridor(s) Centre-line	0m (A1 Blue) 0m (A2 Blue) 0m (B1 Red) 0m (B2 Red) 0m (C1 Orange) 0m (C2 Orange) 0m (D Purple) 0m (E Cyan) 0m (F Pink)
Type of Impact	Direct & Moderate (A1 Blue) Direct & Moderate (A2 Blue) Direct & Moderate (B1 Red) Direct & Moderate (B2 Red) Direct & Moderate (C1 Orange) Direct & Moderate (C2 Orange) Direct & Moderate (D Purple) Direct & Moderate (E Cyan)

	Direct & Moderate (F Pink)

Appendix 2:
Photographic Record

Plate 1: Pluck Standing Stone National Monument No. 453

Plate 2: Leslie Hill House and demesne RPS 40906204

Plate 3: View towards south of all options at Carrickballydooey S3-AAP01

Plate 4: View towards west from Ballyholey Road (S3-AAP02)

Plate 5: View towards south and outbuildings at Mondooey NIAH 40906245

Plate 6: View towards northeast and area of DG062-024--- and S3-AP01 (mid-horizon) at Carnshannagh

Plate 7: View towards northwest and lowlands at Tullyrap S3-AAP03

Plate 8: View towards north/northwest and 'site of' standing stones DG070-032--- and DG070-033--- at Gortin North

Plate 9: View to north/northwest and all option alignments at Murlough S3-AAP05

Plate 10: Ballindrait Windmill NIAH 40834005 (Murlough)

Plate 11: A late nineteenth century photograph of Murlough Windmill (Source: Irish Architectural Archive Ref: 41/46)

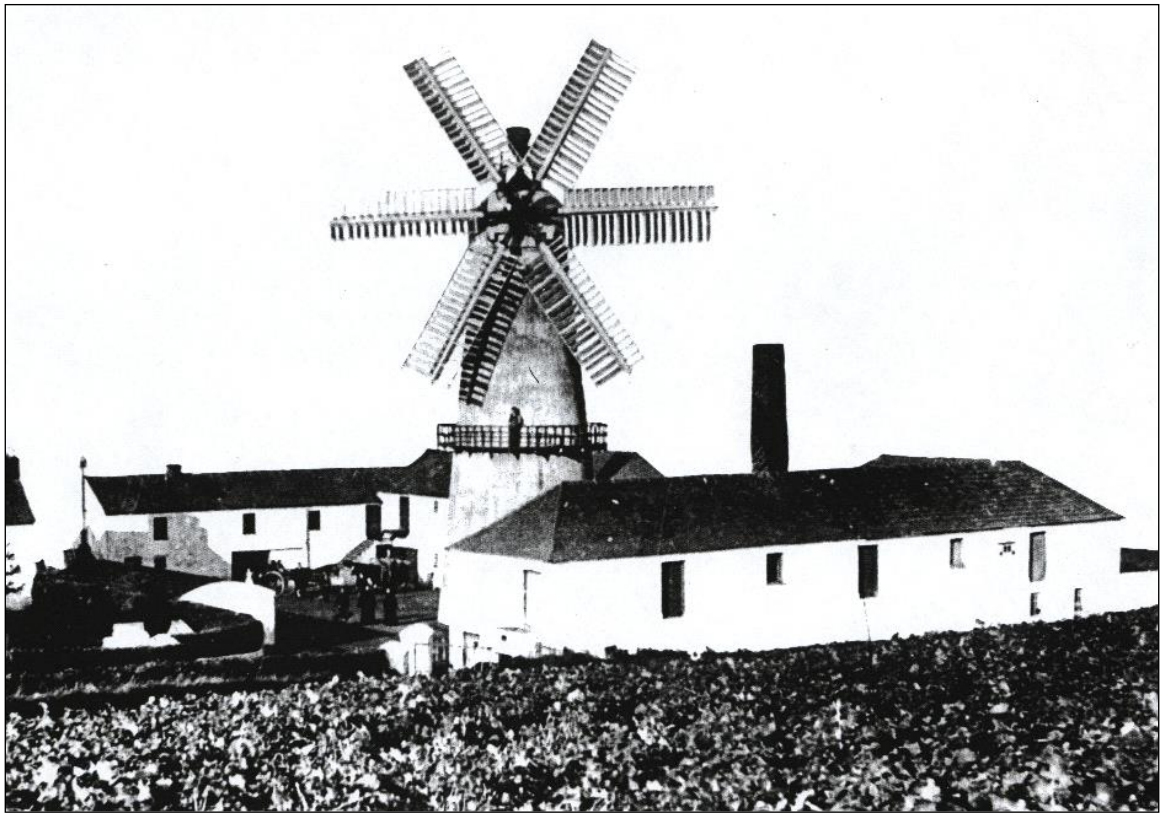


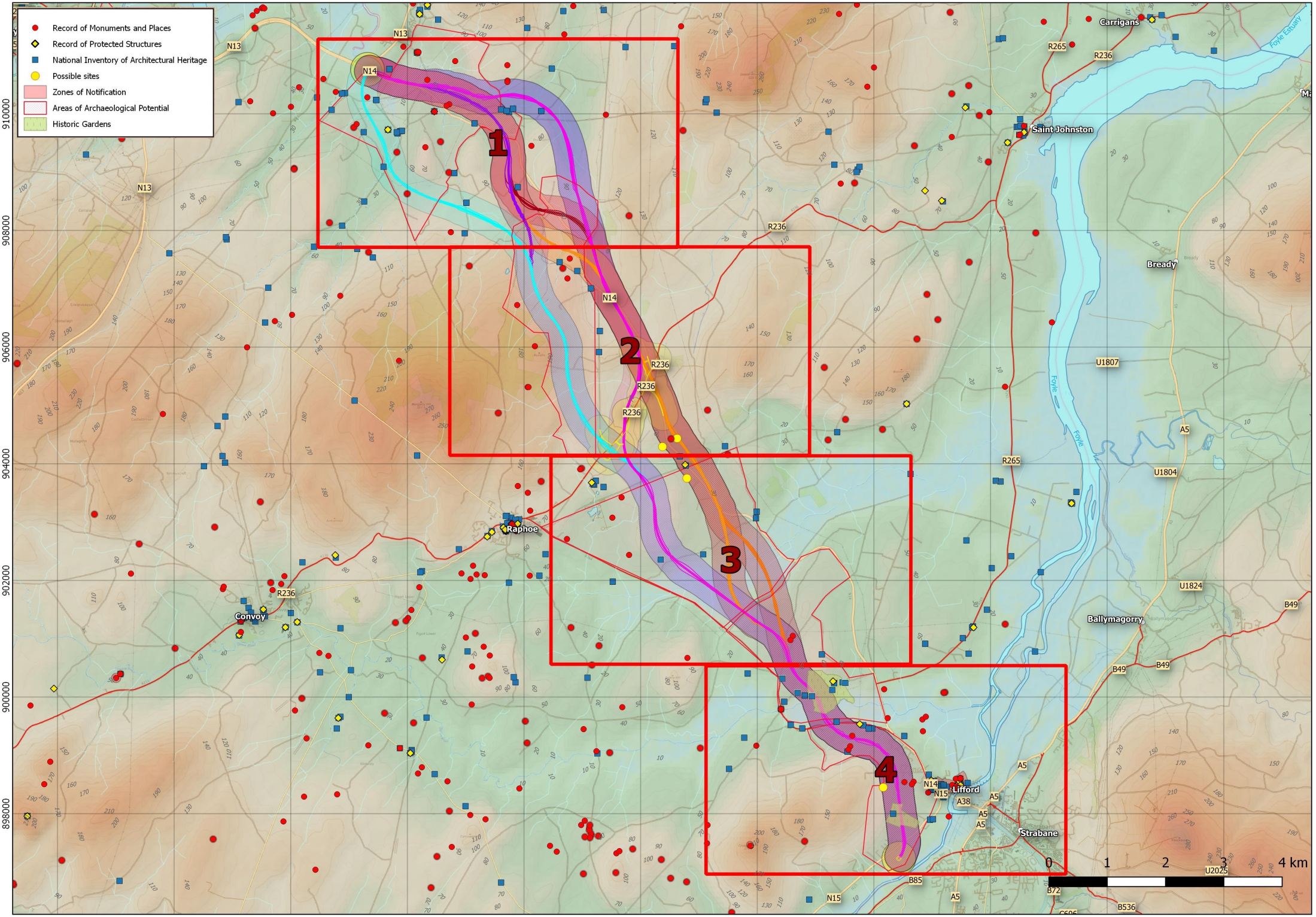
Plate 12: A late nineteenth century photograph of Murlough Windmill (Source: Irish Architectural Archive Ref: 41/46)

Plate 13: View to northeast and all options at Murlough S3-AAP04

Plate 14: St Patrick's R. C. Church NIAH 40834003/RPS 40907020 (Murlough) (designed by Liam McCormack)

Plate 15: St Patrick R.C. Church Tower NIAH 40834004 (Murlough)

Appendix 3:
Cultural Heritage Constraint Option Mapping

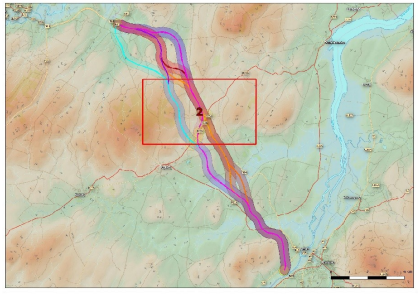

Record of Monuments and Places
Record of Protected Structures
National Inventory of Architectural Heritage
Possible sites
Zones of Notification
Areas of Archaeological Potential
Historic Gardens
618000
620000
622000
624000
626000
628000
630000
632000
634000
636000
638000
910000
908000
906000
904000
902000
900000
898000
1
2
3
4
N13
N14
N15
R236
R265
A5
A38
B49
B85
B72
B536
U1807
U1804
U1824
U2025
Carrigans
Saint Johnston
Bready
Raphoe
Convoy
Ballymagorry
Lifford
Strabane
Foyle
Foyle Estuary
0
1
2
3
4 km

