Department for Infrastructure

The Roads (Northern Ireland) Order 1993
The Local Government Act (Northern Ireland) 2014

A29 COOKSTOWN BYPASS SCHEME
PUBLIC INQUIRY

October 2024

Proof of Evidence
Scheme Development up to Publication of Draft Orders

By

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Table of Contents

1. INTRODUCTION

1.1 Personal Details

1.1.1 My name is Chris Barrett and I am an Associate Director at WSP UK & Ireland. I have an MEng (Hons) degree in Civil Engineering (1994). I am a Chartered Engineer (2009) and I am a fellow of the Chartered Institution of Highways & Transportation.

1.1.2 I have over 25 years of experience in the design, construction and maintenance of highway engineering projects, with key experience in the design and project management of major highway and public realm infrastructure projects. Most recently, I was WSP's Project Manager for the Cornwall Council's £85M St Austell to A30 Link Road Scheme, responsible for the planning submission, detailed design, management of site-based engineering support and contract administration.

1.2 Project Role

1.2.1 In November 2022, I was appointed as WSP's Project Manager for Stage 3 publication of draft Statutory orders and Environmental Impact Assessment Report and Non-Technical Summary (EIAR & NTS) of the A29 Cookstown Bypass Proposed Scheme. I am responsible for the general progression of the project, coordinating design input across the various design disciplines.

1.2.2 The Department for Infrastructure (DfI) Roads have outlined their main objective for the Proposed Scheme is to relieve congestion in the town centre of Cookstown. WSP has been engaged by Department for Infrastructure (DfI) under the Major Works Consultancy Services Framework 2017 to provide preliminary and detailed design services, including the following main items:

- Undertake the Design Manual for Roads and Bridges (DMRB) Stage 2 Scheme Assessment of 4no route options to determine the preferred route
- Continue development of the design of the preferred route through the Stage 3 Scheme Assessment
- Prepare and publish an Environmental Impact Assessment Report and Habitats Regulations Assessment
- Prepare and publish Statutory Procedures (Direction and Vesting Orders) and, if necessary, undertake a Public Inquiry

2. SCOPE OF EVIDENCE

2.1.1 A significant volume of detailed information has been prepared during the development of the Proposed Scheme, which has been published in report form and has been summarised for Public Exhibition at various stages (further described within Section 5 of this proof of evidence document). In addition to my submission and attendance at this Inquiry, the Department is represented by other Experts who are available to provide clarification on elements of the Proposed Scheme, such as Environment, Traffic and Economics.

2.1.2 The scope of my evidence will provide a summary of the technical aspects of the Proposed Scheme presented in the draft Statutory Orders. I will focus on the decisions made during the three Stages of the Scheme Assessment Process and provide a summary of the Proposed Scheme Option, including the anticipated impacts on the surrounding environment and measures included to mitigate these.

2.1.3 My evidence will include:

- A general background to the Proposed Scheme;
- A brief description of the existing conditions along the A29 Scheme extents;
- A summary of the development and assessment of the Proposed Scheme showing how the Proposed Route was identified;
- A description of the Proposed Scheme; and
- Some of the Construction Management considerations

3. BACKGROUND TO THE PROPOSED SCHEME

3.1.1 The strategic context for the Proposed Scheme is described separately in the Proof of Evidence submitted by the Project Manager, Mr. Darren Campbell of DfI Roads.

3.1.2 The current programme to improve transportation links in Northern Ireland has evolved over the last few decades. Several key documents and strategies guiding this programme have been published during this time, an example being *Ensuring a Sustainable Transport Future (ESTF): A New Approach to Regional Transportation* (June 2011). The consistent vision of these strategies is, *"to have a modern, sustainable, safe transportation system which benefits society, the economy and the environment and which actively contributes to social inclusion and everyone's quality of life*". The A29 Scheme meets this vision by upgrading a strategically important route and decreasing congestion in Cookstown town centre with a 3.9km bypass.

3.1.3 A scheme overview is included within Annex A.

3.1.4 The assessment of strategic road improvements is outlined in the DMRB and is defined as a three-stage process:

- Stage 1 Scheme Assessment: Preliminary Option Assessment;
- Stage 2 Scheme Assessment: Preferred Option Assessment; and
- Stage 3 Scheme Assessment: Proposed Option.

3.1.5 The level of detail and scope of the assessment at each stage is appropriate to the type of decision that can be reasonably taken at that time. The outcomes of the assessment process were reported at each stage and exhibited as work progressed between 2007 and present time.

3.1.6 The Environmental Impact Assessment Report for the Proposed Scheme was published in April 2024. The Environmental Impact Assessment Report was issued in accordance with the EIA Directive and 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 and the requirements of the DMRB. Draft Vesting and Direction Orders were also published in April 2024.

3.1.7 The environmental aspects of the Proposed Scheme are described in detail in the separate Proof of Evidence prepared by Mr. Andy Saunders of WSP.

3.1.8 The Proposed Scheme is anticipated to bring considerable benefits to road users, with a projected Benefit to Cost Ratio (BCR) of 3.98. The traffic and economic aspects of the Proposed Scheme are described in detail in the separate Proof of Evidence prepared by Mr. Gokul Gopalakrishnan of WSP.

4. EXISTING CONDITIONS

4.1 Existing Highway Network

4.1.1 The A29 is a trunk road with one lane in each direction, which travels directly through Cookstown Town Centre and carries the major regional traffic flow generated on the west side of Lough Neagh on a north-south route corridor. The A29 trunk road extends from Coleraine to Armagh, serving both strategic and local traffic around Cookstown. There are several principal roads that join the A29 in Cookstown, which include:

- A505 to Omagh
- B520 to Stewartstown
- B73 to Coagh
- B162 to Draperstown

4.1.2 To the south of Cookstown, the A29 Dungannon Road is linked to Sandholes Road, serving industry to the southwest of the town, and the B520 Tullywiggan Road by a roundabout known as the Loughry roundabout. The traffic speed at the roundabout is 40 miles per hour (mph).

4.1.3 On the A29 north of the roundabout, a speed limit of 30 mph is applied directly south of Kings Bridge which carries the A29 over the Ballinderry River. Retail outlets, commercial and residential properties border the A29 between the roundabout and the junction with Sweep Road and Castle Road. This section of the A29 consists of single carriageway approximately 8m wide with 2m wide footways on both sides of the road and there are ghost island junctions at the accesses of several retail and commercial properties.

4.1.4 From the signalised junction with Sweep Road and Castle Road to the junction with Fairhill Road (via the signalised junction at Cemetery Road / Fountain Road), the A29 consists of 12m wide single carriageway, with provision for on-street parking parallel to the kerb and footways on both sides of the road. There are wide footways on both sides of the road and pedestrian refuges opposite footway buildouts. This section contains various schools and churches notwithstanding various retail premises and residential properties scattered throughout.

4.1.5 North of the priority junction with Fairhill Road to the junction of Orritor Road / Coagh Street, the A29 widens into two 8.5m wide carriageways, each with two traffic lanes, separated by a 1.5m wide hard central reservation. There is an additional 5m width of parking bays orientated perpendicular to the flow of traffic and 3.5m wide footways on both sides of the road. This section of the A29 passes through the town centre (which includes a priority controlled junction with Burn Road) and has several official names such as James Street and William Street but is known locally as Main Street. Retail

and commercial properties are predominately located along both sides of the road.

