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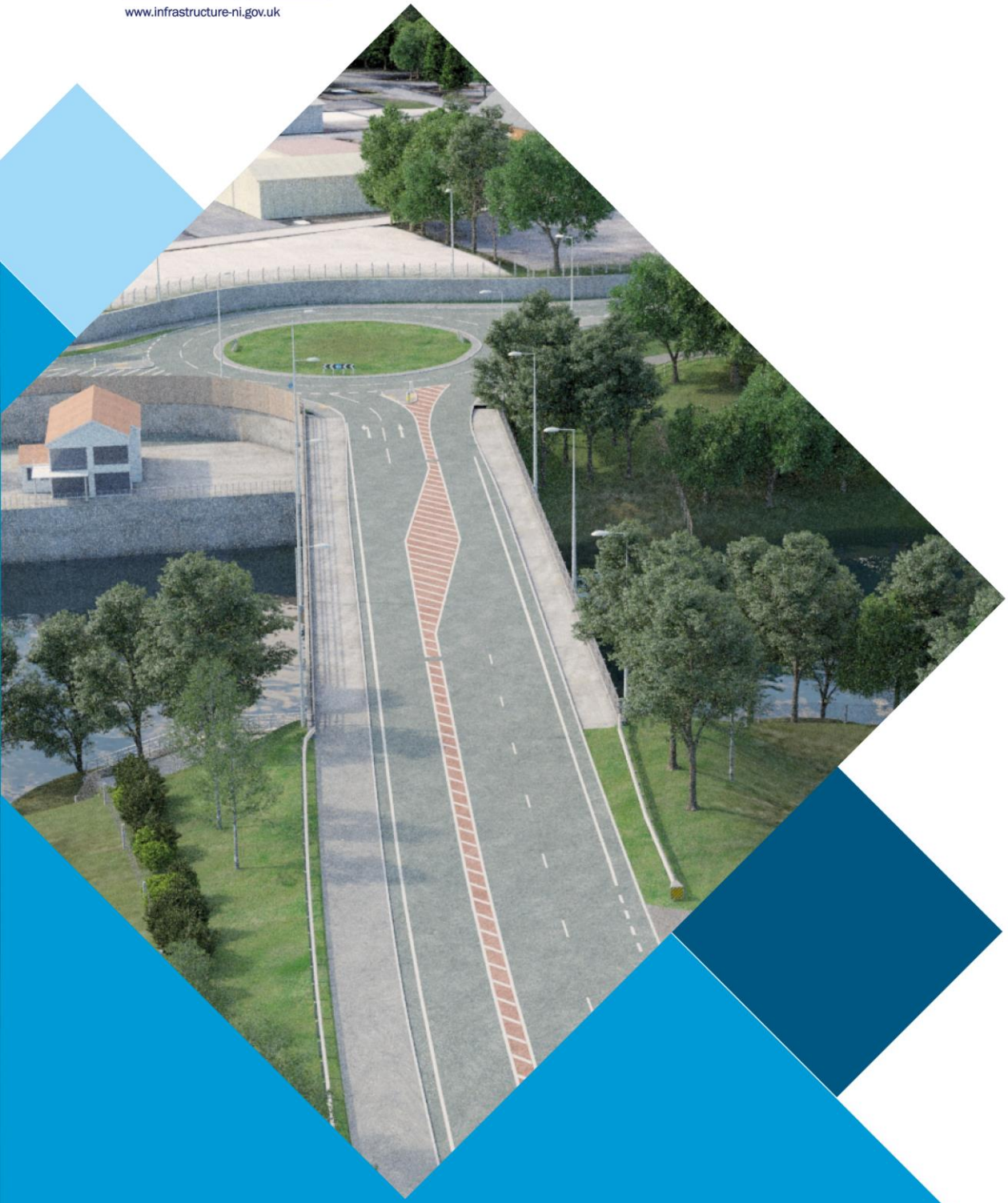

A4 Enniskillen Southern Bypass

Volume 3

Non-Technical Summary

(Environmental Impact Assessment Report)

Department for Infrastructure – Roads
Strategic Roads Improvement Team - Western Division

March 2018

Introduction

An Environmental Impact Assessment (EIA) Non - Technical Summary (NTS) is a requirement under Article 67 (5) (e) of The Roads (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 which amends Part V of The Roads (Northern Ireland) Order 1993.

A NTS is required of the following information that is included within the Environmental Impact Assessment Report (EIAR):

(a) A description of the project comprising information on the site, design, size and other relevant features of the project;
(b) A description of the likely significant effects of the project on the environment;
(c) A description of the features of the project and measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment; and
(d) A description of the reasonable alternatives studied by the Department, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.

The subject of this EIA is the proposed development of a new 2.1km road bypass of Enniskillen, Co. Fermanagh. The total scheme footprint is approximately 17.6 hectares. The purpose of this bypass is to alleviate serious traffic congestion in the town centre and provide a modern and safe link road between the A4 Dublin Road and the A509 Derrylin Road.

Need for the Scheme

Enniskillen suffers from traffic congestion particularly at peak times because of the existing road network not providing sufficient capacity to meet the needs of local and strategic traffic converging at key junctions and river crossings within the town. This results in unreliable journey times for all traffic, driver frustration and a poor-quality town centre environment for road users and the community.