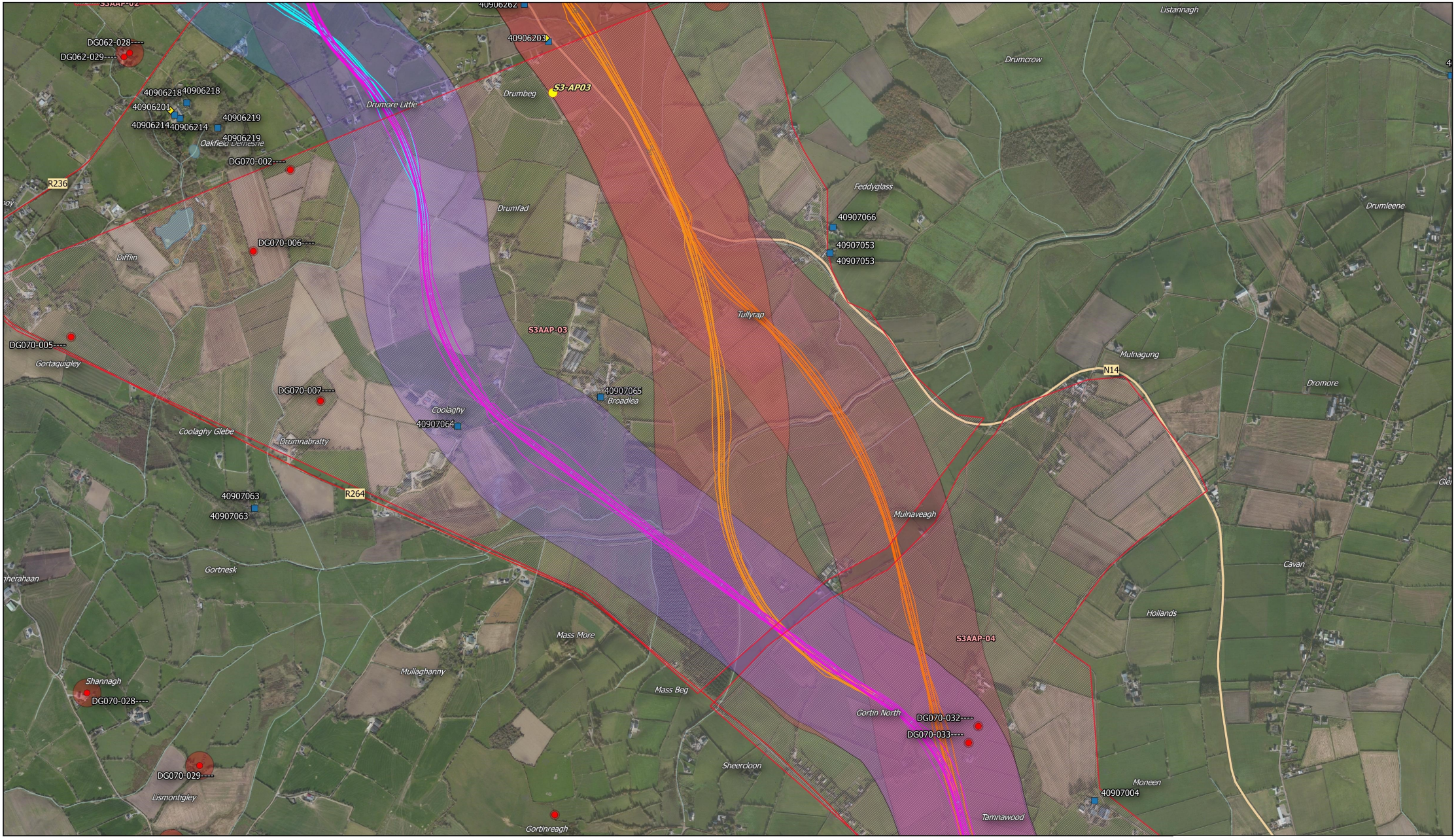

Rossbrackan
Raymoghy
Glebe
Carrickballydooey Glebe
Carrickballydooey
Tullybogly
Pluck
Labbadish
Drumoghill
Galdonagh
Galdonagh Glebe
Corkey
Drumcarn
Woodhill
Mondooey Lower
Castledowey
Doorabble
Carricknamart
S3AAP-01
S3AAP-02
N13
N14
DG054-031----
DG054-032001-
DG054-032----
DG054-032002-
40827009
DG054-033----
40827011
DG054-034----
40905444
40905442
DG054-036----
DG054-039----
DG054-042001-
DG054-042002-
DG054-037----
40905454
40905455
DG054-038----
40905456
40905425
DG054-040----
DG054-041----
40905401
40905401
DG054-048----
40905447
40905407
40905445
40905445
40905446
40905452
DG054-043----
40905457
40905457
DG062-002----
DG062-001----
40906228
40906204
40906234
40906236
DG062-005----
DG062-004----
DG062-003----
DG062-006----
40906225
DG062-009----
40906246
40906245
DG062-008----
40906229
40906244
40906244
DG062-013----
62-010----
40906261
DG062-011----
40906243
Record of Monuments and Places
Record of Protected Structures
National Inventory of Architectural Heritage
Historic Gardens
Possible sites
Zones of Notification
Historic Gardens
Areas of Archaeological Potential
Option F
Option E
Option D
Option C2
Option C1
Option B2
Option B1
Option A2
Option A1
Option F 500m corridor
Option E 500m corridor
Option D 500m corridor
Option C2 500m corridor
Option C1 500m corridor
Option B2 500m corridor
Option B1 500m corridor
Option A2 500m corridor
Option A1 500m corridor
N
0
250
500
750
1000 m

- Record of Monuments and Places
- Record of Protected Structures
- National Inventory of Architectural Heritage
- Historic Gardens
- Possible sites
- Zones of Notification
- Historic Gardens
- Areas of Archaeological Potential
- Option F
- Option E
- Option D
- Option C2
- Option C1
- Option B2
- Option B1
- Option A2
- Option A1
- Option F 500m corridor
- Option E 500m corridor
- Option D 500m corridor
- Option C2 500m corridor
- Option C1 500m corridor
- Option B2 500m corridor
- Option B1 500m corridor
- Option A2 500m corridor
- Option A1 500m corridor

N

0 250 500 750 1000 m

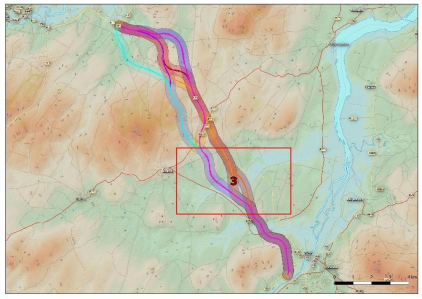


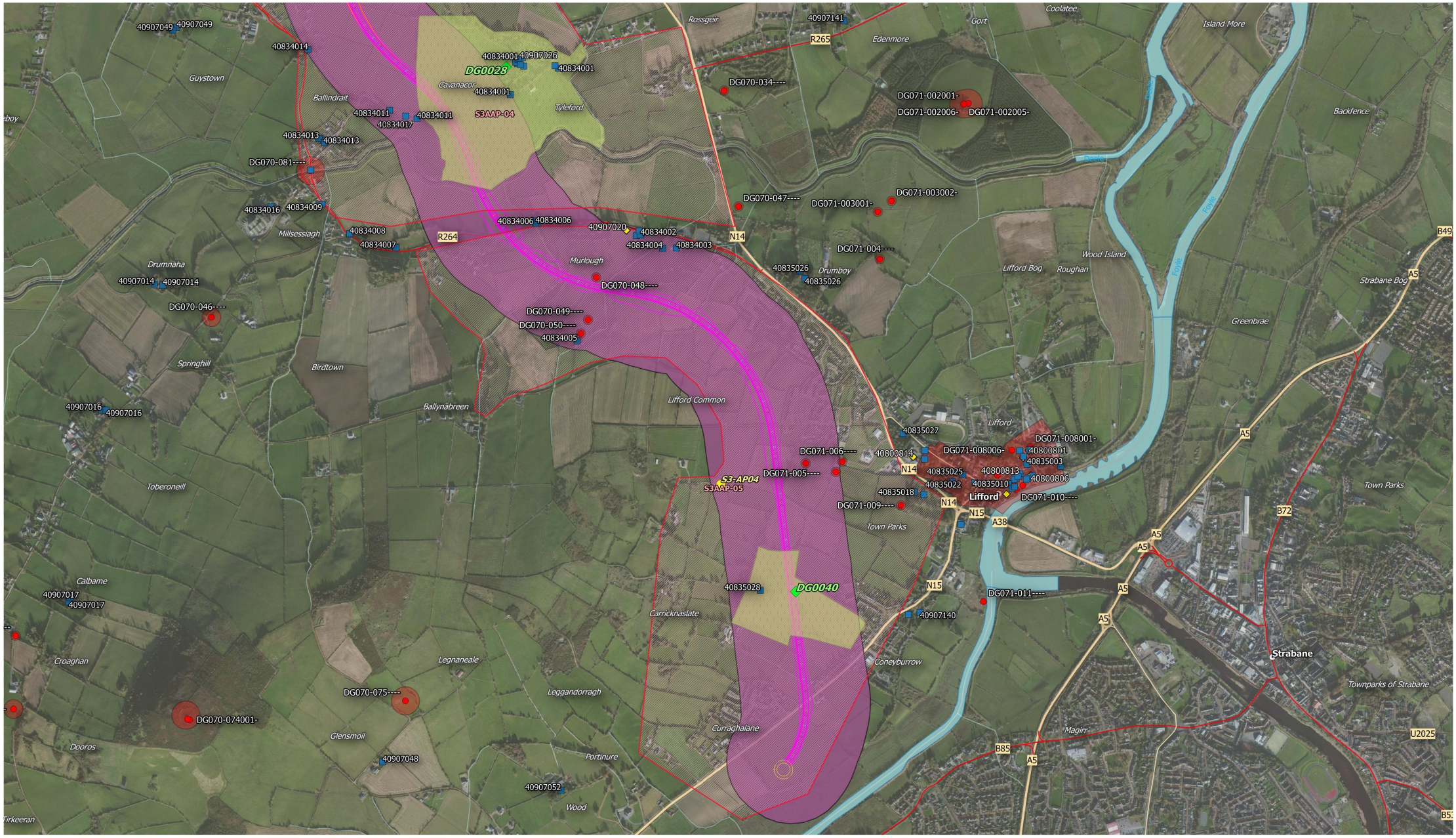


- Record of Monuments and Places
- Record of Protected Structures
- National Inventory of Architectural Heritage
- Historic Gardens
- Possible sites
- Zones of Notification
- Historic Gardens
- Areas of Archaeological Potential
- Option F
- Option E
- Option D
- Option C2
- Option C1
- Option B2
- Option B1
- Option A2
- Option A1
- Option F 500m corridor
- Option E 500m corridor
- Option D 500m corridor
- Option C2 500m corridor
- Option C1 500m corridor
- Option B2 500m corridor
- Option B1 500m corridor
- Option A2 500m corridor
- Option A1 500m corridor

N

0 250 500 750 1000 m

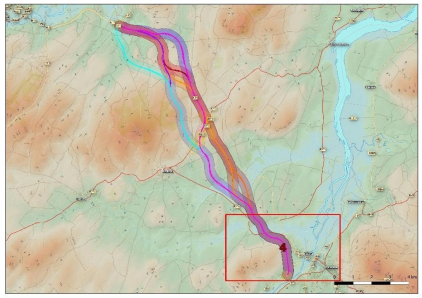




- Record of Monuments and Places
- Record of Protected Structures
- National Inventory of Architectural Heritage
- Historic Gardens
- Possible sites
- Zones of Notification
- Historic Gardens
- Areas of Archaeological Potential
- Option A1
- Option A2
- Option B1
- Option B2
- Option C1
- Option C2
- Option D
- Option E
- Option F
- Option A1 500m corridor
- Option A2 500m corridor
- Option B1 500m corridor
- Option B2 500m corridor
- Option C1 500m corridor
- Option C2 500m corridor
- Option D 500m corridor
- Option E 500m corridor
- Option F 500m corridor

N

0 250 500 750 1000 m



TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.8 - Material Assets (Agricultural)

December 2019

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Option Selection Report – Technical Appendix D3.8 Material Assets Agricultural
Document No. :	TT_Y16112-2JV-RS-MCA-S3 -RP-MAG -00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for publication	CW	PK

Table of Contents

List of Tables

1 INTRODUCTION

This Chapter undertakes multi criteria assessment of each proposed corridor option associated with this Ten T-Project Road Project, Co. Donegal, and the likely significant impacts that these proposed corridor options may have on agriculture.

The impacts that an option may have on agriculture are a function of the following factors:

- Area of lands acquired;
- Area and orientation of lands severed;
- Removal of farm buildings and/or facilities;
- Farm enterprises; and
- Intensity and viability of farming practices.

1.1 Methodology

Guidelines

The following publications and documents were considered in undertaking this comparative assessment:

- 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;
- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5, HA 205/08 (Highways Agency et al., 2008) with respect to overarching assessment principles;
- DMRB Section Volume 11, Section 3, Part 6 'Land Use' (Highways Agency et al., 2001) for the assessment of effects on land use assets;
- 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.

Scope of Assessment

The following aspects were considered in the quantitative assessment for the option selection process from an agriculture perspective;

- Land to be acquired – Land take is one of the more significant impacts that can occur from an agricultural perspective. At this stage of the project the exact land take is not known. However, there is a strong correlation between length of a proposed option and land take. Therefore, the longer an option the greater the land take is likely to be, and consequently the least preferred from an agricultural perspective.
- Area and orientation of lands severed – Land severance can be a very significant 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 the folio data has been used in this option selection assessment.

- Removal of farm buildings and/or facilities – Removal of farm buildings and/or facilities will have a significant effect on an agricultural property. The significance of this effect is accentuated in dairy and high intensity faculties such as pig or poultry units. The removal of remote cattle/sheep handling facilities, while significant can generally be replaced and therefore be readily mitigated.
- Farm enterprises – As stated previously 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 land take and severance, may also significantly affect other enterprises such as beef and tillage.
- The proposed options may affect different farm enterprises as follows;
    - **Dry stock:** 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. 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, land take, even temporary, is potentially more significant on a dairy farm than other enterprises. There are a number of dairy farms (11 No.) within the study area, of which 5 No. may be potentially affected by the proposed options.
    - **Tillage:** Tillage farming is undertaken in the vicinity of the proposed 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, the effective operation of large machinery benefits from large square fields. Triangulation of a field due to severance or reduction in field size due to land take 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 the proposed road project may cause stress due to associated noise levels. There are no stud farms along the proposed options[1], but a number of farms do have sport horses and do partake in equine activities. Furthermore, land take 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.
    - **Pig/Poultry Facilities:** There are a number of intensive agricultural pig and poultry facilities situated in Co. Donegal. These facilities operate strict disease control protocols and cognisance of these disease protocols will be required before access is made to lands and/facilities associated with these enterprises. As a rule these facilities do not occupy large areas for the actual facilities but may require substantial spread lands and loss and/or severance from these lands may potentially impact the operation of these facilities. Noise may also be an issue, particularly for poultry units.

[1] Stud farm as listed in the "Directory of the Turf"

http://www.directoryoftheturf.com/search_results.cfm/searchcategory/Stud%20Farms/searchcounty/Co%20Dublin

- **Horticulture:** These enterprises by their nature are intensively managed producing a high value product. These enterprises may have associated facilities such as polyethylene tunnels, glass houses or specialised irrigation/feeding systems. Land take and severance will be a concern for these enterprise types.

- 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, discussions with landowners at public consultation meetings, and from undertaking windscreen surveys, there would appear to be very little difference in the intensity of many of the tillage and dry stock farms in the region. Significant land take and/or severance of these properties will potentially affect the management of these properties and in some instances tillage will no longer be viable in fields heavily triangulated and these fields will have to revert to drystock grazing.
- There are several large and very well managed dairy farms in the region and these farms, from observations and discussions, are managed very intensively. The viability of these farms to remain in dairy will be potentially affected by any proposed option that severs critical areas of the farm or has a substantial land take. These farms will be considered in the option selection process.
- There are also several pig facilities potentially affected. These facilities appear to be intensively managed and, as such, may be limited to absorb the impacts of a new road acquiring or severing spread lands.

1.1.1 Assessment Criteria

The following tables (**Tables 1-1 and 1-2**) consider the sensitivity of various agricultural operations, and the significance of the potential impact on agriculture. These assessments are broadly based on Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5, HA 205/08 (Highways Agency et al., 2008) with respect to overarching assessment principles and DMRB Section Volume 11, Section 3, Part 6 'Land Use' (Highways Agency et al., 2001) and the requirements of the Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis, PE-PAG-02031, October 2016.

