Tipperary County Council

R498 Road Realignment at Latteragh

PART 8 PLANNING
Volume 1 - Particulars

April 2017
Revision A

TOBIN CONSULTING ENGINEERS
# Part 8 Planning

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TOBIN Consulting Engineers
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1 INTRODUCTION

1.1 OVERVIEW OF THE SCHEME TO DATE
In September 2015, TOBIN Consulting Engineers was appointed by Tipperary County Council to resurrect the R498 Road Realignment at Latteragh Scheme, but starting from the beginning of the design process, with the aim of realigning the R498 to make the route safer for all road users.

TOBIN Consulting Engineers has developed the scheme in accordance with Transport Infrastructure Ireland (TII) publication NRA 2010 Project Management Guidelines (PMG). The PMG defines the key phases of the project. The phases for which TOBIN Consulting Engineers was commissioned include:
- Phase 2 Route Selection
- Phase 3 Design
- Phase 4 Environmental Assessment Reports and Statutory Process.

Having brought the scheme through Phase 2 establishing the need for the scheme, a business case, examining constraints, developing routes, presenting at public consultation and identifying the preferred route and Phase 3 Design; the scheme is now progressing through Phase 4 The Statutory Process.

Figure 1.1: Scheme Location & Extents
1.2 DESCRIPTION OF THE SCHEME
This document relates to the proposed improvement of a section of the existing R498 Regional Road between Nenagh and Thurles, at Latteragh, approximately 7km south-east of the M7 Nenagh Bypass.

The section of the R498 under consideration is approximately 4.3km in length passing through the townlands of Currabaha, Glenmore Lower, Gurteen, Garrane, Bigpark, Sallypark, Curragh, Carrick (Maunsell) and Carrick (Dawson) in the Electoral Districts of Latteragh, Kilnaneave and Glenkeen, County Tipperary.

The existing R498 at Latteragh is a single carriageway section and follows the contours around the Latteragh hills, adjacent to meanders in the Nenagh River. This has led to the road being of a sub-standard cross section and horizontal geometry, which are several steps below the Desirable Minimum required for an alignment with an 80kph speed limit. There are no overtaking opportunities on the section of the route; which can lead to driver frustration. There are three at-grade junctions, which include 2 skewed T-Junctions and a Crossroads, as well as several direct dwelling, farm and field accesses. With the narrow cross section and lack of clear verges along the route, the visibility to and from many of the junctions and accesses are poor.

Multiple collisions have been recorded along this section of the R498 including Fatal and Serious collisions, as well as various anecdotal reports of many unrecorded minor / material damage collisions.

The proposed cross-section is a Type 2 Single Carriageway with shared footway / cycle track which consists of 7m carriageway, 0.5m hard strips, with a minimum 2.5m wide verge (excluding hard strip). A shared footway / cycle track is proposed along the length of the scheme, utilising sections of old road alignment and within the proposed verge along one side of the road. The design speed is 85km/h. The existing three junctions are being improved as part of the scheme, including the provision of a right / left staggered ghost island junction at the R498/L2258/L6154 junction (in the townlands of Bigpark and Sallypark), and improvements to the skew and visibility splays at the junctions of the L2259 and L6152 (in the townland of Curragh).

1.3 BENEFITS OF THE PROPOSED SCHEME
The R498 Regional Road is the main link between Thurles and Nenagh, and is a strategic part of the link between Nenagh and Clonmel which are the administrative capitals of County Tipperary. Geographically Nenagh is located in the north of County Tipperary with no National Routes linking directly to towns in the southern half of the county. The R498 offers the most direct route from Nenagh and Borrisokane to many of the towns in the south of the county including; Carrick-On-Sur, Clonmel, Cahir, Cashel and Thurles, excluding only Tipperary town and Roscrea, which are more easily reached via the M7 through Counties Limerick and Offaly respectively. Thus the R498 has been ranked as strategically important in the 2010-2016 North Tipperary County Development Plan.
In February 2013 North Tipperary County Council produced a Strategy Report for the R498, in the report the section at Latteragh is identified for realignment and the L2258, L2259, L6152 and L6154 junctions are identified for junction improvements.

On the basis of the deficiencies of the existing road as outlined above, and responding to the aspirations policy documentation, the proposed developed will realise the following benefits:

1.3.1 Economic Benefits
The existing bad bends along the R498 at Latteragh have been shown to be inefficient in terms of its operating capacity, and hence operating speeds, particularly during periods of higher flow. At the broader scale, this capacity deficiency, and the resulting loss of reliability, may be suppressing activity along the route, thereby creating imbalances in regional competitiveness due to poor linkages between Nenagh and Thurles. The resulting economic benefits as a result of the proposed scheme are therefore:

- Improved journey times and journey time reliability along the R498 for all road users in order to reduce non-productive time associated with traffic related delay;
- Reduced journey times between Nenagh and Thurles in order to support balanced Regional Development.

1.3.2 Safety Benefits
A total of 9 reported collisions, including 1 fatality and 2 serious collisions, along the 4.3km section of road over a 7 year period of 2007 to 2013 rates the risk of a collision on this stretch of road significantly higher than a standard single carriageway. Therefore the safety benefits as a result of the proposed scheme are therefore:

- A reduction in the number of collisions and resulting injuries associated with this section of road, thereby contributing the current Road Safety Authority objective of no more than 25 fatalities per million population by 2020;
- Improved junction geometry to make junctions safer;
- Improved overtaking sections so as to reduce driver frustration and improved safety; and
- Improved security for vulnerable road users through improvements to the conditions for pedestrians and cyclists on existing roads.

1.3.3 Environmental Benefits
Current activity on the existing stretch of the R498 generates negative environmental impacts on the surrounding environment, most notably the risk of hydrocarbon pollutants entering the adjacent watercourses, including the Nenagh River, especially following road collisions. The environmental benefit as a result of the proposed scheme is therefore:

- A reduced risk of hydrocarbons from entering watercourses and the Nenagh River.
1.3.4 Accessibility and Social Inclusion Benefits
The existing road provides for road and bus connections between Nenagh and south Tipperary, including the towns of Clonmel and Thurles. In order to provide additional transport benefit for those who may be socially excluded, the following benefits as a result of the proposed scheme include:

- Improved transport conditions for non-car users along the R498 through ensuring improved public transport reliability and safety.

1.3.5 Integration Benefits
A series of integration benefits have been identified as a result of the proposed scheme:

- The proposed scheme supports government plans and policies in relation to transport and spatial development in the Mid-West Region;
- Supports public transportation between Nenagh, Thurles and south Tipperary as part of the improved journey times and safety; and
- Supports increase in walking and cycling in the vicinity of the scheme.

1.3.6 Physical Activity Benefits
The existing road has no provision for pedestrians or cyclists and the dangerous bends at Latteragh are particularly unsafe for pedestrians to attempt to walk along the road. The physical activity benefits as a result of the proposed scheme are therefore:

- The proposed shared footway / cycle track facilities will promote safer walking and cycling;
- The facilities will complement the Beara Breifni Way cross country trail which is currently being developed along the river corridor and create circular walks by integrating the facilities.

The completion of this scheme is consistent with the objectives of national and local policy documents such as the National Spatial Strategy, 2002 – 2020, Infrastructure and Capital Investment 2016 – 2021, Mid West Regional Planning Guidelines 2010 – 2022 and the North Tipperary County Development Plan, 2010 – 2016.

1.4 PLANNING AND DEVELOPMENT REGULATIONS
This application is being made in accordance with the procedure outlined in Part XI, Section 179 of the Planning & Development Act, 2000 (as amended). Part 8 of the Planning and Development Regulations, 2001 (as amended), details the class of development that is prescribed for the purposes of Section 179 of the Act, and the relevant class of the proposed scheme is as follows:

80 (1) b) “the construction of a new road or the widening or realignment of an existing road, where the length of the new road or of the widened or realigned portion of the existing road, as the case may be, would be – (ii) in the case of a road in any other area, 1 kilometre or more”, and

80 (1) c) the construction of a bridge or tunnel.
Under Part 8 of the regulations, the Local Authority is required to make details of the proposed road development available for public inspection and comment and to prepare a report in relation to the proposal for consideration by the elected members of the local authority. This Part 8 Planning report contains particular information on the design and on the potential environmental impacts of the proposed scheme and will propose measures to avoid, reduce or remedy undesirable potential impacts as appropriate. It has been prepared in accordance with the information requirements of the Planning and Development Act, 2000 (as amended), and the Planning and Development Regulations, 2001 (as amended).