It is also the case that congestion levels are predicted to increase as the level of car ownership increases. As such, the current situation in Enniskillen is expected to worsen over time and negative impacts on the local population and town centre environment will intensify.

The Department for Infrastructure (DfI) Roads is therefore developing a road improvement scheme to provide a southern bypass to Enniskillen to provide a new link for traffic between the A4 Dublin Road and the A4 Sligo Road. The proposed scheme aims to alleviate traffic congestion within the town and provide improved journey times for strategic through traffic.

The Design Manual for Roads and Bridges

Highways schemes are assessed using The Design Manual for Roads and Bridges (DMRB). This manual provides standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways in the United Kingdom. There are 3 key stages of assessment within DMRB:

Stage 1 – identify the environmental, engineering, economic and traffic advantages, disadvantages and constraints associated with broadly defined improvement strategies;

Stage 2 – identify the factors to be taken into account in choosing alternative routes or improvement schemes and to identify the environmental, engineering, economic and traffic advantages, disadvantages and constraints associated with those routes or schemes; and

Stage 3 – identify clearly the advantages and disadvantages, in environmental, engineering, economic and traffic terms of the preferred route or scheme option.

This EIA NTS relates to Stage 3 of the assessment process.

Alternatives Considered

An important part of the EIA process is to consider alternatives to a proposed scheme.

The findings of the Stage 1 constraints and corridor study were reported in the A4 Enniskillen Bypass – Stage 1 Scheme Assessment Report (SAR) 2010. Four corridor options were developed and assessed based on the potential advantages/disadvantages associated with providing an alignment within that corridor. At Stage 1 it was concluded that a corridor between the A4 Sligo Road and A4 Dublin Road be considered for further assessment. Environmentally this decision was based on the proximity to residential properties, likely flooding impacts and impacts to cultural heritage features.

At Stage 2, consideration was also given to the preferred carriageway type and preferred junction locations/types for connecting the proposed road into the existing road network. Environmentally, the impacts of the route options were very similar and key considerations were engineering and economic. The preferred option was then progressed to the Stage 3 assessment.

As part of the DMRB Stage 3 Assessment process the design of the scheme has been developed through several iterations influenced by differing factors including environmental impact, economics, traffic, safety and accessibility/integration.

Within the Stage 3 Assessment, option appraisals were carried out for the two river crossings required to facilitate the proposed scheme across the River Sillees and the River Erne.

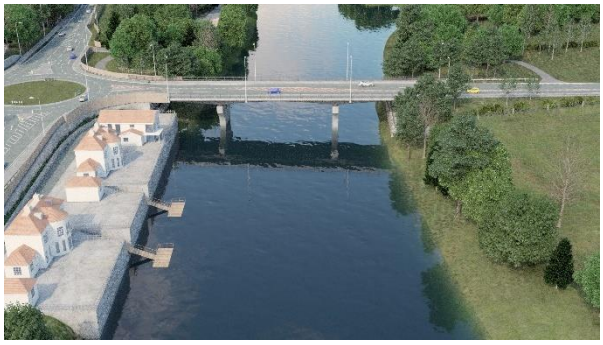

Figure 1 River Erne Crossing

A specimen design of the scheme has been produced and this will be further developed by the appointed design and build contractor.

Description of the Project

The proposed scheme is 2.1km in length (encompassing an area of 17.6 hectares) and stretches mainly along agricultural land from the A509 Derrylin Road in the west to the A4 Dublin Road in the east.

Existing Land Use

From west to east the scheme traverses agricultural land adjacent to the tie in point on the A509 prior to crossing the River Sillees. The River Sillees is a tributary of the River Erne and is typically 10-15 m wide.

The scheme then proceeds across agricultural land prior to severing the access to the Riverside Marina which is located immediately north of the proposed scheme. The scheme progresses through agricultural land for approximately the next 1.9km severing two agricultural accesses prior to reaching the River Erne which lies adjacent to the eastern tie in point. The River Erne is a wide waterway, with typical channel widths within the study area ranging between 50m to 150m; however, several wider pools exist along the channel. The wide deep channel and frequent pools make it a popular channel for recreational boating/water activities.

The A4 Dublin Road roundabout encroaches on the grounds of: a private business within the Killyhevlin Industrial Estate; the Killyhevlin Hotel and residential properties.

Figure 2 Eastern tie in point

The terrain within the study area features a series of large drumlins with lower lying plains between. The floodplains of the River Erne and River Sillees encroach within these low-lying plains and are notable features of the study area.

Scheme Alignment

The horizontal alignment is very similar to the alignment identified as the preferred route in Stage 2.

The vertical alignment has been designed to optimise the balance between excavated material and imported fill material, to minimise costs. The vertical alignment has also been heavily influenced by several significant constraints across the scheme, including:

- Navigable Channels - Requirement to satisfy minimum freeboard at the River Erne and River Sillees crossings.
- Floodplains - Maintain design levels above (the Q100) flood levels for the River Erne and River Sillees floodplains.
- Drainage - Achieve suitable drainage outfalls.
- Land Use - Requirement to provide sufficient headroom within underpass structures, to accommodate typical agricultural and recreational vehicles anticipated to use the new access tracks.