Table 1-1: Assessment of Environmental Value - Agriculture

Value (sensitivity)	Descriptions
Very high	▪ Stud farms; ▪ Equine therapy facilities; and ▪ Deer farms.
High	▪ Riding stables; ▪ Horse training facilities; and ▪ Poultry units;
Medium	▪ Dairy; ▪ Horticultural units; ▪ Pig units; and ▪ Forestry;
Low	▪ Sheep farms; ▪ Beef farms; ▪ Tillage farms; and ▪ Fodder conservation areas.
Negligible	▪ Fallow ▪ Scrub land

Table 1-2: Assessment of Significance – Agriculture

Significance category	Description of effect
Major (negative)	Effect of a proposed corridor option on agricultural are such that the choice of this option is likely to be material in the decision making process.
Moderate (negative)	Effect of the proposed corridor option on agricultural is important but unlikely to be key in the decision making process unless a large number of agricultural properties experience this effect.
Minor (negative)	Effect of the proposed corridor option on agriculture is locally significant. The effects are unlikely to be critical in the decision making process, but will be important in enhancing the subsequent design of the proposed road.
Neutral	Agriculture can absorb the effects of the proposed road.

The comparative evaluation of options was assisted by scoring of agricultural receptors using an Impact Category Key as set out in **Table 1.3.**

Table 1-3: Impact Score Key

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

Information Sources Used

The following information sources were utilised;

- Submissions made by landowners and other stakeholders;
- Discussions with landowners during consultation events; and
- Aerial photography.

Field Surveys Undertaken

No in-field surveys were undertaken for this comparative assessment of different proposed corridor options. However, a number of windscreen surveys were undertaken.

Assumptions

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

- Only properties where the folio was greater than 0.5ha were considered ‘agriculture’ in the comparative analysis, unless a property, less than 0.5ha, contained an intensive agricultural industry or a critical facility on a separate and associated folio.
- For comparative purposes, the land take was assumed to be on average 25m either side of the centreline of the proposed corridor options.
- Strong correlation between road length and land take.

- 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 consumed into the overall assumed land take for the project.
- Only corridor options that potentially impacted agricultural lands were considered in this comparative analysis and sections online at the tie-in locations were not considered. Therefore, the length of a corridor option was from the point the option went off-line through agricultural land.

Consultations

Consultations were undertaken by the project team, in particular by members of the dedicated Landowner Liaison Team, with members of the public, which included landowners.

2 EXISTING ENVIRONMENT

2.1 Baseline Information

According to the Census of Agriculture 2010[2] there are 9,240 farms in Co. Donegal utilising approximately 257,796 hectares. The most widespread type of farming in Co. Donegal is beef and sheep production which represents 74% of the farms compared, to a national average of 65%. There are 180 specialist dairy farms in the county, which represents approximately 2% of the total number of farms in the County.

A summary of these areas within Scheme 3 N14 Manorcunningham to Lifford/Strabane/A5 Link are described in **Table 2-1.**

Table 2-1: Summary of Agricultural Constraints within Section 3 N14 Manorcunningham to Lifford/Strabane/A5 Link

Description	Area (ha)	Approx. No. of Farms[3]	Soils Grade 3a and higher (%)	Soils Grade 3b and lower (%)	Possible constraining enterprises within study area('sensitive' farms)
This is the largest study area and is situated on either side of the N14 from Lifford in the south to Manorcunningham in the north. Much of the land in Study Area No. 3, particularly in the southern part, is of good quality with a strong tradition of tillage and potato production.	7,202	258	55	43	▪ 11 Dairy Farms ▪ 2 Pig Facilities ▪ 1 Horse Facility

[2] Central Statistics Office (2012) Census of Agriculture 2010 Final Results.
[3] Based on average farm size for the County and area of Study Area.

3 OPTIONS ASSESSMENT

3.1.1 Section 3 – Corridor Assessment

Corridor 3A1

- Land take: This corridor is ranked 6th for length and is 4% longer than the shortest option. This option will affect 78 folios.
- Severance: The centreline of this corridor will significantly sever 41 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the longer options and is ranked 6th for overall preference.

Corridor 3A2

- Land take: This corridor is ranked 7th for length and is 5% longer than the shortest option. This option will affect 74 folios.
- Severance: The centreline of this corridor will significantly sever 43 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the longer options and is ranked joint 5th for overall preference. This corridor, when compared to 3A1, has a lower potential effect due to severance on 1 sensitive farm.

Corridor 3B1

- Land take: This corridor is ranked 8th for length and is 5% longer than the shortest option. This option will affect 76 folios.
- Severance: The centreline of this corridor will significantly sever 38 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the longer options and is ranked joint 5th for overall preference.

Corridor 3B2

- Land take: This corridor is ranked 5th for length and is 4% longer than the shortest option. This option will affect 72 folios.
- Severance: The centreline of this corridor will significantly sever 40 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the longer options and is ranked 3rd for overall preference. This corridor, when compared to 3B1, has a lower potential effect due to severance on 1 sensitive farm.

Corridor 3C1

- Land take: This corridor is ranked 4th for length and is 2% longer than the shortest option. This option will affect 73 folios.
- Severance: The centreline of this corridor will significantly sever 40 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the longer options and is ranked 3rd for overall preference.

Corridor 3C2

- Land take: This corridor is ranked 2nd for length and is 1% longer than the shortest option. This option will affect 69 folios.
- Severance: The centreline of this corridor will significantly sever 41 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is one of the shorter options and is ranked 1st for overall preference. This corridor, when compared to 3C1, has a lower potential effect due to severance on 1 sensitive farm.

Corridor 3D

- Land take: This corridor is ranked 3rd for length and is 2% longer than the shortest option. This option will affect 72 folios.
- Severance: The centreline of this corridor will significantly sever 49 folios.
- Constraining factors: This corridor will potentially affect two of the more sensitive farms identified in this section.
- Conclusion: This corridor while one of the shorter options but does potentially affect the largest number of sensitive farms and as such is ranked 4th for overall preference.

Corridor 3E

- Land take: This corridor is ranked 1st for length and is the shortest option. This option will affect 64 folios.
- Severance: The centreline of this corridor will significantly sever 51 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is the shortest option and is ranked 2nd for overall preference.

Corridor 3F

- Land take: This corridor is ranked 9th for length and is 5% longer than the shortest option. This option will affect 75 folios.
- Severance: The centreline of this corridor will significantly sever 47 folios.
- Constraining factors: This corridor will potentially affect one of the more sensitive farms identified in this section.
- Conclusion: This corridor is the longest option and is ranked 7th for overall preference.

3.2 Comparison of Options

Table 3.1: Summary of assessment for Section 3 N14 Manorcunningham to Lifford/Strabane/A5 Link

Option	Quantitative Assessment[4]	Qualitative Assessment	Impact Score	Order of Preference
3A1	18	Moderate	2	6
3A2	17	Moderate	2	5
3B1	17	Moderate	2	5
3B2	11	Moderate	2	3
3C1	11	Moderate	2	3
3C2	8	Moderate	2	1
3D	14	Moderate	2	4
3E	10	Moderate	2	2
3F	21	Moderate	2	7

[4] The quantitative assessment used a simple model that applied a score to the following parameters:

- Length of centreline;
- Number of constraints potentially affected;
- Number of folios intersected; and
- Number of folios significantly severed.

Comhairle Contae Dhún na nGall
Donegal County Council

TEN-T Priority Route Improvement Project, Donegal

Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

Option Selection Report

Appendix D3.9 – Material Assets – Non-Agricultural

December 2019

RPS BARRY TRANSPORTATION

Document Control Sheet

Client:	Donegal County Council
Project Title:	TEN-T Priority Route Improvement Project, Donegal – Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link
Document Title:	Appendix D3.9 – Material Assets – Non-Agricultural
Document No. :	TT_Y16112-BT-RS-MCA-S3 -RP-MAN -00001

Rev. No.	Suitability	Effective Date	Revision Description	Checked	Approved
P01	S4	December 2019	Issue for Publication	EC	ED

Table of Contents

List of Figures

List of Tables

1 INTRODUCTION

This report examines the Material Assets (Non-Agricultural) appraisal for Section 3: Manorcunningham to Lifford/Strabane/A5 Link of the TEN-T Priority Route Improvement Project, Donegal and will form part of the Phase 2 Option Selection Report. Refer to Section 1.2 of the Option Selection Report for a description of the project.

Nine options are assessed, namely: Option 3A1 and 3A2 (Blue), 3B1 and 3B2 (Red), 3C1 and 3C2 (Orange), 3D (Purple) and 3E (Cyan).

The principal objectives of the assessment are to:

- Complete a desk study and to obtain relevant data relating to material assets including utilities, properties, quarries, transport, infrastructure and other amenities for each option;
- Assess the significance of the likely direct physical impacts of the proposed road scheme on non-agricultural material assets along each option within a 300m wide corridor and, where necessary considering the footprint of the option selection alignment design;
- Evaluate and compare the impact on non-agricultural material assets for each option taking into account interactions with other environmental, engineering and economic criteria;
- Assess each option in line with the Project Appraisal Guidelines for National Roads Unit 7.0 - Multi Criteria Analysis issued by the TII[1] in October 2016; and
- Based on the above assessments, compare and rank the options in order of preference.

The extent of the overall study areas within the three sections have been identified and detailed in the main body of the Option Selection Report.

1.1 Methodology

The methodology adopted for the option selection assessment comprised primarily of a desktop study and additional information gathered during windscreen surveys. These elements, including transport infrastructure, utilities and non-agricultural land use, were used to identify and describe areas of potential infrastructural value or sensitivity.

Material sources consulted for the assessment included, but not limited to, the following:

- OSi 1:50,000 mapping;
- Aerial photography (online resources);
- Utilities datasets (ESB, GNI, broadband, telecoms);
- Water and wastewater treatment infrastructure datasets (EPA and Irish Water);
- Donegal County Development Plan 2012-2018;
- An Post GeoDirectory,
- Failte Ireland and Discover Ireland websites; and
- Site visit including a windscreen survey of the surrounding area was undertaken.

The assessment has been carried out in two parts. The first part in Chapter 2 covers the impacts associated with infrastructure and the second part in **Chapter 3** covers impacts on properties. The overall impact assessment for Material Assets (non-agricultural) is then summarised at the end of this report.

[1] The National Roads Authority (NRA) and the Railway Procurement Agency were merged to become Transport Infrastructure Ireland (TII) in 2015.

1.1.1 Assessment Criteria

The assessment was informed by the Transport Infrastructure Ireland (TII) *Project Appraisal Guidelines for National Roads Unit 7.0 – Multi Criteria Analysis PE-PAG-02031* (TII,2016) , (hereafter referred to as the *PAG Unit 7*) and the *EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*[2] (EPA,2017). The criteria that have been used for the assessment of Material Assets (Non-agricultural) are provided in **Table 1-1**.

Table 1-1: Environmental Factors and associated topics for consideration for Option Selection stage

Environmental Factor	Criterion
Chapter 2 Infrastructure	Built Services covering: • Electricity • Renewable energy • Telecommunications • Water and wastewater • Quarries
	Transport Infrastructure covering: • Roads • Rail
	Waste Management covering • Waste facilities • Waste[3]
	Forestry
Chapter 3 Properties	Settlements and Zoning
	Residential
	Commercial
	Community Facilities
	Community Severance
	Tourism

Table 1-2 below sets out the seven impact scoring ratings used in this assessment as outlined in PAG Unit 7.

Table 1-2: Impact Scoring Key (TII, 2016)

7	Major or Highly Positive
6	Moderately Positive
5	Minor or Slightly Positive
4	Not Significant/Neutral
3	Minor or Minor or slightly negative
2	Moderately negative
1	Major or Highly negative

[2] http://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf

[3] Waste is a standalone topic under Unit 7 of the PAG. The impact scores are therefore considered within that topic and are not brought forward into the impact scores for Material Assets (Non-agricultural).

2 INFRASTRUCTURE

2.1 Introduction

Material assets can be defined as economic assets of natural and human origin, or cultural assets of a physical and social type. This section identifies the constraints of the proposed scheme in relation to Material Assets (Non-agricultural) with particular reference to utilities, transport infrastructure, and non-agricultural land use.

2.2 Utilities Infrastructure

Utilities covers the electricity transmission and distribution systems, renewable energy infrastructure, telecommunications infrastructure, water and wastewater infrastructure. There are no gas pipelines in the north west of Ireland.

north west of Ireland.

Figure 2-2 illustrates the telecommunication and electricity network infrastructure within County Donegal from the County Donegal Development Plan (2018-2024).

