

Monaghan County Council

**N2 Monaghan Town to Emyvale
Road Improvements**

Part 8 Application

Description of Proposed Development

Issue | 29th March 2012

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1 The Need for the Scheme

1.1 Background

The N2 Dublin – Derry National Primary Route is a main arterial route linking Dublin to County Donegal. It passes the major hubs of Monaghan Town, Omagh, Strabane and links Letterkenny, Dungannon and Derry. As it passes through Northern Ireland, the N2 becomes the A5. The proposed N2 Monaghan to Emyvale Road Improvement Works refers to 8.5km section of the N2 north of Monaghan Town. This section of road is an unimproved, single carriageway road. It currently carries significant traffic volumes with large proportions of heavy goods vehicles, has substandard vertical and horizontal alignments and has a poor accident history. Refer to Appendix A: Scheme Location Map and Phasing, which illustrates the N2 between Monaghan Town and Emyvale.

In the mid 1990s the N2 between Monaghan and Emyvale was proposed for realignment as the second phase of the Monaghan to Emyvale road realignment - the first phase being the Monaghan Town Bypass which was opened to traffic in 2006. Phase two – the Monaghan to Emyvale road realignment – has Part VIII planning. The design was progressed to Compulsory Purchase Order (CPO) stage; however the CPO has not been served.

In recent years a decision was taken to upgrade the A5 in Northern Ireland between Aghnacloy and Derry. The A5 is being progressed and the preferred scheme was announced in July 2009. The scheme proposed is a dual carriageway cross section and is currently proceeding through the statutory approval process in Northern Ireland.

Following on from the decision to upgrade the A5 in Northern Ireland, the previously proposed N2 Monaghan to Emyvale Road Realignment is being reviewed as part of the larger N2 Clontibret to Northern Ireland Border scheme. Under this scheme the N2 from its tie-in to the Clontibret to Castleblayney 2+1 Road Realignment at Clontibret village, through Monaghan Town and Emyvale village and through to the Northern Ireland border at Moybridge is proposed for realignment. The scheme is currently at route selection stage. There is no agreed programme for construction of the realignment. The N2 Clontibret to the Northern Ireland Border scheme supersedes the previous proposed route for the realignment of the N2 between Monaghan Town and Emyvale.

The N2 between Clontibret Village and Monaghan Town has previously been improved and has benefited from overlay schemes in 2008 and 2010. Monaghan Town was bypassed in 2006. The N2 north of Emyvale village to the Northern Ireland border has previously been realigned and carriageway improvement works and an overlay have been undertaken over the past 5 years. The 2.5km section of the N2 between the Corracrin and Emyvale village has not been subject to any major improvement works. The existing road has;

- Substandard carriageway width, no hard strips and limited verge width.
- Substandard horizontal and vertical alignment, with curves of substandard radius.
- Limited forward visibility and substandard stopping sight distance.

- Variable road construction, none of which were designed for the existing traffic volumes. This has resulted in potholing, alligator cracking and rutting along sections of the carriageway.
- Sideroad junctions have substandard visibility and no provision for turning movements.
- No provisions exist for overtaking on the route which hinders the route's Level of Service.
- No right turn provisions exist on the current routes alignment. This fact hinders safe turning for drivers and increases congestion on the route.

The current status of the N2 Clontibret to the Northern Ireland Border scheme will result in the existing N2 being in use as the N2 Dublin-Derry National Primary Route for a number of years to come. This section of road was given a medium-high risk rating in the 2008 EuroRAP report. It lists 41 serious or fatal collisions occurred on the N2 between the years of 2002 and 2006. It is proposed to undertake road improvements on this section of the N2 under the NRA's Pavement and Minor Improvement works to improve the safety and efficiency of the road.

1.2 The Proposed Scheme

The proposed "N2 Monaghan to Emyvale Road Improvement" project aims to provide interim road safety and travel quality improvements on the existing N2 national primary road between Monaghan Town and Emyvale village.