Following the publication in the press (daily newspaper), of the Council’s intention to submit this proposal to construct the above road improvement scheme, (in accordance with Part 8, Article 81 of the Planning and Development Regulations, (as amended), members of the Public and other interested Bodies may make a submission in writing. A copy of the Newspaper and Site Notices for the proposed development as required by the above Regulations is included in Appendix 1.

This Part 8 proposal is for the R498 Road Realignment at Latteragh Scheme and is based on the preliminary design. The design considerations have been taken into account as much as possible at this stage, but minor modifications may occur at Detailed Design Stage. The following drawings, included in the R498 Road Realignment at Latteragh, Part 8 Planning Volume 2, should be read in conjunction with this document:

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<td>7910-2301</td>
<td>Overall Scheme Layout</td>
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<td>7910-2305 (01 to 05)</td>
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<td>Southern Nenagh River Bridge</td>
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<td>7910-2307</td>
<td>Northern Nenagh River Bridges</td>
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<td>7910-2308</td>
<td>Templederry River Culvert</td>
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Following the end of the submission period, the Chief Executive of Tipperary County Council will prepare a Part 8 Report which will summarise all the details of the submissions received and the Council’s responses to same, and present this report to a meeting of the Nenagh Municipal District Councillors. After consideration, the District Councillors may accept the Chief Executive’s report, with or without modifications, and if so, the proposed road improvement scheme will proceed. Alternatively the District Councillors may reject the recommendation of the Chief Executive and in this case the proposed scheme will not proceed.
If the proposed scheme, with or without modification, is accepted by the District Councillors, then the Council will proceed to prepare a Compulsory Purchase Order (CPO) for the whole scheme, or a section of the scheme, and this CPO will be submitted to An Bord Pleanála for their approval. An Bord Pleanála may arrange a Public Oral Hearing, to hear any submissions and objections to the Council’s scheme. The implementation of the scheme will also be dependent on funding being available.
2 BACKGROUND AND REASONS FOR THE SCHEME

In February 2013 North Tipperary County Council produced a Strategy Report for the R498. In the report the section at Latteragh is identified for realignment and the L2258, L2259, L6152 and L6154 junctions are identified for junction improvements.

2.1 EXISTING ROUTE

The R498 Regional Road is the main link between Thurles and Nenagh, and is a strategic part of the link between Nenagh and Clonmel which are the administrative capitals of County Tipperary. Geographically Nenagh is located in the north of County Tipperary with no National Routes linking directly to towns in the southern half of the county. The R498 offers the most direct route from Nenagh and Borrisokane to many of the towns in the south of the county including; Carrick-On-Sur, Clonmel, Cahir, Cashel and Thurles, excluding only Tipperary town and Roscrea, which are more easily reached via the M7 through Counties Limerick and Offaly respectively. Thus the R498 has been ranked as strategically important in the 2010-2016 North Tipperary County Development Plan.

The R498 at Latteragh is a single carriageway section of road comprising sub-standard cross section and horizontal alignment, which are several steps below the Desirable Minimum required for an alignment with an 80kph speed limit. The existing alignment follows the contours around the Latteragh hills, adjacent to meanders in the Nenagh River; this has led to the sub-standard horizontal geometry. There are no overtaking opportunities on the section of the route; which can lead to driver frustration.

Plate 1: Alignment Constrained by Steep Wooded Hillside  
Plate 2: Alignment between River and a Steep Hillside  
Plate 3: Alignment Through Valley Along the River  
Plate 4: TM due to Road Edge Collapse into River
There are three at-grade junctions, which include 2 skewed T-Junctions and a Crossroads, as well as several direct residential and agricultural accesses. With the narrow cross section and lack of clear verges along the route, the visibility to and from many of the junctions and accesses are poor.
Multiple collisions have been recorded along this section of the R498 including Fatal and Serious collisions, as well as various anecdotal reports of many unrecorded minor and material damage collisions.

### 2.2 PLANNING CONTEXT

This section addresses the planning context of the proposed road scheme. In terms of planning, the strategic and national need for the scheme is supported within a broad range of national, regional and local policy documents.

#### 2.2.1 National Spatial Strategy, 2002 – 2020

Section 4.5 of The National Spatial Strategy for Ireland (NSSI) published by the Government in November 2002 identifies the need for effective linkages between the Towns of Nenagh and Thurles to the Gateways in the Mid West Region.

#### 2.2.2 Infrastructure and Capital Investment 2016 – 2021

Infrastructure and Capital Investment 2016 - 2021 is the Irish Government's capital investment programme through which the transport system in Ireland will be developed over the period 2016 – 2021. This Plan
announced in September 2015 states that funding ‘... will include €6 billion for investment in the national, regional and local road network’.

2.2.3 Mid West Regional Planning Guidelines 2010 – 2022
This document, published by the Mid West Regional Authority in 2010 outlines the regional development strategy and Regional Planning Guidelines for the Mid-West Region of Clare, Limerick and North Tipperary, within the framework of the Government’s National Spatial Strategy. The Strategic framework for the development of the region addresses many factors including Transportation and Roads.

Chapter 6: Transport And Infrastructure identifies a number of Regional Priorities including ‘The road link between Thurles and Limerick City’. The report identifies that this access route could be achieved by upgrading the R498 route between Thurles and Nenagh using the interchange with the M7 Nenagh Bypass. This access route should provide a high quality surface, required to accommodate the traffic volumes that the road carries.

2.2.4 North Tipperary County Development Plan, 2010 – 2016
The North Tipperary County Development Plan identifies the R498 regional road as being strategically important and details a number of relevant transportation policies as follows:

Policy TRANS 3 of the document states ‘It is the policy of the Council to encourage and facilitate transport investment within the County........in order to create effective links and to reduce travel times between the main towns’.

Policy TRANS 7 of the document states ‘It is the policy of the Council to resist development along strategic route corridors, which would reduce traffic, safety or carrying capacity except in exceptional circumstances........’ (Including the R498 Thurles – Nenagh Regional Road).
3 DESIGN OF THE SCHEME
The proposed development has been designed in accordance with Transport Infrastructure Ireland (TII) Publications (Standards), (formally NRA Design Manual for Roads and Bridges (DMRB)).

3.1 CONSIDERATION OF ALTERNATIVES
Following identification of initial constraints within the study area, 6 route corridors were identified. Within or between these route corridors, 14 route options were developed, followed by the Stage 1 assessment. The Stage 1 assessment ranking resulted in 5 route options being carried forward to the Stage 2 assessment and presented at the Second Public Consultation, namely Option 1, Option 6, Option 11, Option 13 and Option 14. The initial route corridors and alignment of the 5 stage 2 Route Options are presented on drawings in Appendix 2.

The 14 options were assessed under the criteria: Engineering, Environment and Economy. Each of the options not put forward for Stage 2 were rejected for various reasons, such as:

- Significant land severance;
- Low percentage of overtaking opportunity provided;
- Sub-standard geometric alignment;
- Significant impact on woodland areas;
- Likely negative impacts in relation to noise and vibration on local receptors;
- Public Consultation submissions; and
- High landscape and visual impacts.

As part of the Stage 2 assessments, onsite environmental investigations were undertaken to identify potential environmental impacts by each of the 5 options. Due to environmental constraints identified during the onsite investigations; Options 6 and 13 were considered not likely to be progressed as the preferred route option.

As presented in Table 3-1 below, by removing options; 6 and 13 (the options not likely to be considered), and the criteria; Accessibility and Integration (the criteria which has little impact), we can more clearly see the comparison between the remaining criteria, Economy, Safety and Environment for Options 1, 11 and 14.

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<td>Option 1</td>
<td>Slightly higher than least expensive</td>
<td>High Preference</td>
<td>Low Preference</td>
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<tr>
<td>Option 11</td>
<td>Least Expensive</td>
<td>Low Preference</td>
<td>Med Preference</td>
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<td>Option 14</td>
<td>Most Expensive</td>
<td>High Preference</td>
<td>High Preference</td>
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Table 3-1: Likely Preferred Route Options Matrix

The selection for Preferred Route Option depends on how the three criteria are prioritised. Collision reduction is one of the main objectives for the scheme and environmental conflicts have been the cause of
failure for previous schemes, along this section of road. Option 14 costs more than the other options. However additional mitigation measures, for Safety or Environment will lead to additional costs; this will reduce the cost difference. Where elements of Safety or Environment are compromised on, there is potential for further indirect costs in the future, such as traffic collisions or changes in the local ecology. Such issues could require further mitigation in the future. For these reasons it was the recommendation of the Route Selection Report that Option 14 be advanced as the Preferred Route Option.

