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A75 Springholm and Crocketford Improvements

DMRB Stage 1 Report

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1. Introduction

1.1 Background to the A75 Springholm and Crocketford Improvements

The A75 Trunk Road in the south west of Scotland is 159km long and extends from Gretna and the A74(M) in the east, to Stranraer in the west. The route constitutes an important link for the Loch Ryan port facilities (Cairnryan). The principal towns along the route are Annan, Dumfries, Castle Douglas, Gatehouse of Fleet, Newton Stewart and Stranraer. This background focuses specifically on previous work which identified the need for improvements around Springholm and Crocketford.

In August 1997, The Scottish Office commissioned a Route Action Plan Study for the entire length of the route. The aim of the Study was to bring together options for improvement of the A75(T) in the short, medium and long term, i.e. one to two years, two to five years and five to ten years, all with regard to Value for Money, Safety, and The Environment. The summarised output was titled A75 Gretna to Stranraer – Route Action Plan - Firm Strategy Report, published in October 1999. The short-term schemes identified localised lining, signing and junction improvements. The medium-term schemes, a number of dedicated overtaking sections, whereas the long-term schemes proposed a series of bypasses and dualling schemes. One of the recommendations for the long-term strategy included a Springholm Bypass which could consist of an offline upgrade to Wide Single 2+1 (WS2+1) to provide guaranteed eastbound overtaking. Additionally, a bypass of Crocketford was appraised as a long-term option but not ultimately recommended to be progressed at that time.

The first Strategic Transport Projects Review (STPR), published in October 2009, recommended that Transport Scotland should implement a targeted programme of measures to improve links to the Loch Ryan port facilities. The recommendation was for short to medium term schemes such as physical works aimed at providing safer overtaking opportunities such as WS2+1 sections, climbing lanes and overtaking lay-bys, and improvements to the operation of junctions around Dumfries.

In January 2020, Transport Scotland published the South West Scotland Transport Study (SWSTS) - Initial Appraisal - Case for Change. The key aim of the report was to consider the rationale for improvements to road, rail, public transport and active travel on key strategic corridors in the South West of Scotland, including those served by the A75, A76, A77, A701 and A709 as well as the railway corridors to Stranraer and Carlisle via Kilmarnock / Dumfries with a particular focus on access to the Loch Ryan port facilities. Following the development of the Transport Planning Objectives, and a process of option sifting and packaging, 23 multi-modal option packages across the study area were identified for further appraisal through the STPR process. Option Package 15 related specifically to the A75 and was described as the

development of capacity enhancement measures on the A75, such as partial dualling, town/village bypasses and improved overtaking opportunities.

The second Strategic Transport Projects Review (STPR2), published in December 2022 by Transport Scotland, presented the Strategic Case for improved access to Stranraer and the Loch Ryan port facilities as Recommendation 40. Within this there are examples of improvement schemes one of which being A75 realignment around Springholm and Crocketford. These are the only two settlements on the A75 corridor not currently bypassed, and also where the speed limit drops to 30 mph.

In March 2024, Scottish Ministers were formally granted funding from the Union Connectivity Development Fund to progress Recommendation 40 from STPR2, specifically to progress initial design and assessment work in relation to the realignment of the A75 around Springholm and Crocketford. The Fund is an outcome of Sir Peter Hendy's Union Connectivity Review (UCR), published in November 2021. Within the UCR there is a recommendation that the UK Government offer funding to the Scottish Government in order to support the upgrade of the existing A75 Trunk Road which would improve journeys between Northern Ireland and Great Britain. The UK Government changed following a General Election held in July 2024 and the incumbent UK Government re-confirmed its commitment to funding of the initial design and assessment work.

1.2 Background to the Design Manual for Roads and Bridges (DMRB) Stage 1 Assessment

On 26 November 2024, Transport Scotland commissioned Jacobs UK Limited to progress design and assessment work in relation to the realignment of the existing A75 Trunk Road around Springholm and Crocketford. The commission included the requirement to undertake a Strategic Assessment, DMRB Stage 1 Assessment (should this be necessary depending on the outcome of the Strategic Assessment), DMRB Stage 2 Assessment and public and stakeholder engagement for the A75 Springholm and Crocketford Improvements, hereafter referred to as the proposed scheme.

The Strategic Assessment was developed to identify what is required to progress from the strategic-level appraisal undertaken previously as part of the STPR2 and the next stages of more detailed DMRB scheme assessments. The Strategic Assessment recommended that consideration is given to undertaking a DMRB Stage 1 Scheme Assessment for the A75 Springholm and Crocketford Improvements. This would be specific to the proposed scheme and would fulfil the additional DMRB Stage 1 Assessment requirements to bridge the progression from the strategic case (STPR2) through to the more detailed requirements of a DMRB Stage 2 Assessment. The Strategic Assessment also informed the development of the scheme objectives which are as follows:

- Reduce the environmental impacts and severance caused by strategic traffic using the A75 trunk road within Springholm and Crocketford, by achieving a reduction in traffic by at least 50%, and enhance placemaking opportunities from year of opening.
- Improve the resilience and reliability of the A75 trunk road, including for freight travelling to and from the ports at Cairnryan, by reducing time lost due to slower moving vehicles and incidents locally to increase the average speed and reduce the variation in average speed from year of opening.
- Reduce local accident rates and severity through reducing KSIs by 65% in line with Road Safety Framework targets, and contribute to improving safety on the A75 trunk road within five years of opening.
- Contribute towards sustainable economic growth locally and for the region by creating potential for local land-use opportunities to increase planning applications over the longer term.
- Increase sustainable travel choices and increase the local sustainable transport mode share by 50%, within a year of opening.

In accordance with Transport Scotland guidance for the Design of trunk roads, the DMRB Stage 1 Assessment was undertaken in line with DMRB TD 37/93 - Scheme Assessment Reporting. The DMRB Stage 1 Assessment is a preliminary assessment and involves a broad, strategic approach to develop and assess indicative improvement strategies. The assessment includes the identification and consideration of environmental, engineering, economic and traffic advantages, disadvantages and constraints associated with the improvement strategies.

The DMRB Stage 1 Assessment Corridor for the proposed scheme, hereafter referred to as the assessment corridor, is shown in Appendix A, Figure A1-1. The assessment corridor has been defined by considering existing constraints and potential improvement strategies through which road alignments could be developed to realign the existing A75 around Springholm and Crocketford, taking account of relevant road design standards in the DMRB. The assessment corridor includes approximately 18.5km of the existing A75 between the Allanton and Drummore roundabouts extending close to Clarebrand, Old Bridge of Urr and Kirkpatrick Durham to the north and encompassing Haugh of Urr, Hardgate and Milton to the south. This length of the existing A75 is predominantly comprised of a single carriageway with three overtaking sections (two in the westbound direction and one in the eastbound direction). Six improvement strategies have been developed within the assessment corridor as described in the section on the Description of Proposed Scheme in this report. Five of the improvement strategies are offline and would bypass the settlements of Springholm and Crocketford and one is online and would pass through Springholm and Crocketford. This report will describe the development and assessment of the improvement strategies within the assessment corridor.

Following the DMRB Stage 1 Assessment, a DMRB Stage 2 Assessment will be undertaken. DMRB Stage 2 will involve the development and assessment of route options within the improvement strategies taken forward from DMRB Stage 1. The outcome of the DMRB Stage 2 Assessment will be the identification of a preferred route option.

Future progress would require completion of a DMRB Stage 3 Assessment which would involve further design development and assessment of the preferred route option. Statutory processes (including publication of draft Orders, an Environmental Impact Assessment Report and a Public Local Inquiry if required) would require to be successfully completed before consideration could be given to a procurement process to appoint a contractor and subsequent construction of the project.

1.3 Stakeholders

There are numerous stakeholders with an interest in the proposed scheme. Key Statutory Bodies include but are not limited to:

- Transport Scotland
- Dumfries and Galloway Council
- Scottish Environment Protection Agency (SEPA)
- NatureScot
- Historic Environment Scotland (HES)
- Health and Safety Executive
- Public Utility Companies

In addition to the above Statutory Bodies, there are numerous other parties with interest in the above scheme, including but not limited to:

- Sustrans
- The Macauley Institute for Soil Research
- The South West Scotland Transport Alliance
- Port of Cairnryan
- Royal Society for the Protection of Birds
- Forestry and Land Scotland / Scottish Forestry
- Scottish Wildlife Trust
- Galloway Fisheries Trust
- National Farmers Union

- The British Geological Society
- Cycling UK
- Local and National Haulage Companies
- Bus operators and other public transport operators
- Community Councils
- Landowners and residents

1.4 Studies, Policy and Strategy Documents

As part of the Strategic Assessment, a review was carried out to identify previous studies, policy and strategy documents relating to the A75. The following specifically reference the A75:

1.4.1 National

- Strategic Transport Projects Review (STPR)
- Union Connectivity Review (UCR)
- Strategic Transport Projects Review 2

1.4.2 Regional

- South West Scotland Transport Study, Initial Appraisal: Case for Change
- South Of Scotland Indicative Regional Spatial Strategy (iRSS) (2021)
- A75 Gretna - Stranraer A77 Ayr - Stranraer Strategic and Economic Impacts Report
- SWestrans Regional Transport Strategy (RTS) 2023-42

1.4.3 Local

- A75 Gretna to Stranraer Route Action Plan Study/Reports (1997- 2000)
- Dumfries and Galloway Local Development Plan 2 (LDP2)
- Further information in relation to the above is provided in the Strategic Assessment Report.

1.5 Structure of this DMRB Stage 1 Assessment Report

This report is structured as follows:

- Introduction: Background to the A75 Springholm and Crocketford Improvements and the DMRB Stage 1 Assessment.

- Existing Conditions: General description of the existing conditions along the existing A75 Trunk Road.
- Description of Proposed Scheme: Description of the improvement strategies developed within the DMRB Stage 1 Assessment Corridor.
- Engineering Assessment: Engineering assessment, including constraints, advantages and disadvantages associated with road alignment, potential types of cross-section, geotechnical, structures, junctions, lay-bys/rest areas, provision for walkers, cyclists and horse-riders (WCH), roadside features and public utilities.
- Environmental Assessment: Summary of findings from the Environmental Appraisal Report (EAR) for the improvement strategies in relation to environmental issues, potential impacts and sustainability measures.
- Traffic and Economic Assessment: Summary of baseline traffic conditions, potential future conditions which may impact assessment, and a qualitative analysis of the traffic and economic effects of the improvement strategies.
- Key Findings and Recommendations: Key findings from the assessment of the improvement strategies including recommendations for DMRB Stage 2.

2. Existing Conditions

2.1 Introduction

This section of the report describes the existing conditions within the assessment corridor. Key environmental constraints within the assessment corridor are shown in Appendix A, Figure A2-1 (A-G).

2.2 Topography and Land Use Overview

2.2.1 Route Characteristics

(a) Topographical Features

The topography within the assessment corridor is comprised of undulating lowlands and hills with higher elevations to the north and south. The lowlands are interspersed with shallow valleys with a network of watercourses and water bodies. The landscape is characterised by an irregular patchwork of field/agricultural land defined by differing boundaries including trees, hedgerows, ditches and dry-stone walls. Interspersed between the field network are numerous small, scattered woodland areas of both conifer plantation and broadleaf species.

Travelling eastbound from Allanton Roundabout which is at approximately 80m Above Ordnance Datum (AOD), the elevation of the existing A75 gradually falls to approximately 20m AOD until reaching the Urr Water crossing. Along this section, the surrounding land consists of flatlands, with occasional forested areas.

Eastbound from the Urr Water crossing, the elevation of the existing A75 increases to approximately 90m AOD towards the settlement of Springholm. The adjacent topography is characterised by flatlands, with occasional forested areas. The existing A75 crosses or lies adjacent to Urr Water, Garmartin Burn, Spottes Burn and several unnamed minor water courses within this section.

Through Springholm, the existing A75 is surrounded by urban land and gradually rises to approximately 110m AOD. The existing A75 crosses the Culshan Burn/ Spottes Burn at the south of Springholm.

The existing A75 immediately north of Springholm is rural once again, with flat terrain, consisting mainly of flatlands and occasional forested areas. The existing A75 lies adjacent to the Bancailzie Lane watercourse. This area includes major water bodies at Auchenreoch Loch to the west and Milton Loch to the east. The land around the Auchenreoch Loch is between 100-110m AOD and the land around Milton Loch is between 120-130m AOD.

The existing A75 then passes through Crocketford, another urban area, where the land remains at approximately 100-120m AOD. The existing A75 lies adjacent to Crocketford Burn on the eastbound approach to Crocketford.

The section immediately north of Crocketford is rural once again, with flat terrain, consisting mainly of flatlands and occasional forested areas. Here, the existing A75 passes between the small farming hamlets of Brae and Henderland. The existing A75 lies adjacent to the Larglea Burn and Bogrie Lane watercourse in the west until it reaches the Drummore Roundabout.

(b) Existing Land Use

The land use in the vicinity of the improvement strategies varies widely, often in accordance with the surrounding topography. The existing A75 constitutes an important link for the Loch Ryan port facilities. The principal settlements along the route are connected by the existing A75 for use by local and long-distance commuters, tourists, agricultural and commercial freight transport and other commercial services. The main land uses surrounding the existing A75 are listed in the following broad categories:

- Settlements with varied residential and commercial components
- Sparsely populated agricultural sites
- Uninhabited or sparsely populated natural areas

The existing A75 currently passes through Springholm and Crocketford. Regular travel between Springholm, Crocketford and further afield is common for local residents to access work locations, commercial areas and schools. Other settlements in the area include Kirkpatrick Durham, Haugh of Urr and the town of Castle Douglas. Additionally, there are numerous smaller settlements and individual dwellings scattered in the area surrounding the existing A75 between Dumfries and Castle Douglas.

Agricultural land use is common in lowlands and comprises a majority of the land surrounding the existing A75. The landscape is characterised by an irregular patchwork of fields and agricultural land, defined by differing boundaries including trees, hedgerows, ditches and drystone walls. In addition, there are numerous small, scattered woodlands of both conifer plantation and broadleaf species interspersed between the field boundaries.