The project has been broken into 4 sub-phases to facilitate design, construction and multi-annual funding. The first phase of the easement and minor realignment works continue for a distance of 1,520m from the Townland of Derrynagrew to the Townland of Kilnadreen, directly north of Monaghan Town. The second phase ties in to the north of Phase 1 which started construction in 2010. Phase 2 involves the easement/realignment and widening of 1500m of the N2 between the townlands of Tirraneill and Mullabrack. Phase 4 is similar to Phase 2 in its proposed works. Phase 3 is approximately 2.5 km. The proposed road cross section is a single carriageway 3.5m lanes, hard strips of 0.5m, 0.15m widening on bends and verges both sides of carriageway. This provides an 8.0m pavement width of Type 2 Single (S2), where it becomes 8.3m on bends

The proposed works involve widening, easement, realignment, improvement and overlay of the N2, road drainage and all ancillary works.

2 Proposed Development

The objective of the proposed Phase 3 improvement works is to continue works past the previous phases. The improvements should result in a superior road of consistent standard which integrates well with the existing N2 Monaghan Town Bypass. The standard of upgrade works should be adequate to cater for existing traffic volumes travelling on the N2, however it should not detract from the viability of the proposed N2 road realignment between Clontibret and the Northern Ireland Border. The works are to be undertaken as part of a multi-annual programme and the road improvement standard should be attainable along the length of the N2 between Monaghan Town and Emyvale

The road improvement works are to be undertaken with reference to the National Roads Authority (NRA) Design Manual for Road and Bridges (DMRB). The location and extent of all of the phases is shown in Appendix A. The location of this proposed preliminary design is detailed in N2-T-000-101-103 in Appendix A.

The proposed road cross section is a single carriageway 3.5m lanes plus 0.15m widening on bends and verges both sides of carriageway. These dimensions provide an 8.3m pavement width at its maximum and 8.0m nominal width of a Type 2 Single (S2) in accordance with TD 27 table 3.

Typical cross sections are included in Appendix B.

The N2 Dublin – Derry National Primary Road caters for significant traffic volumes and a large proportion of Heavy Goods Vehicles (HGVs). Pedestrian and cycling facilities are proposed in the design. Incorporated into the design are a 1.8m wide footpath and a 2.0m cycleway on the east of the mainline.

The vertical alignment is to be improved to provide sight visibility splays at junctions and to facilitate adequate forward stopping sight distance and overtaking sight distance where applicable. Maps of the proposed vertical alignment entitled “Plan & Proposed Vertical Alignment” @ Scale 1:1,000 (A1) are included in Appendix B, N2-T-100-101-104.

Safety barriers will be used to protect against hazards where necessary, in accordance with NRA DMRB standards. There is one major watercourse in the scope of the works. Interceptor ditches have also been incorporated into the proposed realignment. Due to the topography of the N2, these ditches are located majorly on the west of the mainline. These will then be outfelled into existing culverts. Existing culverts may need to be widened or replaced. Hoof Bridge specifically has a proposed new culvert to accommodate the new realigned route.

All culverts will be designed at Detailed Design stage. Construction will be in accordance with the requirements of the relevant fishery bodies and *Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes* by the NRA. The Eastern Regional Fisheries Board, Office of Public Works, the National Parks and Wildlife Service and all other relevant bodies will be consulted also.

Landscaping will be undertaken as part of the works to mitigate against the impact of the proposed development and to screen properties impacted by the proposed improvement works. A general landscaping methodology is proposed, detailed landscaping design will be undertaken during the detailed design phase. Drawings providing this information are included in Appendix J N2-T-2800-101-104.

Permanent fencing will be erected along the proposed scheme in accordance to RCD/300/1. Permanent agricultural fencing will be timber post and rail with mesh facing. Where temporary fencing is required to facilitate construction of the works, it will consist of timber post and wire fencing. Fencing and wall types to the front of dwellings will be agreed as part of the accommodation works with landowners.

Ecological and Environmental studies have been undertaken to identify the impact of the proposed development – refer to Section 4.0 of this document and Appendix G for further information.