3.2 PROPOSED DESIGN
Refer to the Overall Scheme Layout, General Arrangement, Cross Sections and other drawings in Part 8 Planning Volume 2.

3.2.1 R498 Mainline
The Design Speed adopted for the scheme is 85kph, which is in line with the existing 80kph speed limit along the route. The cross section is the Type 2 single carriageway option in accordance with TII DN-GEO-03031 – Road Link Design (formally NRA TD 9/12). This cross section comprises a 7.0m carriageway with 2 x 0.5m hard strips and 2 x 3.0m minimum verges (including hard strip). Refer to drawing series 7910-2302 in Part 8 Planning Volume 2 which shows the geometric details of the proposed realignment.

An appraisal period for road schemes is in general 30 years in line with the Common Appraisal Framework (CAF)¹ and the TII’s Project Appraisal Guidelines (PAG). For an online/offline minor road improvement scheme, a 30 year appraisal period is appropriate. Therefore the design year for the proposed road improvement scheme is 30 years after the envisaged road opening of 2019, i.e. 2049.

The expected Annual Average Daily Traffic (AADT) for the design year 2049 (30 years after opening) is estimated at 5,065. To achieve a minimum Level of Service D – “approaching unstable flow”, for the proposed road with an AADT of over 5,000 requires the cross-section to be a Type 2 Single Carriageway².

3.2.2 Shared Footway / Cycleway
Where parts of the new road will divert off-line from the existing carriageway, the old carriageway will be re-designated as a shared footpath / cycle track. For the proposed on-line widening section, provision is included for a shared footway / cycleway within the proposed verge. Refer to drawing series 7910-2302 in Part 8 Planning Volume 2 which shows the extent of the proposed pedestrian / cycle facility.

3.2.3 Junctions and Access
The existing three at-grade junctions, which include a crossroads junction of the L2258 and the L6154 with the R498 (at approximate chainage 1920, adjacent to the now unoccupied public house known locally as Seanin’s Pub) and two skewed T-Junctions of the L2259 (at approximate chainage 2900) and L6152 (at approximate chainage 2970) will be improved.

¹ Common Appraisal Framework for Transport Projects and Programmes, March 2016 published by DTTAS.
² Table 6/1 of TII Publication, DN-GEO-03031 Road Link Design (formally NRA Reference TD9/12).
3.2.3.1 R498/L2258/L6154 Junction (at Seanin’s pub)
Direct crossroad junctions are not permitted on rural single carriageways. Therefore a staggered ghost island junction is proposed. Refer to drawing series 7910-2304 in Part 8 Planning Volume 2 which shows the proposed arrangement of the ghost island junction. Desirable minimum visibility splays of 3.0m ‘x’ setback distance x 160m ‘y’ distance is proposed and will be cleared of current obstructions of trees and hedgerows.

3.2.3.2 R498/L2259/L6152 Junctions (at Curragh)
The 2 no. side road junctions of the L2259 and the L6152 have a stagger distance in the order of 75m. The skew angle of the L6152 is very acute and visibility splays to and from the L2259 are restricted. The proposed improvements will provide desirable minimum visibility splays of 3.0m ‘x’ setback distance x 160m ‘y’ distance and will also realign the L6152 to remove the acute skew angle, thereby allowing safer seating position to look to the right hand side of the junction.

As the nearby Kelly’s of Fantane Quarry could use the L2259 for direct quarry access for deliveries towards Nenagh, there is the potential for significant levels of turning HGVs during busy delivery periods from the quarry. With the nearby ghost island junction proposed at Seanin’s pub, it will be safer for HGVs to make the right turn from the right turn ghost island pocket. In order to ensure HGVs turn at the ghost island junction it is proposed to introduce a 10 tonne maximum gross weight restriction along part of the L2259, between the R498 and the Lacken river bridge (a distance of approximately 315m). Refer to drawing 7910-2302-03 in Part 8 Planning Volume 2 which shows the proposed arrangement of the junctions and the extent of the weight restriction.

3.2.3.3 New Junction at Chainage 310
A new simple priority junction is proposed at approximate chainage 310 and will provide local access to a house, field accesses and the proposed attenuation pond and will be terminated as a vehicular right of way beyond the final access and re-designated as a shared pedestrian / cycle facility.

3.2.3.4 Other Accesses
The primary objective of the R498 Road Realignment at Latteragh is to reduce the number of collisions and resulting injuries associated with this section of road. One of the factors that influence collisions along a road is junctions / accesses. There are several existing private direct accesses for dwellings, farms and fields along the existing R498 and the majority of these will need to be replaced with direct access to the realigned R498 as there is no alternative. However between approximate chainages 2100 and 2300, the proposed road alignment runs offline and leaves to the existing road intact. In order to minimise the number of accesses on an overtaking section along the realigned road, it is proposed to combine into 1 no. simple priority junction accesses for 2no. dwellings, 1 farmyard, a small community centre and a woodland access. The shared footway / cycleway will also be directed onto this section of old road alignment. Refer to drawing 7910-2302-02 in Part 8 Planning Volume 2 which shows the proposals for the combined access.
To the northern end of the scheme, visibility splays are restricted by the boundaries of existing residential property and boundary vegetation. In order to maximise visibility splays, a narrow strip of lands is proposed to be acquired from a residential front garden (between approximate chainages 4210 to 4240).

Also the short length of hard shoulder opposite Young’s Pub at the northern end of the scheme, which is used as parking, has been raised as a road safety concern. In order to mitigate this road safety concern it is proposed to remove the hard shoulder to facilitate the shared footway cycleway and keep visibility splays clear to/from the soccer club car park access. Alternative parking spaces for the public house will be provided at a safer location on alternative lands owned by the public house landowner.

### 3.2.4 Drainage

The drainage design for the scheme implements the concepts of Sustainable Drainage Systems (SuDS), which requires the drainage to be carefully integrated into the scheme while taking account of the original greenfield drainage patterns; this includes provisions to control the rate of runoff. By using SuDS techniques, typically surface water will be conveyed downstream; via Grassed Surface Water Channels (GSWC) or combined filter drains where subsurface drainage is required, to attenuation swales or ponds.

In line with SuDS the surface water run-off from the scheme will be attenuated to ensure the scheme does not increase the run-off rate into the watercourse. Attenuation ponds and swales will both be utilised along the scheme and be designed for a 100 year return period, (see Figure 3-1 and Figure 3-2 below). Due to the topography six attenuation ponds and two attenuation swales will be required with six outfalls. Attenuation ponds into which surface water is conveyed by carrier pipe shall be two tier pond structures to aid the removal of sediment bound pollutants from the run-off. Oil interceptors will be required for each attenuation pond. The flow will be intercepted prior to entering the pond structure with the exception of locations where over the edge drainage is collected into swales or GSWCs prior to entering the attenuation pond; at these locations the oil interceptors will be placed on the outflow from the pond structure. Refer to drawing series 7910-2303 in Part 8 Planning Volume 2 which shows the extent of drainage proposals.

![Figure 3-1: Example of a Swale](image1)

![Figure 3-2: Example of an Attenuation Pond](image2)
3.2.5 Structures

There are two principle river bridge structures along the scheme. The Southern Nenagh River Bridge at approximate chainage 1075 and the Northern Nenagh River Bridge at approximate chainage 1690; both structures will be of similar construction with reinforced earth abutments and precast concrete decks. Both structures will be clear span with a minimum of 2.0m setback from the river embankment. Refer to drawings 7910-2306 and 7910-2307 in Part 8 Planning Volume 2 which shows the general arrangement for the bridges.

An existing stone arch bridge structure at Ch.130 crosses the Templederry River (tributary to the Nenagh River), however the existing bridge is not wide enough to accommodate the new cross section, a large bottomless culvert will be required to widen the existing culvert or to replace the existing structure entirely. Refer to drawing 7910-2308 in Part 8 Planning Volume 2 which shows a general arrangement for the widening of the existing culvert. During the detailed design stage, if the existing stone arch culvert is considered to be structurally week and / or too small for a predicted 1 in 100 year rainfall event, the culvert will be replaced.