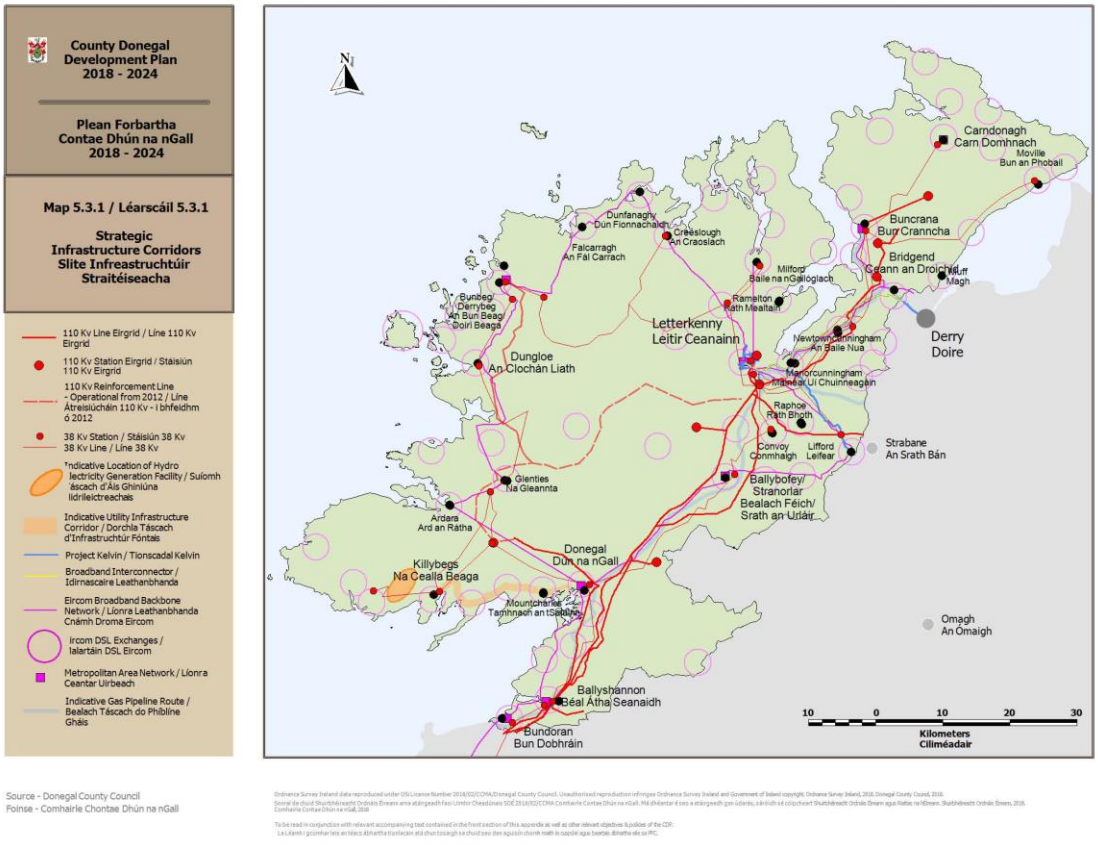


Figure 2-1: Telecommunications and Electrical Networks in Donegal County[4]

It is inevitable that with any infrastructure improvement there will be a direct impact on utilities. However, the significance of that potential impact for various options may differ. Therefore, for the Option Selection phase of the project, only trunk facilities are being considered.

[4] http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/countydonegaldevelopmentplan2018-2024/partaandb/Map%205.3.1%20Strategic%20Infrastructure%20Corridor.pdf

2.2.1 Electricity

The location of high voltage overhead lines was sourced from a contact at the ESB in Letterkenny and cross-referenced to the 2012 – 2018 County Development Plan Strategic Infrastructure Corridors mapping. These high voltage overheads are illustrated on Figure 2-2. Each option in Section 3 has equal direct potential impact/clash with the high voltage overheads, however none of the clashes are longitudinal in nature. No other apparatus of greater than 110kV is currently situated within the Section 3 study area.

Table 2-1 EirGrid overhead line conflicts with options

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
38 kV clash	3	3	3	3	3	3	3	3	3
110 kV clash	1	1	1	1	1	1	1	1	1
Total	4	4	4	4	4	4	4	4	4
Impact Description	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Impact Score	3	3	3	3	3	3	3	3	3

2.2.2 Renewable Energy

A planning application was submitted to Donegal County Council on 7/02/2018 for a wind farm of 30-year operational life at Momeen, off the R236 approximately 3km north of the existing N14. The wind farm would constitute 6 no. wind turbines and all associated works, therefore none of the shortlisted options will have a direct potential impact on the proposed wind farm.

However, the proposed the proposed wind farm must be connected to the National Grid. This will be done via one of the following options outlined in the EIAR (McCarthy, Keville, O'Sullivan):

- *"Option A: Underground cabling between the proposed onsite substation in the townland of Momeen and the existing 110 kV Letterkenny substation in the townland of Listellian. The proposed underground cabling would be installed in the public roads between the wind farm site and Letterkenny substation and measures approximately 14.40 kilometres in length.*

Or:

- *Option B: Connection to the permitted overhead line (with some shorter sections of underground cabling) between the proposed wind farm site and the existing Letterkenny substation. This connection infrastructure, which comprises approximately 10.16 kilometres of overhead line and 2.06 kilometres of underground cabling, has been permitted by Donegal County Council under Planning Reference No. 15-50968."*

All options are deemed to have equal potential impact on National Grid connections to the wind farm and therefore score equally. The severity of the potential impact can be managed by appropriate coordination during the design process; therefore, the scoring of each option is 3 (slightly negative).

Table 2-2 Potential Impact score of each option with respect to wind farm infrastructure

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Impact Score	3	3	3	3	3	3	3	3	3

2.2.3 Telecommunications

Progress had been achieved through National and EU co-funded projects in addressing the broadband core network and international connectivity deficits, through the implementation of the Metropolitan Area Networks Schemes in towns such as Ballybofey/Stranorlar.

Figure 2-2 illustrates the Telecommunication and Electrical Network Structure within County Donegal from the Donegal County Development Plan (2012-2018).

This figure illustrates Project Kelvin connectivity from Strabane via Manorcunningham to Letterkenny. These fibre ooptic cables operated by GTT and form part of the terrestrial portion of a transatlantic cable known as Project Kelvin. The following description of the apparatus/service has been provided by GTT:

"*The cable originates in North America and lands in Portrush Beach Manhole terminating in Dublin via Coleraine, Derry, Letterkenny, Strabane, Omagh, Ballymena, Belfast, Portadown, Armagh, Monaghan, Castleblaney & Drogheda. This cable is considered critical infrastructure and is extremely critical to our business and business in the north in general. This fibre optic cable carries data traffic for Gtt's Global Financial Network (GFN) used by High Frequency Traders which currently unites hundreds of global banks and financial exchanges with a single connection*."

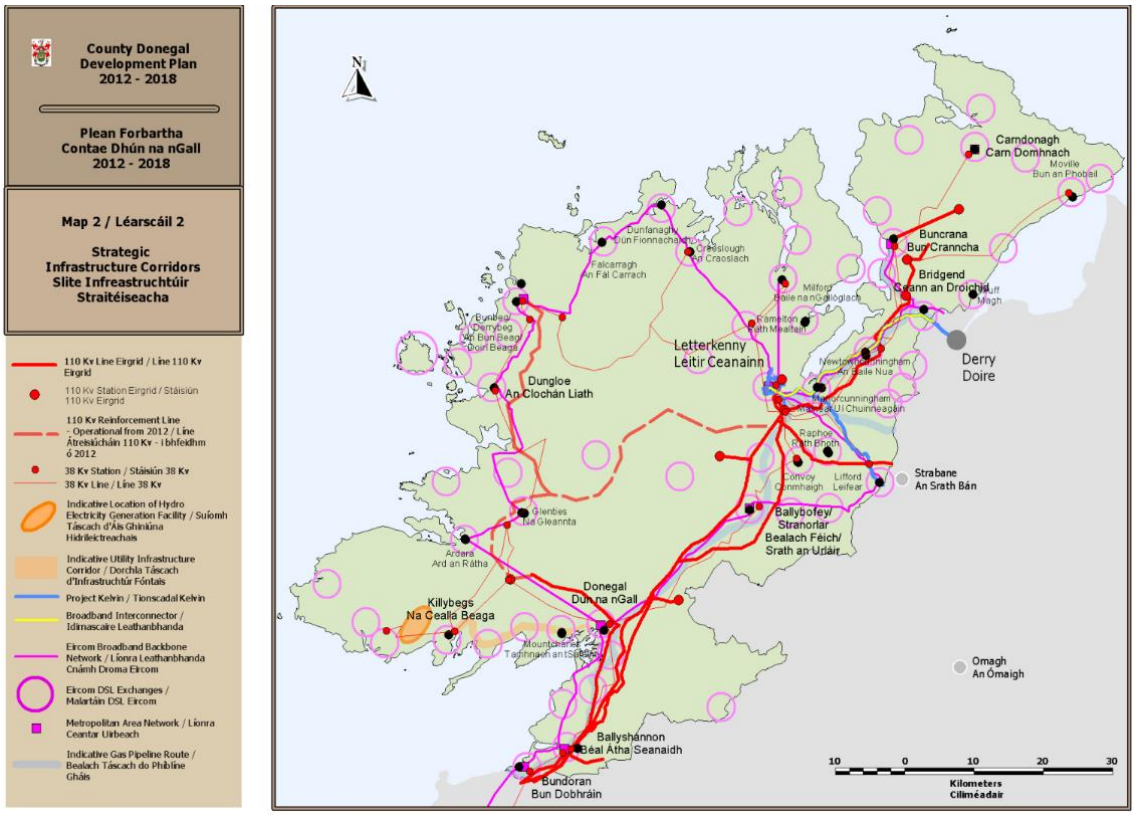


Figure 2-2: Telecommunications and Electrical Networks in Donegal County[5]

The fibre optic cables run along the existing N14 road alignment, therefore the ccomparison of options in terms of impact on fibreoptic apparatus has been established by considering the number of conflict points between the mainline and the existing N14 each route.

[5] http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/countydonegaldevelopmentplan2012-2018/coredocumentmapping/2%20Strategic%20Infrastructure%20Corridors.pdf

As Option 3E is completely offline to the existing N14, it has a neutral impact. Option 3C1/3C2 cross the existing N14 more than any other option followed closely by Option 3B1/3B2 which is anticipated to have slightly less realignment of the existing N14.

Table 2-3 Potential Impact score of each option with respect to Telecommunications/Fibreoptic Apparatus

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Conflict with mainline options	4	4	6	6	6	6	1	0	2
Impact Description	Slightly Negative	Slightly Negative	Moderate Negative	Moderate Negative	Moderate Negative	Moderate Negative	Slightly Negative	Neutral	Slightly Negative
Impact Score	3	3	2	2	2	2	3	4	3

2.2.4 Water and Wastewater Network

The study area is located in the Finn/ Derg/ Foyle Water Management Unit (WMU) Action Plan area. There is one wastewater treatment plant within the Section 3 study area, which is located in Lifford. The plant currently operates on primary treatment only. This treatment plant is not directly affected by any of the options corridors.

There are also wastewater treatment plants outside the study area boundary in Raphoe, Convoy and Manorcunningham.

Donegal County Council provided drawings indicating proposed water and wastewater infrastructure projects. Within this, there is planned capital and rehabilitation projects planned for the N13 and N14 respectively within the study area.

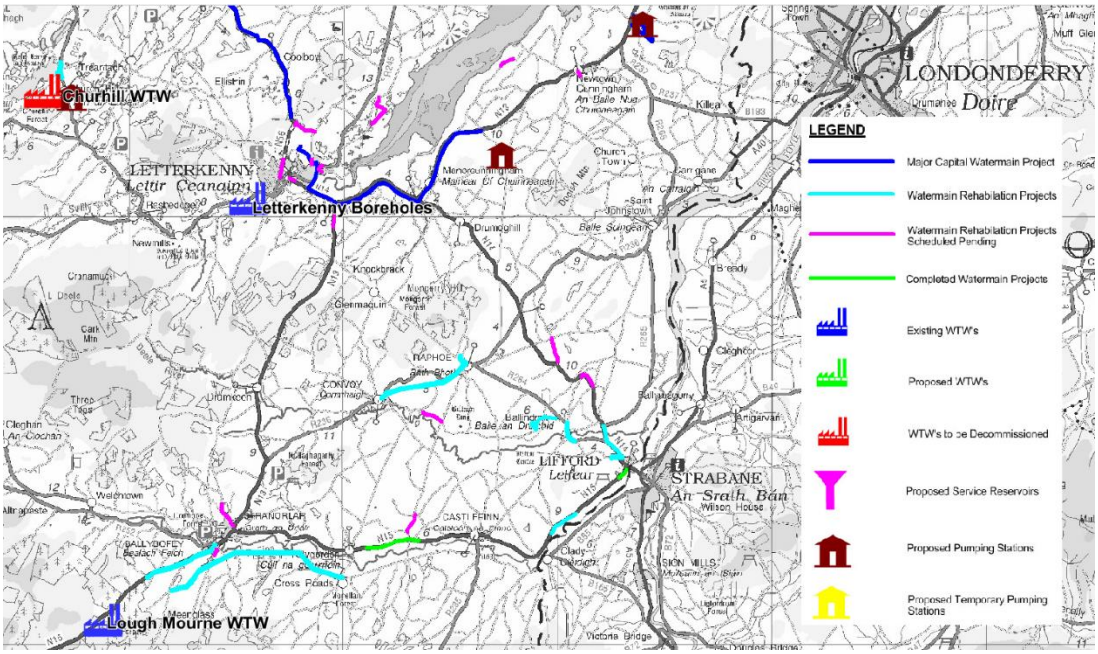


Figure 2-3 Major Capital and Rehabilitation Water Projects

Contact was made with Donegal County Council water services department regarding potential impact on existing water supply infrastructure. It was confirmed that infrastructure will be impacted within the study area. It is unlikely that any option will have a lesser potential impact than another and as no significant constraints or objections have been raised by Irish Water or Donegal County Council in consultations to date. A score of 3 (slightly negative) is deemed appropriate for each option.