Appropriate sight visibility splays and approach gradients are to be provided at accesses and sideroads. Alongside this, right turn provisions at junctions, are to be incorporated into the realigned route. Appendix C contains details of sideroad access arrangements at junctions and accesses directly affected by the proposed works. Due to the realigning of the N2 mainline, appropriate works will be carried out on the adjoining minor roads. Realigning and tapering the new alignment into the existing will be done. This is further discussed in Section 3 and drawings of the proposed works are in Appendix C N2-T-100-201-202.

A Stage 1 Road Safety Audit has been undertaken on the proposed development in accordance with HD19/09 of the NRA DMRB. The completed Stage 1 Road Safety Audit Report is contained in Appendix D. As the proposed scheme undergoes detailed design, a Stage 2 Road Safety Audit will be undertaken. A Stage 3 Road Safety Audit will also be undertaken upon completion of the works.

The finished road will be surfaced with Hot Rolled Asphalt and appropriate road markings and road studs will be provided.

3 Extent of the Proposed Development

3.1 Townlands affected by the proposed development

Townlands affected by this proposed development are as follows;

Griggy, Belderg, Derryhallagh, Creevlea, Carrigans, Tully, Cornacreeve and Emyvale

The location and extent of the works is shown in Appendix A.

3.2 Access to the N2

It is not proposed to restrict any existing access to the proposed realigned and improved N2 National Primary Road. All existing junctions will be retained and access arrangements to the junctions will be improved. Sight visibility splays from the junctions will be secured. Right turning facilities are proposed at all junctions. Localised works will be required at the junctions to regrade and realign the sideroads to meet the proposed realigned N2 as follows;

3.2.1 L5207 Glennan South Junction

The existing junction of the L5207 South onto the N2 is located towards the start of the phase 3 realignment. At present the junction is located within a speed restricted zone of 60km/h which increases the safety of traffic emerging onto the N2 from the junction. The footpath and cycleway on the south eastern side of the scheme provides motorists with clear sight splays from the junction to the mainline

The design of the L5207 includes a minor realignment to tie in with the realigned N2. It is intended that a ghost island be designed for right turning traffic from the N2 onto the L5207. The creation of a right turning bay will reduce congestion and the risk of collision. The horizontal alignment of the N2 either side of the junction is non overtaking which will result in reduced risk for motorists turning onto the N2.

3.2.2 L5170 Derryhea Junction

There is an existing minor island located on the L5170 used as a traffic separator. The traffic turning from the N2 southbound onto the L5170 has a segregated lane for free flow. Traffic approaching the junction from the northern side must yield and then make the manoeuvre when it is clear to do so. This may result in the accumulation of traffic at the junction.

It is intended to create a right turning bay at this junction for traffic turning from the N2 Northbound onto the L5170. The creation of the bay will result in reduced congestion at the junction. The proposed alignment has an almost straight section of road approximately 400m in length to the northern side of the junction. This 400m section has good visibility for motorists and is partially located within a speed restricted area which increases safety. The island has been reduced in width and the junction itself has been increased in width which will reduce the chance of collision between turning vehicles.

3.2.3 L1160 Davagh Etra Junction

The Existing junction between the N2 and the L1160 is an area of substandard geometry and width which leads to below desirable minimum visibility at the location. Hoof Bridge is located on a bend approximately 140m from the junction; the bend impedes site visibility for motorists turning from the L1160 onto the N2 southbound.

The junction splay between L1160 and the mainline N2 carriageway is proposed to be widened which will make turning onto the L1160 easier for motorists. It will also enable 2 cars to queue at the junction one for taking left hand turns and one for taking right hand turns. The realigned junction will also see the removal of foliage making the sight lines clearer for motorists.

3.3 Impact on Land and Property

3.3.1 Impact on Residential/Commercial Property

The proposed project will ease bends and where required will realign the road to improve curve radii. This will have an impact on residential/commercial property where the existing property is located within the proposed line of the road improvement works. While the proposed road improvements will have an impact on the gardens and curtilage of residential properties, the proposed development will not require the demolition of any residential/commercial property.

Where residential accesses off the existing N2 are being directly or indirectly impacted, revised access arrangements from the existing N2 will be provided with reference to current NRA DMRB and Monaghan County Development Plan Standards. Appendix C contains details of sideroad access arrangements at junctions and accesses directly affected by the proposed works. Where necessary, accommodation works will be arranged with each affected property owner on a case by case basis.