While the existing A75 is used as a transport connection to outside destinations, the carriageway itself forms a physical barrier between some agricultural properties. Farm vehicles often use the existing A75 to access various fields along the route, which can attribute to traffic congestion, delays and safety hazards.

Natural areas which are uninhabited or sparsely populated comprise a minority of the land use served by the existing A75. These areas include forested areas and river valleys.

2.2.2 Walking, Cycling and Horse-Riding (WCH) Provisions

The level of existing WCH provision varies throughout the assessment corridor with an increased number of facilities located within settlements including Springholm and Crocketford.

Within the assessment corridor, existing WCH facilities include:

- Core paths, which include rights of way by foot, horseback, cycle or a combination of those.
- Rights of way and National Cycle Network (NCN) routes not designated as core paths.
- Informal WCH routes.

The WCH facilities within settlements mainly comprise footways or shared use routes.

There are two undesignated local paths within the assessment corridor along the existing A75 outwith Springholm and Crocketford:

- A local path, signposted as a shared use route for cyclists and pedestrians which follows an alignment parallel to the existing A75, starting east of Barfil and ending east of Glenkiln Farms.
- Local paths on both the eastbound and westbound side of the existing A75 which link two bus lay-bys to Drummore Roundabout.

The NCN7 runs within the assessment corridor along the Old Military Road which is located between 0.5km to 3km to the south east of the existing A75.

A number of core paths are situated within the assessment corridor, these and NCN7 are shown in Appendix A, Figure A2-1(A).

2.2.3 Environmental Conditions

The existing environmental conditions are shown on the Key Constraints Plans in Appendix A, Figure A2-1. Including, but not limited to, the following:

- Ecological designated sites and habitats: such as Sites of Special Scientific Interest (SSSIs), Ancient/Semi-Natural Ancient Woodland Sites and Native Woodland.
- Historic Environment Landscape Designations: such as Conservation Areas, Scheduled Monuments and Listed Buildings.
- Water Bodies.

2.2.4 Settlements

The villages of Springholm and Crocketford are the only two remaining settlements that the existing A75 directly passes through, with Brae situated adjacent to the road. The existing A75 also passes to the south of the villages of Clarebrand, Old Bridge of Urr, Kirkpatrick Durham and Shawhead and to the north of the villages of Haugh of Urr, Hardgate and Milton. The town of Castle Douglas is located directly south of the Allanton Roundabout.

The settlements generally include features such as Listed Buildings, farm buildings, local residences and commercial properties.

2.2.5 Topography and the Water Environment

The topography is comprised of undulating lowlands and hills with higher elevations to the north and south of the assessment corridor. Shallow valleys and a network of watercourses are interspersed throughout the lowlands. The largest water bodies within the assessment corridor are Auchenreoch Loch and Milton Loch with the latter being a designated SSSI. The largest watercourse within the study area is Urr Water.

2.2.6 Geology

A review of the British Geological Survey (BGS) GeoIndex indicates that the superficial geology within the assessment corridor generally comprises Alluvium, Peat, Glaciofluvial and Glacial Till deposits. These materials are indicated around Springholm and Crocketford. Appendix A, Figure A2-2 shows the superficial geology within the assessment corridor and the BGS boreholes which have identified peat. The underlying bedrock comprises wacke, consistent with strong but potentially fractured sedimentary formations. It is mainly described as greywacke-type sandstone associated with the Carghidown, Cairnharrow and Kirkmaiden Formations. BGS mapping typically to the south of the existing A75, indicates areas where there is limited superficial deposits suggesting bedrock may be at or near surface. Appendix A, Figure A2-3 shows the solid geology (underlying bedrock) within the assessment corridor.

An initial high level desktop review has been informed by selected digitised historical borehole records. The field descriptions and geology codes from these exploratory holes have allowed for a preliminary classification of geological units, which broadly align with published geological mapping. A summary of the sequence of primary geological units identified is as follows:

- Topsoil (TP): Present in the upper horizon of nearly all locations, representing organic rich material of variable thickness.
- Alluvium (ALV): Typically, soft deposits associated with current or historic watercourses and drainage features.

- Glaciofluvial (GLF): Typically, coarse grained sediments with some finer-grained layers.
- Diamicton Till (TILLD): A glacially deposited, heterogenous mixture of clay, sand gravel, and silt, often very stiff and compact, forming the dominant superficial unit across many boreholes.
- Peat: Organic peat deposits, found in soft, fibrous or amorphous form; highly compressible and variable in thickness.
- Wacke: Bedrock Representing hard, greywacke-type sandstone associated with the Carghidown, Cairnharrow and Kirkmaiden Formations. These units are competent but may be fractured or weathered at the surface.

Although no made ground has been confirmed at this stage, historical land use near existing infrastructure would be considered in future phases of investigation.

2.3 Carriageway Features

2.3.1 Introduction

This section of the report provides an overview of existing carriageway features, including alignment and cross-section variations, speed limits, pavement condition and structural characteristics. Junctions, accesses, lay-bys and rest areas are also described.

Chainages (abbreviated as Ch.) noted in this report correspond to location references outlined in Appendix A, Figure A2-4.

2.3.2 Cross-Section

The existing A75 within the assessment corridor is a single two-lane (S2) carriageway with sections of WS2+1 carriageway, as shown in Appendix A, Figure A2-5. The section below summarises the cross section of the existing A75 and indicates any non-compliances from typical cross-sections outlined in the following standards:

- DMRB CD 109 – Highway link design, hereafter referred to as CD 109
- DMRB CD 116 – Geometric design of roundabouts, hereafter referred to as CD 116
- DMRB CD 127 – Cross-sections and headrooms, hereafter referred to as CD 127

From ch.30 to ch.500, there is a differential acceleration lane (DAL) cross-section in the eastbound direction. This cross-section includes an approximately 10.5m wide carriageway with two eastbound approximately 3.5m wide lanes from the Allanton Roundabout. A double white line separates the two lanes from an approximately 3.5m wide westbound lane to the roundabout. In addition, the carriageway includes two approximately 2m wide verges, one on

either side of the carriageway. This cross-section is not in accordance with CD 116, which requires a 1m hardstrip on either side of the carriageway and 2.5m verges.

From ch.500 to ch.700, there is a changeover as the two lanes change from the eastbound to the westbound direction.

From ch.700 to ch.2670, the cross-section is a Wide Single 2 (WS2) climbing lane section with two lanes in the westbound direction. The climbing lane consists of an approximately 10.5m wide carriageway with two approximately 3.5m wide lanes in the westbound direction and an approximately 3.5m wide lane in the eastbound direction, separated by a double white line. In addition to this, the carriageway includes two approximately 2m verges, one each on either side of the carriageway. This cross-section is not in accordance with CD 127, which requires a 1m hardstrip on either side of the carriageway and 2.5m wide verges.

From ch.2670 to ch.12550, the existing A75 is a single carriageway. The carriageway is approximately 7.3m wide with one approximately 3.65m wide lane in each direction. Through settlements approximately 1.8-2.0m wide footways are included in place of verges. The single carriageway cross-section is not designed in accordance with CD 127 which requires a 1m wide hardstrip on either side of the carriageway.

From ch.12550 to ch.13410, the cross-section is a WS2+1 with the two lanes in the westbound direction. This cross-section is similar to that of the WS2 section between ch.700 and ch.2670, with the exception of having a coloured and hatched double white line approximately 1m wide separating the directions of travel rather than a double white line and a 1m hardstrip on either side of the carriageway.

From ch.13410 to ch.18500, the cross-section reverts to an approximately 7.3m wide single carriageway, with two approximately 3.65m wide lanes in each direction and an approximately 2.5m wide verge on each side of the carriageway. This section is not in accordance with CD 127 which requires a 1m wide hardstrip on either side of the carriageway.

2.3.3 Speed Limits and Design Speed

The national speed limit for single and WS2+1 carriageway applies to the full length of the existing A75 within the assessment corridor, except where the road passes through Springholm and Crocketford, where a speed limit of 30mph applies, as shown in Appendix A, Figure A2-6 and summarised in Table 2-1.

Table 2-1: Speed limits on the existing A75 and the corresponding design speed.

Start Ch. (m)	End Ch. (m)	Speed Limit (mph)	HGV Speed Limit (mph)	Design Speed (kph)
30	6590	60	40	100
6590	7940	30	30	70
7940	10700	60	40	100
10700	11200	30	30	70
11200	19000	60	40	100

2.3.4 Alignment Relaxations and Departures from DMRB Standards

A high-level assessment was undertaken to identify alignment relaxations and departures from DMRB Standards on the existing A75 within the assessment corridor. This was done by creating a model of the existing A75 alignment using a LiDAR surface. A number of relaxations and departures from standard were identified including horizontal radii, crest and sag curves and stopping sight distance. These findings were supported by relaxations and departures reported as part of the 1998 A75 Gretna to Stranraer Route Action Plan Study. Existing departures will be assessed further at DMRB Stage 2.

2.3.5 Pavement

The pavement composition of the existing A75 within the assessment corridor was assessed by reviewing Transport Scotland's Asset Management Performance System (AMPS) data which includes details of existing pavement material, thickness, and structural properties. Between the Allanton and Drummore roundabouts, the existing A75 consists primarily of flexible pavement with a bituminous surface course. However, there is a 150m section where a cement binder is used near Allanton Roundabout. The condition of the existing pavement will be assessed at DMRB Stage 2.

2.3.6 Drainage

The existing A75 within the assessment corridor is drained via over the edge and/or combined carrier filter drains in the primarily rural sections of the route and kerb and gully systems within the built-up areas in and around Springholm and Crocketford. The extents of the road drainage network in the vicinity of the scheme or outfall locations are unknown at this time. It has been assumed that road runoff is not currently subject to attenuation or pollution treatments. It has also been assumed that untreated runoff is discharged to the nearest watercourse.

2.3.7 Structures

A review of existing structures within the assessment corridor was undertaken based on recent inspection reports and records. There are two existing underbridge structures along the existing A75. The location of these structures is shown in Appendix A, Figure A2-7.

In general, the two existing structures are in a poor to reasonable condition with some repairs required. The two bridges lie within a single carriageway section of the existing A75 and are not in compliance with current design standards. A description of the existing structures has been provided below including details of the expected maintenance requirements based on the most recent available inspection reports.

A75 410 Ramhill New Bridge is a three-span structure with a steel-concrete composite deck. The structure carries the existing A75 over Urr Water and is approximately 47m in length. The bridge comprises six steel universal beams acting compositely with a 215 mm thick reinforced concrete deck slab. The deck superstructure is supported on skeletal full height reinforced concrete abutments, comprising cross heads, supported on three vertical columns and spread foundations at the east and west ends. Two sets of reinforced concrete piers provide intermediate support to the deck. All the foundations are formed of spread reinforced concrete footings. Maintenance requirements include remedials to waterproofing, carriageway surfacing defects and safety barriers, expansion joint replacement and creating bearing shelf drainage.

A75 400 Springholm Bridge is a single span structure with a steel trough deck topped with concrete infill. The structure carries the existing A75 over Culshan Burn and is approximately 5m in length. There is granite block cladding over the abutments, spandrel walls and wing walls. Maintenance requirements include remedials to the paintwork, remedials to address steelwork corrosion, remedials to exposed reinforcement and remedials to carriageway surfacing defects.

2.3.8 Junctions and Accesses

There are approximately 16 junctions and 89 accesses along the existing A75 within the assessment corridor. They provide connections to local roads, villages, towns and community facilities and comprise of:

- Three A-road Junctions
- Three B-road Junctions
- 10 C-road / Unclassified Junctions
- 14 Residential / Commercial Direct Accesses (Outwith Springholm and Crocketford)
- 24 Access Tracks

- Approximately 51 Field Accesses

Junctions on the existing A75 within the assessment corridor are shown in Appendix A, Figure A2-8. The six major junctions with A and B-roads are noted in Table 2-2.

Table 2-2: Major junctions

Adjoining Road(s)	Approx. Chainage (m)	Junction Type
A75/A745	0	Roundabout
B795	930	Priority Junction
B794	3200	Priority Junction
B794	3550	Priority Junction
A712	10960	Priority Junction
A75 / C-roads	18550	Roundabout

In addition to the junctions and accesses noted, within Springholm and Crocketford along the existing A75, there are a significant number of direct accesses some of which allow for multiple residential and commercial properties to access the existing A75.

2.3.9 Lay-bys and Rest Areas

There are 13 existing lay-bys along the existing A75 within the assessment corridor and these are shown in Appendix A, Figure A2-9. Each lay-by has been categorised as Type A or Type B in accordance with DMRB CD 169 – The design of lay-bys, maintenance hardstandings, rest areas, service areas and observation platforms, hereafter referred to as CD 169. For the purpose of this assessment, Type A lay-bys have a physical segregation island between the existing A75 and the lay-by whereas a Type B lay-by does not have a physical segregation island. A summary of the lay-by layouts found along the existing A75 within the assessment corridor are summarised in Table 2-3.

Table 2-3: Summary of existing lay-by types

Lay-by Types	Eastbound	Westbound
Type A	6	4
Type B	0	3

From a desktop review it has been assessed that the lay-bys on the existing A75 within the assessment corridor are not compliant with the standards outlined in CD 169 or Roads for All: Good Practice Guide for roads.

Existing bus lay-bys on the existing A75 within the assessment corridor are summarised in Existing Conditions, Existing Bus Facilities.

There are no formal rest areas along the existing A75 within the assessment corridor. However, there are locations where road users may stop in Springholm, Crocketford, and at The Inn on the Loch.

2.4 Roadside Features

2.4.1 Signage

Traffic signs on the existing A75 within the assessment corridor are mounted in the verge and include regulatory, warning and informatory signs. All signs on the existing A75 within the assessment corridor are in English only.

2.4.2 Intelligent Transport Systems (ITS)

There are a number of ITS in place along the existing A75 within the assessment corridor, these include two Vehicle Activated Signs (VAS) in Springholm, one on entry from the eastbound and one on entry from the westbound. A further four VAS are in place in Crocketford, one on entry from the eastbound, one on entry from the westbound and two in the vicinity of the traffic signals. In addition, there are two sets of speed activated traffic signals in Springholm.