There will be three large piped culverts under the new alignment to accommodate existing watercourses and dry storm channels. The dry storm channel at Ch.480 (Holy Well Bigpark stream) will be culverted (1350mm diameter pipe) under the proposed alignment and the channel dredged to allow a fall from the culvert to the river. At approximate chainage 2120, the Sallypark River will be culverted (1800mm diameter pipe) under the proposed alignment. The existing undersized culvert under the R498 will be removed. The unreferenced stream at approximate chainage 3400 will need to be realigned and a new culvert (1350mm diameter pipe) provided, as it runs along the existing alignment for approximately 100m where it conflicts with the proposed alignment. Culverts are sized for a 100 year return period in accordance with the OPW’s requirements.

3.2.6 Earthworks / Excavation

The proposed development involves a variety of earthworks along the scheme. These include various heights of cutting and filling to construct the mainline, side roads, accesses and other associated works. There are also large sections of the scheme that are on-line and require minimal earthworks. The extent of the earthworks can be seen on the drawings included in Part 8 Planning Volume 2.

There are three areas along the mainline route that have significant cut. The total cut for the scheme is estimated to be approximately 290,000m³. The fill material to be deposited across the scheme is approximately 145,000m³. Assuming cut material is suitable to be used as fill across the scheme up to approximately 145,000m³ of material will be required to be disposed of off-site. The side slopes of the scheme have been designed as a gradient of 1 in 2. For the cutting slopes within the two wooded areas along the scheme, engineering solutions will be investigated at the detailed design stage to establish if a steeper cut slope batter is feasible thus reducing the impact on the wooded area.

The approximate volume of topsoil to be stripped for the development is 39,000 m³ at a depth of 0.3m.
3.2.7 Landscaping
Landscaping will be undertaken to ensure that the proposed development will successfully integrate into the existing environment without compromising the existing landscape character.

3.2.8 Field Boundaries
Timber post and tension mesh fencing to TII Standard Construction Details CC-SCD-00320, is generally specified as part of the design. Some length of fencing will be mammal resistant fencing to prevent the likes of badgers from burrowing under the fence and gain access to the road. Timber post and rail fencing with chain-link mesh may be specified in areas at the top of cuttings or when located behind safety barriers.

3.2.9 Temporary Traffic Management
The alignment of the scheme is a combination of on-line and off-line works. See Figure 3-3 below showing potential measures required to construct the scheme.

It is envisaged that the off-line works can be completed with minimal impact on the existing route. Both river bridges and the significant excavation areas can be completed within the off-line areas.

The on-line widening works and tie-ins will be executed over short lengths under shuttle control; typically managed by temporary portable traffic signals and when appropriate flagmen with Stop/Go discs may be used.

There are two locations where a short term road closure is likely to be required due to the difference in elevation where the proposed road crosses the existing R498 at approximate chainages 800 and 1000. If both embankment sections are co-ordinated to be constructed at the same time and immediately followed by pavement operations, a maximum road closure in the order of 2-weeks is likely.
3.2.10 Public Utilities

Existing public utilities impacted by the proposed development will be diverted, altered or protected as necessary to accommodate the works. These include telecommunications and electricity supplies.

3.2.11 Construction Compound Site

The construction of the Scheme will require one main site compound for the duration of the construction works. Additional lands will be required under a temporary CPO for the provision of a site compound. An appropriate site has been identified at approximate chainage 1900, see Figure 3-4 below. The site has been selected as it is in the middle of the scheme, with good road access and its proximity to the proposed northern bridge crossing.
The compound will provide accommodation for the following:

- Site offices with canteen, toilet and washing facilities;
- Parking for staff, plant and machinery;
- Storage areas for construction materials; and
- Temporary working areas for prefabricating construction elements.

The construction compound will be kept to the minimum size required to construct the Scheme.

A Construction Management Plan (CMP) will be developed by the contractor which will detail access and egress arrangements for the duration of the construction of the scheme. The CMP will also detail measures to be put in place to reduce the risk of pollution incidents within the site compound and around the entire site.
4 ENVIRONMENTAL IMPACT ASSESSMENT SCREENING

At the end of June 2016, qualified experienced ecologists carried out a habitat survey of the preferred route, undertaking the following:

- Water quality of the Nenagh River was assessed through biological sampling;
- Potential bat roosts were identified;
- Surveys for otters, badgers and breeding birds;
- Mapping the various habitats in the vicinity of the proposed road alignment were also undertaken.

The surveys informed the Environmental Impact Assessment (EIA) Screening Report for the scheme and was issued to the planning department of Tipperary County Council as competent authority.

The EIA Screening Report concluded:

"Based on the information gathered during this study, TOBIN recommends that Tipperary County Council determines that the proposed road development would not be likely to have significant impacts on the environment and that the R498 Road Realignment at Latteragh Scheme does not require an Environmental Impact Assessment."

A copy of the EIA Screening Report is included in Appendix 3.

On 13th December 2016, The Planning Section of Tipperary County Council confirmed that they were; “satisfied, based on the information in the EIA Screening Report of the R498 Road Realignment at Latteragh of November 2016, there that will be no requirement for EIA as no significant impacts are anticipated.”

5 ENVIRONMENTAL APPRAISAL

5.1 INTRODUCTION

In lieu of an EIA, a number of Environmental Impact Reports have been prepared for the scheme. The detailed reports are referenced within the summaries and are presented in Appendices to this report:

- Ecological Impact Assessment Report, including final AA screening (See Appendix 4);
- Archaeology, Cultural Heritage And Architectural Heritage (See Appendix 5);
- Landscape and Visual Impact Assessment (See Appendix 6);
- Noise and Vibration (See Appendix 7);
- Flood Risk Assessment (See Appendix 8);
- Agronomy (See Appendix 9).

Mitigation Measures for various elements are summarised in section 5.3 below.
5.2 ENVIRONMENTAL IMPACT SUMMARIES

5.2.1 Ecological Impact Assessment Report

The assessment of potential impacts on flora and fauna is based on standard good practice including EPA\(^3\), CIEEM\(^4\) and NRA series of guidelines\(^4\). Refer to Appendix 4 for the detailed assessment.

5.2.1.1 Potential Impacts during Construction Phase;

The proposed development site is not located within or adjacent to any designated conservation sites (SAC or SPA), therefore there are no potential direct impacts identified. The potential for indirect or cumulative impacts are assessed as being unlikely and not significant, as set out in greater detail in the EIA Screening Report to inform the Appropriate Assessment.

The land-take required for the proposed development will be kept to a minimum. This will be facilitated by the development of the project as a predominately on-line upgrade of the existing route. For the section of off-line road improvements, there will be no community or significant land severance resulting from the road realignment. Redundant sections of road will be grubbed up and appropriately landscaped, with the exception where it is proposed to maintain the existing pavement for routing of a shared footpath and cycle track link.

There will be a number of culverts constructed where the proposed realignment crosses a tributary of the Nenagh River, and other watercourses and drains. All culverts will be designed in accordance with OPW and Inland Fisheries Ireland requirements.

Brown Trout (Salmo trutta) occurs in the Nenagh River, which is considered prime spawning habitat for this species. Atlantic salmon (Salmo salar), which is protected under Annex II and V of the European Habitats Directive occurs within this river. Brook Lamprey (also listed as an Annex II species) is also likely to occur. During the walkover surveys conducted by TOBIN on the 28th June, biological quality samplings (Q-values) of the River Nenagh were taken. This standard procedure determines the water quality based on the different macro-invertebrate assemblages present within the stream and their pollution tolerance. The species observed on site were indicative of a Q-value reading of 4, echoing the EPA’s 2008\(^2\) results and showing the river to have a satisfactory ecological condition. These species consisted of the following: Isoperla, Simulidae, Baetis, Hydropsyche, Ancylus fluviatilis, Glossosomatidae, Ephemera ignita, Goeridae, Rhacophila, Rhithrogena, Perla, Heptagenia, Lepidostomatidae, Gammarus, Odontoceridae and Leuctra.

Approximately 200 linear metres of riparian habitat will be impacted by the construction of the two river bridges. The works at these locations will only require clearance inside the proposed fence lines. This is to minimise the impacts on riparian vegetation and reduce habitat loss.

\(^3\) EPA (2002). Guidelines on the information to be contained in Environmental Impact Statements

During the walkover surveys conducted by TOBIN on the 28th of June 2016, there was minimal mammal activity recorded along the river bank. No habitats listed on Annex I of the EU Habitats Directive, or rare or protected flora were recorded within the proposed route corridor or around the location of the proposed works. The potential for significant impacts affecting water quality and aquatic ecological receptors are evaluated as being of low significance in the local context.