A list of residential properties closest to the line of the proposed development is given in Table 1; Properties adjacent to existing N2 alignment.

Chainage	Location relative to N2 Mainline	Owners	Impact & Proposed Mitigation Measures (Where Applicable)
0+020-0+050	East of mainline adjacent to N2	School	No direct impact
0+190- 0+220	East of mainline adjacent to N2	TBC	Property boundary to be affected. Land to be acquired to enable the compaction of earthworks in the area
0+208 -0+214	West of mainline adjacent to N2	TBC	No direct impact.
0+180-0+230	East of mainline adjacent to N2	TBC	Shed/old Smithy is to be demolished due to the road realignment moving the carriageway to the east. Land will have to be acquired for clearance purposes.

MC20 – 0+050-0+070	West of L5207 Glennan South Junction	TBC	No direct impact. Minimal land will need to be acquired for clearance purposes.
0+280 – 0+310	West Mainline adjacent to scheme	TBC	Wall will need to be knocked in places. The alignment is shifting to the east which will result in additional land being acquired for clearance.
0+485-0+600	East Mainline adjacent to N2 scheme	TBC	Corner of property garden will be impacted. The existing railing will require realigning along the new road boundary.
0+760-0+800	West adjacent to the Mainline	TBC	No direct impact
0+800-0+820	West adjacent to the Mainline	TBC	No direct impact
1+010-1+030	West adjacent to the Mainline	TBC	No direct impact
1+144-1+158	East of L1160 Davagh Etra Junction	TBC	No direct impact
1+172-1+200	East adjacent to the Mainline	TBC	Wall will need to be knocked in places. The alignment is shifting to the east which will result in additional land being acquired for site clearance.
1+310 – 1+330	Mainline adjacent to N2 west of carriageway	TBC	Due to the alignment shifting west, ditches, earthworks and verge will infringe on land here. Lands will need requiring in this location.
1+360-1+390	East adjacent to the Mainline	TBC	No direct impact
1+430-1+460	East adjacent to the Mainline	TBC	No direct impact
1+500-1+510	East adjacent to the Mainline	TBC	Due to the realignment, ditches, earthworks and verge will infringe on land here. Lands will need requiring in this location.
1+545-1+570	East adjacent to the Mainline	TBC	Property boundary to be affected. Acquire land to facilitate earthworks and verge
1+570-1+600	East adjacent to the Mainline	TBC	Property boundary to be affected. Acquire land to facilitate earthworks and verge
1+608-1+630	West adjacent to the Mainline	TBC	Wall will need to be knocked in places. The

			alignment is shifting to the east which will result in additional land being acquired for clearance.
1+660-1+690	East adjacent to the Mainline	TBC	Wall will need to be knocked in places. The alignment is shifting to the west which will result in additional land being acquired for clearance.
1+760-1800	West adjacent to the Mainline carriageway	TBC	No direct impact – scheme moves to west
1+940-2+050	West adjacent to the Mainline	TBC	Property boundary to be affected. Land to be acquired to enable the compaction of earthworks in the area
2+000-2+020	West adjacent to the Mainline	TBC	Property boundary to be affected. Land to be acquired to enable the compaction of earthworks in the area
2+165-2+200	West adjacent to the Mainline	TBC	No direct impact
2+275-2+300	East adjacent to the Mainline	TBC	No direct impact
2+130-2+300	East adjacent to the Mainline	TBC	No direct impact
2+360-2+410	West adjacent to the Mainline	TBC	No direct impact

Table 1: Properties adjacent to existing N2 alignment

3.3.2 Impact on Agricultural Lands

The proposed project will ease bends and where required will realign the road to improve curve radii. This will have an impact on agricultural land where the existing property is located within the proposed line of the road improvement works.

Where existing agricultural accesses/farm gates off the existing N2 are being directly or indirectly impacted, revised access arrangements from the existing N2 will be provided with reference to current NRA DMRB, Monaghan County Development Plan Standards and in consultation with the landowners. In many cases this will improve the safety of the existing accesses by relocating the access point to a more appropriate location as sight distances onto the realigned N2 will be improved. Also by providing a verge facility for farm machinery to pull into when accessing lands.