From a desktop review, it was noted that there are no fixed speed cameras or other ITS located along the existing A75 within the assessment corridor, although there are traffic signs which indicate that speed cameras may be present.

2.4.3 Traffic Signals

The existing A75 within the assessment corridor consists of three traffic signals in Springholm and one set of traffic signals in Crocketford. Two of the signals in Springholm are speed activated and do not have a pedestrian crossing, and the other two signals provide a pedestrian crossing over the existing A75. These are shown in Appendix A, Figure A2-10.

2.4.4 Road Lighting

Road lighting is currently provided at the following locations on the existing A75 within the assessment corridor:

- On approach to and through Springholm and Crocketford, where the speed limit is 30mph.
- On approach to and around the Allanton and Drummore roundabouts.

2.4.5 Road Restraint Systems (RRS)

Road Restraint Systems (RRS) are provided at various points along the length of the existing A75 within the assessment corridor. 22 sections of RRS have been identified as including ramp style terminals. These terminals are non-compliant as outlined by DMRB CD 377 – Requirements for road restraint systems which states that for single carriageway roads with a speed limit of 50mph or more, terminals for safety barriers are required to have a performance class of P4 and be energy absorbing.

2.4.6 Weather Station

Across the trunk road network there are a number of road monitoring weather stations. These provide real time information on the state of the road surface. There is one weather station at Crocketford on the existing A75 within the assessment corridor.

2.5 Public Transport Facilities

2.5.1 Introduction

Locations of bus and rail facilities have been evaluated to determine their distribution along the existing A75 within the assessment corridor.

2.5.2 Existing Bus Facilities

A desktop review was carried out to identify the existing bus stops and services which run along the existing A75 within the assessment corridor. 11 of the 19 bus stops identified do not have associated signage or road markings designating them as bus stops. Details of the existing bus stops are summarised in Table 2-4 based on information collated for bus operation in May 2025.

Table 2-4: Bus stops and services on the existing A75 within the assessment corridor

Direction	Approximate Chainage (m)	Stop Description	Features	Services
Westbound	110	N/A	Bus lay-by with signage	N/A
Eastbound	950	Castle Douglas, Gerranton	None	Stagecoach 500, 501 McCall's Coaches 502 Dumfries and Galloway 555

Direction	Approximate Chainage (m)	Stop Description	Features	Services
Westbound	950	Castle Douglas, Gerranton	None	Stagecoach 500, 501 McCall's Coaches 502
Eastbound	2230	Castle Douglas, Dunjarg	None	Stagecoach 500, 501 McCall's Coaches 502 Dumfries and Galloway 555
Westbound	2230	Castle Douglas, Dunjarg	None	Stagecoach 500, 501 McCall's Coaches 502
Eastbound	3520	Haugh of Urr, Chapelton Cottages	None	Stagecoach 501 McCall's Coaches 502 Dumfries and Galloway 555
Westbound	3520	Haugh of Urr, Chapelton Cottages	None	Stagecoach 501 McCall's Coaches 502
Westbound	7120	Springholm, Village	Bus lay-by	Stagecoach 500 McCall's Coaches 502, 503 Dumfries and Galloway 555
Eastbound	7250	Springholm, Village	On street bus stop markings and bus shelter	Stagecoach 500 McCall's Coaches 502, 503 Dumfries and Galloway 555
Eastbound	9200	Crocketford, Lochview Motel	None	Stagecoach 500 McCall's Coaches 502, 503 Dumfries and Galloway 555
Westbound	9200	Crocketford, Lochview Motel	None	Stagecoach 500 McCall's Coaches 502, 503 Dumfries and Galloway 555

Direction	Approximate Chainage (m)	Stop Description	Features	Services
Eastbound	11020	Crocketford, Village	Lay-by and sign	Stagecoach 500 McCall's Coaches 502, 503, 521 Dumfries and Galloway 555
Westbound	11050	Crocketford, Village	Bus lay-by and bus shelter	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Eastbound	14400	Crocketford, Brae	None	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Westbound	14400	Crocketford, Brae	None	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Eastbound	15400	Shawhead, Road End	None	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Westbound	15400	Shawhead, Road End	Bus lay-by and bus shelter	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Eastbound	18300	Lochfoot, Road End	Bus lay-by and sign	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555
Westbound	18380	Lochfoot, Road End	Bus lay-by	Stagecoach 500 McCall's Coaches 502, 521 Dumfries and Galloway 555

The timetables for the local bus services operating along the existing A75 within the assessment corridor are provided in Appendix B. Appendix A, Figure A2-11 shows their routes.

In June 2025, Stagecoach announced that it would be ending most of its services in the Dumfries and Galloway region by the end of August 2025 including the 500 and 501 services

which operate on the existing A75 within the assessment corridor. Changes to bus services will be considered and reported in the DMRB Stage 2 Assessment.

2.5.3 Existing Rail Facilities

A review of rail facilities has been undertaken and has identified no train stations or railway lines within the vicinity of the proposed scheme. The nearest train station is located in Dumfries.

2.6 Traffic and Safety Characteristics

2.6.1 Traffic Conditions

Annual Average Daily Traffic (AADT) flows along the existing A75 have been determined using Automatic Traffic Counter (ATC) data obtained from Transport Scotland's National Traffic Data System (NTDS). The assessment corridor contains two permanent ATC sites. Additionally, there are three ATC sites situated outside the immediate extent of the assessment corridor with a site located to the east of Drummore Roundabout, a site locate to the of Garroch Roundabout and a site located to the south of Allanton Roundabout. There are varying degrees of data reliability at each site and therefore the most representative months and year has been selected for analysis.

Based on the most recent available data, the estimated daily traffic flow ranges from approximately 6,200 vehicles (south of Allanton Roundabout, near Castle Douglas) to 16,000 vehicles (east of Garroch Roundabout, near Dumfries). Traffic levels generally decrease from Garroch Roundabout towards Allanton Roundabout throughout the assessment corridor from east to west. The specific counter sites within the assessment corridor demonstrate traffic flows lie within this range at approximately 9,000 vehicles per day, as shown in Table 2-5.

The volume of Heavy Goods Vehicles (HGVs) remains relatively consistent across the assessment corridor, comprising approximately 13% to 16% of daily traffic.

Further details on traffic and safety characteristics are included within the Traffic and Economic Assessment chapter of this report.

Table 2-5: AADT flows

A75 Section	AADT (rounded to nearest 100)
A75 south of Allanton Roundabout (Castle Douglas) (2024)	6,200
A75 south of Springholm (2024)	9,000
A75 Crocketford (2023)	9,300
A75 east of Drummore Roundabout (2024)	10,700
A75 east of Garroch Roundabout (2024)	16,000

2.6.2 Accident Analysis

Transport Scotland has provided accident data for the full A75 Trunk Road from Gretna to Stranraer covering the period from 2012 to 2024. Accident data for a minimum five year period is typically used in accident analysis, however data was requested over a longer period to allow for analysis of the pre- and post-COVID pandemic accident trends. This approach was adopted due to the atypical road conditions experienced during the COVID-19 pandemic travel restrictions. Consequently, data from 2020 and 2021 can be excluded from the analysis, as the travel restrictions and the significant reduction in traffic travelling on the road network means accidents and the associated severities recorded over this period may not be representative of the accident characteristics on the A75. Accident data is discussed in further detail in the Accident Data section of the Traffic and Economics chapter of this report.

For the full A75 Trunk Road, accident rates vary relative to the national average accident rates depending on the period examined. The period of 2022 to 2024, after the travel restrictions imposed during COVID-19 pandemic were lifted (post COVID-19) shows an accident rate of 0.084 personal injury accidents per million vehicle kilometres (PIA/MvKM) for the A75 Trunk Road, which is approximately 1.5 times the national rate of 0.055 PIA/MvKM for non-built-up roads. The accident rate comparison for the full A75 Trunk Road over various time periods is summarised in Table 2-6. Note that the national accident rate data is only currently available to the end of 2023, however this does not materially impact the comparison ratio shown.

Table 2-6: A75 Trunk Road Full Route Accident Rates

Period	A75 Trunk Road Accident Rate (PIA/MvKM)	National Accident Rate – Non-Built-Up (PIA/MvKM)	Local/National Accident Rate Ratio
2012-2024	0.085	0.080	1.1

Period	A75 Trunk Road Accident Rate (PIA/MvKM)	National Accident Rate – Non-Built-Up (PIA/MvKM)	Local/National Accident Rate Ratio
2012-2024 (Excluding 2020-2021)	0.088	0.085	1.0
2012-2019 (Pre-COVID)	0.091	0.093	1.0
2018-2024 (Excluding 2020-2021)	0.079	0.064	1.2
2022-2024 (Post-COVID)	0.082	0.055	1.5

On the A75 in Springholm and Crocketford, considered as built-up areas for the accident analysis due to the 30mph speed limit, there are changes in accident rates evident over time, as summarised in Table 2-7. For the period 2018-2024 (excluding COVID-impacted years of 2020 and 2021), the accident rate for the A75 in Crocketford was 0.119 PIA/MvKM and in Springholm the accident rate was 0.087 PIA/MvKM, with both exceeding the national average of 0.077 PIA/MvKM for built-up areas. Note that the national accident rate data is only currently available to the end of 2023, however this does not materially impact the comparison ratio shown. The period from 2022 to 2024, after the travel restrictions imposed during COVID-19 pandemic were lifted (post COVID-19) shows higher accident rates, with the accident rate on the A75 in Crocketford at 0.194 PIA/MvKM (approximately 3.0 times the national rate) and in Springholm at 0.146 PIA/MvKM (approximately 2.2 times the national rate), compared to the national rate of 0.065 PIA/MvKM for built-up areas. Although it should be noted that as these accident rates are calculated over a shorter timeframe of three years, they may not represent a longer-term trend.

Table 2-7: A75 Trunk Road 30mph sections Springholm and Crocketford accident Rates

Period	Crocketford Accident Rate (PIA/MvKM)	Springholm Accident Rate (PIA/MvKM)	National Accident Rate - Built Up (PIA/MvKM)	Crocketford/ National Accident Rate Ratio	Springholm/ National Accident Rate Ratio
2012-2024	0.096	0.086	0.134	0.7	0.6
2012-2024 (Excluding 2020-2021)	0.111	0.099	0.147	0.8	0.7
2012-2019 (Pre-COVID)	0.077	0.082	0.167	0.5	0.5

Period	Crocketford Accident Rate (PIA/MvKM)	Springholm Accident Rate (PIA/MvKM)	National Accident Rate - Built Up (PIA/MvKM)	Crocketford/ National Accident Rate Ratio	Springholm/ National Accident Rate Ratio
2018-2024 (Excluding 2020-2021)	0.119	0.087	0.077	1.5	1.1
2022-2024 (Post-COVID)	0.194	0.146	0.065	3.0	2.2

2.6.3 Diversion Routes

When incidents or planned maintenance occur on the existing A75, the recommended diversion routes are often via minor roads that pass through small villages and can result in significantly longer journey distances and increased travel times. Table 2-8 provides a comparative analysis of the impact on distance travelled between the existing A75 Trunk Road and the recommended diversion routes for a closure within the assessment corridor, and a closure further west between Gatehouse of Fleet and Newton Stewart, as well as the number of incidents which has historically resulted in a road closure on these sections.

The recommended diversion route between Garroch Loaning (Dumfries) and Haugh of Urr Road End (south of Springholm), the main diversion route for the assessment corridor, is approximately 28km, adding approximately 9km of additional distance travelled compared to the existing A75. This section of the existing A75 experienced 11 incidents resulting in a full or partial road closure between 2018 and 2024, according to incident reporting data provided by Transport Scotland.

The longest recommended diversion route for the existing A75 is for a closure between Cardoness Castle Junction (Gatehouse of Fleet) and Calgow Junction (Newton Stewart). This diversion adds approximately 105km to the journey for both eastbound and westbound traffic compared to the existing A75. Between 2018 and 2024, this section of the existing A75 experienced 17 incidents that resulted in either a full or partial road closure. Over the full A75 Trunk Road (between the A74(M) slip and Innermessan A77), the road was fully or partially closed for sections on 119 occasions between 2018 and 2024.

Both diversion routes are illustrated in Appendix A, Figure A2-12.

Table 2-8: Impact of diversionary routes and number of incidents resulting in closures

Section of Closure	Approx. Length of Closure (km)	Direction	Approx. Diversion Length (km)	No. of Incidents Resulting in Closure (2018-2024)
Garroch Loaning and Haugh of Urr Road End	19.2	Eastbound and westbound	28.0	11
Cardoness Castle Junction and Calgow Junction	25.1	Eastbound and westbound	131.0	17

2.7 Journey Times and Reliability

Journey times on the existing A75 within the assessment corridor have been analysed using INRIX data for both 2019 and 2024, over a 24 hour period. The analysis reveals minimal differences in journey times between these years, with changes in average journey times being less than one minute. This stability in journey times indicates relatively consistent travel conditions over the six-year period.

The average weekday journey time is approximately 15 minutes and 30 seconds in both directions, and the average journey time is approximately 45 seconds lower during weekends. The daily profiles show weekday journey times are typically higher from early morning, peaking around midday before gradually decreasing. The weekend journey times show a flatter profile with lower maximum journey times than the weekdays. Monthly analysis of 2024 data indicates consistent journey times throughout the year, even with the increase in AADT traffic flows during the summer months.

Further details on journey times and reliability are included within the Traffic and Economic Assessment chapter of this report.

2.8 Social and Economic Context

2.8.1 Assessment Corridor

The assessment corridor, which defines the study area for the following analysis, is illustrated in Appendix A, Figure A2-13, along with the relevant Scotland Census Output Areas (OAs). As far as possible, the statistics and results presented in this section are based on the defined OAs. These geographical zones are aggregations of postcode areas and represent the smallest geographical units for which Census results are published. Where this has not been possible other data is presented at either a Scotland Census Data Zone (DZ) or Local Authority (LA) level.

Further details on social and economic context are included within the Traffic and Economic Assessment chapter of this report.

2.8.2 Population

Analysis of the 2022 Scotland Census data shows that Crocketford and Springholm have populations of 310 and 542 respectively, as shown in Table 2-9. The population of the two villages represents approximately 46% of the total population of 1,834 within the assessment corridor. The remaining population comprises residents from other villages such as Haugh of Urr, as well as those living in more rural areas or communities.