4.1.6 From the signalised junction with Orritor Street and Coagh Street, the A29 continues north (via Oldtown Street and Milburn Street) towards a double mini-roundabout junction with Morgans Hill Road and Lissan Road. The carriageway cross section reduces to a 12m wide single carriageway with on-street parking generally permitted parallel to the kerb and 4m wide footways on both sides of the road. There is a mix of retail premises and residential properties along this stretch of carriageway.

4.1.7 Beyond the junction of Morgans Hill Road and Lissan Road, the A29 Moneymore Road continues northeast through a residential area. The speed limit increases to 40mph in advance of a priority T-junction with the East Circular Road and continues for a short distance after this junction for approx. 350 metres. North-east of this, the speed limit is unrestricted for a short section until the start of the dualling section which is restricted to 60mph and the A29 becomes a 3.5km section of rural dual carriageway with hard shoulders towards Moneymore.

4.1.8 The horizontal alignment of the A29 is virtually straight through the town centre and the vertical alignment is undulating, with an overall rise of 30.8m from 46.5m Above Ordnance Datum (AOD) at the Loughry roundabout to 77.3m AOD at the junction with Morgans Hill Road and Lissan Road.

4.1.9 Crests are located directly north of the junction with the A505 Drum Road, at the junctions with Convent Road and Fairhill Road and between the junctions with Orritor Street and Coagh Street and Morgans Hill Road and Lissan Road. Northeast of the junction with Morgans Hill Road and Lissan Road, the A29 falls to approximately 55.0m AOD at the start of the dual carriageway.

4.1.10 Sandholes Road extends west of the Loughry roundabout as a single carriageway with a 2.5m shared footway cycleway on the northern side of the road. Traffic speed is derestricted, reducing to 40mph prior to the Strifehill Road junction. This speed restriction continues to the junction of Sandholes Link Road and continues along this road in a northerly direction where is changes to a 30mph restriction situated at the junction with Derryloran Estate Road. The 30mph restriction is applied on the approach to the junction with A505 Drum Road adjacent to Derryloran Old Church and Graveyard

4.1.11 Sandholes Link Road links the east-west Sandholes Road to the A505 Drum Road, in a north-south direction. This road has a concentration of industrial units on the west side and a mixture of industry and residential properties on the east side.

4.1.12 Sandholes Link Road has a level of 60.0m AOD at the junction with Sandholes Road. The level reduces to 53.5m AOD forming a sag curve where the road crosses the culverted Fairy Burn watercourse. The road

then rises to a crest of 63.2m AOD before falling back to a level of 55.0m AOD at the junction with the A505 Drum Road.

4.1.13 Westland Road and Morgans Hill Road, located to the west of the A29, joins the A505 Drum Road in the south to the A29 Moneymore Road, (via a signalised junction with Orritor Street) to a double mini-roundabout junction with Morgans Hill Road and Lissan Road in the north. This route is a single carriageway with a footway on both sides and forms an alternative route through Cookstown for traffic travelling north-west, to and from Omagh, and for north–south traffic wishing to avoid the town centre. There is no similar route to the east of the town.

4.2 Traffic Congestion

4.2.1 Currently the A29 runs through the core retail area within the town centre. The different uses of the network conflict in the town centre, where shopping, personal business and employment trips wishing to access the centre, demand the same road space required to service through traffic. This conflict is further confused by the needs of this section of the network to accommodate the demands of other road users, most noticeably pedestrians, public transport, school children drop off and pick up trips.

4.2.2 These conflicts can lead to a large variation in travel times experienced by those using the A29 through Cookstown, contributing to driver stress and poor journey time reliability. The 2019 surveys confirmed a large variation in journey times along the A29 through Cookstown, ranging from around 7 minutes in uncongested conditions to over 20 minutes in the most congested observations. Anecdotal evidence from 2023 suggests that the large journey time variability continues, post-Covid, to affect journeys through Cookstown.

4.2.3 Based on traffic surveys carried out in 2023, sections of the A29 through Cookstown carry close to 16,000 vehicles per day 2 way with hourly peaks in excess close to 1,300 vehicles recorded at Milburn Street (south of its junction with Moneymore Road).

4.3 Road Safety

4.3.1 Accident data was obtained for the Cookstown area between 17th April 2013 and 31st March 2021. The full data set for the five-year period between 2015 and 2019 was used in the accident assessment. 2020-21 data was discarded as this data was largely impacted by the COVID-19 travel restrictions.

4.4 Geology and Soils

4.4.1 A summary of anticipated ground conditions associated with the Preferred Scheme is summarised in Table 4-1 and is based on information from each ground investigation considered collectively.

4.4.2 Superficial deposits in the study area predominantly comprise Glacial Till, with other deposits present locally such as made ground, peat, and alluvium. The bedrock encountered on the site has been divided into four units: Metasediments, Sandstone, Limestone and Mudstone. Several historical mineral workings and quarries identified along the Scheme have been investigated and the findings reported in the factual report ref, A112794-73, 787-B027259 and 787-B027259.

Table 4-1 - Summary of Anticipated Superficial and Bedrock Geological Units associated with the Preferred Route

Geological Unit	Typical Description	Depth Encountered from (m bgl)	Typical Thickness (m)	Anticipated Location
Topsoil	Soft to firm dark brown slightly sandy slightly gravelly CLAY or SILT with rootlets.	0.0	0.1 - 0.9	Encountered frequently, except for the Sandholes Road realignment
Made Ground	Soft to Firm/Stiff, brown, slightly sandy, gravelly CLAY, with high cobble content. Predominantly reworked natural deposits used as embankment fill, with a few instances of anthropogenic material including concrete, rubble debris, tile, brick, macadam, plastic, and wood	0.0 – 2.1	0.1 - 4.8	Generally associated with existing roads and abandoned railway lines. The thickest deposit of 4.8m bgl associated with the abandoned railway line which crosses the proposed route at mainline Ch3100m, north of Old Coagh Road
Peat	Soft, dark brown or black, clayey	0.3 – 0.9	0.35 – 1.1	Localised deposits

Geological Unit	Typical Description	Depth Encountered from (m bgl)	Typical Thickness (m)	Anticipated Location
	and/or sandy pseudo-fibrous Peat			encountered at/near the abandoned railway line (Ch3100m and Ch3150m), Moneymore Road proposed roundabout connection and Mainline Ch2525m, at realigned Coagh Road
Alluvium (Cohesive)	Soft reddish brown slightly sandy slightly gravelly CLAY.	0.1 – 5.0	0.25 – 6.9	Generally localised around Ballinderry River and within the vicinity of smaller watercourses. Generally interbedded with Granular Alluvium.
Alluvium (Granular)	Loose to medium dense brown slightly gravelly very silty fine to medium SAND.	0.15 – 6.0	0.5 – 5.4	Generally localised around Ballinderry River and within the vicinity of smaller watercourses. Generally interbedded