River Sillees Boat Turning Pool

There is a natural widening of the River Sillees channel, to the south east of the proposed A509 Derrylin Road roundabout. This wide section of the river forms a pool, which is currently utilised

by small boats to U-turn, allowing them to travel back downstream towards the River Erne.

Upon construction of the River Sillees bridge, the Sillees channel will no longer be navigable for motorised watercrafts beyond the new structure. This results in the need to recreate the turning pool downstream of the structure to maintain the existing turning provision within the channel.

The proposed turning pool has been designed to provide the same area as the existing turning pool, and all widening works are to take place on the eastern bank of the river.

The final form of the pool is to be confirmed at detailed design. However, it is anticipated that scour/erosion protection will be required. This is likely to be a soft engineering approach to maintain the character of the river.

Non-Motorised User (NMU) Provision

To ensure safe connectivity for NMUs, two new links will be provided along the western verge of the A4 Dublin Road and the eastern verge of the A509 Derrylin Road. These will both be contiguous with the bypass NMU route, allowing users to travel between the eastern and western extents of Enniskillen along designated NMU facilities.

Accommodation Works

To maintain access to the affected lands and property within the study area, accommodation works have been developed to mitigate the impact of the scheme on third party land owners. This includes three existing access tracks which are to be realigned and conveyed beneath the bypass via new underpass structures.

In addition, new access tracks are to be created within the study area, and a ghost island junction is to be provided on the southern arm of the A4 roundabout, to cater for right turning traffic using the Killyhevlin Hotel's repositioned secondary access.

Details of the proposed scheme are displayed in Figure 3.

Construction

It is expected that construction of the Enniskillen Southern Bypass would take approximately 18 months to 2 years to complete.

It is envisaged that construction work would take place during normal working hours, with contractors adhering to applicable legislation and policy guidance. However, it is anticipated that some works may be required to take place outside of normal working hours e.g. setting up traffic management arrangements.

The construction programme for the scheme is very much dependent on the earthworks strategy adopted and this would be finalised by the appointed Contractor. It is assumed that the bulk earthworks would be undertaken during the spring and summer months (March to August).

Upon completion of the detailed design by the Design & Build Contractor, the following construction activities would be typical of a major highway scheme:

- Advance/preparatory works;
- Site establishment and demolition works;
- Main construction works for the scheme including drainage, earthworks, structures and surfacing works; and
- Finishing works such as landscaping.

Millimetres 100 10 0

DO NOT SCALE

ENNISKILLEN TOWN CENTRE

A4 SLIGO ROAD

A509 DERRYLIN ROAD

RIVER SILLEES

RIVER ERNE

ENNISKILLEN TOWN CENTRE

ARDHOWEN THEATRE

ENNISKILLEN GOLF CLUB

CASTLE COOLE ESTATE

LOUGH YOAN ROAD

PROPOSED A4 DUBLIN ROAD ROUNDABOUT

KILLYHEVLIN INDUSTRIAL ESTATE

PROPOSED DRAINAGE TREATMENT POND

PROPOSED RIVER ERNE BRIDGE

A4 DUBLIN ROAD

PROPOSED EASTERN UNDERPASS

KILLYHEVLIN LAKESIDE HOTEL & LODGES

PROPOSED DRAINAGE TREATMENT POND

PROPOSED DRAINAGE TREATMENT POND

PROPOSED SILLEES BRIDGE

PROPOSED GHOST ISLAND JUNCTION

PROPOSED CENTRAL UNDERPASS

PROPOSED A509 DERRYLIN ROAD ROUNDABOUT

PROPOSED WESTERN UNDERPASS

PROPOSED DRAINAGE TREATMENT POND

KEY:

- PROPOSED SCHEME
- TREATMENT PONDS
- OSNI MAPPING
- WATER BODY
- EXTENDED RIVER BED

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made to the design hazard log).
Construction
Maintenance / Cleaning
Use
Decommissioning / Demolition

Rev.	Date	Description	Org	Chk'd	App'd	Aut'd
P01.1	---	FIRST ISSUE				

Suitability: FOR INFORMATION

Design Status: S2

Project Title: A4 Enniskillen Southern Bypass

Drawing Title: Figure 3 PROPOSED SCHEME

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NTS				
Original Size	Date	Date	Date	Date
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(Project | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5148441

Revision: P01.1

Plotted by: MAGI9990 Date: Feb 27, 2018 - 4:39pm
Drawing file saved on ProjectWise

Environmental Impact Assessment

This EIA considers both direct and indirect impacts arising from the proposed scheme. Direct impacts are caused by the proposed scheme itself, whereas indirect impacts are caused by changes that happen in part due to pressure arising from the proposed scheme, but not as a direct consequence of it e.g. increase emissions from car use in a particular area could potentially impact on an ecologically designated site due to changes in local air quality.

The technical assessments conducted as part of this EIA have utilised a number of techniques including the guidance within DMRB, site visits, consultations and best practice guidance. To ensure the completeness and quality of the EIA Report (including this NTS) it has been prepared by competent experts.

Impacts have been expressed in terms of their significance which were derived through consideration of the sensitivity of a receptor and the magnitude of the impact. The development of significance criteria has been informed through the relevant sections of the DMRB, topic specific guidance, consultation with appropriate environmental bodies, and (where applicable) professional judgement.