Table 2-9: Population statistics (2022 Census)

Settlement	Population
Crocketford	310
Springholm	542
Other within Assessment Corridor	982

The 2022 Census data, shown in Figure 2-1, confirms that the assessment corridor has an older population. Both the assessment corridor area and Dumfries and Galloway have 27% of their population aged 65 and over, notably higher than the proportion for Scotland at 20%. The contrast is more pronounced when considering the combined 50-64 and 65 & over age groups, which account for 53% of the assessment corridor population and 51% of Dumfries and Galloway, compared to just 42% for Scotland overall.

Conversely, the age group 16-64, representing most of the working age population, is proportionally smaller in the assessment corridor and Dumfries and Galloway. The assessment corridor has 58% of the population in this age range, comparable with Dumfries and Galloway (57%), but both lower than the Scotland average (65%).

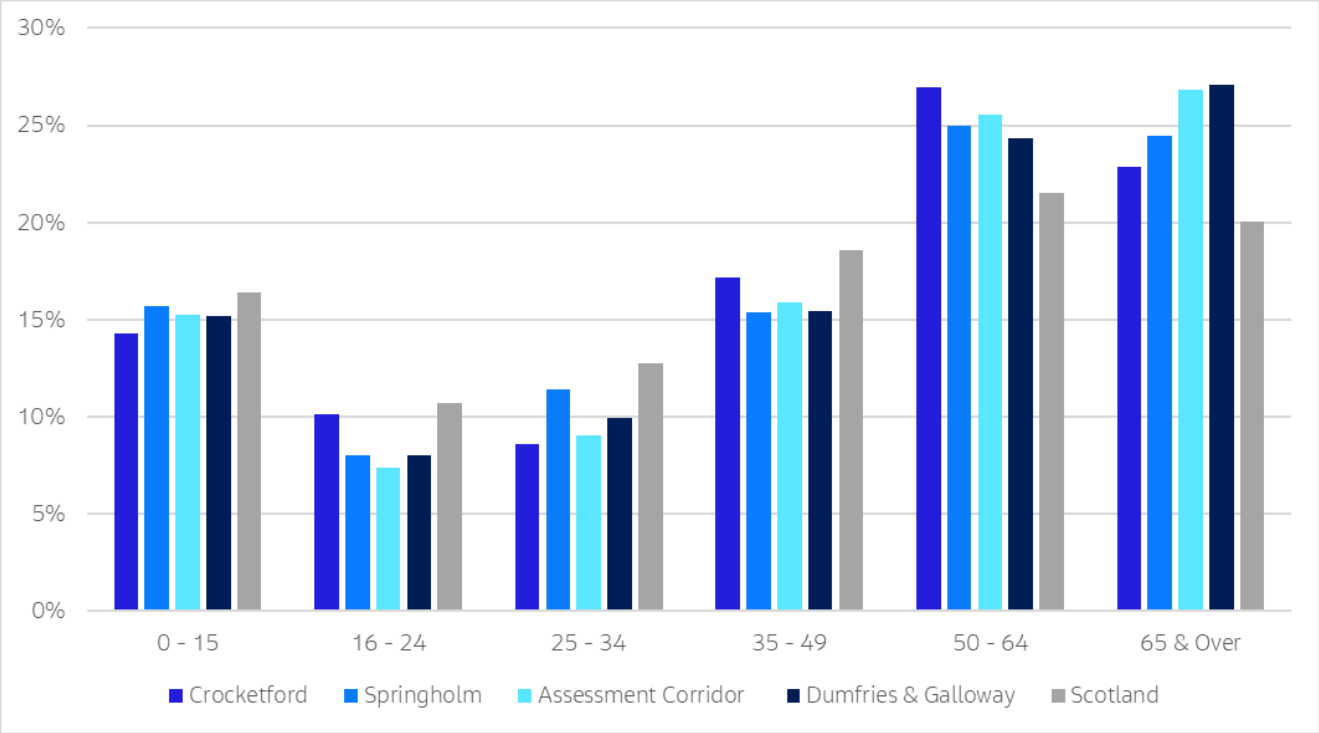


Figure 2-1: Population Age profile (2022 Census)

2.8.3 Travel To Work Mode Share

The travel to work mode share data from the 2022 Scotland Census is shown in Figure 2-2. Springholm has the highest proportion of car usage at 63%, significantly greater than the national average (49%). Car usage in Crocketford is 50% and is more in line with the national average. The assessment corridor car use is approximately 57%, which is equal to the Dumfries and Galloway car use mode share. Crocketford has a higher percentage of people working from home (46%) compared to the Scottish average of 32%, whereas this is only 29% in Springholm. For the assessment corridor the working from home proportion is 36%, which is also higher than the national average.

The data also highlights a significant difference in public transport and active travel usage between the villages in the assessment corridor compared with the wider regional and national averages. Crocketford and Springholm show minimal use of public transport (0 and1% respectively) compared to Dumfries and Galloway (2%) and across Scotland (6%). Both villages also have lower rates of active travel modes compared to the regional and national averages. The mode share of walking to work in the villages is 2% in Crocketford and 4% in Springholm, compared to 9% for Dumfries and Galloway and 7% for Scotland. For cycling, the mode share is less than 1% for both villages, slightly below both Dumfries and Galloway and Scotland (both 1%).

It is important to note that the 2022 Scotland Census data was collected after the majority of the COVID-19 pandemic travel restrictions were lifted, which likely had a substantial impact on travel patterns. The higher percentage of people working from home in some areas may reflect the changes in travel behaviour and workplace cultures that originally occurred during the pandemic. However, as return-to-workplace policies are implemented, there may be increases in travel to a physical workplace over time.

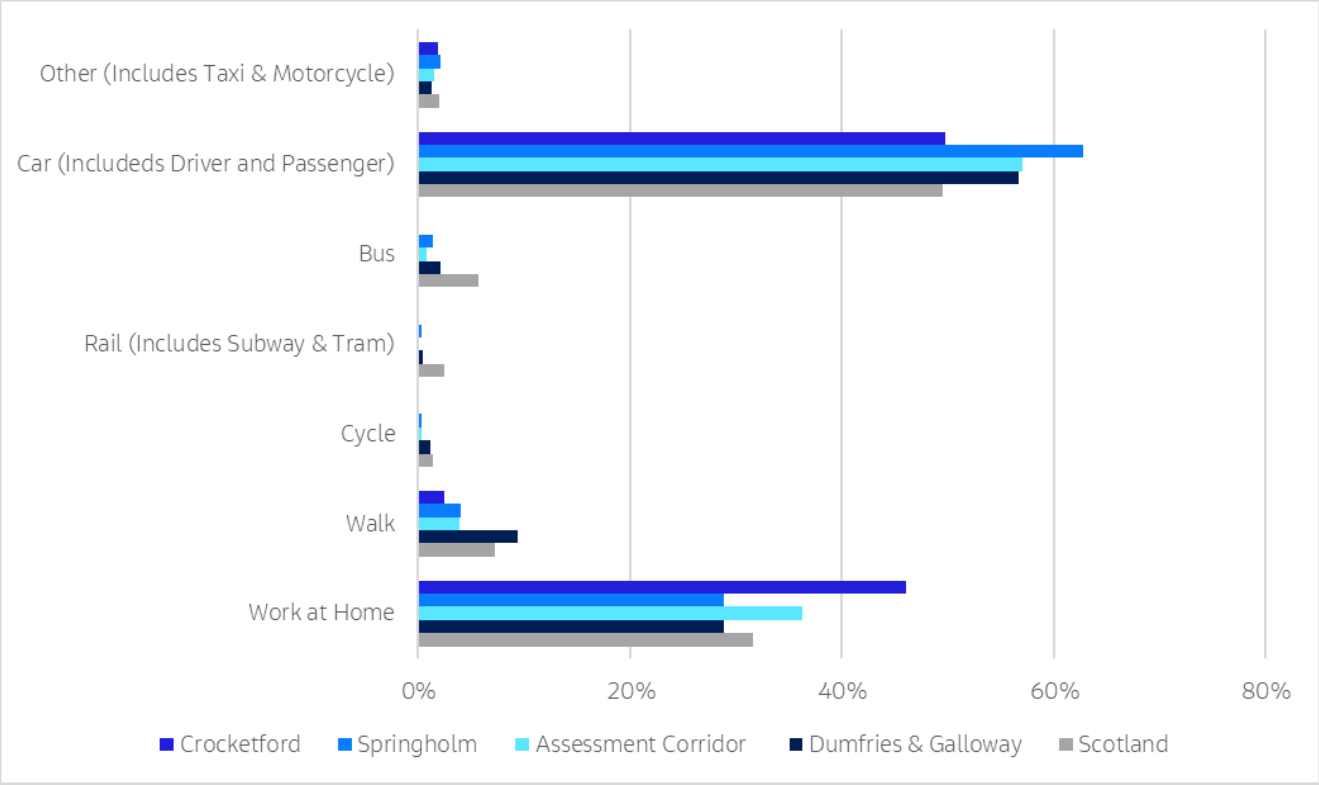


Figure 2-2: Method of travel to place of work (2022 Census)

Comparing the 2022 Scotland Census data with pre-pandemic figures (2011), the work-from-home proportion for Crocketford increased from 35% to 46%, whilst Scotland's overall rate nearly tripled from 11% to 32%. Despite the significant rise in remote working, car usage decreased by a lower amount in Crocketford (from 57% to 50%) and Springholm (from 67% to 63%), compared to the more substantial decrease from 62% to 49% nationally.

2.8.4 Vehicle Availability

The 2022 Scotland Census data for Crocketford and Springholm indicates that households in the two villages have higher vehicle availability compared to Dumfries & Galloway and Scotland overall, as shown in Figure 2-3. These rural communities show a higher proportion of multi-car or van households compared to both the regional and national averages. Specifically, 47% of households in Crocketford and 49% in Springholm have two or more cars or vans available, significantly higher than the equivalent figure for Dumfries and Galloway

(35%) and Scotland overall (31%). Moreover, the percentage of households with access to three or more cars or vans in both Crocketford (14%) and Springholm (17%) is notably higher than the Dumfries and Galloway region (9%) and national (7%) averages.

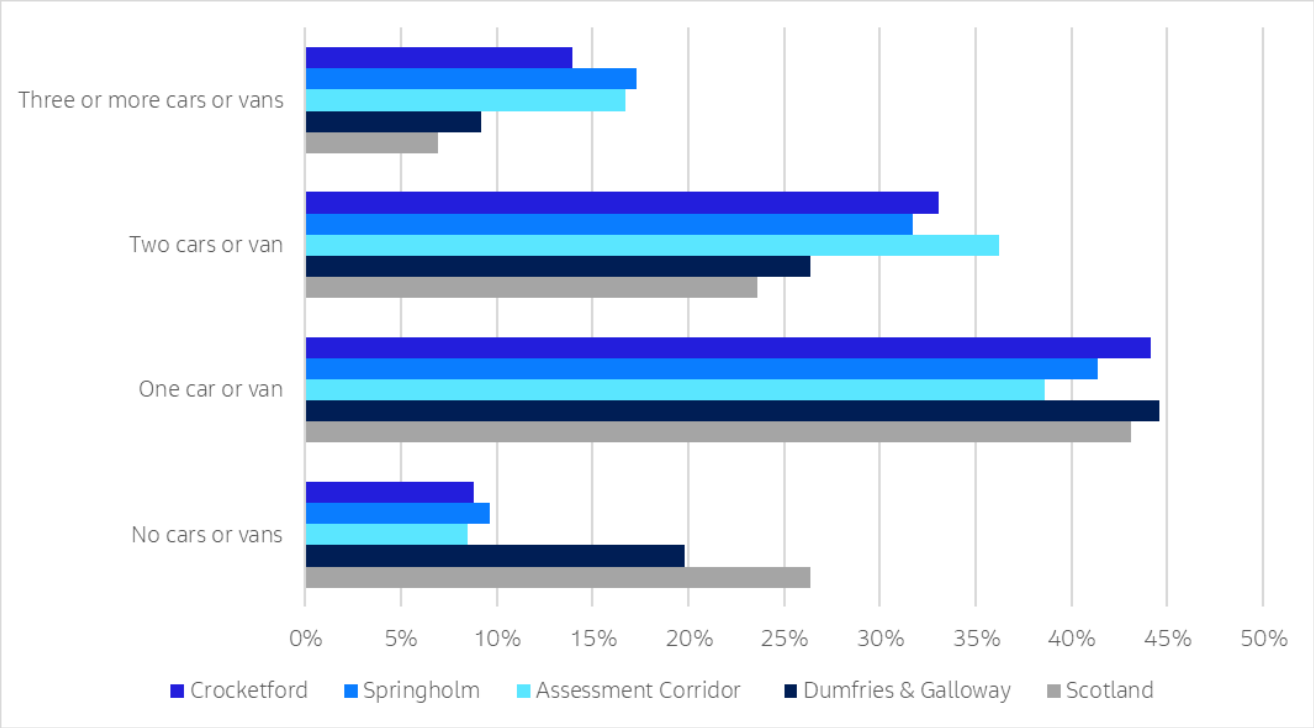


Figure 2-3: Car or van availability per household (2022 Census)

2.8.5 Education

Figure 2-4 illustrates the 2022 Scotland Census data for the highest level of qualification achieved. The data shows that Crocketford and the whole assessment corridor area have slightly higher percentages of degree-level education (31%) compared to the national average (28%), while Springholm matches the national average. The percentage of individuals with no qualifications ranges from 15% to 21% across all areas. Crocketford and the assessment corridor have the lowest proportion (15%) of people with no qualification, slightly less than the national average of 17% and Springholm (17%). The Dumfries and Galloway region has the higher proportion of people with no qualifications at 21%.