Table 2-4 Potential Impact score of each option with respect to water and wastewater infrastructure.

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Impact Score	3	3	3	3	3	3	3	3	3

2.3 Summary of Utilities Infrastructure

All options have similar impacts on high voltage electricity lines and renewable energy. In terms of telecoms, options which have a higher interface with the existing road network are likely to have a higher impact, with Options 3B1/3B2 and 3C1/3C2

A summary of the utilities infrastructure impacts and preferences is provided below.

Table 2-5 Utilities Infrastructure Impacts

Option	Electricity	Renewables	Telecomms	Water & Wastewater	Impact Description	Impact Score	Preference
3A1	3	3	3	3	Minor to slightly negative	3	Intermediate
3A2	3	3	3	3	Minor to slightly negative	3	Intermediate
3B1	3	3	2	3	Minor to slightly negative	3	Intermediate
3B2	3	3	2	3	Minor to slightly negative	3	Intermediate
3C1	3	3	2	3	Minor to slightly negative	3	Intermediate
3C2	3	3	2	3	Minor to slightly negative	3	Intermediate
3D	3	3	3	3	Minor to slightly negative	3	Intermediate
3E	3	3	4	3	Minor to slightly negative	3	Intermediate
3F	3	3	3	3	Minor to slightly negative	3	Intermediate

2.4 Quarries

The nearest quarry is in Convoy, south of the options, the proximity of the quarry is similar to all the options. All options are equally preferable. There are six recorded mineral locations in the study area. All of these quarries are disused. No potential impacts are predicted. All options are equally preferable and have a neutral impact with respect to quarries.

Table 2-6 Potential impact score of each option with respect to quarries

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Impact Score	4	4	4	4	4	4	4	4	4

2.5 Transport and Infrastructure

2.5.1 Roads

2.5.1.1 Existing Network

This section investigates the impact of each option on road assets. A lack of available transport modes increases reliance on the road network for private and commercial movements. The TEN-T network in County Donegal performs a variety of functions and is particularly important for the following:

- Businesses – supporting cross-border relations and key transport hubs, including Killybegs harbour, Ireland's largest fishing port.
- Commuters – providing access to employment and facilitating cross border trips.
- Leisure, including tourist trips – providing connectivity between County Donegal and the rest of the island of Ireland.

Each of the options will directly impact on the existing national road network at the termination points during construction, however the temporary to short-term impacts associated with the construction phase will be greatly outweighed by the permanent operation of a new national road from Manorcunningham to Lifford/Strabane/A5 and providing greater connectivity to the north and north-west of the country.

In comparing the options Option 3E has the least interface with the existing road network as it is remote from the existing N14 and many residential areas. Conversely, Options 3C1/3C2 have the highest number of interfaces with the existing road network, with the existing road interfaces being dealt with by provision of an under or overbridge. Across all options, there are a small number of local road closures anticipated where reasonable alternative routes are available. Where local road continuity is retained, under/overbridges have been accommodated by mean of local road realignment. Options 3C1/3C2 have a greater length of side-road realignment than any other option. Options 3E has the least local road re-alignment, as it is remote from much of the local road network.

The residual effects of each option on the existing road network has also been considered in this assessment. All options have a Compact Grade Separated Junction (GCSJ) with the R236. For Options 3D, 3E and 3F, this junction is offline to the existing N14/R236 junction and has the potential to result in a change in local traffic patterns. Conversely, Options 3A1/3A2, 3B1/3B2, 3C1/3C2 all have the R236 junction online to the existing N14/R236 junction, which has is unlikely to result in a significant change to existing local traffic patterns or flows. Additionally, Options 3A1/3A2, 3B1/3B2, 3C1/3C2 and 3D all have a second intermediate junction at Drumoghill which permits access to/from the N14 mainline to the local villages in the area. This provides additional access to centres of population compared with Options 3A1/3A2, 3E and 3F.

Although details the quantitative characteristics of option, the differences between the impacts are not significant. Furthermore, all options will provide a positive impact on the existing road network in the long-term, providing a high standard roadway for the use of the area.

In terms of preference, the importance of each impact must be considered. As such, Options 3A1/3A2, 3B1/3B2 and 3C1/3C2 are preferable over Options 3D, 3E and 3F due to the consistency they provide in terms of local trip assignment on the residual road network. Overall, Options 3B1/3B2 are preferred over 3A1/3A2 and 3C1/3C2 due to less road closures and side road realignment, respectively.

2.5.1.2 Proposed Road Network

The A5 in Northern Ireland is an existing road corridor leading from Derry in the North West through County Tyrone and connecting to N2 in Monaghan. The A5/N2 forms the key option from Derry/Donegal to Dublin. The A5 aligns to the west of Strabane in Tyrone, located to the east of Lifford. The N14/N15 at Lifford currently links to the existing A5 by a single carriageway bridge across the River Finn.

Investment has been secured for an upgraded A5, called the A5 Western Transport Corridor (WTC), which will replace the existing A5 the west of Strabane.

A cross-border link connecting the N14/N15 to the A5 WTC has also been granted planning approval by An Bord Pleanala and a final position for the link has been fixed. The new N14/N15 to A5 Link and the position of the new A5 WTC are outlined in red and black respectively in Figure 2-4 below.

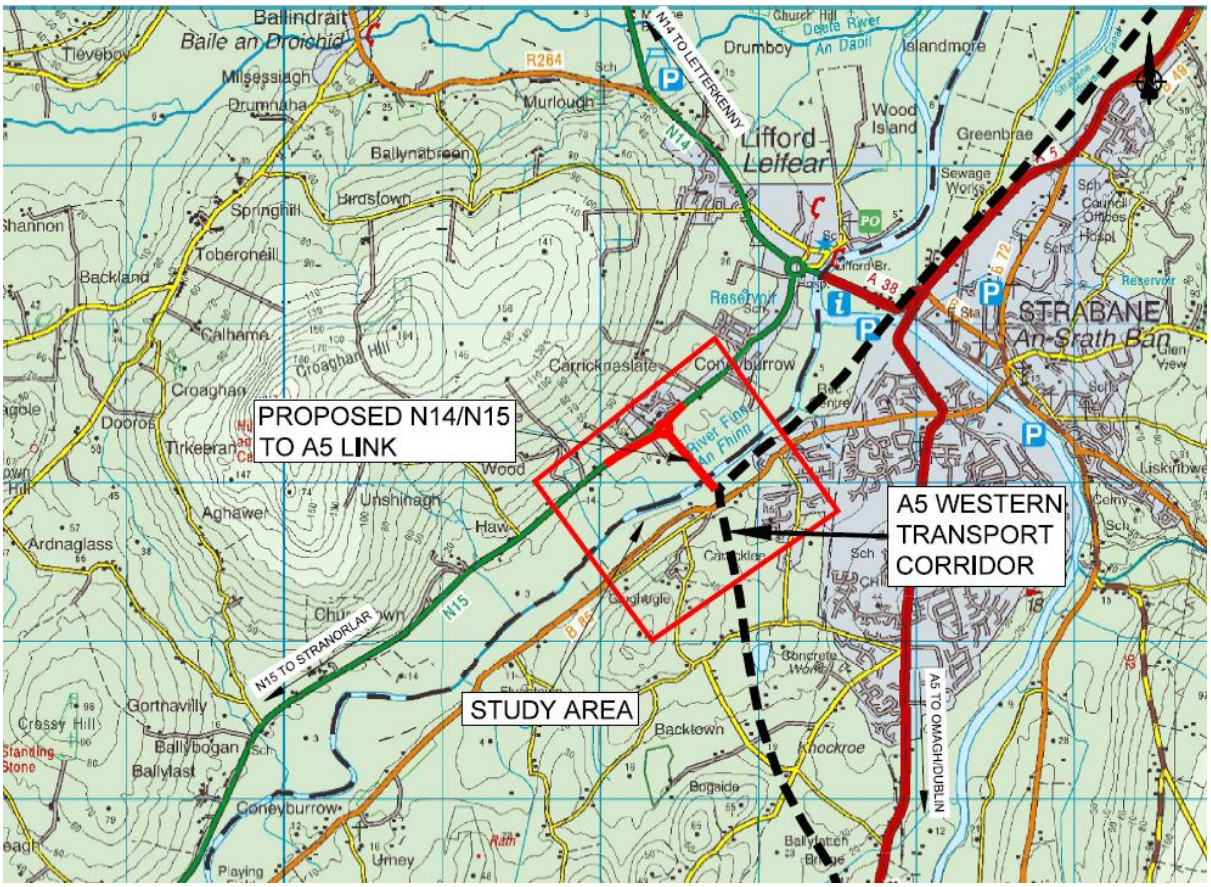


Figure 2-4 A5 Western Transport Corridor location

Any proposed realignment of the N14 must be designed for the long-term objective of connecting to the A5 Link and A5 WTC, but in the short/medium term, have sufficient connectivity to the existing road in the vicinity of Lifford. Any improvements made to the transport network in Donegal (to the N14 or N15) must be feasible independently and shall not rely on the implementation of the A5 Link to meet scheme objectives.

2.5.2 Summary of Roads impact

All options have the same start and end points with slight variance in the number of local road interfaces. Option 3C1 and 3C2 have more realignment of the existing road network as well as the most over/underbridges.

While it is acknowledged that all options will change the existing road network and result in some re-routing and road closures, in the context of the overall impact, any of the proposed options would provide a significant improvement in the road infrastructure provision in the area. The summary of the impact scores are shown below.

Table 2-7 Quantitative impact of options on existing road network

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Total Road Crossings	15	15	16	16	17	17	16	13	14
Road Closures / Re-Routing	5	5	4	4	4	4	3	1	3
New/Realigned side Road Lengths (m)	6400	6450	6840	6880	8230	8270	5100	4115	6985
No. of Junctions	4	4	4	4	4	4	4	3	3
Impact Description	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive	Moderately Positive
Impact Score	6	6	6	6	6	6	6	6	6

2.5.3 Rail Network

No live railway network exists in Donegal. There is a redundant rail line within the study area located within the townlands of Drumoghill, Labbidish and Corkey. Options 3A1, 3A2, 3B1, 3B2, 3C1, 3C2, D, and F all directly intersect the railway line at one location each. Option 3E does not currently intersect the redundant railway line, however it is evident from the alignment of the railway through Labbidish and the presence of railway bridges in Pluck that Option 3E aligns through fields where the railway line has been excavated for agricultural purposes. Therefore, although much of the asset is not currently visible, it is a certainty that the infrastructure was at this location and may still be present and buried. There is the potential to avoid direct impact on the existing railway network by designing the road alignment under or over the redundant railway.

Therefore, there is no perceptible difference with regards potential impact of each option on the existing railway infrastructure.

No live railway network exists in Donegal.

Table 2-8 Potential Impact score of each option with respect to impact on existing (redundant) rail network

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Impact Score	3	3	3	3	3	3	3	3	3

2.6 Summary of Transport Infrastructure

There is no live railway network in the county, and little opportunity to revive the facility. However, all options having a conflict with the redundant railway does provide a slightly negative impact. Similarly, all options have an impact on the existing road network and will result in some re-routing of local routes and closing of some lightly trafficked roads. Options 3C1 and 3C2 would require more road realignment than others while all options provide the future benefit of connectivity to the new A5 Western Transport Corridor. As all options would significantly improve infrastructure provision in the area, all options are deemed to provide an overall positive impact. The summary of the impact scores and preferences are below.

Table 2-9 Transport Infrastructure Impacts

Option	Road	Rail	Impact Description	Impact Score	Preference
3A1	6	3	Moderately Positive	5	Intermediate
3A2	6	3	Moderately Positive	5	Intermediate
3B1	6	3	Moderately Positive	5	Intermediate
3B2	6	3	Moderately Positive	5	Intermediate
3C1	6	3	Moderately Positive	5	Intermediate
3C2	6	3	Moderately Positive	5	Intermediate
3D	6	3	Moderately Positive	5	Intermediate
3E	6	3	Moderately Positive	5	Intermediate
3F	6	3	Moderately Positive	5	Intermediate

2.7 Waste

2.7.1 Waste Management

Waste management considers the physical infrastructure associated with licenced waste facilities that may be impacted by the construction of a proposed option. Waste arising from the actual construction of the proposed project is dealt with under the topic Waste in the Option Selection Report

One waste management facility was identified within the study area. This is located in area of Pluck, the townland on the north western end of the study area (D&M Environmental Services). This facility recycles food waste, sludge, hazardous waste and glass. The company also offers septic tank emptying.

The facility is not directly impacted by any option corridor. It is located approximately 150m from Option 3E corridor.

Table 2-10 Potential Impact score of each option with respect to waste management facilities

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Impact Score	4	4	4	4	4	4	4	4	4

2.7.2 Waste

For the purposes of the Option Selection Report, the topic of Waste is a standalone criterion as per PAG Unit 7. Although, the topic is presented here, in Material Assets (Non-agricultural), as it is naturally associated with waste management, the scoring provided on Waste is outlined in a separate “Waste” section in Volume A.