Geological Unit	Typical Description	Depth Encountered from (m bgl)	Typical Thickness (m)	Anticipated Location
				with Cohesive Alluvium.
Glacial Till (Cohesive)	Firm to very stiff reddish brown slightly sandy slightly gravelly CLAY.	0.0 – 12.5	0.1 – 22.9+	Cohesive Glacial Deposits are generally interbedded with Granular Glacial Deposits, and both were prevalent throughout the site, generally from ground level, underlying topsoil or underlying Alluvium deposits
Glacial Till (Granular)	Loose to dense reddish brown slightly gravelly, silty, fine to coarse predominantly fine SAND. Gravel is angular to subrounded fine to coarse. Where the gravel was the main constituent, the particles were generally described subrounded to subangular, fine to medium of	0.0 – 17.9	0.1 – 14.8+	Granular Glacial Deposits were found often interbedded with Cohesive Glacial Deposits but were encountered less frequently than cohesive deposits

Geological Unit	Typical Description	Depth Encountered from (m bgl)	Typical Thickness (m)	Anticipated Location
	MUDSTONE and SANDSTONE.			
Metasediments	Medium strong to very strong, grey or greyish pink, medium grained unfoliated METASEDIMENT	2.5 – 4.9	7.1 – 13.3	Wastewater Treatment works along the Ballinderry River
Limestone	Medium strong to strong, grey or reddish grey, thinly to thickly laminated, fine grained fossiliferous LIMESTONE	2.5 – 7.5	0.5 – 4.3	Ballinderry River Crossing
Mudstone	Extremely weak to weak, brown or reddish thinly laminated, fine to medium grained MUDSTONE	2.6 – 16.5	0.4 – 9.9	Ballinderry River Crossing
Sandstone	Extremely weak to medium strong, reddish brown, thinly laminated, poorly to moderately cemented, fine to medium grained SANDSTONE	0.4 – 18.2	0 – 12.5	Bedrock underlying much of the Bypass

4.4.3 The locations of the anticipated problematic ground conditions, associated geotechnical risks and proposed treatments are listed in Table 4-2.

Table 4-2 – Earthwork Constraints

Chainage From	Chainage to	Problematic Ground Conditions	Geotechnical Risk	Possible Treatment
35	170	Soft deposits associated with the existing Fairy Burn watercourse	Bearing capacity failure, excessive/adverse settlement	Treatment of abandoned watercourse
150	170	Area prone to flooding	Excess pore pressure, embankment instability	Granular starter layer for embankment
60	240	Soft cohesive alluvium up to 4.5m depth	Bearing capacity failure, excessive/adverse settlement	Excavation and replacement / staged construction
1310	1400	Potential Treatment of Fountain Road drainage ditch – possible alluvium.	Bearing capacity failure, excessive/adverse settlement	Excavation and replacement / staged construction
1950	2150	Deep cutting with high groundwater table and potential for groundwater issues	Instability / localised erosion of cut slopes	Slope drainage measures
2160	2290	Deep cutting in cohesive glacial deposits with high groundwater table	Instability of cut slopes	Slope strengthening measures (e.g. rock blanket) where slopes

Chainage From	Chainage to	Problematic Ground Conditions	Geotechnical Risk	Possible Treatment
				steeper than 1v:3h
2500	2560	High embankment	Internal stability of embankment fill material	Strengthen embankment shoulders / base. Appropriate minimum strength requirement for embankment fill
2930	3180	High embankment	Internal stability of embankment fill material	Strengthen embankment shoulders / base. Appropriate minimum strength requirement for embankment fill
2930	3200	Low strength cohesive founding stratum and localised peat deposits	Global instability of slope, excessive settlement, bearing failure	Excavation and replacement of soft deposits
3050	3150	Localised peat deposits up to 1.35m thick	Bearing capacity failure, excessive/adverse settlement	Excavation and replacement of peat
Old Coagh Road Ch50	Old Coagh Road Ch350	Deep cutting in cohesive glacial deposits with high groundwater table	Instability of cut slopes	Slope strengthening measures (e.g. rock blanket) required for stability of 1v:2.5h slopes

4.5 Hydrology

4.5.1 The Proposed Scheme crosses several watercourses; some are designated watercourses under the jurisdiction of DfI, rivers and others are classed as non-designated (responsibility of the riparian landowners). The largest watercourse is the Ballinderry River (designated) which flows south of Cookstown, with its floodplain constrained between drumlins and ultimately flows into Lough Neagh. The Ballinderry River catchment upstream of where the Cookstown Bypass crosses the river is approximately 135km2.

4.5.2 The Fairy Burn (designated) flows west to east (south of Sandholes Road) discharging into the Ballinderry River to the north-east of Loughry roundabout and is impacted by both the Cookstown Bypass and Sandholes Link Road. The Fairy Burn catchment upstream of where the Cookstown Bypass crosses the watercourse is approximately 8km2.

4.5.3 Further designated watercourses within the Proposed Scheme area include Fountain Road Stormwater Drain flowing from west to east and Molesworth Road Stormwater Drain flowing from north to south. The catchment upstream of where the Cookstown Bypass crosses Fountain Road Stormwater Drain and Molesworth Road Stormwater Drain is approximately 0.8km2 inclusive of both watercourses.

4.5.4 There are also several undesignated watercourses in the vicinity of the Proposed Scheme area, many of which are unnamed. Claggan Lane watercourses and Old Coagh Road watercourses are tributaries of Lissan Water, located to the east of the Proposed Scheme. The Claggan Lane watercourses catchment upstream of where the Cookstown Bypass crosses the watercourses is approximately 0.6km2. The Proposed Scheme crosses three tributaries (collectively referred to as Old Coagh Road watercourses) at three locations with the total catchment upstream being approximately 2km2.

4.6 Hydrogeology

4.6.1 The Northern Ireland Environment Agency (NIEA) designates the hydrogeology as follows:

- Sherwood Sandstone Formation – high productivity fracture/intergranular flow aquifer;
- Rockdale Limestone and Derryloran Formations – moderate potential productivity fracture flow aquifer; and
- Rossmore Mudstone Formation – limited productivity fracture flow aquifer.

4.7 Mining, Mineral Extraction and Active Quarries

4.7.1 A review of the OSNI GeoIndex shows no record of current mining activities within the study area. However, the OSNI Geo Index and historical mapping indicates the presence of former mineral workings, quarries and gravel pits that could include contamination within their backfill.

4.8 Contaminated Land

4.8.1 With the exception of the Sandholes Link Road, the Proposed Scheme is predominantly within an agricultural environment. Industrial development is generally confined within the current Cookstown boundaries although isolated sites have been identified during the walkovers that could contain contamination. These include:

- Car sales/repair;
- Depots;
- Spoil heaps;
- Fuel storage/sales (active and disused);
- Water treatment works;
- Disused railway line;
- Historic landfill; and
- Disused and infilled quarries and sand and gravel pits.

4.8.2 The NIEA Historical Land Use Layer available on the OSNI Spatial NI Geoportal was also consulted and identified the following potentially contaminative historical site uses in addition to those identified during the walkover and listed above:

- Unspecified works;
- Tape and webbing factory;
- Textile works;
- Timber products manufacturing (saw mill); and
- Flax mill.

4.8.3 Soil sampling and chemical testing was undertaken during the ground investigations and the soil testing data, when screened against the highways and public open space end use scenarios, did not record any exceedances, indicating there is unlikely to be an unacceptable risk to human health at the locations sampled.