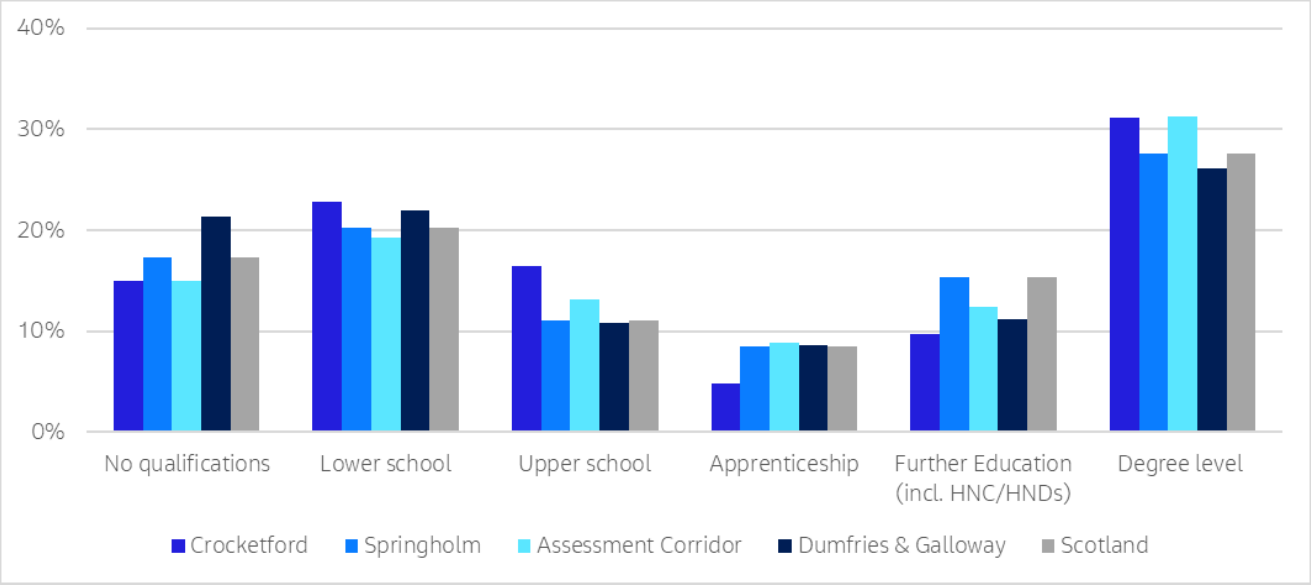


Figure 2-4: Highest qualification achieved (2022 Census)

2.8.6 Scottish Index of Multiple Deprivation (SIMD)

The Scottish Index of Multiple Deprivation (SIMD) shows the socio-economic variation experienced across the study area as of 2020. The overall SIMD rank of an area is dependent on multiple domains, including income, employment, health, education, housing, geographic access and crime. Whilst it is a combination of these domains that defines the overall SIMD rank, each can be interrogated individually to determine specific domains of strength and weakness of an area. Appendix A, Figure A2-14 illustrates the overall SIMD decile ranking of data zones within the study area.

The assessment corridor encompasses five data zones, which fall within the 5th to the 8th decile of the SIMD across Scotland (where 1 is most deprived and 10 least deprived), indicating a moderate to good level of socio-economic status across much of the assessment corridor. Haugh of Urr is the least deprived with a ranking of 8, while Crocketford and the Springholm/Kirkpatrick Durham area are the more deprived with a ranking of 5. No data zone within the assessment corridor falls within the top 20% most deprived across Scotland.

Appendix A, Figure A2-15 presents the SIMD Geographic Access Indicator domain scores for data zones included within the assessment corridor. The geographic access domain within SIMD refers to the ability of residents to reach a number of key services, with sub-domains for public transport journeys and journeys by private car. It evaluates the ability for residents to reach key services such as health facilities, educational institutions, retail centres, fuel stations, and post offices.

The majority of data zones (four out of five) have a ranking of 1 for the Access to Services domain, indicating very poor access to services. This is true for the data zones encompassing

the settlements of Crocketford and Springholm, Haugh of Urr, Milton and Kirkpatrick Durham as well as the surrounding rural areas. The sole exception is the zone east of Castle Douglas, which has a slightly better ranking of 2; however, this still indicates poor access to services, albeit marginally better than the other data zones within the assessment corridor.

2.8.7 Digital Connectivity

Table 2-10 shows the average percentage of households that receive Superfast Broadband (SFBB) and Ultra-Fast Broadband (UFBB) reported by Ofcom across Springholm and Crocketford in the assessment corridor, compared to Dumfries and Galloway and Scotland overall. SFBB is defined as speeds of 30Mbps or greater, while UFBB refers to speeds of 300Mbps or greater. SFBB is available for 71% of households within the assessment corridor boundary, with Crocketford at 83% and Springholm at 99% specifically. UFBB availability is significantly limited and does not appear to be available in Crocketford and Springholm. While the assessment corridor shows 18% UFBB coverage overall, this average is influenced by three of the 12 Output Areas (Oas) which have between 40% and 70% UFBB coverage, while the remaining OAs have only up to 20% coverage.

Table 2-10: Broadband connectivity

Area	SFBB (30mbps) availability (% premises)	UFBB (300Mbps) availability (% premises)
Crocketford	83%	0%
Springholm	99%	0%
Assessment corridor	71%	18%
Dumfries and Galloway	85%	7%
Scotland	94%	60%

2.8.8 Economy & Labour Market

Figure 2-5 illustrates the percentage distribution of industry sectors for the assessment corridor, Dumfries and Galloway, and across Scotland. This data is derived from the Business Register and Employment Survey (BRES) and is based on employment location. Due to the geographic representation of BRES data, for the purpose of this analysis, the most relevant 2011 Scotland Census data zones have been selected to represent the assessment corridor (as BRES has not updated outputs to reflect the 2022 Scotland Census data zones), allowing for a more localised comparison with regional and national figures.

The data indicates that education is the dominant sector within the assessment corridor, accounting for 44% of employment. This figure is markedly higher than both the Dumfries

and Galloway region and Scotland, where Education represents only approximately 8% of employment in each case. The high proportion of education employment is largely due to one data zone, representing the region east of Crocketford and the settlements of Lochfoot and Milton.

The second largest sector within the assessment corridor is Human Health & Social Work, comprising 14% of employment. This is slightly below the figure of 17% for Dumfries and Galloway and the national figure of 16%. Agriculture, Forestry & Fishing is more prominent in the assessment corridor (8%) compared to the national average (3%), but less than the regional figure for Dumfries and Galloway (14%).

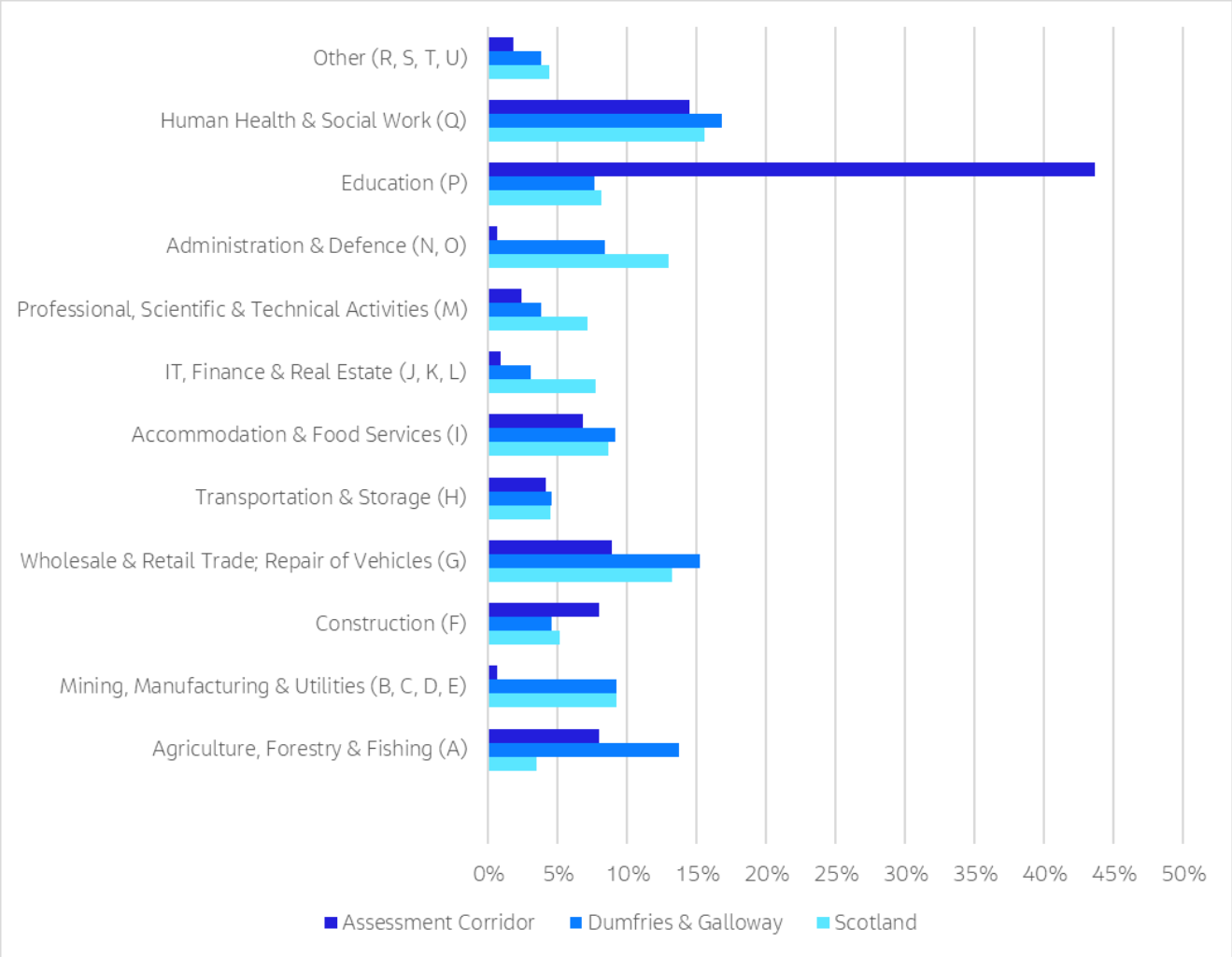


Figure 2-5: Industry sector comparison (BRES)

Figure 2-6 presents 2022 Scotland Census data comparing the economic activity of individuals within the assessment corridor to the Dumfries and Galloway region and Scotland averages. Economic activity refers to individuals aged 16 and over who were working or seeking work in the week preceding the Census. The data classifies individuals into two main categories: economically active including full-time and part-time employees, self-employed

individuals, and those unemployed but seeking work; and economically inactive comprising retirees, students, homemakers, individuals with long-term illnesses or disabilities, and others not participating in the labour market.

The assessment corridor area has an economic activity rate of 62%, which is largely in line with the national average (61%), and is higher than Dumfries and Galloway (56%).

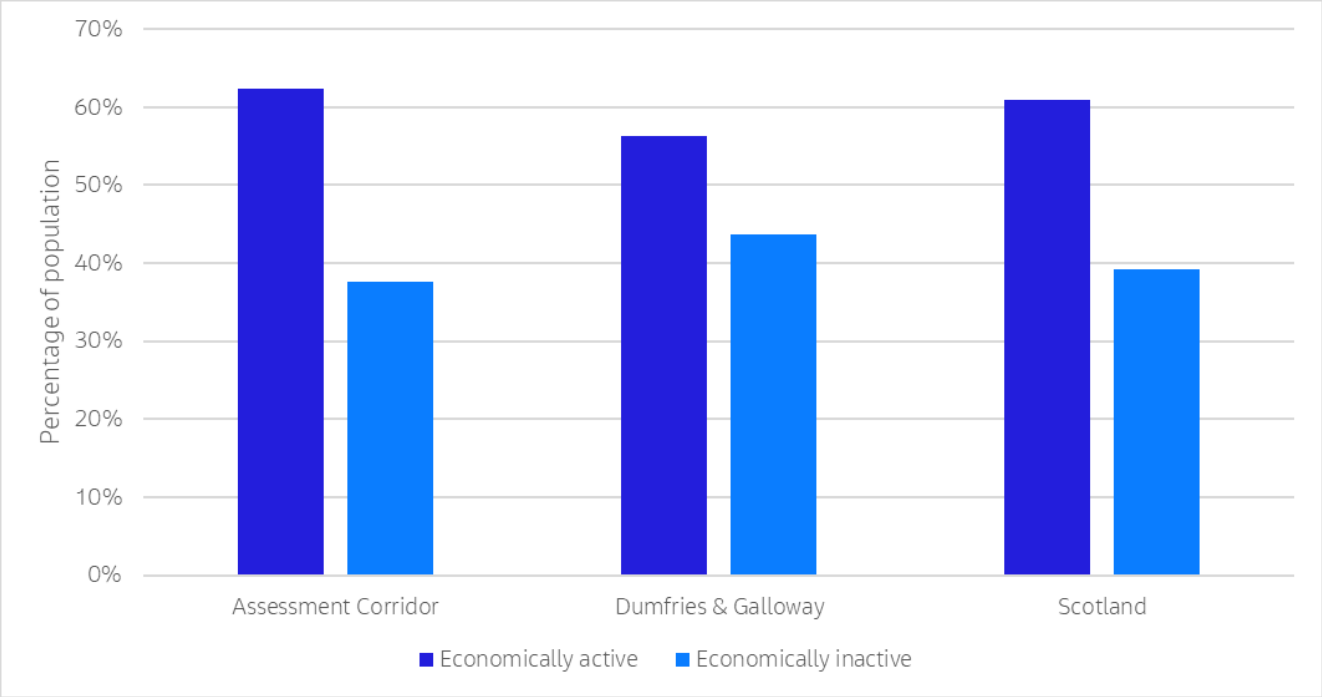


Figure 2-6: Economic activity rate comparison (Census 2022)

2.9 Public Utilities

Public utility information has been obtained in accordance with the C2 Preliminary Inquiries stage of the New Roads and Street Works Act 1991, Measures Necessary where Apparatus is Affected by Major Works (Diversionary Works), A Code of Practice.

2.10 Challenges of the Corridor Environment

2.10.1 Flooding

In terms of fluvial (river) flood risk, part of the assessment corridor is within the Springholm Potentially Vulnerable Area (PVA), as identified in 2018 under the National Flood Risk Assessment (NFRA) which is in the Urr Water catchment. The majority of flood risk in this area is from fluvial flooding. Principal rivers with modelled fluvial flood risk have been identified using SEPA Flood Maps. These Flood Maps identify the watercourses and the flood extents associated with them.