Disturbance to fauna during the construction stage may potentially arise as a result of a short-term increase in human presence, additional construction noise, and additional lighting onsite. A pre-construction survey is recommended prior to the commencement of construction works to check the activity of bats, along with existing badger setts and for any new setts within the proposed development site. Mitigation measures will be put in place in accordance with the NRA guidelines for the protection of badgers during the construction period, which will minimise any potential impacts. In this regard, the potential for impacts can be evaluated as being of low significance in the local context.

Breeding birds were identified as comprising species commonly recorded in the Irish countryside. Nesting birds are likely to use habitats within the proposed route corridor during the breeding season; however, the woodland habitats in the locality are deemed to be large enough to be sustainable ecologically. Due to the mobile nature of these species, and the mitigation measures proposed to avoid the removal of breeding bird habitat during the nesting season, it is evaluated that the potential impacts affecting birds are imperceptible and limited to the local context.

5.2.1.2 Potential Impacts during the Operational Phase

No significant impacts on any Natura 2000 sites are anticipated during the operational phase of the proposed development.

Maintenance works will result in ongoing management of existing hedgerows and treelines; however, the hedgerows and treelines proposed for the scheme will be set further back from the road edge, meaning the management regime will be less frequent, and result in a reduced impact.

During operation, a drainage system will be in place to reduce the effect of spillage incidents discharging pollution into the Nenagh River. The Nenagh River and its tributaries along the existing alignment in the Latteragh area are located within the Shannon River Basin District (SHIRBD) and have been classified by the Water Framework Directive as Moderate water quality. The groundwater classification for this region is classified as Good. The Water Framework Directive requires that good water quality status is achieved for all waterbodies that are classified as Poor to Moderate by December 2015. The current Risk category is 1a for the Latteragh area which denotes the area did not achieve ecological or good chemical status potential by 2015.

The proposed road drainage system includes a drainage design which will improve upon the existing road drainage which is primarily an “over the edge” system. Typically grassed channels and filter drains will be
provided along the scheme, including attenuation pounds with oil interceptors at most outfalls. Refer to 3.2.4 above. The proposed road drainage system will therefore contribute to the objectives of the Water Framework Directive to restore the Nenagh River to achieve a Good water quality.

Bat species and their prey are sensitive to the effects of strong lighting during hours of darkness. There is no public lighting proposed along the road realignment, therefore no negative impacts on local bat populations are anticipated.

5.2.2 AA screening

It is vital that an assessment of potential source-pathway-receptor links is undertaken to assess potential impact links between the receptor (European Sites) and source (proposed development) to establish the risk of any likely significant effects. It used the information collected on the sensitivity of the Qualifying Interests of each European Site and describes any likely significant effects from the construction, operation and decommissioning stages of the proposed development. This assumes the absence of mitigation measures with the exception of those incorporated in the design stage as good practice such as avoidance. The Screening Stage identified likely significant effects of the proposed development both in isolation and potentially in combination with other plans or projects.

5.2.2.1 Potential for direct impacts on Natura 2000 sites

The proposed development site and immediate vicinity are located at a minimum distance of approximately 5.2 km from any designated Natura 2000 site. This precludes the potential for any direct impacts arising as a result of the proposed road realignment.

5.2.2.2 Potential for indirect impacts on Natura 2000 sites

The key issue being considered in this appraisal is the likelihood of indirect effects to features of interest associated with impacts from the development in particular;

- Sediment run-off or pollutants e.g. dust entering the aquatic environment;
- Noise effects during construction and operation.

Indirect effects could arise from pollutants entering watercourses in the study area, specifically the Nenagh River and reaching designated sites located at a distance downstream. This could potentially interfere with the relationships that sustain Annex I habitats and Annex II species. It was confirmed during the assessment that:

- The site is located outside Natura 2000 sites.
- No species listed as qualifying fauna of Natura 2000 sites detailed were recorded or are likely to significantly utilise the site.
- No habitats listed as qualifying habitat of Natura 2000 sites were recorded on the site or are likely to significantly utilise the site.
- The site is unsuitable for wintering birds which are qualifying features of interest for the Lough Derg, Shannon SAC.
• The site does not provide significant supporting habitat for features of interest in adjacent Natura 2000 sites.
• Standard pollution controls will be implemented during the construction phase of the project which will avoid discharges of excess soil, cement and other pollution sources outside the site footprint. No direct impacts including dumping of spoil/builders’ material, storage of materials equipment etc. will occur on Natura 2000 site.
• Indirect impacts on water quality and aquatic ecology in the Nenagh River are therefore evaluated in the local context and are not considered to be of a scale that would likely give rise to significant adverse effects on the qualifying interests of any designated Natura 2000 sites, with respect to the conservation objectives of these sites. This evaluation is made with specific reference to the SAC and SPA sites on Lough Derg and the Lower River Shannon SAC.

5.2.2.3 Potential for in-combination or cumulative effects
The proposed development has been proposed, taking account of the policies set out in the Tipperary County Development Plan (2010-2016) and the North Tipperary Biodiversity Action Plan (2007) and the Nenagh Biodiversity Plan (2013-2016) which includes the Nenagh River. There are no planning applications, or proposed developments identified within the zone of influence of the proposed development which could interact in combination or cumulatively to give rise to significant adverse effects on any designated Natura 2000 site. A proposed windfarm development consisting of 16 wind turbines on Keeper Hill was also considered for cumulative effects. This development site is located to the west of the Latteragh scheme. The River Nenagh and its tributaries are not hydrologically connected with the proposed windfarm development in any way. It was evaluated that there is no likelihood of potential adverse cumulative or in-combination effects that will occur.

5.2.3 Archaeology, Cultural Heritage and Architectural Heritage

Refer to Appendix 5 for the detailed assessment.

5.2.3.1 Archaeological Heritage
• There are no World Heritage sites or sites on the tentative list of World Heritage Sites located within 10km of the proposed development.
• There are no National Monuments in the Ownership or Guardianship of the State within 5km of the proposed realignment.
• All townlands within 2km of the proposed development site were cross referenced with the list of sites under Preservation Orders available from the Department of Arts, Heritage, Rural, Regional and Gaeltacht Affairs (DAHRRGA). There are no sites with Preservation Orders listed within the subject area.
• A review of the ‘Report of the Commissioners or Church Temporalities of Ireland (1879)’ was carried out. There are no sites listed in the ownership or guardianship of the Local Authority within 500m of the study area.
5.2.3.2 Record of Monuments and Places
Sites that are not in state care are listed in the Record of Monuments and Places. A data search indicates that there are 19 recorded monuments within 1000m of the subject site, five of which are within 500m of the scheme. Of the above, only two sites in Garrane townland (TN027-105 & TN027-105 classified as a deserted medieval settlement and motte) and forming part of the same complex has a the ‘Zone of notification’ that extends into the development area. There are no recorded sites physically located within the realignment corridor.

5.2.3.3 Architectural Heritage
The nearest protected structure to the proposed works is Garrane Mill (RPS S167) located approximately 25m from the proposed boundary fence-line of the scheme on the west bank of the River Nenagh (at approximate chainage 1700). The works will not physically impact on fabric of the buildings however vibrations during the construction phase could adversely impact the structural integrity of the mill. The significance of the impact on this area was assessed as being slight.

Other Protected sites including Latteragh School House (RPS S346), at approximate chainage 2280, and Orkney/Glenmore Lodge (RPS S179), at approximate chainage 400, will not be impacted by the works.

It is recommended that if the stone built bridge between the townlands of Glenmore Lower and Currabaha (chainage 120) cannot be retained in situ that a full photographic and drawn survey be undertaken.

There are a number of architectural sites and features that do not appear on existing inventories, these include the vernacular dwelling at the southern terminal of the scheme and the former Latteragh Post office building. These sites are of local heritage interest and will not be directly impacted by works, it is recommended that contractors be advised of their presence to avoid against any inadvertent impacts with passing machinery.

5.2.4 Landscape and Visual Impact Assessment
Refer to Appendix 6 for the detailed assessment.

Much of the road, (approximately half), will follow a broadly similar alignment to the existing R498 helping to minimise visual impact. Where the realigned route varies significantly, this will create a requirement to remove roadside hedgerow and tree vegetation and in some instances it is necessary to undertake cut and fill exercises on the existing landform. The proposed route has been designed to minimise woodland loss as far as is practical. Native tree planting is proposed for land that will disturbed or remodelled to facilitate the realignment such as exposed embankments, further mitigating visual impacts over time.