4 Environment

4.1 Overview

The proposed development is a road improvement project. The overall road improvements are approximately 8km in length (Phases 1 to 4).

With reference to Article 8 of the Roads Regulations, 1994 (Road development prescribed for the purposes of Section 50(1)(a) of the Roads Act, 1993), An Environmental Impact Statement (EIS) is required for “*The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area*”.

While the proposed road improvement project (Phases 1 – 4) extends to approximately 8km in length, only two lanes will be provided over the length of the project. Monaghan County Council has, on the basis of the above, determined an EIS is not required for the proposed road improvements.

Where a proposed road development would be located on certain environmental sites the road authority shall decide whether the proposed road development would be likely to have significant effects on the environment. As per Section 50(1) (d) of the Roads Act, 1993, as inserted by Art. 14(a) of the EIA (Amendment) Regulations, 1999, the sites concerned are:

- i. Special Area of Conservation (SAC)
- ii. A site notified in accordance with Regulation 4 of the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997)
- iii. Special Protection Area
- iv. A site where consultation has been initiated in accordance with Article 5 of Council Directive 92/43/EC of 21 May, 1992, on the conservation of natural habitats and of wild flora and fauna.
- v. A Nature Reserve within the meaning of sections 15 or 16 of the Wildlife Act, 1976.
- vi. Refuge for Fauna under section 17 of the Wildlife Act, 1976.

An Appropriate Assessment (AA) screening report undertaken by the Monaghan County Council has determined that the proposed development does not have a direct impact on any of the above listed areas of protection. A copy of the Appropriate Assessment Screening Report is contained in Appendix E.

4.2 Environmental Impacts and Mitigation Measures

Although an Environmental Impact Statement is not required for this development it was considered informative to have regard to *Schedule 6 of the Planning and Development Regulations 2001*, in ascertaining the environmental consequences of the proposed development.

The Heritage officer for Monaghan County Council identified the importance of Hedges, Mammals, Bats, Wetlands, Churches and Burial Grounds that may potentially be impacted by the scheme. An Ecological survey has been carried out by a qualified Ecologist (See Appendix G) and recommendations from the survey will be considered in the detailed design and phasing of the works.

To determine the environmental consequences the proposed development will have, a number of specialist consultants were appointed to review the proposed scheme, identify existing conditions, identify likely impacts and propose measures to mitigate against these impacts.

4.2.1 Heritage and Archaeology

Monaghan County Council's Heritage Officer and NRA Archaeologist Mr. Niall Roycroft undertook heritage and archaeological assessments of the proposed works area. These reports are contained in Appendix F to this planning application

4.2.1.1 Heritage

Mr Niall Roycroft (NRA Archaeologist) carried out a desktop survey and a site visit for the proposed scheme on the 28th January 2011.

Anketell Grove was built by the Anketell family in 1781 and the extent of the demesne is not clearly marked on the NIAH (National Inventory of Architectural Heritage) mapping.

It was also noted that Emyvale Presbyterian Meeting House and Burial Ground is located to the north of the turn for Grove Lough, Carrigans on the N2. There is a burial ground on the site and the possibility that human remains are interred onsite. As recommended in the heritage and archaeological assessment, the proposed works have avoided this site due to the nature of the site.

It is Monaghan County Council's intention to comply with the recommendations of the Heritage officer's and NRA Archaeologist's report.

4.2.1.2 Archaeology

Monaghan County Council Roads Section contacted the National Roads Authority (NRA) Archaeological Department in relation to carrying out a review of the proposed scheme. The NRA Archaeology section "*is responsible for the management of the archaeological implications of national road projects*".

A desktop survey and a site visit for the proposed scheme on the 28th January 2011. The Archaeological survey and site visit identified the following sites of interest:

St Patricks Catholic Church, Corracrin and the old Smithy at Corracrin.

This church was built circa 1811 with more recent additions. The proposed route does not impact on this church.