In general if an effect is considered 'slight' or 'neutral' then this is interpreted as 'not significant'. 'Significant' effects are those that are either 'moderate' or 'large'.

In cases where the proposed scheme is deemed to potentially cause adverse impacts, mitigation measures have been proposed. The mitigation measures will be incorporated into the design and construction of the scheme by the appointed contractor.

Construction mitigation measures will be recorded in a Construction Environmental Management Plan (CEMP). This contains details of environmental protection measures and procedures to be employed during the construction of the scheme. The CEMP will be updated by the appointed contractor when specific details of the scheme are known e.g. compound/storage locations.

Air Quality

An air quality assessment was undertaken to determine the impacts of the proposed scheme development during both the construction and operational period.

During construction, short term impacts such as dust generation were identified, however with appropriate mitigation measures in any impact becomes non-significant. These measures include sweeping and storage procedures which will be recorded in the CEMP.

The assessment indicated that there are no significant adverse effects with the proposed scheme when operational. Hence, no mitigation measures are likely to be necessary. There are, however, expected to be significant beneficial effects, particularly at receptors within Enniskillen where there is expected to be a decrease in nitrogen dioxide pollutant (NO_2) concentrations.

Cultural Heritage

A total of three sites are included in the Northern Ireland Sites and Monuments Record (NISMR) within 500m of the proposed scheme. Of these, one is also a scheduled monument. There are no sites listed as being in State Care within 500m of the proposed bypass. The closest site to the proposed bypass is a ringfort/rath (FER211:038) situated c. 190m to the west–southwest. The remaining sites are a further ringfort/rath (FER211:085) situated c. 235m south and a scheduled enclosure (FER211:042) situated c. 475m north.

There are two listed buildings within 500m of the proposed bypass. These include a Gate (HB12/17/055) situated c.195m north–northwest and a Gate Lodge (HB12/17/056) situated c. 215m north–northwest.

A total of five structures listed as Industrial Heritage sites are within 500m of the proposed bypass. The closest of these are two Eel Weirs (IHR01027:000) situated adjacent and c. 150m south–southeast of the proposed scheme. The remaining sites include a Bridge (IHR01009:032) situated c.15m east, a Level Crossing (IHR01009:031) situated 20m south, a Bridge (IHR01009:005) situated c.175m north–northwest and a Viaduct (IHR01009:006) situated c.185m north–northwest.

There are two registered parks and gardens within 500m of the proposed scheme. These are the demesne landscape at Lisgoole (F018), situated to the immediate south of the proposed bypass and the demesne landscape at Castle Coole (F006) situated c.145m north.

There are no Defence Heritage Sites, World Heritage Sites, Registered Battlefields, Areas of Significant Archaeological Interest, Areas of

Archaeological Potential or Conservation Areas within 500m of the proposed scheme.

A geophysical survey of the proposed bypass footprint highlighted multiple anomalies of archaeological potential across the scheme. These have the potential to represent settlement activity from all periods throughout history and prehistory. A number of the anomalies appear to relate to post medieval field systems and several areas have been identified that contain significant alluvial deposits.

A field inspection of the proposed bypass was carried out as part of this assessment. One vernacular cottage, which may date to the early 19th century, is located within the footprint of the proposed bypass, along with the site of a further building. Two derelict structures are also present to the north of the proposed scheme.

The proposed scheme is within an area considered to be of high archaeological potential due to the presence of the Sillees and Erne Rivers. This is illustrated by the density of recorded archaeological sites located within the wider area that represent all periods of history and illustrate how significant the River Erne and its associated bodies of water were to past populations. It was recommended that a programme of archaeological testing is carried out across the length of the proposed scheme (currently being finalised, March 2018 with no significant finds to date). The work is being undertaken under licence to the Historic Environment Division.

The derelict vernacular cottage located within the footprint of the proposed bypass should be subject to a full measured survey prior to demolition. A townland boundary and the path of the former railway should be subject to a written and photographic record prior to destruction. Heritage features such as the railway bridge (IHR01009:006), Lisgoole Abbey demesne, a ruined post-medieval structure and a derelict vernacular cottage will suffer minor adverse impacts on their setting due to the proposed scheme.

It is predicted that the setting of the remains of the railway bridge that once crossed the River Erne (IHR01009:006) will be significantly impacted upon following the implementation of the proposed mitigation measures. Whilst this structure is not intact or subject to statutory protection, its remains are substantial and screening mitigation will take time to establish in order to reduce the medium adverse impact predicted in the opening year. No significant residual effects remain post mitigation.

Figure 4 Historic photograph of railway bridge

Ecology and Nature Conservation (Biodiversity)

The ecology and nature conservation chapter describes the ecological baseline and evaluates the nature conservation value of ecological features present within the Ecological Zone of Influence for the proposed scheme. The assessment characterises the impacts of the proposed scheme on important ecological features; sets out agreed avoidance, mitigation, compensation and enhancement measures; and assesses the significance of the residual effects of the proposed scheme on the important ecological features. A Habitats Regulations Assessment (HRA) has also been carried out in relation to international ecologically designated sites that may be impacted by the proposed scheme.

A desk study review comprising existing reports and consultation responses, and data gathering was carried out in 2016 and 2017.