4.8.4 Soil leachability testing indicates a risk to the underlying aquifer is unlikely at the locations sampled but there is a potential risk to surface water from copper and zinc at five locations associated with made ground at the former

railway crossings. However, the exceedances are all less than one order of magnitude and therefore gross contamination is considered unlikely.

4.8.5 Groundwater testing indicates an existing impact to groundwater water from manganese at seven locations. In addition, heavy metals (chromium, copper, manganese, nickel) and aromatic hydrocarbons (C21-C35) were recorded in concentrations that could pose a theoretical risk to surface waters if they are in continuity with groundwater. However, the results do not indicate the presence of either widespread or localised gross contamination.

5. DEVELOPMENT OF THE PROPOSED SCHEME

5.1 Background

5.1.1 In June 2007, Roads Service (now DfI Roads) commissioned Mouchel Parkman (now WSP), to assist in the development of the A29 Cookstown Bypass scheme and completion of the required statutory procedures. A history of the scheme development is described below.

5.1.2 An eastern distributor route to relieve the town centre was identified in the East Tyrone Area Plan 1974-1994 (published 1978). Part of this route, between the A29 Moneymore Road and Old Coagh Road, named the East Circular Road, which has now been constructed. In September 2004, Atkins issued a Scheme Appraisal for Cookstown Eastern Distributor Road. This report developed the findings of a JMP Consultants Cookstown Transportation Study, prepared in March 1999, and detailed a proposed route for strategic traffic, the Eastern Distributor Road, including an appraisal and horizontal and vertical geometry. A proposal for a Sandholes Link Road was also included to further reduce through traffic in the town centre by making the proposed eastern distributor more attractive for traffic travelling to / from Omagh, via the A505 Drum Road.

5.1.3 The Eastern Distributor Road and Sandholes Link Road were included in The Cookstown Area Plan 2010 (Adopted Plan), and the A29 Cookstown Eastern Distributor was listed within the Regional Strategic Transport Network Transport Plan (RSTN TP) 2015 and the Investment Delivery Plan (IDP) as a strategic road improvement in the forward planning schedule. This consists of major highway Schemes which could be started in the next 10 years, subject to clearing the statutory procedures, satisfactory economic appraisal and the availability of funds.

5.1.4 Following publication of the Cookstown Area Plan 2010 in June 2004, a Cookstown Local Transport Study was prepared by Jacobs Babtie (dated September 2005). This study focused on the needs of local traffic, but also listed an Eastern Distributor Road, Sandholes Link, and an eastern bypass as possible means of reducing problems in the town centre.

5.2 Stage 1 Scheme Assessment

5.2.1 After a review of the previous reports and studies, the Department decided that alternatives to the Eastern Distributor Road should be considered. A Stage 1 Scheme Assessment in accordance with DMRB TD37/93, Scheme Assessment Reporting was undertaken to assess the environmental, engineering, economic and traffic benefits, dis-benefits and constraints of broadly defined improvement corridors to the east and west of Cookstown (as shown in Annex B). The findings of this assessment were published in November 2008 in the A29 Cookstown Bypass Stage 1 Scheme Assessment Report - Constraints Report (SAR1).

5.2.2 The SAR1 concluded that the Eastern Corridor offered the best options for a bypass of Cookstown. The Eastern Corridor also includes the option of improving the existing road network between the Sandholes Road and the A505 Drum Road.

5.2.3 By contrast, bypass options within the Western Corridor were found to be considerably longer than those to the east due to existing development and the alignment of the existing A29 to the northeast of the town centre. The assessment also highlighted the particular significance of the Upper Ballinderry River Special Area of Conservation (SAC) and Area of Special Scientific Interest (ASSI). There are also more significant flood plains and low-lying areas within the Western Corridor.

5.2.4 Improvements to the existing A29 through the town centre were considered and discounted early in the feasibility stage. Improvement options would be significantly constrained by existing development and the local road network, and the current adverse effects of severance, noise, air quality and the impact on townscape would remain and deteriorate further.

5.2.5 The SAR1 recommended that alternative bypass route options within the Eastern Corridor including improvements to the Sandholes Link Road were developed further in a Stage 2 Scheme assessment in accordance with TD37/93.

5.2.6 Gateway 0 Approval was granted in December 2008 by Roads Service Board (now DfI Transport and Road Asset Management) for the scheme to move into the Preparation Pool. This is a list of high priority major highway schemes which could be started in the next 5 years, subject to clearing the statutory procedures, satisfactory economic appraisal and the availability of funds.

5.3 Stage 2 Scheme Assessment

5.3.1 Subsequent to receiving Gateway Approval, a Stage 2 scheme assessment commenced and identified a preferred route for the bypass which was announced in June 2010 via a Public Information Day held at the South West College, Burn Road, Cookstown. The purpose of the event was to invite comments from the public on the options being considered. The findings from this consultation event were one of the many factors taken into consideration during the assessment and identification of the preferred route.

5.3.2 This Stage 2 Scheme Assessment Report (SAR2) presented four route options for the bypass (coloured routes Red, Blue, Purple A & Purple B) all located to the east of Cookstown, with an improvement option also provided for Sandholes Link Road. The Roads Service Directorate Board confirmed approval on the Purple A route and Sandholes Link Road during March 2010 but Gateway 1 approval to commence statutory procedures was not granted during this period.

5.3.3 Further development of the Preferred Route ceased in 2011 due to lack of funding until October 2016, when the then Minister for Infrastructure announced funding would be made available for a number of capital works Schemes including the A29 Cookstown Bypass.

5.3.4 Due to the intervening timeframe between initial selection of the Preferred Route in 2010 and recommencement of the scheme in 2018, the decision to prepare a new Stage 2 assessment was agreed with DfI Roads. Subsequently, the updated SAR 2 report reviewed various options (as shown in Annex C) and confirmed the Purple A option remained the Preferred Route and Gateway Approval 1 for the commencement of Statutory procedures was granted during November 2021.

5.3.5 A further 2 day Public Consultation was held at the Burnavon Arts and Cultural Centre, Cookstown in December 2021 on the Preferred Route to assess opinion and comments to the publication of the Emerging Design as recommended in the updated SAR 2 Report and the Department's Emerging design.

5.3.6 The SAR2 also recommended the following should be given further consideration at the SAR3 stage:

- Road Safety: a review of the junction strategy at Castle Road.
- Climate Change: assess and mitigate the impact of the Scheme on the environment.
- Active Travel: assess how the Scheme interacts with other modes of transport.
- Alignment optimisation: A review of the alignment to reduce severance and improve the usability of residual land separated by the route, review the cut slope signature using a targeted Geotechnical Investigation, and maximise the cut fill balance to reduce carbon and environmental impacts.
- Consultation: further consultation should be undertaken with, all relevant Statutory bodies, affected landowners and other relevant parties to mitigate impacts of the Scheme, and Statutory Undertakers to develop utility diversions where necessary.

5.4 Stage 3 Scheme Assessment

5.4.1 As part of the Stage 3 scheme assessment development work included completing a full Environmental Impact Assessment Report (EIAR) examining the impacts of the scheme under a range of headings detailing the factors that would be put in place to mitigate the impact of the scheme. This assessment report also confirmed that the route referred to as the 'Purple A Route Option' along with Sandholes Link Road was taken forward as the Preferred Option.