The proposed scheme will require the demolition of a former Smithy located at chainage 0+180-0+230. The Smithy building has well preserved cobbling around large flagged areas, a central “waiting niche” with fine voussoired and keystone cover and cornice which is decorated with fine toothed cutting. Although it is not a protected structure, it is of local significance and provisions to record the building will be undertaken prior to the schemes commencement.

The Hoof Bridge at chainage 1+250 has been noted on OS mapping dated 1835. It is a 1.6 meter clear span masonry arch with masonry spandrel wall and block work parapet on the west side of the bridge, for further information photographs are included in Appendix F. The east or downstream side of the structure was extended in 1988 to accommodate a footway along the N2. The extension comprises of block work, rising walls with reinforced concrete lintels spanning between the walls. The proposed design will require the demolition of this newer section and retain the older masonry arch. Construction of a new culvert/portal frame arrangement adjacent to the old structure is proposed. This will enable the accommodation of the proposed widening works. The design will permit an improved horizontal alignment to be incorporated into the design.

In the survey, areas which could be of archaeological interest have been identified along the route. Trenching at these locations is a recommendation from the survey. See Appendix F for further information.

4.2.1.3 Ecology, Freshwater, Bird, Large Mammal and Bat reports

Flynn Furney Environmental Consultants were appointed to undertake Ecology, Freshwater Ecology, Bird, Large Mammal and Bat Surveys and reports. A copy of Flynn Furney Environmental Consultant’s Reports is contained in Appendix G.

The main findings of these reports are:

- No designated Areas for Conservation lie within or will be affected by the proposed route.
- Fish species including white clawed crayfish and brook lamprey could live in the Hoof bridge catchment and its tributaries. The site is to be surveyed prior to the works commencing at detailed design stage.
- An environmental operating plan should be drawn up on the site in accordance with guidance given by the NRA.
- The proposed scheme will not significantly impact upon any rare, threatened, protected plant or terrestrial mammal species,
- The watercourses to be crossed, as part of the works, are not of salmonid standard and are not under any statutory designation,
- No badger territory will be impacted by the proposed scheme,
- During the bird survey six “amber list “and a single ‘Red Listed’ species (Lapwing) were recorded. Impacts on bird population may be mitigated by correct timing of works, supervision of clearance in sensitive areas and replacement of lost habitat with native species.

- Four bat species were recorded within the routes vicinity All have “favourable Status” in the Republic of Ireland. Mitigation measures outlined include removal of vegetation is to be limited as possible, correct timing of the works, and where large mature trees with ivy and hollows are felled, they will be felled under correct supervision and left for 24 hours. Other mitigation measures include, compensatory and replacement habitat provision and observance of good practice in any lighting schemes during the works.
- For further details on the above please refer to the Flynn Furney Environmental Consultant’s Reports contained in Appendix G.

Flynn Furney Environmental Consultants Reports also identified potential minor and moderate impacts the scheme may have on Ecology, Freshwater Ecology, Birds, Large Mammals and Bats. A number of other recommendations to mitigate against potential impacts are listed in these reports. It is the Monaghan County Council intention to comply with the recommendations of these reports.

4.2.2 Arboriculture (Tree and Hedgerow Survey) Report

Due to the nature of the proposed development, the road improvement scheme will require the removal of mature trees and significant lengths of hedgerows to facilitate widening of the road. Where feasible, existing mature trees and hedgerows will be retained and will be protected during construction works.

Existing tree sizes, species and condition along the existing road vary greatly along the length of the proposed works. Dr. Philip Blackstock was commissioned to undertake an arboriculture assessment on the existing trees and hedgerows between Coolkill East and Emyvale (with the exception of Corracrin settlement area). All trees have been surveyed, numbered and recorded and hedgerows have been identified and recorded.

A very small conifer plantation will be affected by the works near the Corracrin end of the scheme and an ash beech treeline on the west side of the alignment. A number of ornamental or garden trees on the western side of the N2 will be lost at Anketell Grove. These include birch, semi-mature horse chestnut, poplar, sycamore and conifers.

Dr. Blackstock’s survey has identified that some of the trees are in bad condition and should be removed. Dr. Blackstock’s survey and report is contained in Appendix H.

Recommendations of Dr. Philip Blackstock’s report have been incorporated into the landscaping plan, detailed in Section 4.3.