A series of ecological surveys were carried out in 2016 and 2017. Initially, an extended Phase 1 habitat survey was undertaken. This identified a number of features for which further surveys were carried out: hedgerows, woodland, river corridors, red squirrel, barn owl, badger, otter, bat roosts, breeding birds including kingfisher, invertebrates, and fish.

The HRA screening found likely significant effects on two qualifying features (otter and whooper swan) of three international sites. These features were taken forward to full Appropriate Assessment. Additional information on these features was collected. It was determined that there would be no adverse effects on the integrity of the conservation objectives relating to whooper swan. Avoidance and mitigation measures were identified to avoid significant adverse effects on the conservation objectives for otter.

Potential adverse effects were identified on Devenish Island ASSI during construction and operation due to the risk of pollution incidents. During construction, these effects will be avoided by adherence to the CEMP, which will include requirements for the implementation of appropriate pollution control measures. No adverse effects were identified on any other nationally statutory designated site during either construction or operation.

A number of potential effects were identified during construction as a result of loss of habitat (woodland, hedgerows and riparian habitat along both the River Erne and Sillees River), water pollution (River Erne and Sillees River), disturbance of protected species (foraging badger; sheltering, foraging and commuting otter; roosting, foraging and commuting bats; foraging and commuting red squirrel; breeding birds; and foraging barn owl).

A range of avoidance and mitigation measures have been included in the design and construction programme. These will avoid/mitigate all of the effects of construction such that none of the residual effects are considered significant, apart from effects on foraging and commuting bats.

The proposed scheme will result in the loss of important habitat features that are utilised by large numbers of bats, including some less common species, during commuting and foraging. There is generally a high cover of hedges and commuting and foraging habitat in the area so alternative habitat exists, along with the rivers at each end of the proposed scheme, that link habitats north and south of the scheme. However, habitats within the proposed scheme provide important linkages between roost sites in Enniskillen and foraging habitat to the south. Mitigation for loss of commuting and foraging habitat and to maintain connectivity has been provided within the design. However, it is considered that construction will have a moderate adverse residual effect on commuting and foraging bat assemblages that are significant in the context of County Fermanagh.

During operation, potential effects were identified as a result of severance of habitat for protected species (foraging badger, foraging and commuting otter, foraging red squirrel, foraging and commuting bats , foraging barn owl), and noise and visual disturbance (breeding birds).

A range of avoidance and mitigation measures have been included in the design. These will mitigate all of the effects of operation such that none of the residual effects are considered significant, apart from effects on foraging and commuting bats and on foraging barn owl.

Some species of bat will be deterred from foraging close to busy roads. Due to the large areas over which bats forage it is likely that any loss of, or displacement from, suitable foraging habitat in the vicinity of the proposed scheme will in itself amount to only a small proportion of the wider available resource. However, the impact of any such disturbance or displacement could be greatly increased if bats are hampered in moving between breeding and roosting sites and foraging habitat. Where the route of the proposed scheme severs, or is located in close proximity to, existing features known to be utilised regularly by foraging or commuting bats, there is an increased risk that bats could be killed or injured as a result of collisions. However, the tree and hedgerow planting within the landscape design will reduce the risk of collision.

The residual risks of collision are considered to be minimal. Permanent loss of commuting and foraging routes will be replaced by hedgerow planting on both sides of the proposed scheme. The loss of this habitat is considered to be a small proportion of the overall available resource in the local area. Severance may result in permanent displacement of bats away from preferred foraging and commuting routes. However, foraging habitat is widely available in the local area. Commuting routes linking habitats to the north and south of the proposed scheme via the River Erne and the Sillees River will still be available. It is considered that the residual effect in the opening year is moderate adverse. Once the landscape planting has matured and bats have become habituated to using underpasses, the effects on the conservation status in terms of the abundance and distribution of commuting and foraging bats in a county context is not considered significant.

Severance during construction may result in permanent displacement of barn owls away from preferred foraging habitat, and a low risk of barn owl collision remains. It is considered that the residual effect in the opening year is slight adverse. Once the landscape planting has matured and barn owls have become habituated to the proposed scheme, the effect on the conservation status in terms of the abundance and distribution of barn owl in a national context is not considered significant.

Road Drainage and the Water Environment

The proposed scheme is split between two catchments; the western part of the site is located within the Sillees catchment and the eastern part

of the site is located within the Upper Erne catchment.

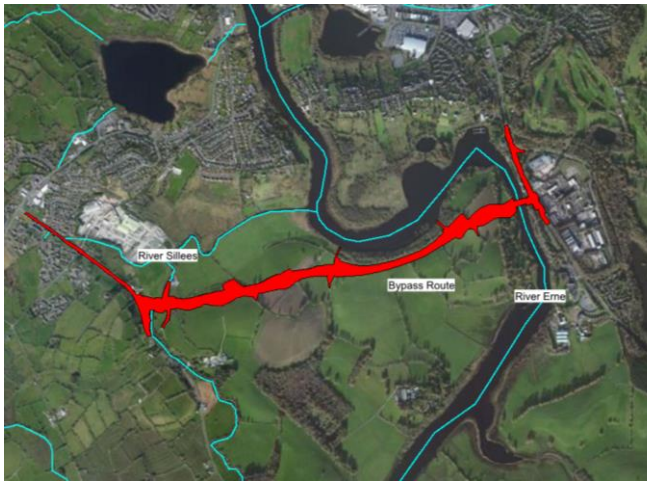

Figure 5 Surface Water Features

The 'River Erne Enniskillen' is considered a Heavily Modified Water Body and has been assessed as having Poor Ecological Potential Status (under the Water Framework Directive (WFD)) from 2012-present. It is the intention that this area will have achieved Good Ecological Potential by 2021.