5.4.2 Since early 2022, preliminary design work has developed and optimised the preferred route alignment whilst further considerations were given to road safety, climate change and active travel measures to form a specimen design. This included the following amendments and additions to form the Proposed Scheme (as shown in Annex D):

- The provision of dedicated active travel routes, crossings and facilities
- Upgrades to the existing Loughry Roundabout (extension to the east, addition of a fifth arm and realignment on Tullywiggan Road)
- The provision of a flood defence wall at Otter Lodge on the Ballinderry river
- The removal of a previously proposed retaining wall at the Wastewater Treatment Works (WWTW) via a value engineering process
- A revised 3-arm Killymoon roundabout arrangement
- The stopping up of eastern side of Castle Road and removal of the previously proposed overbridge
- The refinement of the bypass between B73 Coagh Road and U728 Old Coagh Road
- The addition of a segregated left turn lane at Moneymore Roundabout
- Smaller roundabouts on Sandholes Link Road section at Sandholes Road and Drum Road junctions
- The addition of drainage attenuation ponds and swale features
- The provision of two pedestrian overbridges at Killymoon Roundabout and Moneymore Roundabout
- The provision of two underpasses to future proof potential greenway routes
- The provision of toucan crossing point on Bypass adjacent to Loughry Roundabout.

5.4.3 An external Gateway 1 Review was completed for the project in December 2023. Following on from this review, the Minister gave approval for publication of the draft Statutory Orders and the Environmental Impact Assessment Report.

5.4.4 In February 2024, WSP prepared a draft Stage 3 assessment (SAR3) structured into two distinct parts:

- Part 1 (the Environmental Impact Assessment Report); and
- Part 2 (the Engineering, Traffic and Economic Assessment Report).

5.4.5 Detailed cost estimates for the Proposed Scheme were developed at Stage 3 and indicated a total Scheme cost of approximately £70 million.

5.4.6 Traffic assessments indicate that the Proposed Scheme will provide an alternative route to the traffic currently routeing through Cookstown Town Centre, more than halving the time taken to travel between Moneymore Road and Dungannon Road via the bypass. Secondary and incidental routes in the surrounding areas would also benefit from reduced journey times upon completion of the bypass.

5.4.7 Accident savings are predicted to range between £12-£14 million with approximately 400 fewer accidents and 500 fewer casualties predicted over 60 years

5.4.8 The SAR3 economic assessment confirmed the SAR2 findings remain valid, and the Proposed Scheme continues to offer high value for money with a Benefit Cost Ratio of 3.98. The Proposed Scheme is forecast to generate significant levels of users benefits with a Present Value Benefit ranging between £117-£151 million. The overall Net Present Value for the core scenario is approximately £102 million and between the demand scenarios, the Net Present Value ranges are from £83-£117 million.

5.4.9 The SAR3 Report concluded that the implementation of the Proposed Scheme would improve conditions for both strategic and local road users by enhancing the transport network and recommended that the Proposed Scheme be taken forward through to the next Statutory Order publication stages

5.5 Public Consultation

5.5.1 The Department for Infrastructure (DfI) Roads has undertaken a comprehensive consultation exercise to present information in respect to the proposed bypass of the A29 at Cookstown. This included a community consultation exercise in stage 2, to encourage contributions and feedback from the local community and stakeholders to inform design development and the preparation of the EIAR.

5.5.2 **Stage 2:** A two-day public exhibition was held on 7th-8th December 2021 at the Burnavon Arts Centre in Cookstown to present the emerging design. Additionally, a virtual consultation room was made available on-line for those who could not attend in person.

5.5.3 **Stage 3a:** Over the summer of 2023, DfI led a series of individual meetings between affected landowners, stakeholders and the project design team to discuss the proposed vesting and accommodation works.

5.5.4 **Stage 3b:** Following the advertising of the draft orders and EIAR on 3rd April, an eight-week consultation period for receipt of public and statutory comments followed, ending on 29th May 2024.

5.5.5 **Stage 3b:** On 16th April 2024, another one-day public exhibition was held at the Burnavon Arts Centre in Cookstown to present a developed specimen design in support of the publishing of the draft orders and EIAR. Again, a

virtual consultation room was made available on-line for those who could not attend in person.

6. DESCRIPTION OF THE PROPOSED SCHEME

6.1 Proposed A29 Scheme

6.1.1 A pictorial overview of the Proposed Scheme can be seen in Annex A, and is broken down and detailed as follows:

6.2 Mainline

6.2.1 Loughry Roundabout to Killymoon Roundabout

The existing A29 Dungannon Road / Loughry roundabout will be upgraded and extended east, creating a fifth arm to the existing roundabout and realigning Tullywiggan Road. The bypass road layout is a Wide Single 2+1 carriageway (WS2+1 arrangement as defined by CD 109 Revision 1 as a road with two lanes of travel in one direction and a single lane in the opposite direction). The carriageway features two lanes northbound and one lane southbound between the two roundabouts. This section includes the provision of a 27 metre single span bridge over the Ballinderry River and the realignment of the Fairy Burn watercourse. On the approach northwards towards Castle Road, the route passes through a narrow section between the Ballinderry River and the Waste Water Treatment Works (WWTW) site. Castle Road will be stopped-up where it is crossed by the bypass, with a pedestrian link provided on the western side of the bypass onto the Bypass footway / cycleway. The annexed part of Castle Road (east of the bypass) will be accessed via a new link road onto the proposed Killymoon Road roundabout and onwards to the Bypass. The bypass ties into a new three arm roundabout (45m ICD) at Killymoon Road, from which vehicular access to Killymoon Golf Course, Killymoon Castle and the annexed Castle Road (east) is provided via the new Link Road running adjacent to the Golf Course's boundary. A 3.0m wide shared use footway / cycleway adjacent the bypass' northbound lane is proposed the entire length of the scheme. Pedestrian crossing movements will be facilitated by a Toucan crossing close to Loughry Roundabout and also an overbridge structure, south of the Killymoon roundabout to maintain active travel linkage to Killymoon Golf Club, Killymoon Castle and Castle Road residents. On the western side of Killymoon roundabout, the Killymoon Road is to be stopped up to vehicular traffic with a turning head provided and only pedestrian access permitted.

6.2.2 Killymoon Roundabout to Cloghog Roundabout:

From Killymoon roundabout, the route continues north-east to the east of Festival Park. The carriageway layout continues as a WS2+1 arrangement between the two roundabouts, however switches with one lane northbound from Killymoon roundabout and two lanes southbound from Cloghog roundabout. A four-arm roundabout (45m ICD) is proposed for the connection to Cloghog Road east of Festival Park. An underpass in the

vicinity of the old railway line (south of Festival Park) is provided for future proofing of a potential greenway project.