Waste is defined as any substance or object which the holder discards or intends or is required to discard. In terms of a road construction project, most naturally occurring materials excavated as part of the works will not be considered a waste as they can be re-used within the works.

There will be a requirement to handle, store, remove and dispose of waste material in accordance with the relevant waste management legislation. Waste material will be generated from two sources:

- Wastes resulting from general construction on-site, i.e. waste fuels, oils from machinery, cement and concrete from required masonry works and wastewater from sanitary facilities.
- Excess excavated materials generated from general site clearance and earthwork excavations, including, where necessary, bridge abutments, as well as construction and demolition waste from proposed bridge works and other construction activities.

The nature of the wastes generated from site clearance and earthworks will generally be vegetation, topsoil, subsoil and stone. Where this material is to be stored on-site and reused it is important that it is not stored close to any watercourses or lakes. Any excavated material which is deemed unacceptable for re-use in the works will have to be removed off-site for disposal or for processing and as such may be required to be removed or disposed of under a waste permit or certificate of registration from the local authority.

There are three broad types of excavated material as set out in TII’s *Specification for Road Works Series 600 – Earthworks*:

- Acceptable material: material excavated from within the site or imported on to the site which meets the requirements of the specification for acceptability for use in the works;
- Unacceptable material Class U1: material excavated from within the site which, unless processed so that it meets the requirements of the specification for acceptable material will not be used in the works;
- Unacceptable material Class U2: material having hazardous chemical or physical properties requiring special measures for its excavation, handling, storing, transportation, deposition and disposal. Class U2 material excavated from within the site will not be used in the works unless processed so that it meets the requirements of the specification for acceptable material.

Acceptable excavated material that is not surplus to requirements will be re-used in the works for engineering purposes including fill to embankments, landscaping, etc. Acceptable material that is surplus to requirements will be used in spoil heaps on-site or at off-site locations, subject to proper approvals.

Although there is variance in the volume of material that will need to be disposed of, or imported, for each option, all options have high earthwork operations as the study area has a drumlin topography and a combination of low-lying alluvial areas and high elevation alignments. While considering typical anticipated quaternary characteristics for the area and applying common assumptions in terms of depth, each option can be compared in terms of anticipated material disposal. As such, Table 2-11 provides a comparative estimation of potential volume of earthworks material to be disposed of based on the Phase 2 alignment designs. This volume assumes alluvium material directly impacted by each option will be classified as unsuitable. The quantities outlined in Table 2-11 do not represent the volume of waste that will be generated from each option, but provide a means to compare options based on the Phase 2 alignment design.

Table 2-11 Comparative Estimation on Volume of Earthworks Material Disposal

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Material disposal ('000 m3)	1,198.1	1,208.5	1,090	1,100.4	987.3	997.7	926.2	862.1	1,328.3
Impact Description	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative	Slightly Negative
Impact score	3	3	3	3	3	3	3	3	3

It is anticipated that much of the material excavated can be deposited within the site study area rather than removed. This will be investigated during the design and EIAR stages of the project.

2.8 Forestry

A commercial conifer forest exists on the south of the Swilly Burn. Options 3A1, 3B2 and 3C1 do not have any impact on this forest, however there is currently a direct impact by option corridors 3A2, 3B2, 3C2, 3D, 3E and 3F.

Option 3A2, 3B2, 3C2 all align along the edge of the forestry, and therefore have a lesser impact rating that Options 3D, 3E and 3F which align through the middle of the forestry, splitting it in two separate parts.

Table 2-12 Potential Impact score of each option with respect to Forestry

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Neutral	Slightly Negative	Neutral e	Slightly Negative	Neutral	Slightly Negative	Moderate Negative	Moderate Negative	Moderate Negative
Impact Score	4	3	4	3	4	3	2	2	2

3 PROPERTIES

3.1 Introduction

In terms of the assessment on properties, as detailed in this section, the assessments take account of existing planning permissions within each option which may be impacted by the proposed road development. The planning permissions referenced are based on a search of the Donegal County Council online planning register system on 4th February 2019. Those included relate only to those developments which are permitted but as yet do not appear to have been implemented.

A windshield survey and site visit was undertaken on 5th September 2018 which comprised driving each of the options to ground-truth the findings of the desktop survey and provide further detail with respect to physical structures and land uses such as schools, playing pitches, local businesses, tourist attractions and amenity facilities such as walkways and trails.

The assessments focus on the following areas:

Potential to Impact on Land Zoned for Development or other Purposes

Impacts on County Donegal Development Plan 2018 – 2024.

Potential to Impact Existing Properties (Residential, Commercial, Community Facilities, Community Severance and Tourism)

Existing Residential Properties

This assessment compares the options with respect to potential impact on residential properties. It does not identify noise impacts, traffic delays / disruption impacts or visual impacts etc. as these topics are dealt with in separate assessments. Therefore, this assessment considers the overall impact to residential amenity in terms of the proximity of each of the options to residential properties.

Data from the An Post GeoDirectory system was utilised to map and calculate the number of properties within bands of 0-50m, 50-100m, 100-200m and 200-300m from the centreline of each option. The GeoDirectory data categorises properties into residential, commercial, both or unknown. For the purposes of this assessment, 'residential' and 'both' categories have been considered together to represent the various numbers of residential properties. Properties within the 0-50m band are deemed to have the highest potential for impact, with decreasing potential for impact as distance from the corridor centreline increases.

Supplementary to this approach, a review of any direct impacts resulting from the Phase 2 option selection alignment design is also considered. This helps to increase the certainty of the impact scores as it acknowledges the constrained locations where there is little opportunity for property avoidance in the 300m corridor as the design develops. For example, a location where there is a cluster of properties at 60m from the centreline means that any future change to the design could be expected to increase the potential for impact, rather than reduce the impact score of the option. Similarly, the location and layout of junctions with the mainline are considered. This allows properties outside the 50m centreline but within the footprint of a potential grade separated junction to be considered in the impact scoring.

Therefore, the impact score of a particular option will consider the impact of the corridor and the number of properties within it, as well as the Phase 2 Option Selection layouts and the anticipated, unavoidable direct impacts.

Commercial Properties

The assessment for commercial properties has followed a similar methodology to that of residential properties with the numbers of properties within 0-50m having a priority level of consideration for scoring.

Community Facilities

This section focusses on the number and type (sensitivity) of community facilities such as schools, churches, amenity grounds such as playing pitches and walkways, medical facilities and childcare service providers located within or near the options.

A minor negative rating is applied to options where there are no receptors or a very low number of receptors within an assessment corridor and the receptors identified serve relatively small number of people that do not comprise particularly sensitive groupings. A major negative would be assigned where there is potential for direct significant or profound impacts to facilities serving large population numbers (e.g. large hospitals or major recreational facilities) or a large number of locally important facilities or where particularly sensitive groupings are substantially affected. A moderate negative scoring is assigned to impacts which lie between these parameters, whereby local facilities are potentially impacted to a significant extent or larger facilities could be impacted but to a lesser extent than a direct significant or profound extent.

Community Severance

There is a risk of creating community severance where new options are provided that intersect existing pedestrian linkages in particular and / or significantly increase vehicular journey times from residential areas to community facilities and other services. Severance can be created by either a physical or psychological barrier. A major negative impact would apply in an instance for example where a large-scale housing development would be cut off from its local shops, services and other community facilities. A moderate negative impact would apply where substantial clusters of residential development outside of major housing areas are potentially cut off from one or more important local services or facilities. A minor or slight negative impact would apply where a low number of properties are potentially cut off from local services but where mitigation is likely to be most effective.

This assessment is based on a high-level appraisal of GeoDirectory data based on mapped locations as opposed to numerical analysis and a review of development plan mapping to identify any severance of residential properties from nearby services. This is considered appropriate to this stage of assessment, particularly as the options have little interaction with substantial settlements.

Tourism

The assessment is based on the number and nature of known tourism attractions, tourist accommodation and / or amenity facilities that are of benefit to tourists, and which may also be of amenity value to the local resident and working community.

A major negative would be applied where a large-scale or internationally or nationally branded tourist facility is significant impacted. A moderate impact is applied where a regionally important visitor attraction, a large-scale accommodation facility such as a hotel or an amenity facility that has a regional function is potentially directly impacted or indirectly impacted to result in a significant or profound impact. A minor or slightly negative impact is assigned where a facility that is of importance to the local tourist economy and serves and amenity function to the local population is potentially impacted.

3.2 Existing Environment

3.2.1 Settlements, Zoning and Policy Objectives

The identified options and existing N14 all originate close to the village of Manorcunningham, travel southeast to the north of the town of Raphoe and terminate at the western side of the town of Lifford.

Outside of the settlements named above, the only other identified settlements comprise villages such as Ballindrait and Murlog, located towards the east and Drumoghill, located towards the northwest of the study area. The study area largely comprises of rural agricultural land with linear or scattered one-off properties in the areas outside the identified settlements.

The County Donegal Development Plan 2018-2024 (hereafter referred to as the CDP) is the primary planning policy document for the county. This plan provides a high-level zoning map for Lifford which is considered a ‘Layer 2B’ town due to its ‘Special Economic Function’. This special function is outlined as follows:

> "*Proximity to Northern Ireland border and associated cross border context. Centre for delivery of Local Authority services."*

The existing road runs through areas of established development at the west and south of the town, therefore all associated traffic is routed through a built-up area which currently experiences congestion. All proposed options are located similarly to the west and south of the town where they are within the settlement boundary of Lifford. The area within that settlement boundary is limited to a very small section of the proposed options; most of each option is outside the settlement boundary for Lifford or indeed any other settlement.

3.2.1.1 Settlements

The County Development Plan (CDP) provides that 34% of population growth would occur in Layer 2 towns. The population growth specifically projected for Lifford is identified as an additional 73 no. people, bringing the total projected population to approximately 1,706 no. by 2024. See below with respect to zoning.

3.2.1.2 Rural Area Types

There are three separate rural area types identified in the County Plan: Urban Area, Stronger Rural Area and Area Under Strong Urban Influence according to both Map 2A.1 '*Core Strategy Schematic Map*' and Map No. 6.2.1 '*Rural Area Types'*. All options assessed originate at the northwest of the study area near the Pluck roundabout south of Manorcunningham in an Area Under Strong Rural Influence and then travel east through intervening Stronger Rural Areas, before again traversing through Areas Under Strong Rural Influence and terminating in Lifford in an Urban Area.

3.2.1.3 Landscape Designations

The CDP has three landscape designations categories – 'moderate', 'high' and 'especially high'. These are illustrated in Map No. 7.1.1 'Scenic Amenity' of the CDP. The majority part of each of the options being assessed is located within an area designated as high scenic amenity; however, each option also traverses pockets of moderate scenic amenity.

Areas of high scenic amenity are defined in the CDP as:

> "*Areas of High Scenic Amenity are landscapes of significant aesthetic, cultural, heritage and environmental quality that are unique to their locality and are a fundamental element of the landscape and identity of County Donegal. These areas have the capacity to absorb sensitively located development of scale, design and use that will enable assimilation into the receiving landscape and which does not detract from the quality of the landscape, subject to compliance with all other objectives and policies of the plan*."

3.2.1.4 Development Zoning

As set out previously in this report and in Figure 2.1 Lifford Zoning Map, the development zoning for Lifford is a high-level framework. The zoning map (Map no. 15.17) does not specifically provide for residentially zoned land. There is a large area to the northwest of the town identified as an opportunity site which is stated in the Plan to comprise:

> "*To provide for specific development opportunities that are appropriate in terms of mix of use and compatibility with the wider area whilst recognising features of importance that are specific to the site*"