The level of screening to the site afforded by existing tree and hedgerow vegetation, both flanking the existing R498 and further back as part of the existing field patterns, is a significant factor in limiting both the visual envelope and the anticipated visual impacts.
The North Tipperary Development Plan 2010 – 2016 includes a Listed View, (Reference V11) “Views north and south of the R498 from Bouladuff through Borrisoleigh to Latteragh”, that coincides with the southern portion of the proposed realignment scheme.

This view is primarily be experienced by users of the R498, (as well as a limited number of other receptors such as nearby dwellings), looking towards Devil’s Bit Mountain and the Slievephelim Complex as illustrated in Figure 5-1 below. As such the proposed road realignment itself is unlikely to have a significant impact on these views towards these uplands areas.

The landscape sensitivity of the receiving environment can be classified Medium to High due in combination to its generally scenic quality, listed view and residential properties. It is deemed that the landscape, whilst being of medium to high sensitivity, still retains the potential capacity to absorb a wide range of sensitively designed new developments, subject to normal planning and development control procedures - there being a recognition in planning policy that the landscape is an important economic, community and cultural resource, which changes and develops in line with the needs of the community who work and live in it.

The magnitude of landscape change which would result from the development, can be classified as Low.
The significance of the landscape visual effects of the proposed realignment will vary depending on the exact location along the 4.3km route, however they are generally neutral in nature given the established precedents of a roadway and vary between ‘not significant or slight’ to an occasional instance of ‘significant or very significant’.

Assuming the retention of the existing screening vegetation as far as possible and the implementation of appropriate new landscape mitigation planting as detailed under the landscape masterplan (Drawing No 17306_3_100, included in the detailed assessment), then it is deemed that the proposed scheme viewed in its totality represents an acceptable development in terms of landscape and visual impact.

5.2.5 Noise and Vibration
Refer to Appendix 7 for the detailed assessment.

5.2.5.1 Operational Phase Impacts
Modelling of the proposed route was carried out using the hourly traffic flows and speeds. The total values are shown in Table 4-1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>AADT (two-way flow)</th>
<th>Number (%) HGV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Count Base Year</td>
<td>2015</td>
<td>3840</td>
<td>143 (3.7%)</td>
</tr>
<tr>
<td>Envisaged Road Opening Year</td>
<td>2019</td>
<td>4280</td>
<td>162 (3.8%)</td>
</tr>
<tr>
<td>15 years after opening</td>
<td>2034</td>
<td>4862</td>
<td>226 (4.6%)</td>
</tr>
<tr>
<td>Design Year (+ year years after opening)</td>
<td>2049</td>
<td>5065</td>
<td>303 (6.0%)</td>
</tr>
</tbody>
</table>

Table 5-1 Traffic flows for proposed route

Using this data and the existing and proposed road’s routes, a total of seven scenarios were modelled as follows:

Year 2015 – No nothing (the existing situation used to calibrate the models)
Year 2019 – Do Something i.e. the scheme is constructed
Year 2019 – Do Minimum i.e. the scheme is not built
Year 2034 – Do Something
Year 2034 – Do Minimum
Year 2049 – Do Something
Year 2049 – Do Minimum

The resultant noise levels at all the measurement locations were assessed. There were no scenarios in any year considered, where the conditions for mitigation were satisfied.
5.2.5.2 Construction Phase Impacts

Noise level associated with construction may, in accordance with TII (NRA) guidance, be calculated in accordance with the methodology set out in BS5228: Part 1. This standard sets out sound power levels for typical construction site plant items, which are used to predict noise levels at selected locations.

However, due to the fact that the programme for construction works has not been established in detail, it is not possible to conduct prediction of the construction phase. The TII (NRA) guidance document however, specifies noise levels that it typically deems acceptable in terms of construction noise, which are set out in Table 5-2.

<table>
<thead>
<tr>
<th>Period</th>
<th>L_{Aeq(1hr)} dB</th>
<th>L_{Amax} dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Friday 07:00 to 19:00hrs</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Monday to Friday 19:00 to 22:00hrs</td>
<td>60</td>
<td>65</td>
</tr>
<tr>
<td>Saturday 08:00 to 16:30hrs</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Sundays and Bank Holidays 08:00 to 16:30hrs</td>
<td>60</td>
<td>65</td>
</tr>
</tbody>
</table>

Table 5-2 Maximum permitted noise levels at facade of nearby dwellings during construction.

Vibration impacts during the operation of the proposed scheme would not be of a magnitude to cause disturbance or structural damage.

However, there is potential for vibration impacts during construction works, particularly in relation to excavation, rock breaking and lorry movements. A vibration monitoring programme shall be implemented during the construction phase, where vibrations shall not exceed the frequencies set out in Table 5-3 below.

<table>
<thead>
<tr>
<th>Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of</th>
<th>Less than 10Hz</th>
<th>Less than 10Hz 10 to 50Hz</th>
<th>50 to 100Hz (and above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatively modern Buildings:</td>
<td>8 mm/s</td>
<td>12.5 mm/s</td>
<td>20 mm/s</td>
</tr>
<tr>
<td>Critical Buildings:</td>
<td>3 mm/s</td>
<td>8 mm/s</td>
<td>10 mm/s</td>
</tr>
</tbody>
</table>

Table 5-3 Maximum allowable vibration levels during construction phase.

As Garrane Mill is a protected old structure, the ‘Critical Buildings’ vibration limits shall apply.

5.2.6 Flood Risk Assessment

Refer to Appendix 8 for the detailed assessment.
A Flood Risk Assessment (FRA) was undertaken to provide a quantitative appraisal of potential flood risk in relation to the proposed development. The FRA undertook a review of:

- OPW Flood Maps
- Tipperary County Development Plan
- The Planning System & Flood Risk Management (PSFRM) Guidelines
- OPW Preliminary Flood Risk Assessment Maps

The proposed road realignment is classified as a "Less Vulnerable Development" by the Planning System & Flood Risk Management (PSFRM) Guidelines. The guidelines specify that this type of development is appropriate within Flood Zone B, i.e. that there is less than a 1% probability (1 in 100 years) of the site flooding.

This flood risk assessment has considered a 20% increase in peak flow to take account of climate change.

Due to the proximity of the road to the River Nenagh, it was estimated that the primary source of flood risk was from fluvial flooding.

Hydraulic modelling of the Nenagh River was carried out by TOBIN to estimate the 100 and 1000 year MRFS flood levels along the proposed R498 road realignment.

Two new bridge crossings are proposed as part of the scheme.

- Southern Nenagh River Bridge – provisionally sized as a 15.2 meter clear span structure
- Northern Nenagh River Bridge – provisionally sized as a 17.2 meter clear span structure

While an increase in water level is estimated locally at each of the proposed bridges, the impact of the road realignment on the Nenagh River flood extents is predicted to be minimal.

The proposed road realignment crosses the estimated flood plain at two locations. It is recommended that the finished road level be constructed at an elevation above the predicted 100-year MRFS flood level in the Nenagh River.

It is also recommended that surface water runoff from the proposed road be limited to greenfield runoff rates.

On the basis that the above recommendations are taken into account it is predicted that the proposed road realignment will not result in an increased risk of flooding elsewhere.
5.2.7 Geotechnical and Groundwater Vulnerability

The initial desk study of the geology within the study area is presented in the Figures below. Figure 5-2 below illustrates the Teagasc Soils features as detailed on the GSI database. Along the proposed route the soils comprise as follows:

- Southern tie-in – Till derived chiefly from Lower Palaeozoic rocks (Surface water Gleys, Ground water Gleys);
- Within the Nenagh River valley – Alluvium (Mineral Alluvium)
- Sloping Wooded areas (east of river) – Bedrock at surface-Non calcareous (Lithosols, Regosols);
- Eastern side of northern tie-in – Till derived chiefly from Lower Palaeozoic rocks (Acid Brown Earths, Brown Podzolics)

Figure 5-2: Extract of Soils Mapping from Constraints Report

Figure 5-3 below illustrates the Teagasc Sub-Soils features as detailed on the GSI database. Along the proposed route the sub-soils comprise as follows:

- Southern tie-in – Till derived from Lower Palaeozoic sandstones and shales;
- Within the Nenagh River valley – Alluvium
- Sloping Wooded areas (east of river) – Bedrock outcrop and subcrop;
- Eastern side of northern tie-in – Till derived from Lower Palaeozoic sandstones and shales
The bedrock geology from the GSI database shows that the study area of the scheme is underlain with a Hollyford Formation, comprising rock types of Greywack, siltstone and grit. Greywack is the rock type extracted from the nearby Kellys of Fantane Quarry.