6.2.3 Cloghog Roundabout to Moneymore Roundabout:

North from Cloghog roundabout to Old Coagh Road, the carriageway layout continues as a WS2+1 arrangement with two lanes northbound and one lane southbound. The route passes over Coagh Road and Old Coagh Road on embankments, allowing the respective side roads to remain open via an underbridge (mainline over side road). A conflicting WS2+1 changeover is proposed on the bypass in the vicinity of Old Coagh Road, where the WS2+1mainline arrangement switches to one lane northbound and two lanes southbound. The route continues towards the A29 Moneymore Road, where it connects with the A29 Moneymore Road and Tamlaghtmore Road via a four-arm roundabout (60m ICD). A segregated left turn lane for southbound traffic from Moneymore onto the bypass will be provided. onto the bypass will be provided from Moneymore Road. The existing dual carriageway is proposed to be reduced, with a new termination point located 165m to the north-east of its current location, with a section of the central reserve to be stopped up (preventing vehicular crossing movements). An underpass in the vicinity of the old railway line (north of Old Coagh Road) is provided for future proofing a potential greenway project

6.3 Mainline Junctions:

6.3.1 The bypass mainline proposes four new at-grade junctions:

- Loughry roundabout;
- Killymoon Road roundabout;
- Cloghog Road roundabout; and
- A29 Moneymore Road roundabout.

6.4 Mainline Side Roads:

6.4.1 The mainline crosses several side roads, which as part of the works will undergo a series of improvements to existing road safety, such as realigned horizontal and vertical geometry, improved cross section (larger verges) as well as greater forward sight distance.

6.4.2 The bypass proposes to include four side road adjustments:

- Castle Link Road;
- Clare Lane Improvement Works;
- Coagh Road; and
- Old Coagh Road.

6.5 Sandholes Link Road:

6.5.1 Sandholes Link Road commences at Sandholes Road opposite the Ballyreagh Industrial Estate creating a new three-arm roundabout (32m ICD). A 3.0m wide (typical) shared use footway / cycleway is proposed adjacent the Sandholes Link Road's northbound lane. The route continues on the line of the existing carriageway northwards for a distance of approx. 600m towards the junction with Drum Road. The cross section widens for provision of right turn pockets for the Derryloran Industrial Estate and Old Rectory Park leading onto a new at-grade, three-armed roundabout (32m ICD) at the Drum Road junction.

6.6 Road Closures:

6.6.1 There are several road closures and diversions proposed. These include:

- Castle Road would be stopped up where it is crossed by the bypass to avoid traffic from entering the town. Castle Link Road will be provided to accommodate access to the proposed Killymoon Road roundabout and onwards to the Bypass. Turning heads will be provided either side of the bypass.
- Killymoon Road will also be stopped up where it crosses the bypass to stop vehicles accessing the town. A turning head will be provided on the western side of the bypass. A private access lane will be provided onto the proposed Castle Link Road to offer and maintain access to and from Killymoon Golf Club and Killymoon Castle.
- The existing Tamlaghtmore Road / Moneymore Road junction located further north-east from the new Moneymore roundabout is proposed to be stopped up and a turning head provided; combined with the stopping up of the central reserve on the dual carriageway. This will eliminate dangerous U-turns and force drivers to use the proposed Moneymore roundabout, resulting in improved road safety.
- Tamlaghtmore Road sliproad is proposed to be stopped-up where the SuDS retention pond is proposed to discharge the realigned Claggan Lane watercourse.

6.6.2 The existing junction of Strifehill Road / Sandholes Link Road is proposed to be stopped up to avoid any traffic using this road to bypass the proposed Sandholes Road / Sandholes Link Road roundabout. A turning head will be provided at the northern junction and there will be a 2.0m wide footway put in place on the Strifehill Road with the provision of an uncontrolled pedestrian crossing in the vicinity of the existing junction (which currently links Strifehill Road and Sandholes Road).

6.7 Private Access

6.7.1 In general, any private accesses affected by the works will either be maintained or have alternative access provided where necessary. Accommodation lanes have also been provided at a number of locations in

order to mitigate increased journey lengths for affected farm holdings, which also has the added benefit of reducing the number of slow-moving vehicles on the bypass and side roads.

6.8 Public Utilities

6.8.1 Public utilities impacted by the Proposed Scheme include the following:

- British Telecommunications (BT)
- Northern Ireland Water (NIW)
- Northern Ireland Electricity (NIE)
- Department for Infrastructure – Roads (street lighting, traffic signals, etc.)
- Scotia Gas Networks (SGN)
- Clear Channel NI.

6.8.2 The majority of these services are affected where the bypass crosses the existing road network and will require minor diversionary works.

6.9 Structures

6.9.1 The Mainline requires a total of eighteen primary structures, which will incorporate a bridge crossing over the Ballinderry River, overbridges at Coagh Road and Old Coagh Road, footway/cycleway overbridges, underpasses to facilitate livestock and a potential greenway project, various culverts/ retaining structures and a flood protection wall. Sandholes Link Road will also require provision of several retaining structures and alterations to an existing culvert.

6.10 Geotechnical

6.10.1 Extensive geotechnical investigations were undertaken to inform the design. The existing geotechnical ground conditions indicate that the cohesive glacial deposits on site will provide suitable founding strata for the bypass embankments. Soft and loose deposits of alluvium and soft weathered cohesive glacial deposits have been encountered sporadically throughout the site, which may cause adverse settlement and issues with bearing capacity. Where these materials are encountered at formation level for embankments, it is recommended that some form of ground improvement is employed such as excavation and replacement, basal reinforcement, staged construction, or a combination of solutions.

6.10.2 For cuttings, it is anticipated that the cohesive glacial deposits will generally remain stable at a slope of 1(v):3(h) depending on the depth of the cutting, the depth of the water table and the implementation of drainage. Where cutting slopes steeper than 1(v):3(h) are proposed, or there is a shallow

water table, it is anticipated that special measures may be required to ensure long term stability.

6.11 Drainage

6.11.1 As defined in the scheme assessment reports 2 & 3, the general principles applied in the development of drainage proposals is to discharge stormwater runoff where possible to the existing network of watercourses. The proposed road drainage system has been designed in accordance with the requirements set out in the DMRB, guidance set out in the Construction Industry Research, and Information Association (CIRIA) C753 The Sustainable Drainage Systems (SuDS) Manual, and best practice. DfI guidelines in relation to the discharge of road related runoff suggests that the proposed rate of storm runoff should be no greater than the existing rate which is typically considered to be 10 litres/second/hectare for greenfield runoff; ref DfI document "Schedule 6 application for consent to undertake works to a watercourse". Where this is not achieved, a separate assessment is required to assess the impacts of additional flow. Drainage Plan drawings 718314-WSP-C-D-0500-0301 to -0306 provide an overview of the proposed design, including drainage networks and flow directions, open channel ditches, swales and SuDS ponds. The drawings also show the proposed outfall locations. A set of 'Schedule 6' drawings have also been developed to show the various catchment areas, discharge locations and flow rates. DfI Rivers has stated in a letter, dated June 10th 2024, that it is 'satisfied' with the schedule 6 submission. For additional flood information refer to the WSP Flood Risk Assessment of February 2024 (718314-0500-R-0005).