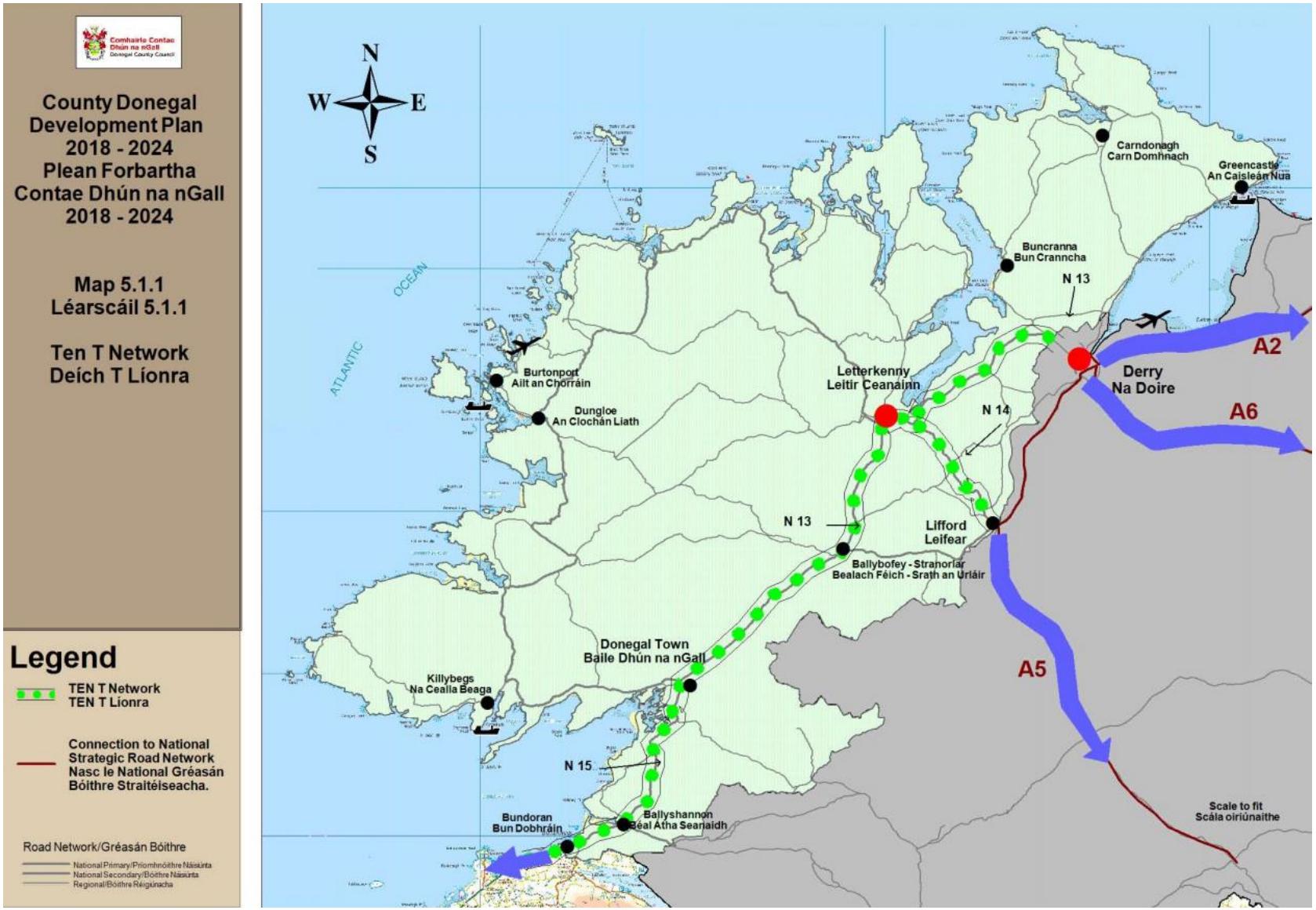


Figure 3-1: TEN-T Network (Map 5.1.1 from CDP)

3.3 Options Assessment

Options have been scored with reference to the criteria set out in **Table 1-2** relating to proximity to and number of residential, community and commercial properties, tourism resources and severance of communities.

3.3.1 Comparison of Options

3.3.1.1 Settlements and Zoning

All options will contribute to the Core Strategy objectives of the County Development Plan and in principle will be positive, improving connectivity through the area and region.

With regard to specifically mapped road objectives for the study area, Map no. 5.1.4 '*N14 Letterkenny to Lifford'* provides '*options and corridors mapped for reservation'*. The red options 3B1 and 3B2, and orange options 3C1 (Orange) and 3C2 (Orange) are most consistent with this map, followed by the options 3A1 (Blue) and 3A2 (Blue). The 3D (Purple), 3E (Cyan) and 3F (pink) options are located largely outside of this reserved corridor with the 3F (Pink) option having the most overlap of these three. No option is accorded a major negative as while there are departures from the alignment show, the options are located in predominantly rural areas of broadly similar characteristics, the detail of which will be assessed elsewhere.

The 3B1/ 3B2 (Red), and 3C1/3C2 (Orange) options are provided with a neutral scoring; the options 3A1/ 3A2 (Blue) with a minor negative and the 3F (Pink) option a minor to moderate negative. Lastly the 3D (Purple) and 3E (Cyan) receive a moderate negative scoring with respect to roads objectives.

As regards Map 15.17 of the current County Development Plan, each of the proposed options is in line with the reserved transport corridor located to the west and south of the town, which is identified as 'infrastructure' on that zoning map for Lifford.

Rural area type zonings are largely provided for the management of proposals for single dwellings. While it is noted that new entrances to future development proposals are unlikely to be permitted along the options (as per TII policy for national roads), access to individual sites will still be achievable from the local road network. Therefore, the implementation of these zoning objectives will not be impeded by the proposed options. There is limited, if any, differential of any significance between the proposed options and the impact is considered neutral in all cases.

Because all options traverse an area of high scenic amenity, this will result in a negative scoring. There are no significant differentials between the options. The areas can absorb some development according to the CDP objectives, it is noted that mitigation may be taken into account and the appropriate scoring is considered moderate negative at this stage.

None of the proposed options intersect lands zoned for residential or economic development or the above-mentioned opportunity site. The only interaction between proposed options and identified development zoning in Lifford comprises the area zoned for 'infrastructure' as outlined earlier. This a neutral impact.

The options are scored differently for compatibility with published roads objectives; none of the options however score more negatively than moderate and therefore the moderate landscape zoning scoring is assigned due to it being the worst-case rating for each Option.

The options may be ranked as follows given their compatibility with or otherwise with the reserved option corridor set out in relevant planning policy documents:

1. 3B1 (Red) and 3C1 (Orange)
2. 3B2 (Red) and 3C2 (Orange)
3. 3A1 (Blue)
4. 3A2 (Blue)
5. 3F (Pink)
6. 3D (Purple)
7. 3E (Cyan)

Table 3-1 Settlement and Zoning Impacts

Option	Qualitative Assessment	Score
Option 3A1(Blue)	Largely consistent with Map 5.1.4 of CDP with some departures at northern end and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3A2 (Blue)	Largely consistent with Map 5.1.4 of CDP with small additional departure and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3B1 (Red)	Largely consistent with Map 5.1.4 of CDP and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3B2 (Red)	Largely consistent with Map 5.1.4 of CDP and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3C1 (Orange)	Largely consistent with Map 5.1.4 of CDP and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3C2 (Orange)	Largely consistent with Map 5.1.4 of CDP and aligns with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3D (Purple)	Largely inconsistent with Map 5.1.4 of CDP however option does align with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3E (Cyan)	Largely inconsistent with Map 5.1.4 of CDP however option does align with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)
Option 3F (Pink)	Largely inconsistent with Map 5.1.4 of CDP however option does align with Lifford zoning map (15.17). Traverses high scenic amenity area.	2 (Moderately negative)

3.3.1.2 Potential for Impact on Residential Properties

The number of residential properties within 0-50m of the centreline (50m band) is relatively low for all options, which reflects the rural nature of Section 3. Options 3D (Purple) and 3A1/3A2 (Blue) have the lowest with 3 no. properties each and this rises to 9 no. in the 3B2 (Red). All options therefore have significantly less than 25 residential properties within the 0-50m band which in the context of the option length is considered a 'minor negative' score across the board.

There are between 20 no. and 33 no. properties within the 50-100m bands for all options. The number of properties located between 100 and 300m of the corridor centreline ranges from 368 no. (3C1) to 430 no. (3B1). Again, no significant differential is considered to exist when considering property numbers within corridor bands.

A review of extant planning permissions indicates that there are 3 no. potential new residential developments along Options 3F (Pink), 3A1/3A2 (Blue) and 3B2 (Red), 4 no. along Option 3C1 (Orange) and Option 3D (Purple) options and 5 no. along the Option 3E. The numbers are not considered to be of such an extent as to impact on the scoring.

All options have been scored minor or slightly negative, with the length of road scheme and purpose of the development being considered.

Therefore, in reviewing planning applications and corridor bands, no significant difference exists between options on Section 3.

Figure 3-2 Likely direct residential impact on all options

Upon review of the Phase 2 option selection alignment design, all options have a target end point forming a junction (anticipated to be a roundabout) on the A5 link west of Lifford. There is a likely direct impact on two properties adjacent to 0-50m corridor, as shown in Figure 3-2 as a result of anticipated earthworks to accommodate the road alignment at this location. This residential impact is the same on all options.

Additionally, all options propose a Compact Grade Separated Junction (CGSJ) between the new N14 mainline and the R236. The option selection alignment design for Options 3D and 3E at the R236 wraps around residential properties at this interface, creating direct impact on 5 no. residential properties which is not included in the 0-50m band assessments. The direct impact of the junction at this location, therefore, creates a differentiation between scoring of Section 3 options in terms of residential impact.

Figure 3-3 Residential properties (Blue) and Commercial properties (Red) at the R236 junction location within Options 3D and 3E

Table 3-2 Residential Property Impacts

Option	Quantitative Assessment		Score
Option 3A1(Blue)	Corridor Assessment	7 no. properties within 50m band 27 no. properties in 50-100m band 373 no. properties in 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3A2 (Blue)	Corridor Assessment	8 no. properties within 50m band 26 no. properties in 50-100m band 375 properties within 100-300m band	2 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3B1 (Red)	Corridor Assessment	8 no. properties within 50m band 20 no. properties in 50-100m band 430 no. properties in 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3B2 (Red)	Corridor Assessment	9 no. properties within 50m band 30 no. properties within 50-100m band 423 properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3C1 (Orange)	Corridor Assessment	8 no. properties within 50m band 28 no. properties within 50-100m band 368 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3C2 (Orange)	Corridor Assessment	9 no. properties within 50m band 27 no. properties within 50-100m band 370 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	
Option 3D (Purple)	Corridor Assessment	3 no. properties within 50m band 25 no. properties within 50-100m band 384 no. properties within 100-300m band	2 (Moderately Negative)
	Option Selection Design Assessment	7 no. direct impacts	
Option 3E (Cyan)	Corridor Assessment	3 no. properties within 50m band 33 no. properties within 50-100m band 375 no. properties within 100-300m band	2 (Moderately Negative)
	Option Selection Design Assessment	7 no. direct impacts	
Option 3F (Pink)	Corridor Assessment	4 no. properties within 50m band 28 no. properties within 50-100m band 342 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	2 no. direct impacts	

3.3.1.3 Commercial Properties

Similarly, to the residential properties, there are low numbers of commercial properties within the 50m band. Each option has 3 no. such properties within the 0-50m band, with the exception of Options 3D (Purple), 3E (Cyan) and 3F (Pink) which have 1 no. each. This reflects the predominantly rural / agricultural nature of the area. All options have 3 no. or less commercial properties identified as being located within the 50-100m band.

With regard to the number of properties within the 100-300m band, the numbers of commercial properties vary from 34 no. to 37 no. which is not considered a significant differential in the context of potential impacts and the potential for avoidance and mitigation. As such, in considering corridor bands

only, all options have a similar impact, with Options 3D and 3E having the least no. of properties within the 0-50m band.

Conversely, upon review of the option selection alignment for both options, there will be direct impact on 2 commercial properties (to the southern side of the R236) at the proposed Compact Grade Separated Junction (CGSJ) between the new N14 mainline and the R236. Furthermore, there is a third commercial property within the corridor at this location which also has increased potential for direct impact due to the junction location. Therefore, Options 3D and 3E have a more negative impact on commercial property.

Table 3-3 Commercial Property Impacts

Option	Quantitative Assessment		Score
Option 3A1(Blue)	Corridor Assessment	3 no. properties within 50m band 3 no. properties within 50-100m band 27 no. properties within 100-300m band	3 (Minor or Slightly negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3A2 (Blue)	Corridor Assessment	3 no. properties within 50m band, 3 no. properties within 50-100m band 24 no. properties within 100-300m band	3 (Minor or Slightly negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3B1 (Red)	Corridor Assessment	3 no. properties within 50m band 2 no. properties within 50-100m band 34 no. properties within 100-300m band,	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3B2 (Red)	Corridor Assessment	3 no. properties within 50m band 2 no. properties within 50-100m band 31 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3C1 (Orange)	Corridor Assessment	3 no. properties within 50m band 1 no. property within 50-100m band 35 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3C2 (Orange)	Corridor Assessment	3 no. properties within 50m band 1 no. property within 50-100m 32 no. properties within 100-300m band	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	
Option 3D (Purple)	Corridor Assessment	1 no. property within 50m band, 3 no. property within 50-100m 37 no. properties within 100-300m band.	2 (Moderately negative)
	Option Selection Design Assessment	2 no. direct commercial property impacts at R236 junction	
Option 3E (Cyan)	Corridor Assessment	1 no. property within 50m band 3 no. property within 50-100m. 33 no. properties within 100-300m band.	2 (Moderately Negative)
	Option Selection Design Assessment	2 no. direct commercial property impacts at R236 junction	
Option 3F (Pink)	Corridor Assessment	3 no. property within 50m band 3 no. properties within 50-100m 36 no. properties within 100-300m band.	3 (Minor or Slightly Negative)
	Option Selection Design Assessment	No anticipated direct impacts as a result of option selection alignment design	

3.3.1.4 Existing Community Facilities

Drumoghill village is located to the east of the Pluck roundabout and north of the N14 at the north-western end of the study area in which the options being assessed are located. It contains community facilities such as a church, school and playing pitches located around and near to a triangle of local roads, one of which leads to a separate cluster of residences and premises such as a second primary school south of the N14. The 3B1/3B2 (Red), 3C1/3C2 (Orange) and 3D (Purple) options will potentially impact on a playing pitch which is located within the corridor. The 3F (Pink) and 3A1/3A2 (Blue) options are located close to a church; the 3C1/3C2 (Orange), 3D (Purple) and 3B1/3B2 (Red), options to the school (Drumoghill N.S.). Impacts are considered minor negative given that there should be scoped to keep a distance from the boundaries of the church and school as both are outside of the corridors. The existing N14 runs close to the school in particular.