4.2.3 Noise Assessment & Report

QED Engineering Ltd was appointed to undertake a Noise Survey and Report for the proposed scheme. Noise Sensitive locations were identified and noise monitoring and modelling was carried out. The main finding of this report are that “*..no specific mitigation measures are required at any dwelling along phase 3 of the route*” and “*.. the road upgrade works on phase 3 of the N2 between Monaghan and Emyvale are not expected to pose a noise impact*”

A copy of their report is contained in Appendix I and drawings of the proposed design and houses for further information.

4.2.4 Human Beings and Air quality

The existing N2 is substandard in terms of carriageway width, substandard horizontal and vertical alignments, variable road surfacing, limited forward visibility and stopping sight distance. The proposed scheme aims to improve the horizontal and vertical profile of the existing N2 by bend easement and realignment. The proposed scheme will involve the purchase of horticultural and agricultural lands, this will be minimised to have the least possible impact on landowners.

The proposed scheme will not increase traffic volumes on the road but will provide an improved road alignment, forward visibility, stopping sight distance and a consistent road surface in accordance with the National Roads Authority (NRA) Design Manual for Roads and Bridges (DMRB). This will provide a safer route for all road users.

Monaghan County Council anticipates Air Quality will not decrease as a result of the scheme, however, during construction there shall be minor adverse impacts on Air Quality caused by dust. This will be mitigated against by use of dust suppression when necessary.

4.2.5 Interrelationship of the above factors

The proposed development will result in the provision of a high quality and consistent road, with good quality road surface which meets current horizontal and vertical geometric requirements, appropriate sight visibility splays from junctions and accesses, forward visibility in accordance with current design standards and improved road safety. The completed road project will provide benefits to all road users. The proposed scheme will have minor impacts on the environment and mitigation measures are proposed where appropriate.

4.3 Landscaping Proposals

To mitigate against the loss of existing trees and hedgerows, landscaping is proposed along the length of the works. The scope for large-scale landscaping is limited by the fact the project consists of road improvement works and the proposed road improvements follow the line of the existing road and attempt to limit the required landtake and the impact on existing properties as much as possible.

The proposed landscaping has been developed with reference to Dr. Philip Blackstock's Arboriculture Report, which determined the existing species planted on the line of the existing road and identified key landscaping features of the road which can be emphasised through the proposed landscaping plan for this scheme. The NRA document "*A Guide to Landscape treatments for National Road Schemes in Ireland*" also forms the basis for the landscaping proposals.

The general landscaping proposals for the scheme will be repeated over the length of the scheme and are described below. Some key landscaping proposals are also made at individual locations - a drawing of key landscaping proposals is contained in Appendix J.

4.3.1 Hedging - General

The Arboriculture Report concluded that the roadside hedges appear to have been originally planted when the road was built approximately 150 years ago. Trees are planted at 7m centres through the hedge. The hedges themselves are dominated by common privet, hawthorn, blackthorn and guelder rose over this section of the N2 between Corracrin and Emyvale. The existing species composition is equally mixed and is of native species. It is noted that agricultural field hedges close to the road are less species rich and are dominated by hawthorn and ash.

It is proposed to replant hedges with a mix identical to the existing to maintain the existing character of the area. As suggested by Dr. Blackthorn, where adjacent agricultural lands are under-utilised and where the lands are of poor quality, blackthorn will be replaced with hazel. Holly will be included as a minor component.

Hedging stock will be 900mm to 1000mm tall for taller species and between 300mm and 450mm in height for lower species. The hedgerows will be planted as staggered double rows 300mm apart at 400mm centres. Maintenance of the landscaping will be undertaken with reference to the NRA Guidelines.

4.3.2 Hedgerow Translocation

Dr. Philip Blackstock has conducted a tree and hedgerow survey along the planned route. No sections of species rich hedgerow have been identified within the Corracrin to Emyvale section.

Dr. Blackstock's survey identified a patch of Bluebells at Hoof Bridge, which could be transplanted.