6.11.2 Mainline Surface and Sub-Surface drainage

- The primary method of surface and sub-surface drainage on the mainline is proposed to be through filter drains.
- For kerbed sections of the bypass, surface runoff would be collected along the kerb line and conveyed via kerb 'grips' to shallow roadside dry swales with underlying filter drains. The normally dry swale is located within the verge adjacent to the edge of carriageway and will follow the same longitudinal gradient. Water would infiltrate through the swale topsoil and underlying filter media to the filter pipe, where it is conveyed along the network to the attenuation feature. Chamber covers for the dry swale sections are proposed to sit slightly proud of the swale invert level and have a grated cover to allow direct access during extreme rainfall events to minimise risk of ponding on the road.
- For non-kerbed sections of the bypass, surface water runoff is proposed to drain over the edge and be collected by filter drains where the water would infiltrate through the topsoil and underlying filter media to the filter pipe, where it is conveyed along the network to the attenuation feature.

- For sections where it not possible to provide filter drains, combined drainage kerb systems have been proposed, for example at bridges, retaining walls, roundabout central islands, and traffic islands.

6.11.3 Mainline Attenuation

- The bypass is proposed to be attenuated with SuDS features including four attenuation ponds and two swales, designed in accordance with The SuDS Manual (CIRIA C753).
- In accordance with CG501 of the DMRB, attenuation ponds have been designed to attenuate the 100-year design storm event, including a 20% uplift in peak rainfall for climate change (refer to the FRA), and discharge at the greenfield runoff rate. Additional capacity has been built-in with a 300mm typical freeboard above the stated design storm water level.

6.11.4 Mainline Treatment

- The proposed treatment regime for non-kerbed sections of the mainline is a filter drain discharging to a SuDS pond or swale, followed by an outfall via a grassed ditch.
- The proposed treatment for kerbed sections of the mainline is a roadside shallow swale to a filter drain, followed by a SuDS pond / swale, then an outfall via a grassed ditch.
- The stage 2 SAR refers to pollution control using HEWRAT in accordance with DMRB document LA113. This application is designed to assess the risks related to the intermittent nature of road runoff. It assesses the acute and chronic pollution impacts on aquatic ecology associated with soluble and sediment bound pollutants. This shows that most of the outfalls pass but will be reviewed and modified as part of the detail design.

6.11.5 Side Road Surface and Sub-Surface drainage

- Surface and subsurface drainage for side roads will be via filter drains where possible, with the proposed drainage more closely matching the existing system near tie-in locations.

6.11.6 Side Road Attenuation and Treatment

- Side roads have been checked against existing pre-development discharge rates and attenuation has been estimated. Attenuation is typically provided via grassed surface water channels with check-dams, oversized pipes, or other flow-slowing features.

6.11.7 Sandholes Road Surface drainage

- Along Sandholes Link Road, topographical survey information and utilities information have been used to identify existing drainage features and outfalls to be maintained. The existing drainage network consists of kerb and gully systems, and it is proposed to maintain the

existing systems where possible as there is limited available space to introduce new SuDS features.

6.11.8 Sandholes Road Attenuation

- Attenuation for Sandholes Road is proposed by the use of oversized pipes.

6.11.9 Pre-Earthworks Drainage

- Pre-earthworks drainage (PED) is proposed by means of grassed ditches or filter drains at the top of cutting slopes and toe of embankment slopes to intercept overland flows from adjacent natural catchments.
- The proposed pre-earthworks drainage will also intercept existing field drainage where the proposed works severs or otherwise interrupts these networks.
- Pre-earthworks drainage has been sized to accommodate flows and proposed with a longitudinal gradient suitable to discharge to a receiving watercourse. Where it is not possible to discharge to a watercourse, the PED is proposed to tie-in with mainline drainage.
- Due to topographical constraints, it is necessary for some PED networks to transfer flows from one side of the carriageway to the other, which is facilitated by piped crossings.

6.11.10 Outfalls

- Outfalls to watercourses are proposed via set-back outfalls with grassed ditch open-channel connections. Some sections of road will connect to existing drainage systems where appropriate.

6.11.11 Operation & Maintenance

- DfI is responsible for the maintenance of their infrastructure, including drainage features and will develop a routine maintenance regime.

6.12 Earthworks

6.12.1 The developed Scheme design will require the removal of material in cuttings and areas of known poor ground and the placement of material to construct the new road design profiles. Due to the nature of the works, this will create a cut-fill imbalance for the construction of the proposed works.

6.12.2 Earthwork material volumes for the Preferred Route have been extracted from the current design model, with the assumptions and exclusions, material re-use assessment and calculations documented within WSP Ltd Technical Note Earthworks and Imported Fill Requirements dated 01/02/24.

6.12.3 Note that proposed ponds, watercourse diversions, flood compensation areas, structures (bridges, culverts and similar) and Sandholes Link Road are excluded from the volume assessment at this stage, and as such the

volumes quoted are to be considered high level and are approximate only for the purpose of understanding the overall mass haul strategy.

6.12.4 Considering the cut and fill volumes required for the works, special measures and imported fill requirements the overall estimated earthworks balance is as follows:

- Total excavated materials 766,000m3
- Total imported materials 119,000m3
- Total deposited volume 602,000m3
- Resulting surplus 283,000m3

6.13 Street Lighting

6.13.1 The new bypass is aligned through existing fields and side roads where there is no existing road lighting. It is proposed to install new road lighting at each of the roundabouts and arms. The Killymoon, Cloghog and Moneymore roundabouts will have a mixture of aluminium road lighting columns of 12m nominal height with a planted base and post top mounted, and aluminium road lighting columns of 12m nominal height with a planted base and single bracket arms. There will also be a need to install road lighting feeder pillars, earth electrodes and road lighting chambers.

6.13.2 Where there are proposed works on Sandholes Link Road the existing road lighting columns are to be removed. These are to be replaced with aluminium road lighting columns of 10m nominal height with a planted base and post top mounted. With these proposed works there will also be road lighting feeder pillars, earth electrodes and road lighting chambers installed. These works affect the Sandholes roundabout, Sandholes Link Road, Drum Road roundabout and Strifehill Road.

6.13.3 Loughry roundabout has existing road lighting columns that are to be removed. With Loughry roundabout converting into a five-arm roundabout, the road lighting will change too. The existing lighting is to be replaced with a mixture of aluminium road lighting columns of 12m nominal height with a planted base and post top mounted, and aluminium road lighting columns of 12m nominal height with a planted base and single bracket arms. There will also be a need to install road lighting feeder pillars, earth electrodes and road lighting chambers.

6.14 Signage Strategy

6.14.1 Traffic, regulatory and warning signs will be provided in accordance with the Traffic Signs Manual, (May 2022, Department of Transport) and will comply with all statutory requirements. Due to the nature of the A29 Bypass, it is envisaged that a new signage strategy will be required for the route to provide clarity and consistency for drivers on the mainline. The signage strategy will be developed in further detail as the Project progresses.

6.15 Non-Motorised Users

6.15.1 Active Travel provisions along the Bypass provide accessibility to pedestrians, cyclists and other mobility users. A 3.0m wide shared use footway / cycleway adjacent the bypass' northbound lane is proposed the entire length of the scheme and along Sandholes Link Road. On the northern side of the Loughry roundabout, a toucan crossing is provided (a signalised crossing which also allows for bicycles to be ridden across). Additionally, the overbridges accommodate the active travel paths at Killymoon Road and Moneymore Road.