A moderate negative is assigned to the options that intersect the village's soccer pitch.

Ray NS is closest to the 3A1/3A2 (Blue) and 3F (Pink) options but not contained within any of the options' corridors.

At the south eastern end of the options in the Lifford area, all options avoid community facilities. The options do all come close to the church and primary school located on the R264 in Murlog. These are already close to a national road. A minor negative impact across all options is acknowledged in this case.

The schools and churches are sensitive community facilities however none are located directly within options.

There are no potential direct impacts to facilities serving large numbers of population (e.g. major recreational facilities, large hospitals) and no single option impacts on a large number of individual community facilities. The soccer pitch in Drumoghill is likely to be significantly impacted and the only exception to minor or slightly negative ratings is where options intersect same and a moderate scoring is applied.

Table 3-4 Community Facility Impacts

Option	Qualitative Assessment	Score
Option 3A1(Blue)	Close to community facilities at Drumoghill and Murlog.	3 (Minor or Slightly Negative)
Option 3A2 (Blue)	Close to community facilities at Drumoghill and Murlog	3 (Minor or Slightly Negative)
Option 3B1 (Red)	Close to community facilities at Drumoghill and Murlog Intersects playing pitch.	2 (Moderately negative)
Option 3B2 (Red)	Close to community facilities at Drumoghill and Murlog. Intersects playing pitch.	2 (Moderately negative)
Option 3C1 (Orange)	Close to community facilities at Drumoghill and Murlog. Intersects playing pitch.	2 (Moderately negative)
Option 3C2 (Orange)	Close to community facilities at Drumoghill and Murlog. Intersects playing pitch.	2 (Moderately negative)
Option 3D (Purple)	Close to community facilities at Drumoghill and Murlog. Intersects playing pitch.	2 (Moderately negative)
Option 3E (Cyan)	Close to community facilities at Drumoghill and Murlog.	3 (Minor or slightly negative)
Option 3F (Pink)	Close to community facilities at Drumoghill and Murlog.	3 (Minor or slightly negative)

3.3.1.5 Community Severance

The existing national road currently influences how local communities access services and facilities. In considering the proposed options, a relatively small number of residential properties may be cut off from facilities in Drumoghill or Murlog. At Murlog, the potential for same is equal for all options. At Drumoghill, any such potential incidences are low. Furthermore, it is likely that facilities at Manorcunningham serve most of the needs of the local population. In all cases any potential for severance is considered minor or slightly negative.

There are two locations where the community severance impact of each option can be differentiated. These are north of Ballyholey, as shown in Figure 3-4 and at the interface of options with the R236 and at the R236. Figure 3-4 shows that Options 3D (Purple) and 3E align around settlements at this location and therefore have less severance impact. Options 3C1/3C2 (Orange) cause more severance than Options 3A1/3A2 (Blue) and 3B1/3B2 (Red), separating settlements and isolating one or two properties between the existing N14 and the new alignment.

Figure 3-5 shows that options aligning to the east (Option 3A1/3A2, 3B1/3B2 and 3C1/3C2) have less impact on community severance than all other options (under the Orange option). Option 3E(Cyan) and 3D (Purple) have a common corridor at this location and cause the greatest severance impact across a local road and the existing R236. Option 3F (Pink) has a slight severance impact at this location.

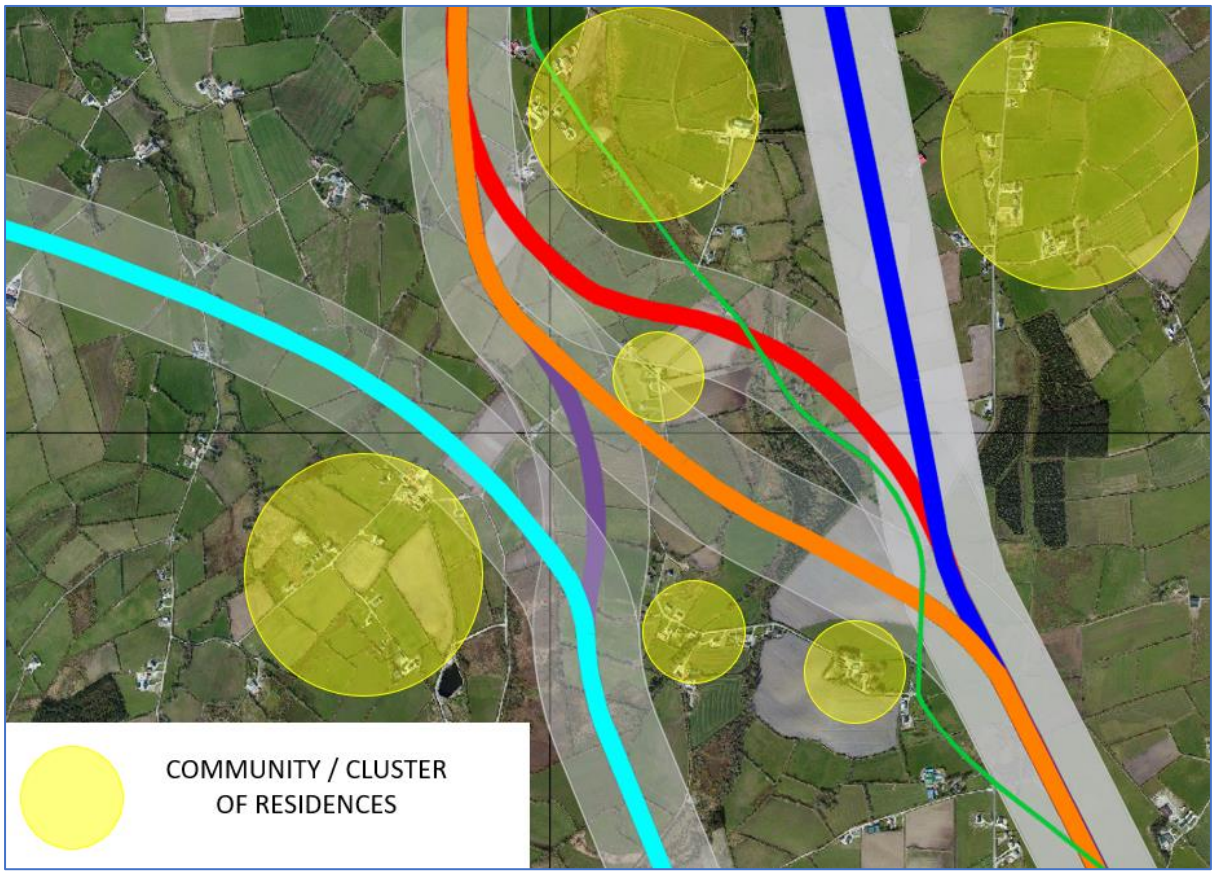


Figure 3-4 Clusters of Communities/Residences north of Ballyholey

Figure 3-5 Option Corridor severance at the R236

All options create severance in the community of Murlog, where all options align over the R264 separating Ballindrait and residential properties from the church. This is mitigated by an underbridge, which will keep the existing road open.

Options aligning to the east (Option 3A1/3A2, 3B1/3B2 and 3C1/3C2) have less impact on community severance than all other options. Option 3E(Cyan) and 3D (Purple) have a common corridor at this location and cause the greatest severance impact across a local road and the existing R236. Option 3F (Pink) has a slight severance impact in terms of severance.

Table 3-5 Community Severance Impacts

Option	Qualitative Assessment	Score
Option 3A1(Blue)	Potential severance of residential properties from Drumoghill and Murlog.	3 (Minor or slightly negative)
Option 3A2 (Blue)	Potential severance of residential properties from Drumoghill and Murlog.	3 (Minor or slightly negative)
Option 3B1 (Red)	Potential severance of residential properties from Drumoghill and Murlog.	3 (Minor or slightly negative)
Option 3B2 (Red)	Potential severance of residential properties from Drumoghill and Murlog.	3 (Minor or slightly negative)
Option 3C1 (Orange)	Potential severance of residential properties from Drumoghill and Murlog.	2 (Moderately negative)
Option 3C2 (Orange)	Potential severance of residential properties from Drumoghill and Murlog.	2 (Moderately negative)
Option 3D (Purple)	Potential severance of residential properties from Drumoghill and Murlog.	2 (Moderately negative)
Option 3E (Cyan)	Potential severance of residential properties from Drumoghill and Murlog.	2 (Moderately negative)
Option 3F (Pink)	Potential severance of residential properties from Drumoghill and Murlog.	3 (Minor or slightly negative)

3.3.1.6 Tourism

The study area and proposed options do not form part of the Wild Atlantic Way, however they will increase connectivity and journey times to sections of the Wild Atlantic Way both to the north and west of the Pluck roundabout which is a positive benefit associated with all options.

There was no large scale internationally or nationally known tourist facilities identified at desktop or site visit stages. No accommodation facilities of a substantial scale were identified.

Oakfield Park (near Raphoe), which comprises the grounds and estate of Oakfield Demense, is the most significant attraction identified in the area. This attracts tourists and locals to the gardens, art exhibitions and a restaurant / bar. The park lies within the study area however it does not lie within the corridor of any of the options and therefore shall remain unaffected directly by the 3D (Purple), 3E (Cyan) and 3F (Pink) options which are closest. Similarly, Cavancor House and Art Gallery is located near Lifford and the N14, however it is also outside of the options.

All options will impact on a waymarked cycling and walking trail travelling north from the village of Ballindrait on the local road L2414. Objective TOU-O-9 in the county plan is set out as follows:

"*To support the development of new, and protect the functionality of existing, Greenways, walking and cycling options as keys components of an overall green tourism infrastructure and as standalone tourism products in their own right."*

Any potential impacts would at worst, be minor to slight negative.

In terms of hospitality, there are a number of Bed and Breakfasts and pubs located along the existing N14. While these businesses currently benefit from passing trade, they are also impacted by factors such as congestion and noise, which are addressed separately.

Table 3-6 Tourism Impacts

Option	Qualitative Assessment	Score
Option 3A1(Blue)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3A2 (Blue)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3B1 (Red)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3B2 (Red)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3C1 (Orange)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3C2 (Orange)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3D (Purple)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3E (Cyan)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)
Option 3F (Pink)	Impact on walking / cycling trail.	3 (Minor or Slightly Negative)

3.4 Forestry

A conifer forest exists on the south of the Swilly Burn. Routes 3A1, 3B2 and 3C1 do not have any impact on this forest, however there is currently a direct impact by option corridors 3A2, 3B2, 3C2, 3D, 3E and 3F.

Options 3A2, 3B2, 3C2 all align along the edge of the forestry, and therefore have a lesser impact rating that Options 3D, 3E and 3F which align through the middle of the forestry, splitting it in two separate parts.

Table 3-7 Potential Impact score of each option with respect to Forestry

	3A1	3A2	3B1	3B2	3C1	3C2	3D	3E	3F
Impact Description	Neutral	Slightly Negative	Neutral	Slightly Negative	Neutral	Slightly Negative	Moderately negative	Moderately negative	Moderately negative
Impact Score	4	3	4	3	4	3	2	2	2

4 CONCLUSION

In terms of Non-Agricultural material assets, all options score similarly on Infrastructure impacts except Forestry, where Options 3D, 3E and 3F have the most impact due to encroachment into areas of Forestry.

With respect to Properties Option 3D has the highest impact and Option 3E follows closely behind which a slightly less impact on Community Facilities. Both Options would require acquisition of 7 residential properties and 2 commercial properties at the vicinity of the R236 junction. This is deemed the most significant differentiator between options with respect to non-agricultural material assets and therefore these options are least preferred.

With the least impact, on balance, on Infrastructure and Properties Options 3A1/3A2, 3B1/3B2 and 3F are preferred options. Options 3C1/3C2 have a similar impact but result in greater community severance. As such, Options 3C1/3C2 are intermediate preferred.

The summary of the impact scores and preferences are shown in Table 4-1 Summary of Impact Scores for Non-Agricultural Material Assets for Section 3.

Table 4-1 Summary of Impact Scores for Non-Agricultural Material Assets for Section 3

	Infrastructure					Properties									
	Utilities	**Transport**	**Waste Management**	**Forestry**	**Quarries**	**Settlements & Zoning**	**Residential**	**Commercial**	**Community Facilities**	**Community Severance**	**Tourism**	**Total**	**Impact Score**	**Impact Description**	**Preference**
3A1	3	5	3	4	4	2	3	3	3	3	3	36	3	Minor Negative	Preferred
3A2	3	5	3	3	4	2	3	3	3	3	3	35	3	Minor Negative	Preferred
3B1	3	5	3	4	4	2	3	3	2	3	3	35	3	Minor Negative	Preferred
3B2	3	5	3	3	4	2	3	3	2	3	3	34	3	Minor Negative	Preferred
3C1	3	5	3	4	4	2	3	3	2	2	3	34	3	Minor Negative	Intermediate
3C2	3	5	3	3	4	2	3	3	2	2	3	33	3	Minor Negative	Intermediate
3D	3	5	3	2	4	2	2	2	2	2	3	30	2	Moderate Negative	Least Preferred
3E	3	5	3	2	4	2	2	2	3	2	3	31	2	Moderate Negative	Least Preferred
3F	3	5	3	2	4	2	3	3	3	3	3	34	3	Minor Negative	Preferred