The Aquifer Classicisation for the area shows that the road corridor is within Poor Aquifer, where bedrock is generally unproductive except for local zones. Figure 5-4 below illustrates Groundwater Vulnerability as detailed on the GSI database. Along the proposed route the groundwater vulnerability comprise as follows:

- Southern tie-in – Moderate to High
- Within upper Nenagh River valley – Rock at or near surface to Extreme
- Within lower Nenagh River valley – Moderate to High
- Sloping Wooded areas (east of river) – Rock at or near surface
- Eastern side of northern tie-in – Extreme to High
Figure 5-4: Extract of Groundwater Vulnerability Mapping from Constraints Report

The proposed road drainage system includes a drainage design which will improve upon the existing road drainage which is primarily an “over the edge” system. Typically grassed channels and filter drains will be provided along the scheme, including attenuation ponds with oil interceptors at most outfalls. Refer to 3.2.4 above. The proposed road drainage system will therefore intercept pollutants, including hydrocarbons, from entering groundwater.

5.2.8 Agronomy

Refer to Appendix 9 for the detailed assessment.

There are 29 land parcels directly affected by the construction of the proposed development, of which 17 are agricultural land holdings.

An agricultural consultant from Curtin Agricultural Consultants Ltd made direct contact with 13 of 17 of these agricultural landowners, in order to carry out the following tasks:

- To conduct an appraisal of the land quality and farming practices along the route;
- To conduct an appraisal of land take, degree of severance and any farmyard disturbance arising from the proposed development.
- To gather data via a questionnaire to enable an assessment of the impact and mitigation measures required as a result of the road development.
There are no farms on which the agricultural impact of the proposed development would be significant or profound.

There is 1 farm whereby the landholding will be severed by the proposed road. The proposed road will severe approximately 4 hectares; 3.3 hectares of which is an immature plantation.

There are 3 farm holdings that would experience moderate adverse impacts representing 18% of all farm holdings along the scheme.

There are 5 farm holdings that would experience slight adverse impacts representing 29% of all farm holdings along the scheme.

There are 9 farm holdings that will experience a not significant level of impact along the proposed development representing 53% of all farm holdings along the scheme.

However after mitigation effective access will be provided to the separated lands. The overall impact on agriculture along the proposed road development is not significant.

5.2.9 Air Quality
During operation of the road, it is concluded that regional air quality impacts and climatic impacts would be imperceptible as the level of traffic using the old alignment and the proposed alignment will be similar.

The main emissions to the atmosphere likely to result from construction of the proposed scheme will be in the form of dust and exhaust emissions from construction vehicles. The construction activities that have the potential to cause the formulation/accumulation and airborne pollution of dust arise particularly during the earth-moving phase.

5.2.10 Integration and physical activity
Walking and cycling facilities will be provided along the scheme, these facilities will provide safer routes for walkers and cyclist and potentially encourage more people to walk and cycle in the area. Refer to drawing series 7910-2302 in in Part 8 Planning Volume 2 which shows the extent of the proposed pedestrian / cycle facility.

The existing cross-country trail; The Beara Breifni Way, which is currently under development, will be severed by the scheme in two locations segregating approx. 600m of the trail. The section that will be severed currently leaves the riverbank and crosses above an ash plantation along a farm access track before reaching the Garrane Mill where there is a new bridge crossing a stream, see Figure 5.5 for trail routes.
5.3 MITIGATION MEASURES

5.3.1 Mitigation Measures for Ecology
Mitigation Measures for Ecology include the following:

5.3.1.1 Ecological Clerk of Works
A number of construction activities for the works shall be supervised and monitored by a suitably qualified ecologist, who will be required to be fully appraised of all the pollution control and biosecurity mitigation measures and the reasons why they are applied. The Ecological Clerk of Works shall be in attendance on site during the following construction activities:

- All Site Clearance;
- Excavations, including topsoil stripping and earthworks activities adjacent to the Nenagh River and other watercourses;
- Excavations, foundations and embankment works for the Nenagh River bridges;
- Excavations at watercourses; and
- Construction of culverts.

5.3.1.2 Invasive species
Invasive species found to develop within the site, either during the intervening period following the current field surveys, or during the construction phase of the development will require a specialist Method Statement for its eradication to avoid the spread of invasive species, to ensure compliance with the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011).

In order to prevent the spread of invasive species the contractor shall ensure that all equipment is cleaned and disinfected prior to arrival on-site, and again once works are completed. The contractor shall also adhere to the requirements of Inland Fisheries Ireland (2010) Biosecurity Protocol for Field Survey Work with respect to the protocols developed for the control of the spread of alien species to the aquatic environment.

5.3.1.3 Rivers and Watercourses
Prior to and during the construction phase, mitigation measures will be put in place to protect nearby surface water bodies and the underlying aquifer.

Standard preventative measures will be used to avoid any impacts on the local surface and ground water environment. Such measures include:

- Bunding
- Erection of silt fencing
- Attenuation measures / Silt traps
- Spill kits

Proprietary sediment settlement and control systems available on the market shall be used to control the discharge of silts during dewatering of excavations.
All earthworks operations in the vicinity of the Nenagh River shall be limited to dry seasons to minimise the effects of silt laden run-off or any soil subsidence.

Prior to the diversion of the unreferenced stream at approximate chainage 3650, a pre-construction survey will be undertaken. If this stream is deemed to contain suitable habitat for fish, a fish survey will take place. During the excavation for the watercourse, temporary silt control ponds will be constructed along this stream to collect silt before discharging into the river.

5.3.1.4 Fauna
The following mitigation measures will be undertaken as part of works for the protection of fauna.

- Bats
  - All felled trees or lopped boughs will be brought to the ground in a supported fashion and left in-situ for 24 hours prior to removal or cutting into smaller sections. This is to enable any bats that may be using the trees or boughs to escape.

- Birds
  - Hedgerows / Trees should not be cleared or trimmed between the 1st March and 31st August.
  - Where the construction programme does not allow this time restriction to be observed, then these areas shall be inspected by a qualified Ecologist for the presence of breeding birds prior to commencement of construction works. Where any nests are found, the appointed ecologist will provide recommendations as to whether a licence is required for vegetation removal and will detail the process for obtaining such derogation from the NPWS.

- Badgers
  - Exclusion of badgers from any currently active sett should only be carried out during the period of July to November (inclusive) in order to avoid the badger breeding season.
  - The badger proof fencing to be erected in such a way as to direct the badgers towards a proposed mammal underpass and clear span bridges.

- Other
  - Due to the potential for a lengthy time span to elapse between planning and commencement of works, a pre-construction survey is recommended prior to the commencement of construction works. This is of particular importance with reference to badger and bat species which may have developed dwellings or roosts within the proposed development site during the intervening period.

5.3.2 Mitigation Measures for Control of Pollution
Proper site management during construction must be carried out to ensure that all necessary measures are taken to prevent silt-laden run-off and pollutants from entering any watercourse, with particular cognisance of the proximity of the proposed works to the Nenagh River.
A Construction Management Plan (CMP) will be prepared for the project prior to construction. The following standard practice pollution control measures will be incorporated into the CMP, which the contractor shall be obliged to follow to reduce any risk of a pollution incident.

- The Contractor shall prevent pollutants exiting the site via surface water run-off during the earthworks phase by implementing sediment control measures, including the provision of attenuation measures, silt traps or geotextile curtains as required.
- All vehicular traffic will use the specified access tracks / haul routes to limit disturbance to vegetated areas thereby reducing potential to generate sediment laden run off.
- The Contractor will inspect all hydraulic hoses and fittings prior to mobilising equipment and machinery to site and carry out maintenance checks thereafter once onsite.
- The Contractor shall have a dedicated area for refuelling of equipment, ideally located at the temporary construction compound. Fuels and oils shall be stored in a bunded cabinet and a spill kit containing oil absorbent materials made available in the event of an accidental spillage.
- The Contractor will ensure that stockpiles of excavated soils/subsoil and engineering fill material will be located at least 5m from any drainage features (wet or dry). Silt fencing will be installed at the edges of the access track to prevent silt being released out of the site, via surface water run-off.
- The Contractor will ensure that any excavated material, not required for reinstatement following construction, is reused or disposed of at a waste permitted facility. Its disposal should not lead to the loss or damage of any natural or semi-natural habitats elsewhere. This material should not be placed close to any local watercourse or drainage ditch feeding into watercourses as it may result in an increase the release of silt downstream.
- On completion of the works, all plant, tools, offices, storage containers, surplus materials, waste and temporary welfare facilities will be removed from the site by the Contractor.