The Springholm PVA also lists pluvial (surface water) flooding as a potential flood source within the assessment corridor. The 'Surface Water and Small Watercourses Flooding' presented on SEPA Flood Maps identifies areas of pluvial flood risk as well as flooding from small watercourses, field drains and areas of standing water (such as ponds and lochs).

There have been historic instances of fluvial and pluvial flooding reported within the assessment corridor. Historical fluvial flood events have been reported near Springholm and Crocketford in 2002 and 2003 and pluvial flooding has been observed when heavy rainfall is combined with high water levels in Auchenreoch Loch impacting parts of the existing A75.

Newspaper reports from the Daily Record include the following articles on flood events in the past 10 years:

- 7 January 2016 Storm Frank brings flooding and New Year Chaos to the Stewartry
- 27 January 2016 Heavy rainfall causes roads chaos across Dumfries and Galloway
- 15 August 2019 Stewartry Roads disappear under floodwater after wind and rain batters Dumfries and Galloway

Flooding will be assessed further at DMRB Stage 2. Appropriate national and local policy documents will be considered including:

- National Planning Framework 4
  - Policy 22 Flood risk and water management – The intent is to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding.
- River Basin Management Plan for Scotland 2021-2027
- Dumfries and Galloway Council Local Development Plan 2
  - NE11: Supporting the Water Environment
  - NE12: Supporting the Water Environment
  - IN7: Flooding and Development
  - IN8: Surface Water Drainage and Sustainable Drainage Systems (SuDS)
  - IN9: Waste Water Drainage
- Flood Risk Management Plan, Solway Local District Plan

2.10.2 Winter Resilience

Roadside features related to winter resilience such as snow poles and snow gates have not been identified along the existing A75 within the assessment corridor. An initial review has

suggested that outside of extreme weather events, the existing A75 does not experience significant issues related to winter weather.

2.10.3 Landslides

An initial review has found that there are no significant issues with landslides along the existing A75 within the assessment corridor.

3. Description of Proposed Scheme

3.1 Introduction

Six improvement strategies have been assessed at DMRB Stage 1. These are shown in Appendix A, Figure A3-1. The improvement strategies tie-in to the existing A75 within the assessment corridor at various locations and are located at varying offsets from the existing A75.

3.2 Do-Minimum Scenario

While the approach to the DMRB Stage 1 Assessment has focussed on major improvements along the A75 in the vicinity of Springholm and Crocketford, it is also necessary to consider the Do-Minimum scenario in the quantitative assessment, including economic appraisal, against which the proposed scheme is compared.

The Do-Minimum scenario reflects the most likely transport situation where the proposed scheme is not progressed and no major intervention is assumed to occur. The current road layout is largely maintained as is, with essential road maintenance continuing to be addressed and minor interventions undertaken. This allows the assessment to determine the potential impacts of not progressing the proposed scheme and allows a consistent baseline comparison against which the effects of the proposed scheme can be determined.

Examples of potential interventions that could be anticipated in the Do-Minimum scenario include improvements to the safety and operation of the route such as updated signing and lining and the installation of additional Variable Message Signs (VMS).

3.3 Improvement Strategies

3.3.1 Improvement Strategy 1

Improvement Strategy 1 is offline and leaves the existing A75 at Allanton Roundabout. It then runs north-west of Springholm, Auchenreoch Loch and Crocketford, before rejoining the existing A75 at Drummore Roundabout. It would involve the construction of a new carriageway between the Allanton and Drummore roundabouts. The total length of the improvement strategy is approximately 19km.

This improvement strategy would include a number of structures over watercourses including Urr Water. In addition, further structures and/or junctions may be required for the existing A75, B795, B794, A712, Core Path IRON/72/1, several C-roads and private accesses. This improvement strategy passes through areas of undulating topography and native woodland.

A number of properties lie within the improvement strategy. Improvement Strategy 1 is shown in Appendix A, Figure A3-1.

3.3.2 Improvement Strategy 2

Improvement Strategy 2 is offline and leaves the existing A75 at a location approximately 2.7km south of Springholm. It then runs north-west of Springholm, Auchenreoch Loch and Crocketford before rejoining the existing A75 at a location approximately 0.8km north-east of the settlement of Brae. It would involve the construction of a new carriageway between the existing A75 / B794 junction and the existing A75 to north-east of Brae. The total length of the improvement strategy is approximately 12.4km.

This improvement strategy would include a number of structures over watercourses. In addition, further structures and/or junctions may be required for the existing A75, A712, Core Path IRON/72/1, several C-roads and private accesses. This improvement strategy passes through areas of undulating topography. A number of properties lie within the improvement strategy. Improvement Strategy 2 is shown in Appendix A, Figure A3-1.

3.3.3 Improvement Strategy 3

Improvement Strategy 3 is online and follows the route of the existing A75 from the south of Springholm to the north of the Crocketford. This includes the sections of existing A75 subject to the 30mph speed restriction. The total length of the improvement strategy is approximately 5.4km.

This improvement strategy would include the widening or replacement of the existing structures over watercourses. In addition, further structures and/or junctions may be required for the A712, several C-roads and private accesses. A large number of properties lie within the improvement strategy. Improvement Strategy 3 is shown in Appendix A, Figure A3-1.

3.3.4 Improvement Strategy 4

Improvement Strategy 4 is offline and leaves the existing A75 at a location approximately 0.8km south-west of Springholm. It then runs to the south-east of Springholm, parallel to the existing A75 for approximately 1.2km, before continuing south-east of Crocketford and re-joining the existing A75 approximately 0.6km north-east of Crocketford. It would involve the construction of a new carriageway between the south-west of Springholm and the north-east of Crocketford. The total length of the improvement strategy is approximately 6.0km.

This improvement strategy would include a number of structures over watercourses. In addition, further structures and/or junctions may be required for the existing A75, several C-roads and private accesses. This improvement strategy passes through areas of undulating

topography. A number of properties lie within the improvement strategy. Improvement Strategy 4 is shown in Appendix A, Figure A3-1.

3.3.5 Improvement Strategy 5

Improvement Strategy 5 is offline and leaves the existing A75 approximately 0.4km south of the Ramhill Bridge over Urr Water. It then runs south-east of Springholm and passes south-east of Auchenreoch Loch and Crocketford and north-west of Milton Loch before rejoining the existing A75 near the settlement of Brae. It would involve the construction of a new carriageway between the south of Ramhill Bridge and the south of Brae. The total length of the improvement strategy is approximately 11km.

This improvement strategy would include a number of structures over watercourses including Urr Water. In addition, further structures and/or junctions may be required for the existing A75, the B794, Core Path IRON/72/1, Core Path URR/603/1, several C-roads and private accesses. This improvement strategy passes through areas of undulating topography and native woodland. A number of properties lie within the improvement strategy. Improvement Strategy 5 is shown in Appendix A, Figure A3-1.

3.3.6 Improvement Strategy 6

Improvement Strategy 6 is offline and leaves the existing A75 at Allanton Roundabout. It then follows a route south-east of Springholm, Crocketford and Milton Loch. It also passes to the east of Haugh of Urr, Hardgate and Milton, running parallel to the Old Military Road for the majority of the route, rejoining the existing A75 at the Drummore Roundabout. It would involve the construction of a new carriageway between the Allanton to Drummore roundabouts. The total length of the improvement strategy is approximately 17.2km.

This improvement strategy would include a number of structures over watercourses including Urr Water. In addition, further structures and/or junctions may be required for the existing A75, the Old Military Road, the B794, several C-roads and private accesses. This improvement strategy passes through areas of undulating topography and native woodland. A number of properties lie within the improvement strategy. Improvement Strategy 6 is shown in Appendix A, Figure A3-1.

3.4 Comparative Preliminary Cost Estimates

Due to the broadly defined nature of the improvement strategies, a detailed cost estimate has not been prepared at DMRB Stage 1. Therefore, a comparative cost assessment has been undertaken. The comparative cost assessment involved reviewing previous projects that are similar in nature to the proposed scheme to gain an understanding of which features would make the improvement strategies comparatively more or less expensive. A high level review

of each improvement strategy was then undertaken, taking into consideration its relative length and whether it is generally online or offline, with online construction considered to be more expensive.

Based on the above, it is likely that the relative cost of each improvement strategy, listed in ascending order, would be as follows:

- Improvement Strategy 4 (Approximately 6km in length and generally offline)
- Improvement Strategy 3 (Approximately 5.4km in length and generally online)
- Improvement Strategy 5 (Approximately 11km in length and generally offline)
- Improvement Strategy 2 (Approximately 12.4km in length and generally offline)
- Improvement Strategy 6 (Approximately 17.2km in length and generally offline)
- Improvement Strategy 1 (Approximately 19km in length and generally offline)

Detailed cost estimates will be prepared for route options at DMRB Stage 2.

4. Engineering Assessment

4.1 Introduction

A high level assessment of engineering issues associated with the improvement strategies has been undertaken in relation to the following topics:

- Topography and Land Use
- Geotechnical Considerations
- Water Environment, Hydrology and Drainage
- Alignment and Cross-section
- Pavement
- Structures
- Junctions and Accesses
- Lay-bys and Rest Areas
- Walking, Cycling and Horse Riding (WCH) Provisions
- Roadside Features
- Public Utilities
- Constructability

4.2 Topography and Land Use

There are various settlements within and in close proximity to the assessment corridor as shown in Appendix A, Figure A2-1(G). An assessment was undertaken to determine which settlements are within 500m of each of the improvement strategies which are summarised as follows:

- Castle Douglas, Clarebrand, Old Bridge of Urr, Kirkpatrick Durham, Crocketford, Brae and Shawhead are within 500m of Improvement Strategy 1.
- Old Bridge of Urr, Kirkpatrick Durham, Springholm, Crocketford and Brae are within 500m of Improvement Strategy 2.
- Springholm and Crocketford are within 500m of Improvement Strategies 3 and 4.
- Springholm is within 500m of Improvement Strategy 5.
- Castle Douglas, Haugh of Urr, Milton and Lochfoot are within 500m of Improvement Strategy 6.

4.3 Geotechnical Considerations

A preliminary assessment has been undertaken to provide a general overview of anticipated ground conditions within the assessment corridor. The superficial deposits and solid geology are as indicated in the Geology section of the Existing Conditions chapter of this report.

The main geotechnical considerations are summarised as follows.

4.3.1 Peat and Compressible Soils:

The presence of soft, compressible soils such as peat and alluvium was mapped across the assessment corridor. These materials are generally expected to be low in strength and highly compressible, posing a risk of settlement, reduced bearing capacity, and possible instability. This may require either ground improvement, avoidance of specific area, or alternative foundation solutions, particularly in areas where peat is extensive and of uncertain thickness. Removal of thick peat layers could also lead to heave or post-construction rebound.

4.3.2 Shallow Bedrock and Excavation Constraints

Bedrock is typically formed of competent greywacke; however, weathering profiles and localised faults may affect excavation and founding conditions. Shallow bedrock is mapped across the south-west and central sections of the route, which may constrain excavation depths and influence construction sequencing. In some areas, transitions from superficial deposits to shallow weathered rock may require localised excavation support or adaptation of foundation design, particularly where ground conditions are variable or differential stiffness is expected. Inferred linear geological features, including possible faulting near Springholm, may further influence ground behaviour and excavation stability.

4.3.3 Chemical Constraints

The presence of organic leachates and naturally occurring sulphates within the superficial deposits may affect the durability and long-term performance of construction materials. These conditions will need to be considered in the specification of concrete mixes and drainage components to ensure chemical resistance and compliance with relevant standards.

4.3.4 Historical Mineral Workings

There is a high density of historical surface mineral workings (BritPits) across the assessment corridor, with numerous ceased quarries, gravel pits, and sandstone extraction sites recorded on or near the assessment corridor. While most are classified as ceased, their presence may indicate areas of variable backfill, localised voids, or ground disturbance that could affect founding conditions and stability. Further investigation may be required to assess the extent and legacy impact of these features on ground behaviour.

4.3.5 Ground Instability Risks

Localised zones of potential ground instability have been identified within the assessment corridor, primarily associated with superficial deposits. While the overall landslide risk is generally low to moderate and confined to isolated areas, further assessment may be required in sloping terrain where till or alluvium are present. Some clay-rich deposits exhibit shrink – swell potential, which may result in surface movement or long-term deformation beneath embankments or along cut slopes. In areas of loose, saturated granular material, there is a potential for running sand conditions, which could affect excavation stability, increase dewatering requirements, and necessitate short-term excavation support. These factors may influence the geometry, construction sequence, and stabilisation requirements of proposed cuttings and embankments.

4.3.6 Unexploded Ordnance (UXO)

The assessment corridor lies within a zone of low to moderate UXO risk, as indicated by Zetica UXO mapping. Historical records show proximity to former strategic targets such as industrial and military facilities around Dalbeattie and Castle Douglas. While there are no known UXO finds within the assessment corridor, the potential presence of buried ordnance cannot be ruled out. A preliminary UXO risk assessment should be undertaken to determine the need for mitigation measures during intrusive ground investigation or construction works, particularly in areas involving deep excavation.

4.3.7 Geotechnical Summary for Improvement Strategy 1

Superficial deposits (excluding peat) intersecting with Improvement Strategy 1 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)
- Glaciofluvial deposits (gravel, sand and silt)

BGS maps indicate a presence of peat north-east of Crocketford within Improvement Strategy 1.

Bedrock for Improvement Strategy 1 consists of Greywacke (Carghidown, Kirkmaiden and Cairnharrow formations). For linear bedrock features there are two inferred faults, one parallel to the existing A75 (reverse/thrust fault, barbs on hanging wall side, throw in meters) and one perpendicular to the existing A75 north of Springholm Primary School with unknown displacement.

In summary for Improvement Strategy 1 geotechnical considerations are as follows:

- Soft alluvium and peat may result in settlement.
- Aggressive ground conditions for concrete.
- Shallow bedrock may complicate excavation.
- Faulting may cause variable conditions.