The overall ecological status of the River Sillees is 'poor'. It is the intention that this area will have achieved Good Ecological status by 2021.

Impacts from a road project on the water environment may include the potential impact to the quality of receiving water bodies, from either routine run-off or spillages. The water bodies may be either surface watercourses or groundwaters. Another potential impact is the risk of flooding within the catchment. Other potential impacts include amenity or economic value of water bodies.

The construction phase will require civil engineering works to take place on, and adjacent to the bypass site and will include the construction of two bridge crossings (River Sillees and River Erne). The boat turning pool downstream of the proposed River Sillees bridge is to be constructed by widening the existing channel, with the western bank being fixed and all widening taking place about the eastern bank. It is anticipated that the river will be widened by excavating out material to the depth of the existing channel and a new bank will be created by extending the scour protection from the River Sillees structure.

Water protection measures (e.g. settlement ponds) have been identified and these will be incorporated into the CEMP by the appointed contractor. These protection measures will ensure that no significant impacts will occur on the receiving water environment during the construction phase.

The assessments undertaken regarding the operation of the scheme have demonstrated that no significant impacts are anticipated in terms of: routine run-off; accidental spillages; flood risk; amenity; or geomorphology.

Water protection measures have been incorporated into the scheme design, i.e. Sustainable Drainage Systems (SuDS).

Landscape Effects

The Landscape and Visual Impact (LVIA) have been assessed over a 2km study area.

The impacts on landscape are concerned with changes to the elements and features that comprise the landscape character, areas of specific value such as designated sites and non-designated landscape. The visual impacts are concerned with residential and non-residential (commercial and/or recreational) receptors.

The assessment in relation to landscape receptors considers the proposed scheme, associated undergrounding of a section of the existing overhead line, and the widening of part of the A509 Derrylin Road to facilitate an upgrade to the cycle path, in relation to the landscape character areas, landscape designations, and the general landscape.

The landscape assessment found the potential for significant impact at two locations. The residual impacts of construction, post mitigation, on the landscape resource remain moderate adverse for a limited period of time. There are no anticipated significant impacts on the landscape resource during operation.

The assessment in relation to visual receptors considers the proposed scheme, associated undergrounding of a section of the existing overhead line, and the widening of part of the A509 Derrylin Road to facilitate an upgrade to the cycle path, in relation to 9 viewpoints, selected through collaboration with statutory consultees, and sequential views representing a range of visual receptors.

The residual impacts concerning visual amenity during operation are limited to residential receptors on the Dublin Road located in close proximity to the proposed Dublin Road roundabout and the Erne Bridge (including the

new build house currently under construction). At this location the effect of the proposed scheme on visual amenity is considered to be moderate adverse.

In conclusion the assessment has identified likely significant impacts of the proposed scheme would be contained within a relatively small area around the site during construction, and limited to one residential property in close proximity to the proposed Erne Bridge beyond the construction period.

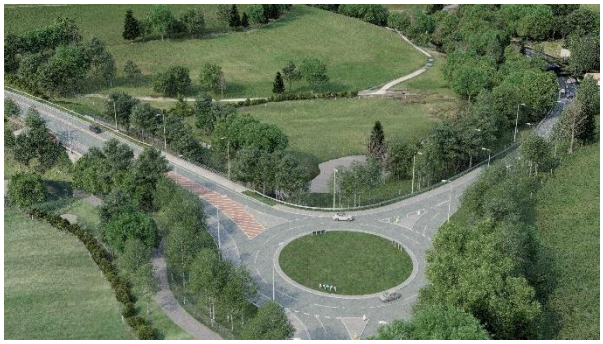

Figure 6 Typical Landscape Planting at Derrylin Road Roundabout

Land Use

Seven main landholdings outside the existing highways network and verges are directly impacted by the proposed scheme. Direct liaison has been undertaken with each of these land owners.

No significant impacts on land use have been identified during either the construction or operation of the scheme.

Agricultural and other commercial enterprises will remain viable due to a relatively low level of land loss during both the construction and operational phases.

The provision of appropriate mitigation e.g. access to severed agricultural land via underpasses will minimise any impact magnitude.

Land Condition: Geology, Soils and Contaminated Land

The impact on geology and soils due to the proposed scheme will occur during the construction phase of works. No geologically designated areas will be impacted upon and overall impacts on geology and soils will be minor and considered not significant.

Ideally a scheme attempting to achieve a balance of cut and fill operations would be advantageous from a sustainability perspective. However, under the proposed scheme proposals a deficit of material is likely which means that material will need to be imported to the site from elsewhere.

A Contaminated Land Preliminary Risk Assessment (PRA) has been undertaken and the area underlying the proposed scheme is considered to be low risk in terms of human health and controlled waters receptors during construction.

Noise and Vibration

An assessment has been undertaken to consider the noise and vibration impacts of the proposed scheme on nearby sensitive receptors, both during the construction phase and during operation of the scheme.