6.16 Primary Engineering Standards

6.16.1 The A29 Cookstown Bypass, each of the affected side roads within the scheme and Sandholes Link Road have been designed in accordance with the DMRB and the Manual of Contract Documents for Highways Works (MCHW). The principal design guides are outlined below:

- DMRB CD 109 Highway Link Design
- DMRB CD 127 Cross Section and Headrooms
- DMRB CD 116 Geometric Design of Roundabouts
- DMRB CD 123 Geometric design of at-grade priority and signal-controlled junctions
- DMRB CD 143 Designing for walking, cycling and horse-riding

6.16.2 In addition to the DMRB design guides above, 'Creating Places' design guide published by The Department was used to inform the design of turning heads.

7. CONSTRUCTION MANAGEMENT

7.1 Construction Programme

7.1.1 A construction timeframe has been assumed of twenty months, commencing on site in spring 2026 (subject to statutory procedures and funding availability). The construction completion, handover and road opening is expected by the end of 2027.

7.1.2 The Proposed Scheme will be tendered as a single contract with construction of the bypass and Sandholes Link Road improvement works running in parallel. Once appointed, the Design and Build (D&B) Contractor shall undertake detailed design prior to the construction activities commencing. These activities are typical for a major roads Scheme and include:

- advance / preparatory works such as Archaeological Investigation, site clearance, compound establishment, fencing and demolition works.
- main construction works including earthworks, structures, drainage and roadworks.
- final finishes to include landscaping.

7.2 Construction Impacts

7.2.1 The construction scenarios for the Sandholes Link Road and Cookstown Bypass have been modelled using the traffic model and the impacts were monetised using the Transport Users Benefit Appraisal (TUBA) program.

7.2.2 Indicative Traffic Management (TM) with eleven phases were identified for the construction of the Scheme, with some of the phasing overlapping each other to create eight TM scenarios. The details of the traffic management phases / scenarios and their durations are presented in Table 7-1 below.

Table 7-1 – Construction scenarios tested with Cookstown strategic traffic model

TM Scenarios	TM numbers	Description (TM number in brackets)	Duration (months)	Comments / Assumptions
1	1	Sandholes Road (1) works only	2	TM numbers 1, 2, 3 & 4 It is anticipated that the permanent works on Sandholes Road (1) will be constructed in phases utilising
2	1, 2, 5 & 6	Sandholes Road (1) works plus Fairy Burn Culvert (2) partial closure and single file traffic, works at Loughry Roundabout (5) and works on Castle Road (6)	4	

TM Scenarios	TM numbers	Description (TM number in brackets)	Duration (months)	Comments / Assumptions
3	1, 3, & 5	Sandholes Road (1) works plus Drum Road Roundabout (3) and Loughry Roundabout (5)	3	temporary traffic signals to keep the road open. However, it does require some temporary works to be undertaken. Given the additional temporary works required and the inefficiencies of undertaking works in non-continuous phases (to tie-in with the roundabout works at either end) results in an anticipated duration of approx. seven months under traffic signals. Drum Rd Roundabout (3) & Sandholes Roundabout (4) works are expected to take around 3 months each and will also be constructed utilising temporary traffic signals. These are a fairly conservative programme estimates of the works and may be able to compress slightly.
4	1 & 8	Sandholes Road (1) works plus Cloghog Road (8) closure	1	
5	1, 4, 8, 9 & 11	Sandholes Road works (1) plus Sandholes Roundabout (4), Cloghog Road (8) closure (8), Coagh Road (9) closure and Moneymore Roundabout (11) works	1	
6	1, 4, 7, 8, 9 & 11	Sandholes Road (1) works plus Sandholes Roundabout (4), temporary access road to Killymoon Golf Club (7), Cloghog Road (8) closure, Coagh Road (9) closure and Moneymore Roundabout (11) works	2	
7	7, 10 & 11	Temporary access road to Killymoon Golf Club (7) plus Old Coagh Road (10) closure and Moneymore Roundabout (11) works	2	TM number 7 It is anticipated that the temporary access road to

TM Scenarios	TM numbers	Description (TM number in brackets)	Duration (months)	Comments / Assumptions
8	10 & 11	Old Coagh Road (10) closure plus Moneymore Roundabout works	2	Killymoon Golf Club (7) will take 1 month to construct. <u>TM numbers 8, 9 & 10</u> Side road closures for the construction of bridge structures at Coagh Rd (9) & Old Coagh Rd (10) or roundabouts (at Cloghog Rd (8) are anticipated to last 4 months. Permanent works at Killymoon Roundabout will be undertaken offline once the temporary access road has been completed. <u>TM numbers 5 & 11</u> It is anticipated that both Moneymore Roundabout (11) & Loughry Roundabout (5) works will be constructed utilising temporary traffic signals to keep the existing A29 open. However, it does require some temporary works to be undertaken. Given the additional temporary works required and the inefficiencies of undertaking works in phases in an

TM Scenarios	TM numbers	Description (TM number in brackets)	Duration (months)	Comments / Assumptions
				anticipated duration of approx. six months under traffic signals. This is a fairly conservative programme estimate of the works and may be able to compress slightly.

7.2.3 Each of the proposed traffic management phases were coded into the traffic model to simulate the physical changes to the network brought about by the construction works. Results from the TM scenario models were assessed against an equivalent 2027 DM model scenario using TUBA to monetise the impact of delays to users caused by the construction works. The results are presented in Table 7-2.

Table 7-2 – PVB Disbenefit by TM scenario

Construction Model Scenario	Present Value Benefits (PVB) (£,000s)
TM scenario 1	-59
TM scenario 2	-199
TM scenario 3	-142
TM scenario 4	-40
TM scenario 5	-71
TM scenario 6	-144
TM scenario 7	-64
TM scenario 8	-64
Total	**-783**

7.2.4 The overall road user disbenefit during construction is estimated to be around £0.8 million.

8. CONCLUSION

8.1.1 The development of the Proposed Scheme has been carried out in accordance with the requirements of the Department and the need to comply with relevant standards, which has resulted in a Scheme which will:

- Relieve traffic congestion within Cookstown.
- Reduce journey travel times along the A29 corridor.
    - Journey times between Moneymore Road and Dungannon Road via the bypass will be reduced by more than 50%. Secondary and incidental routes in the surrounding areas would also benefit from reduced journey times upon completion of the bypass
- Improve the road network between the north and south of the province.
- Improve road safety.
    - Accident savings are predicted to range between £12-£14 million with approximately 400 fewer accidents and 500 fewer casualties predicted over 60 years
- Improve the quality of life for the majority of residents.
- Improve the town centre environment.
- Minimise the impact on the natural and built environment.
- Enhance the economic growth of the area.
- Achieve value for money as demonstrated through a net positive return on investment.
    - The Proposed Scheme continues to offer high value for money with a Benefit Cost Ratio of 3.98.

ANNEX A – The Proposed Scheme

Pictorial Overview

ANNEX B - Stage 1 (Preliminary Option Assessment) Layouts

718314-WSP-B-D-0800-0164 SAR 1 Assessment Corridors

ANNEX C - Stage 2 (Preferred Option Assessment) Layouts

718314-WSP-B-D-0000-0038 SAR 2 Route Options

ANNEX D - Stage 3 (Proposed Option) Layouts

718314-WSP-C-D-0800-0231-SAR 3 Proposed Scheme Alignment

718314-WSP-C-D-0800-0215_0230-SAR 3 Proposed Scheme Plan & Profile