4.3.8 Geotechnical Summary for Improvement Strategy 2

Superficial deposits (excluding peat) intersecting with Improvement Strategy 2 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)

BGS maps indicate a presence of peat north-east of Crocketford and BGS logs indicate peat at the west by Garmatin Burn and east near Route 75 within Improvement Strategy 2.

Bedrock for Improvement Strategy 2 consists of Greywacke (Carghidown and Kirkmaiden formations). For linear bedrock features there are two inferred faults, one parallel to the existing A75 (reverse/thrust fault, barbs on hanging wall side, throw in meters) and one perpendicular to the existing A75 north of Springholm Primary School with unknown displacement.

In summary for Improvement Strategy 2 geotechnical considerations are as follows:

- Soft alluvium and peat may result in settlement.
- Aggressive ground conditions for concrete.
- Shallow bedrock may complicate excavation.
- Faulting may cause variable conditions.

4.3.9 Geotechnical Summary for Improvement Strategy 3

Superficial deposits (excluding peat) intersecting with Improvement Strategy 3 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)

BGS logs indicate a presence of peat to the south-west of Crocketford.

Bedrock for Improvement Strategy 3 consists of Greywacke (Carghidown and Kirkmaiden formations). For linear bedrock features there is one inferred fault which crosses the A75 perpendicularly north of Springhom Primary School with unknown displacement.

In summary for Improvement Strategy 3, geotechnical considerations are as follows:

- Soft alluvium and peat may result in settlement.
- Aggressive ground conditions for concrete.
- Shallow bedrock may complicate excavation.
- Faulting may cause variable conditions.

4.3.10 Geotechnical Summary for Improvement Strategy 4

Superficial deposits (excluding peat) intersecting with Improvement Strategy 4 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)

BGS maps and logs indicate a presence of peat to the south-east of Crocketford.

Bedrock for Improvement Strategy 4 consists of Greywacke (Carghidown and Kirkmaiden formations). For linear bedrock features there is one inferred fault which crosses the A75 perpendicularly north of Springhom Primary School with unknown displacement.

In summary for Improvement Strategy 4, geotechnical considerations are as follows:

- Soft alluvium and peat may result in settlement.
- Aggressive ground conditions for concrete.
- Shallow bedrock may complicate excavation.
- Faulting may cause variable conditions.

4.3.11 Geotechnical Summary for Improvement Strategy 5

Superficial deposits (excluding peat) intersecting with Improvement Strategy 5 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)
- Glaciofluvial deposits (gravel, sand and silt)

BGS maps and logs indicate a presence of peat to the south-east of Crocketford within Improvement Strategy 5.

Bedrock for Improvement Strategy 5 consists of Greywacke (Carghidown and Kirkmaiden formations). For linear bedrock features there is one inferred fault which crosses the A75 perpendicularly north of Springholm Primary School with unknown displacement.

In summary for Improvement Strategy 5, geotechnical considerations are as follows:

- Soft alluvium and peat may result in settlement.
- Aggressive ground conditions for concrete.
- Shallow bedrock may complicate excavation.
- Faulting may cause variable conditions.

4.3.12 Geotechnical Summary for Improvement Strategy 6

Superficial deposits (excluding peat) intersecting with Improvement Strategy 6 are made up of the following:

- Devensian till (Diamicton)
- Alluvium (silt, sand and gravel)
- Glaciofluvial deposits (gravel, sand and silt)

There is no indication of peat presence for Improvement Strategy 6.

Bedrock for Improvement Strategy 6 consists of Greywacke (Carghidown formation). For linear bedrock features there are no inferred faults recorded.

In summary for Improvement Strategy 6, geotechnical considerations are as follows:

- Shallow bedrock may complicate excavation.

4.3.13 Geotechnical Summary

Depending on the depth and extents of the peat this may pose both geotechnical and environmental challenges. These may include low bearing capacity, high compressibility, and potential carbon release upon disturbance.

Inferred bedrock fault structures are mapped near Springholm and may influence local rockhead profiles and excavation stability.

There is limited historic groundwater information available from a review of existing information. However, these are likely to be elevated within peat and alluvial zones, potentially requiring groundwater management during construction. The potential presence of organic leachates and naturally occurring sulphates in these deposits could also impact the specification of concrete and drainage materials.

An assessment of the anticipated ground conditions, geotechnical and land quality constraints will be carried out for each of the improvement strategies and presented in a Preliminary Sources Study Report (PSSR). Existing information from a variety of desktop review sources including but not limited to, historical maps, geological maps, historical exploratory holes and existing reports from the area will be scrutinised. A geotechnical and geo-environmental site visit will be undertaken during the study. This information will be used at DMRB Stage 2 to identify significant geotechnical or land quality constraints, which may influence the preferred route option.

In order to support the geotechnical and environmental input to the DMRB Stage 2 Assessment, a ground investigation is proposed. The investigation will take cognisance of the geotechnical risks identified in the PSSR.

4.4 Water Environment, Hydrology, and Drainage

4.4.1 Water Environment and Hydrology

The assessment corridor encompasses numerous watercourses and water bodies. Within 500m of the assessment corridor, there are 19 named watercourses, eight of which are designated Water Framework Directive (WFD) Regulation water bodies. There are also a number of other non-WFD Regulation named watercourses. Table 4-1 shows a list of these watercourses.

Table 4-1: WFD Regulation and non-WFD Regulation named watercourses in the assessment corridor

Watercourse	Watercourse Type	Overall Status	Relevant Improvement Strategy
Urr Water (d/s Drumhumphrey Burn)	WFD Regulation water body	Good	1, 5, 6
Spottes Burn	WFD Regulation water body	Good	1, 2, 3, 4, 5
Cargen Pow/ Bogrie Lane	WFD Regulation water body	Moderate	1, 2, 3, 4, 5
Lochfoot Burn	WFD Regulation water body	Moderate	1, 6
Under Brae Lane	WFD Regulation water body	Good	6

Watercourse	Watercourse Type	Overall Status	Relevant Improvement Strategy
Culloch Burn (u/s Milton Loch)	WFD Regulation water body	Good	5
Culloch Burn (Milton Loch to Kirkgunzeon Lane)	WFD Regulation water body	Good	6
Barnshalloch Burn	Non-WFD Regulation water body	N/A	None
Bettyknowes Burn	Non-WFD Regulation water body	N/A	1, 2
Culmain Burn	Part of Culloch Burn (Milton Loch to Kirkgunzeon Lane) WFD Regulation water body	Good	None
Largela Burn	Non-WFD Regulation water body	N/A	1, 2
Glenhead Burn	Non-WFD Regulation water body	N/A	1, 2
Crocketford Burn	Part of Cargen Pow/ Bogrie Lane WFD Regulation water body	Moderate	1, 2, 3
Cronie Burn	Non-WFD Regulation water body	N/A	1, 2
Brooklands Burn	Non-WFD Regulation water body	N/A	1, 2
Minnydow Burn	Non-WFD Regulation water body	N/A	1, 2
Culshan Burn	Non-WFD Regulation water body	N/A	3
Barncailzie Lane	Non-WFD Regulation water body	N/A	3

Watercourse	Watercourse Type	Overall Status	Relevant Improvement Strategy
Garmartin Burn	Non-WFD Regulation water body	N/A	2, 5

There are numerous artificial drainage ditches and unnamed ordinary watercourses within 500m of the assessment corridor. All six improvement strategies cross these minor surface water receptors.

There are four named ponds and lochs of varying sizes within 500m of the assessment corridor. These are:

- Milton Loch – WFD Regulations designated with 'Moderate' overall status.
- Auchenreoch Loch – non-WFD Regulations water body
- Grange Dam – non-WFD Regulations water body
- Brooklands Pond – non-WFD Regulations water body

There are also numerous unnamed ponds and areas of standing water. Lochrutton Loch, while not within the assessment corridor, is important to consider as it is located within 50m to the south east of the assessment corridor.

In terms of hydromorphology, six watercourses within the assessment corridor show some evidence of morphological features and processes. These watercourses are crossed by the improvement strategies. Structures are observed on numerous watercourses, including minor and major road crossings via bridges and culverts.

4.4.2 Flood Risk

Part of the assessment corridor lies within the Springholm Potentially Vulnerable Area (PVA) which identifies the main risk of flooding as from rivers. A desktop review of SEPA flood mapping has indicated that there are areas of 'Low' likelihood flooding (a 0.1% (1 in 1000 year) annual exceedance probability (AEP)) and 'Medium' likelihood flooding (a 0.5% (1 in 200 year) AEP) in the study areas. This is associated with the following watercourses:

- Urr Water
- Spottes Burn
- Barnacilzie Lane
- Brooklands Burn
- Minnydow Burn

- Lochfoot Burn
- Culloch Burn

Pluvial flooding is also identified as a potential flood source within the Springholm PVA. Generally, pluvial flooding in the assessment corridor is characterised by ponding of rainfall in surface depressions in the landscape with flooding also associated with small watercourses and drains. Pluvial flooding is likely to affect all six improvement strategies.

Groundwater, reservoir and sewer flooding will be assessed at DMRB Stage 2.

4.4.3 Drainage

Due to the broadly defined nature of the improvement strategies, drainage designs have not been prepared at DMRB Stage 1. Drainage designs will be prepared at DMRB Stage 2 in accordance with the DMRB and will include consideration of Sustainable Drainage Systems (SuDS) to attenuate and treat surface run-off.

4.5 Alignment and Cross-section

Due to the broadly defined nature of the improvement strategies, alignment designs have not been prepared at DMRB Stage 1. However, the improvement strategies have been developed with consideration of constraints and DMRB CD 109 – Highway link design. This will allow a range of alignment designs to be developed at DMRB Stage 2.

During the development of the alignment designs, the type of road will be considered with options including single, WS2+1 and dual carriageway. Further consideration of cross-section and design speed will also be undertaken in line with DMRB CD 127 – Cross-sections and Headrooms, hereafter referred to as CD 127.

The types of road and associated design parameters for cross-section and maximum design speed which will be considered at DMRB Stage 2 have been summarised in Table 4-2.

Table 4-2: Indicative type of road, cross-section and maximum design speed

Type of Road	DMRB CD 127 Reference	Maximum Design Speed
Dual Carriageway	D2AP	120kph
Single Carriageway	S2	100kph
WS2+1 Carriageway	WS2+1	100kph

4.6 Pavement

Due to the broadly defined nature of the improvement strategies, pavement designs have not been prepared at DMRB Stage 1. A preliminary pavement design will be developed at DMRB Stage 2 and will include consideration of the existing pavement condition where necessary.

4.7 Structures

A high level assessment has been undertaken to determine the indicative maximum number of major structures required for each improvement strategy. The findings of this assessment are summarised in Table 4-3.

Table 4-3: Indicative numbers of major structures and notable constraints

Improvement Strategy	Indicative No. of Major Structures	Notable Constraints
1	4	Watercourses – Urr Water, Bettyknowes Burn, Brooklands Burn and side road. Roads - A712
2	2	Watercourses - Brooklands Burn and side road. Roads – A712
3	1	Watercourses – Spottes Burn.
4	2	Watercourses – Spottes Burn and lake.
5	1	Watercourses – Urr Water (Potential to retain Ramhill New Bridge).
6	3	Watercourses - Urr Water. Roads – Old Military Road (Potential for two crossings).

Due to the broadly defined nature of the improvement strategies and the negligible influence of minor structures on the structural assessment, the numbers of retaining walls, culverts and minor bridges (expected length of less than 20m) have not been included in Table 4-3. Minor structures will be assessed at DMRB Stage 2.

4.7.1 Online Existing Structures

There are two existing structures along the existing A75 within the assessment corridor. Ramhill New Bridge, which interacts with Improvement Strategy 5 and Springholm Bridge, which interacts with Improvement Strategy 3. The width of both structures has been

considered for compliance with single, WS2+1 and dual carriageway cross-sections, with the minimum compliance listed in Table 4-4.

Table 4-4: Existing structures on existing A75 within the assessment corridor

Structure	No. Spans	Span Lengths (m)	Total Span Length (m)	Total Span Width (m)	Form of Construction	Review Summary
A75 410 Ramhill New Bridge	3	13.7, 19.5 and 13.7	46.9	11.8	Steel girders composite with a reinforced concrete slab deck.	Cross-section is not compliant with single carriageway standard or wider.
A75 400 Springholm Bridge	1	5	5	10.9	Steel trough composite with concrete infill deck.	Cross-section is not compliant with single carriageway standard or wider.

4.8 Junctions and Accesses

A high level assessment has been undertaken to determine the potential road interfaces with each improvement strategy.

Improvement Strategy 1 interfaces with the following existing roads:

- A75 at tie-ins to Allanton and Drummore roundabouts
- A712, B795 and B794
- C-Roads and/or unclassified roads
- Residential and/or Commercial private accesses

Improvement Strategy 2 interfaces with the following existing roads:

- A75 and A712 at tie-in points
- C-Roads and/or unclassified roads
- Residential and/or Commercial private accesses

Improvement Strategy 3 and 4 interface with the following existing roads:

- A75 at tie-in points
- C-Roads and/or unclassified roads
- Residential and/or Commercial private accesses

Improvement Strategy 5 interfaces with the following existing roads:

- A75 and B794 at tie-in points
- C-Roads and/or unclassified roads
- Residential and/or Commercial private accesses

Improvement Strategy 6 interfaces with the following existing roads:

- A75 at tie-ins to Allanton and Drummore roundabouts
- B794
- C-Roads and/or unclassified roads
- Residential and/or Commercial private accesses

A junction strategy will be developed at DMRB Stage 2. The junction type will be influenced by the proposed carriageway cross-section. Junctions on dual carriageway options may include roundabouts, grade separated junctions and/or at-grade left-in left-out priority junctions. Junctions on single carriageway and WS2+1 options may include roundabouts and/or at-grade priority junctions.

4.9 Lay-bys and Rest Areas

4.9.1 Lay-bys

DMRB design standard CD 169 – The design of lay-bys, maintenance hardstandings, rest areas, service areas and observation platforms recommends spacing of lay-bys for non-emergency stopping provision as follows:

- 2.5km for dual carriageway
- 2km – 5km for single carriageway with AADT greater than 8,000

A lay-by strategy will be developed at DMRB Stage 2 to determine the spacing, type and location of proposed lay-bys.