Construction phase impacts have been assessed in accordance with BS 5228:2009+A1 Code of Practice for Noise and Vibration Control on Construction and Open Sites. The assessment has considered anticipated construction activities and has determined that there are significant impacts associated with the works but that construction impacts are by their nature short term and temporary and are controlled by the use of best practice construction techniques which are anticipated to reduce the impact of the works to acceptable levels. It is not anticipated that there will be any night-time construction works required as part of the scheme.

Operational phase impacts have been assessed in accordance with the processes laid out in the Design Manual for Roads and Bridges (DMRB) and in consideration of the Noise Policy Statement for Northern Ireland (NPSNI), Noise Insulation Regulations (Northern Ireland) 1995 and noise target values as provided by the World Health Organisation (WHO) in their Guideline for Community Noise 1999.

The assessment has determined that within the study area there are road links which will experience a decrease in noise and those which will experience an increase in noise due to the redistribution of traffic around the network. The most significant detrimental impact will be experienced by those properties closest to the proposed new bypass and in these locations proposed mitigation measures in the form of acoustic barriers have been proposed.

With mitigation measures in place all receptors are less than the Significant Observed Adverse Effect Level in terms of noise.

No significant vibration impacts during construction or operation of the proposed scheme are anticipated.

Pedestrians, Cyclists, Equestrians and Community Effects

During construction it is acknowledged that the proposed scheme will impact on the local community and non-motorised users (NMU). Construction phase impacts will be short term and controlled by procedures included within the CEMP and liaison with the relevant bodies to ensure all measures are taken to limit disturbance during this phase. It is acknowledged that some of these construction effects may still be considered significant with control measures in place.

Operationally, it is considered that this scheme will have longer term significant residual benefits due to the improved pedestrian, cycling and equestrian traveller environment. In addition, once the scheme is fully functioning it should improve road safety for all users, reduce the congestion in the Enniskillen town centre improving linkages between the local population and community facilities.

Figure 7 NMU Provision

Vehicle Travellers

This assessment addresses impacts on vehicle travellers in terms of views from the road and driver stress levels. It is anticipated that the scheme will bring significant beneficial impacts to vehicle travellers.

Figure 8 View from the road

The scheme engineering and landscape design will alleviate the current issues that negatively impact views from the road and driver stress. The proposed scheme will provide a clearer journey for vehicle travellers and will encompass excellent views, good signage and higher speeds.

Following completion of the proposed scheme the view from the road will improve on the existing situation by offering tranquil views to the vehicle traveller. Driver stress is expected to be low and will remain low by the design year.

Following completion of the proposed scheme the average journey time is expected to decrease as overtaking opportunities and speed limits increase.

Climate

An assessment was undertaken to identify and assess the likely effects of the proposed scheme in relation to climate change, and the vulnerability of the proposed scheme to climate change, due to its construction and operation. The assessment was split into two to address both these issues:

Effects of the proposed scheme on Climate

It is anticipated that following implementation of the mitigation measures, construction of the proposed scheme will still cause large quantities of emissions, and as such have a large significant negative impact at the scheme scales. This is to be expected due to the fact that the proposed scheme involves construction of an entire new road with a large ‘sunk’ carbon investment.

It is however noted that, excluding the construction emissions, that in 2020 and 2035, with the proposed scheme in place, there is an overall reduction in emissions in line with UK carbon reduction targets. The construction impact therefore has a payback period of 28.7 years.

Therefore in the long term the scheme will have a beneficial impact on climate.

Vulnerability of the proposed scheme to climate change

Northern Ireland's infrastructure has been vulnerable, in the past, to extreme warm and cold weather, and heavy rainfall. Projected climate trends in Northern Ireland suggest it is likely that the occurrence of heat waves (particularly in summer) and extreme precipitation (particularly in winter) will increase. It is likely that the proposed scheme is not vulnerable to the changes in average temperature or precipitation, rather the trends in extremes pose more of a risk.

This qualitative assessment identified that current design standards and best practice operational and maintenance regimes are expected to provide a degree of resilience to climate risks. Design, construction and operational climate change adaptation measures are however required to provide an appropriate degree of climate resilience to residual impacts over the life of the proposed scheme.

Vulnerability to a major accident or disaster

This assessment has considered:

- Vulnerability of the proposed scheme to risks of major accidents and/or disasters; and
- Any consequential changes in the predicted effects of the proposed scheme on environmental topics.

There are not expected to be any significant adverse effects after mitigation, resulting from major accidents and disasters, as a result of the proposed scheme during either the construction or operational phases.

Mitigation of risks during construction to prevent significant accidents or disasters include good contractor management including adherence to all Health and Safety and CDM regulations. The CEMP will also be used to mitigate potential risks during construction.

Operationally measures have been included within the scheme design such as designing the scheme to high safety standards and applying future-proof design factors to accommodate changes in climate including increased flooding.

Disruption Due to Construction

The proposed scheme will be mainly constructed offline and will require the formation of embankments and cuttings. Two major bridge crossings and a boat turning pool will also be required.

Significant impacts are anticipated during the construction phase of the works including impacts relating to: noise and vibration; visual sensitivity; and ecological sensitivity.

The implementation of environmental control procedures within the CEMP will minimise disruption to the receiving environment and thus minimise the potential environmental effects of construction.