4.3.3 Hedgerow Trees

The Arboriculture Report concluded that the roadside hedges appear to have been originally planted with beech trees, spaced about 7.0m apart and augmented by naturally dispersed ash and alder trees. The report notes that the provision of a robust, species rich hedge with evenly spaced trees would be a desirable landscaping treatment where the proposed works require the removal of existing hedgerows or the provision of new road boundaries.

While this is the preferred landscaping treatment for this scheme, the long-term operation and safety of the road must be ensured. The Safety Barrier design standard TD 19/07 of the NRA DMRB states "*Trees 3.18; When evaluating new plantings or existing trees, the maximum allowable girth should be 175mm measured 1m above the ground when the tree has matured.*" This equates to a maximum diameter of 56mm when the tree is fully matured and effectively means no trees should be planted close to the road where there is a risk that errant vehicles may collide with them.

Where the road is in cutting, there is an opportunity to plant trees in the hedgerow at the top of the bank, as the risk of collision with the trees is minimal. The NRA guide to landscaping recommends "*species selected should reflect the composition of existing hedgerows in the surrounding landscape*".

In Dr. Blackstock's survey, mature species of alder, ash, beech, birch, larch, oak, scots pine and sycamore occur repeatedly throughout the survey area. Of these species, the NRA guidelines recommend alder, ash, beech, oak, silver birch and scots pine for use in hedgerows. It is noted "*Sycamore should not be planted due to its invasive nature*". The tops of banks will be relatively close to the carriageways and tree species must be robust to minimise the potential to fall onto the road. Birch and alder have relatively short lifespan and could be at risk of falling into the carriageway.

The NRA Guidelines state "*where tree species are included in rural hedgerows they should be randomly dispersed, thereby avoiding for development of simple repeating patterns and formal avenues*". In certain areas a mix of ash, beech and scots pine will be planted in the hedgerow at the top of cuttings. When planted, the trees will be between 900mm and 1200mm in height, as recommended in the NRA Guidelines.

4.3.4 Embankments

Where embankments are formed and are suitable for landscaping they will be planted with a scrub/transitional woodland mix based on the species and mixes listed in Para 6.2.4 of the NRA Guidelines. The exact planting arrangements over the length of the scheme will be determined with regard to the prevailing site conditions, including soil geographic factors at detailed design stage.

4.3.5 Grass Verges

A 3m verge on the west of the mainline is proposed in the routes design. 2.5m of which will be grass verge and 0.5m of hardstrip. On the east side of the mainline the verge will consist of 1.8m wide footpath, 2.0m wide cycleway and 0.5 m of hard strip.

The proposed road verges will be well drained. Topsoil will be placed on the verges to achieve the finished level. The proposed treatment of the grass verges is as per "Treatment 2" of Section 6.1.3 of the NRA Guidelines; "*Simple grassland mix of Creeping Bent (*Agrostis stolonifera*), Red Fescue (*Festuca rubra*) and Sheep's Fescue (*Festuca Ovina*) from indigenous seed sources – areas treated in this manner will be colonised naturally, over time, by species from adjacent plant communities*". Seeding of the area will be undertaken in accordance with the NRA Guidelines.

4.3.6 Miscellaneous Landscaping Proposals

While scope for wider scale landscaping beyond the planting of hedgerows and hedgerow trees is limited, there are a number of locations where the opportunity exists to provide a larger scale planting area or individual planting proposals;

Area 1: At chainage 1+304, east of mainline a landscape proposal has been created for the area. A scrub treatment will be inserted at this location. The mix will consist of naturally occurring species in the vicinity, namely Goat Willow, Guilder Rose, Holly and Blackthorn. The percentage design mix of the species will be determined at detailed design stage

Area 2: At chainage 1+725 two landscape treatments has been allocated for the location. A scrub treatment will be inserted at this location. The mix will consist of naturally occurring species in the vicinity, namely Hazel, Guilder Rose, Holly, Ivy and Blackthorn. The percentage design mix of the species will be determined at detailed design stage.

A low canopy mix has been determined to also be placed at the location, although further set back from the carriageway. The species will include naturally occurring species from the locality, namely beech and wild cherry, alongside the scrub species. The percentage design mix of the species will be determined at detailed design stage.