5.3.3 Mitigation Measures for Archaeology, Cultural Heritage and Architectural Heritage

Mitigation Measures for Archaeology, Cultural Heritage and Architectural Heritage include:

- Archaeological testing shall take place in selected areas in advance of construction, these areas shall include:
  - the affected section with the RMP constraint for the Motte (TN027-105001-);
  - the deserted medieval settlement (TN027-105-);
  - the affected area of the mill race;
  - in greenfield sites opposite Glenmore Cottage;
  - in Mill Farm and Carrick (Maunsell) townland; and
  - in sensitive areas along the existing road.
- Full time monitoring take place during top-soil stripping operations and in in affected riparian and woodland areas.
- In respect of architectural sites, if the stone built bridge between the townlands of Glenmore Lower and Currabaha (chainage 120) cannot be retained in situ, that a full photographic and drawn survey be undertaken.
• The Works Contractor shall be appraised of sensitive sites and limit vibrations that may affect the integrity of structures, particularly at Garrane Mill.

5.3.4 Mitigation Measures for Landscape and Visual Impacts
Mitigation Measures for landscape include:
• Minimise vegetation clearance to just within LMA
• Retain the existing screening vegetation as far as possible and implement appropriate new landscape mitigation planting as detailed under the landscape masterplan (DWG No. 17306_3_100)

5.3.5 Mitigation Measures for Noise & Vibration
Mitigation Measures to minimise the impacts of noise & vibration during construction include:
• Monitoring of noise levels during construction to ensure below specified threshold.
• Monitoring of vibration levels during construction at nearby buildings, especially at Garrane Mill. (Vibration monitor with the capability to measure to the lower limit and with real-time alerting functionality shall be employed at Garrane Mill).

5.3.6 Mitigation Measures for Watercourses / Drainage
The proposed road will cross the Nenagh River at two locations. The bridge structures proposed are clear span bridges, with a minimum 2.0m setback from the natural river bank. This reduces the impact on the 1:100 MRFS flood level. Where the alignment is to be constructed along existing flood plain, the embankment will be constructed of a permeable material with 40% voids, a flood water storage pond is to be constructed to mitigate the remaining flood water displacement.

The proposed road drainage design will comprise mainly grassed channels where at grade / on embankment or filter drain when in cutting. Attenuation ponds, incorporating oil interceptors, are proposed at 6 locations along the scheme. The flow rate from the attenuation ponds to the receiving watercourses will be limited to the greenfield run-off rate. The proposals will significantly reduce the risk of pollutants entering the water courses and Nenagh River as the existing road drainage flows over the edge onto existing lands or into existing watercourses and into the Nenagh River without interception of potential oil spillages from the high number of collisions that occur along this section of the R498.

5.3.7 Mitigation Measures for Agronomy
Compensation under the Compulsory Purchase System – compensation to farmers for residual damage is part of the statutory process for compensation. Compensation may include for replacement of new handling facilities or for loss of shelter and the like.

General mitigation during the construction and operational stages of the scheme will include the following:
5.3.7.1 Construction Phase

- Landowners will be provided with access to all separated land parcels during the construction of the proposed road development. Where temporary disruptions to this access occur landowners will be notified in advance.
- Where existing water and electricity supplies are disrupted during the construction phase an alternative water source or electricity supply will be made available.
- Suitable boundary fencing will be erected to delineate the proposed development boundary line and prevent disturbance to adjacent land.
- A key contact person will be appointed during the construction phase to facilitate communications between affected landowners and to facilitate the re-organisation of farm enterprises by farmers during critical times.
- Landowners with lands adjoining sites where either rock breaking, blasting or piling takes place will be notified in advance of these activities.
- The impacts on water quality will be minimised by way of a programme of mitigation measures for surface water sources, refer to sections 3.2.4, 5.3.2 and 5.3.6.
- The spread of dust onto adjoining lands will be minimised by way of mitigation measures set out in section 5.3.8.
- Where drainage outfalls are temporarily altered or land drains blocked or damaged an adequate drainage outfall will be maintained and land drains will be repaired.

5.3.7.2 Operational Phase

- All separated land will be accessible via the proposed realigned road and accommodation access roads and access tracks.
- Where existing water and electricity supplies to fields or farm yards are severed, the supply will be reinstated by provision of ducting where possible. Alternatively, where ducting is not feasible a permanent alternative water source or electricity supply will be made available. Compensation payments will enable farmers to replace power and water supplies.
- Water from the proposed road development will be diverted to attenuation ponds before discharging to watercourses. The drainage design of the proposed road development will intersect existing field drains and carry the drainage water to suitable outfalls.
- Landscaping along the proposed road development will minimise the visual impact on farms along the route of the proposed road development and will over time improve shelter in affected farms.

5.3.8 Mitigation Measures for Air Quality

It is not expected that any site-specific mitigation measures are required during the operational phase of the proposed road development.

A dust minimisation plan shall be put in place for the construction phase and followed accordingly. The implementation of this plan shall ensure the effect on air quality will not be significant during the construction period. Properly designed and recognised methods of controlling and damping down dust will be in
operation during the course of the contract and strict enforcement of these regulations should be carried out.

5.3.9 Mitigation Measures for the Beara Breifni Way
During the construction of the two river bridges and the road alignment between the two bridges, it is proposed that the Beara Breifni Way will be temporarily diverted to run along a temporary fenced off track along the western side of the proposed road fence line. The existing styles will be relocated to allow the crossing of fences.

Following construction of the scheme, the existing cross-country trail will be rerouted under the proposed southern river bridge before continuing along the river bank and under the proposed northern river bridge before reaching the existing trail at Garrane Mill.

Figure 5.5 below shows the route of the existing, temporary and proposed trail for the Beara Breifni Way.

Existing signage will be amended as necessary to direct walking along the amended route.

![Figure 5.5 Beara Breifni Way Trail](image-url)
6 LAND ACQUISITION AND ACCOMMODATION WORKS

Land acquisition will be required in order to construct the proposed scheme. The outline design focuses on the development of the proposed route to permit land acquisition procedures to be undertaken. The permanent land area to be acquired for the scheme is approximately 15.6 hectares (excluding the existing road).

- 10.4ha of farmland will be included in the CPO for the scheme; 3.5ha of which is land frontage on the existing road to accommodate widening and drainage works, the remaining 6.9ha is grassed farmland to accommodate sections of full realignment.
- 4.0ha of woodland will be included in the CPO for the scheme; this is largely due to the steep gradient of the lands on which the woodland stands requiring significant land take to regrade.
- 0.8ha of commercial forestry will be included in the CPO to accommodate bridge crossings and a drainage attenuation pond.
- 5.5ha of existing road bed will also be included in the CPO where the proposed alignment is online and will require widening, regrading and drainage works.
- There is some small areas of land required from the front gardens of 4no. dwellings (totalling in the order of 0.3 hectares). The extent of which, will generally be limited to a narrow strip to allow for improved visibility splays and verge widening. The current visibility from each of these accesses is sub-standard for the design speed of the road.
- 1.4ha of Temporary CPO to facilitate the construction of the scheme.

There is no requirement to acquire residential properties or other buildings as part of the scheme.

Accommodation works will be required along the route, in consultation with landowners; this will include repaving of accesses to tie in with the new alignment, demolishing and rebuilding garden walls, fencing, gates and new retaining structures.
7 FUNDING

The capital scheme cost has been estimated in the order of €13.1M (as of Q2 2017), including the cost of land, advanced works, design and supervision fees and VAT.

The Scheme will be funded by the Department of Transport Tourism and Sport, however at the time of writing this document there is no funding commitment in place to enable the delivery of the proposals for which planning is being sought.

8 PUBLIC CONSULTATION

Plans and particulars of the proposed development will be available for inspection for the duration of the inspection period as referenced in the Notices, included in Appendix 1.