Most construction impacts will be temporary in nature. Permanent construction impacts on ecology and landscape have been mitigated in the scheme design through measures such as mitigation planting. Significance of construction are included within the various technical assessment summaries.

Materials and Waste

Material resources are required for construction of the new pavement, signage, foundations, underpasses, structures and drainage.

A Site Waste Management Plan will be required from the appointed contractor to deliver efficiencies including reducing excess waste, increasing the recycling potential of materials, and minimising the requirement for raw materials.

Where site won materials are found to be unsuitable, resources could potentially be sought from the local area to avoid increased haulage distances. However, there is a possibility of significant quantities of “waste” excess materials requiring movement off site.

Potential effects from the proposed scheme from materials requirement and excess materials / waste will be refined during the detailed design stage. Potential effects may relate directly to material demand, the sourcing of materials, the generation of non-useable materials from the site clearance and demolition, the re-use of soils and materials on site, the pre-treatment of materials prior to re-use on site, the recycling of materials and wastes, and the re-use and / or disposal of materials off site.

The project is currently registered with Civil Engineering Environmental Quality Scheme (CEEQUAL) and the requirement for a “very good (or better)” award should ensure the design and construction of a sustainable scheme.

Material Assets

Material Assets is a broad term that encompasses a wide range of features and which could cover almost all physical or non-physical sectors of the environment that could be said to have material value. In the context of this proposed scheme and the potential environmental impacts of this, the term ‘Material Assets’ is taken to refer to the following:

- Utility Infrastructure;
- Electricity
- Gas
- Water (including private installations)
- Telecommunications;
- Aviation Safety;
- Rights of Way; and
- Minerals (e.g. sand & gravel).

The proposed scheme will impact on material assets in the immediate locale. Impacts will be experienced for the most part during the construction stage. It is considered that any effects will not be significant and temporary in nature.

Operationally it is anticipated that a major beneficial effect will be experienced (at the eastern section of the scheme) through the removal of electricity pylons and the burial of cables. Visually this will be beneficial and it will also make additional space available e.g. within the plant hire centre in the Killyhevlin Industrial Estate.

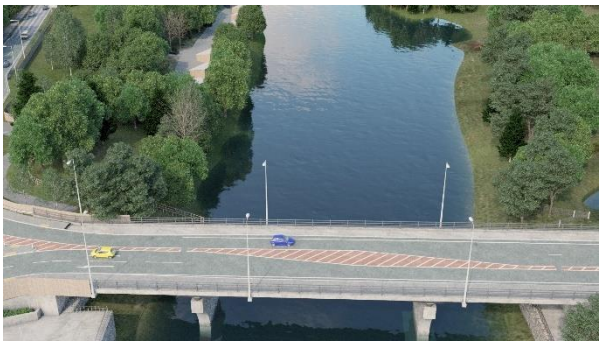

Figure 9 Removal of overhead cables at Erne Bridge

Human Health

This is a summary chapter within the EIAR compiling relevant information relating to human health from the following technical assessments:

- Air Quality;
- Road Drainage and The Water Environment;
- Noise and Vibration;
- Land Condition: Geology, Soils and Contaminated Land;
- Pedestrians, Cyclists, Equestrians and Community Effects; and
- Vehicle Travellers.

The general impact on human health due to the proposed scheme is anticipated to be beneficial due to a number of factors including:

- Improvements in air quality;
- Increased safety due to good road design and the removal of traffic from the congested town centre; and
- Improvements in stress levels of drivers.

Impact on Plans and Policies

This assessment considered key policies and plans with the aim of identifying whether or not these will be hindered or achieved by the construction of the proposed scheme.

The assessment has demonstrated that the proposed scheme is in line with the key policies and plans. The proposed scheme will be subject to the statutory process for road development in

Northern Ireland and the relevant legislation underpinning this.

Cumulative Effects

Cumulative impacts result from multiple actions on receptors and resources and occur over time. They are generally additive or interactive in nature. Cumulative impacts can also be considered as impacts resulting from incremental changes caused by other past, present or reasonably foreseeable actions together with the project.

There are principally two types of cumulative impact in EIA, i.e.:

- Cumulative impacts from a single project whereby the impact arises from the combined action of a number of different environmental topic specific impacts upon a single receptor/resource i.e. Interaction of impacts; and

- Cumulative impacts from different projects (in combination with the project being assessed) whereby the impact may arise from the combined action of a number of different projects, in combination with the project being assessed, on a single receptor/resource. This can include multiple impacts of the same or similar type from a number of projects upon the same receptor/resource i.e. in combination impacts.

Each of the technical assessments have taken into account the likely significant interacting impacts between each assessment. This has been achieved through dialogue via the EIA Co-ordinator and the various technical leads. Although there are impact interactions across a wide variety of topics only the significant interactions have been considered. Minor adverse and minor beneficial impacts have been identified. The term minor relates to effects that are locally significant and adverse impacts are restricted to: cultural heritage/landscape; ecology/landscape and Land Use/Noise and Vibration. Beneficial impacts relate to: Air Quality/Land Use/Climate/Major Accidents and Disasters; and Landscape/Vehicle Travellers.

None of the development projects identified as being relevant in terms of its size, type and location is considered likely to lead to ‘in-combination’ effects of a sensitive environmental receptor.

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