4.9.2 Rest Areas

A rest area is an off-carriageway (longer duration) stopping provision that includes parking and can include tourist information, toilets, public telephone, picnic area, disabled facilities and/or viewpoints. Provision of potential rest areas will be considered at DMRB Stage 2.

4.10 Walking, Cycling and Horse-Riding (WCH) Provisions

A high level assessment to determine the potential interfaces between the improvement strategies and WCH facilities within the assessment corridor has been undertaken. WCH facilities within the assessment corridor are shown in Appendix A, Figure A2-1(A).

Improvement Strategy 1 interfaces with the following WCH facilities:

- A small section of undesignated local path along the A75 which is designated as a shared use route for cyclists and pedestrians east of Barfil and ending east of Glenkiln Farms.
- Core Path IRON/72/1 Bettyknowes to Shawhead at the southern extents.
- Footpaths on the eastbound and westbound sides of the existing A75 linking from bus lay-bys to Drummore Roundabout.

Improvement Strategy 2 interfaces with the following:

- A small section of undesignated local path along the A75 which is designated as a shared use route for cyclists and pedestrians east of Barfil and ending east of Glenkiln Farms.
- Core Path IRON/72/1 Bettyknowes to Shawhead at the southern extents.

Improvement Strategy 3 interfaces with the following:

- Core Path URR/603/1 Springholm to Milton Loch at the western extents.
- Footpaths within Springholm and Crocketford.

Improvement Strategy 4 interfaces with the following:

- Core Path URR/603/1 Springholm to Milton Loch at the western extents.

Improvement Strategy 5 interfaces with the following:

- Core Path URR/603/1 Springholm to Milton Loch at the western extents.
- Core Path IRON/72/1 – Bettyknowes to Shawhead at the southern extents.
- Improvement Strategy 6 interfaces with the following:
- The NCN7 (Old Military Road) at several locations.
- Footpaths on the eastbound and westbound sides of the existing A75 linking from bus lay-bys to Drummore Roundabout.

WCH provisions will be assessed further at DMRB Stage 2.

4.11 Roadside Features

Due to the broadly defined nature of the improvement strategies, roadside features have not been assessed at DMRB Stage 1. A number of roadside features will be assessed at DMRB Stage 2, including:

- Road Restraint Systems (RRS)
- Traffic signs
- Traffic signals
- Road markings and studs
- Street furniture (for example bollards and pedestrian guardrails)
- Emergency telephones
- Weather stations
- Safety cameras and CCTV cameras
- Police observation platforms
- Intelligent Transport Systems (ITS)
- Street lighting

4.12 Public Utilities

Information on public utilities has been collated in accordance with the C2 Preliminary Inquiries stage of the New Roads and Street Works Act 1991, Measures Necessary where Apparatus is Affected by Major Works (Diversionary Works), A Code of Practice. This is an ongoing exercise with some statutory undertakers still to provide information on their apparatus. The information collated at the time of writing is summarised below.

4.12.1 BT Openreach

BT Openreach currently have existing apparatus in the form of underground and overhead cables, boxes and manhole chambers, running in close proximity to the existing A75 between the Allanton and Drummore roundabouts, with the cables crossing the road in multiple locations, including several through Springholm, Crocketford and Brae. Potential interfaces within each improvement strategy are as follows:

- Improvement Strategy 1 interfaces with BT infrastructure along the A75, A712, B795, B794 and a large number of C-roads/unclassified roads and accesses.

- Improvement Strategy 2 interfaces with BT infrastructure along the A75, A712 and a large number of C-roads/unclassified roads and accesses.
- Improvement Strategy 3 interfaces with BT infrastructure running alongside the existing A75 and a large number of connecting roads including the A712.
- Improvement Strategy 4 interfaces with BT infrastructure running alongside the existing A75 and a large number of C-roads/unclassified roads and accesses.
- Improvement Strategy 5 interfaces with BT infrastructure running alongside the existing A75 and a large number of C-roads/unclassified roads and accesses.
- Improvement Strategy 6 interfaces with BT infrastructure along the existing A75, Old Military Road and a number of C-roads/unclassified roads and accesses.

4.12.2 Gas Networks Ireland (UK) Ltd

Gas Networks Ireland (UK) Ltd currently have existing apparatus in the form of a High Pressure underground gas main which primarily runs through farmland within the assessment corridor. The gas mains cross the existing A75 east of the B794 junction on the westbound lane, east of Brae and west of Drummore Roundabout. Potential interfaces within each improvement strategy are as follows:

- Improvement Strategy 1 interfaces with Gas Networks Ireland pipeline at the north-east of Allanton roundabout, east of Brae and west of Drummore Roundabout.
- Improvement Strategy 2 interfaces with Gas Networks Ireland pipeline where the pipeline crosses the existing A75 east of the B794 junction on the westbound lane and east of Brae.
- Improvement Strategy 3 and 4 do not interface with Gas Network Ireland pipeline.
- Improvement Strategy 5 interfaces with Gas Network Ireland pipeline north-east of the mains crossing on the existing A75 east of the B794 junction on the westbound lane.
- Improvement Strategy 6 interfaces with Gas Network Ireland pipeline west of Drummore roundabout.

4.12.3 Last Mile

Last Mile currently have existing apparatus in the form of Low Voltage Underground Electricity Lines which run within Springholm and Crocketford. Potential interfaces within each improvement strategy are as follows:

- Improvement Strategies 1, 2, 5 and 6 do not interface with Last Mile electricity lines.
- Improvement Strategies 3 and 4 interface with Last Mile electricity lines at Springholm and Crocketford.

4.12.4 SGN

SGN currently have existing apparatus in the form of Medium and Low-Pressure underground gas mains to the south-west of the assessment corridor. The majority of these follow the Old Military Road, School Brae and Cairnduff Place at the south-east extents of the assessment corridor. Potential interfaces with each improvement strategy are as follows:

- Improvement Strategies 1, 2, 3, 4 and 5 do not interface with SGN apparatus.
- Improvement Strategy 6 interfaces with SGN apparatus where the strategy intersects with the Old Military Road.

4.12.5 Scottish Power

Scottish Power currently have existing apparatus in the form of Low Voltage and High Voltage (22kV /11kV) underground and overhead lines. All six improvement strategies interface with Scottish Power apparatus.

4.12.6 Vodafone

Vodafone currently have existing apparatus in the form of underground utility routes and chambers along the A712 heading east into Crocketford. The utilities continue through Crocketford and head east along the existing A75 to the Drummore Roundabout. All six improvement strategies interface with Vodafone apparatus.

4.12.7 Scottish Water

Scottish Water currently have existing apparatus in the form of underground utility routes which cross the existing A75 in multiple locations, including just north of the B795 junction, at Church Road, a number of locations throughout Springholm and Crocketford and approximately 500m north of the Henderland junction. The underground utility routes also run in the verge alongside the existing A75 carriageway between the southern extent of Springholm and the northern extent of Crocketford, as well as between East Brae Cottage and the Drummore Roundabout. All six improvement strategies interface with Scottish Water apparatus.

4.13 Constructability

Potential constructability issues have been identified for each improvement strategy. These will be considered further at DMRB Stage 2.

Improvement Strategy 1

- Construction over Urr Water.

- Realignment of the A712.
- Construction on/in proximity to area of peat east of Crocketford.
- Construction on/in proximity to ancient woodland at Blackpark and Brooklands.

Improvement Strategy 2

- Realignment of the A712.
- Construction on/in proximity to areas of peat east of Crocketford, west of Garmartin Burn and east of Brae.
- Construction on/in proximity to ancient woodland at Blackpark and Brooklands.

Improvement Strategy 3

- Construction in proximity of Auchenreoch Loch.
- Construction within Springholm and Crocketford in proximity to a number of residential and commercial properties.
- Traffic Management within Springholm and Crocketford during construction and diversions through surrounding villages.
- Additional safety considerations for online construction adjacent to live traffic.
- Construction on/in proximity to areas of peat south-west of Crocketford.

Improvement Strategy 4

- Construction in proximity of Auchenreoch Loch.
- Construction on/in proximity to areas of peat south and east of Crocketford.

Improvement Strategy 5

- Construction in proximity of Auchenreoch Loch and Milton Loch SSSI.
- Construction on/in proximity to areas of peat south-east of Crocketford.

Improvement Strategy 6

- Construction over Urr Water.
- Realignment of the NCN7.

5. Environmental Assessment

5.1 Introduction

This section draws on the A75 Springholm and Crocketford DMRB Stage 1 Environmental Appraisal Report (EAR). The purpose of the EAR was to inform decision makers and designers on the environmental constraints and potential impacts associated with the six improvement strategies being considered at DMRB Stage 1.

5.2 Approach to Environmental Assessment

5.2.1 Previous Environmental Assessment

As discussed in the introduction, the A75 Trunk Road was considered as part of 'Recommendation 40' of STPR2, which focused on improving access to the Loch Ryan port facilities (Cairnryan). All STPR2 recommendations were assessed in the STPR2 Strategic Environmental Assessment (SEA). The STPR2 SEA Environmental Report was publicly consulted on alongside the STPR2 Final Technical Report between December 2022 and February 2023.

The A75 Trunk Road was also included in the SWestrans Regional Transport Strategy (RTS) under the following themes that were included in the RTS and assessed in the RTS SEA:

- Theme 4: Reducing the Impact of Transport on Our Communities. Priority i: Investigate the feasibility of bypasses for Crocketford and Springholm on the A75 as well as other communities on the A7, A75, A76, A77 and A709 including Dumfries.
- Theme 8: Supporting Safe, Effective and Resilient Connections to Loch Ryan and Other Strategic Sites. Priority ii) Enhancements to the strategic road network including the A7, A75, A76, A77 and A709 should be taken forward to improve safety, journey times, diversionary routes and improve access to key locations across the region.

The RTS SEA Environmental Report was published in Autumn 2022 for a 12 week consultation period. The RTS SEA Post Adoption Statement was published in June 2024.

5.2.2 Methodology

The STPR2 SEA and the SWestrans RTS SEA described in the section above are high level, with little data specific to the A75 Trunk Road. It was therefore agreed that an EAR should be produced, specific to the A75 Springholm and Crocketford Improvements at DMRB Stage 1 to enable a more informed understanding of the environmental sensitivities in proximity to the proposed scheme.

All environmental factors (for example noise and air quality) have been scoped in for assessment at DMRB Stage 1. An outline of the methodologies for each factor are reported within the EAR. These factors are aligned with DMRB LA 101 - Introduction to environmental assessment (revision 0), DMRB LA 103 - Scoping projects for environmental assessment (revision 1), and DMRB LA 104 - Environmental assessment and monitoring (revision 1). The EAR also follows guidance from DMRB TD 37/93 - Scheme Assessment Reporting.

The EAR describes baseline conditions, assessment methodologies, potential impacts, design, mitigation and potential enhancement measures, and provides a preliminary assessment of likely significant effects.

The EAR includes an appraisal for the following environmental factors:

- Air Quality
- Cultural Heritage
- Landscape and Visual
- Biodiversity
- Geology, Soils and Groundwater
- Material Assets and Waste
- Noise and Vibration
- Population and Human Health
- Road Drainage and the Water Environment
- Climate
- Cumulative Effects

For DMRB Stage 1, a high level, primarily desktop review approach was used for all environmental factors.

5.3 Findings

This section presents the findings from the EAR, detailing the key impacts of the identified improvement strategies on each of the environmental factors outlined in the previous section.

For the purpose of this environmental assessment, and to ensure a ‘worst case’ approach, the full improvement strategy width of 200 meters has been considered. However, on selection of improvement strategies to take forward to DMRB Stage 2 for route option development, it is recognised that some of the impacts identified could be avoided or reduced as the route options will likely not have a width of 200 metres, for example direct impacts on

listed buildings, Milton Loch Site of Special Scientific Interest. This will be acknowledged when undertaking the comparative assessment.

5.3.1 Air Quality

It is unlikely there will be exceedances of Air Quality Objectives (AQO) or Limit Values (LV) for human receptors, however, there is potential for significant effects at designated sites (for example ancient woodland) within 200m of the affected road network (ARN). Therefore, a simple DMRB assessment, based on DMRB LA 105 Air Quality (vertical barriers) (revision 0.1.0), should be undertaken at DMRB Stage 2 to assess the operational opening year impacts at designated sites within 200m of the ARN. A small number of human receptors close to the improvement strategies could also be assessed for illustrative purposes using a simple approach to show that concentrations at human health receptors will be significantly below the AQOs/LVs. It is proposed that a construction assessment is not undertaken until DMRB Stage 3.

5.3.2 Cultural Heritage

Table 5-1 shows the heritage assets that have potential to experience likely significant effects during construction of the proposed scheme. The table also shows a comparison of the numbers of heritage assets within each improvement strategy. At DMRB Stage 2, the location of these heritage assets will be taken into consideration during design development with the aim of avoiding or reducing impacts.

Table 5-1: Number of Cultural Heritage Assets Potentially Experiencing Likely Significant Effects during Construction for each Improvement Strategy

Likely Significant Adverse Effects	**Improvement Strategy 1**	**Improvement Strategy 2**	**Improvement Strategy 3**	**Improvement Strategy 4**	**Improvement Strategy 5**	**Improvement Strategy 6**
Number of Category B Listed Buildings potentially impacted	3	2	7	4	0	1
Number of non-designated Historic Buildings potentially impacted	2	0	9	1	4	2

Likely Significant Adverse Effects	Improvement Strategy 1	Improvement Strategy 2	Improvement Strategy 3	Improvement Strategy 4	Improvement Strategy 5	Improvement Strategy 6
Number of non-designated Archaeological Sites potentially impacted	1	6	2	2	3	3

At this stage, no significant impacts are anticipated during construction or operation to the Conservation Area or Scheduled Monuments.

Cultural Heritage assets are considered to be an irreplaceable resource and as stated in DMRB LA 106 - Cultural Heritage Assessment, the 'need for development' should be balanced against the requirement to 'protect and enhance our national cultural heritage resource' in line with national and local legislation, policy and good practice guidance.

5.3.3 Landscape and Visual

All six improvement strategies have been assessed with regards to their potential impacts on landscape and visual receptors. Each improvement strategy presents differing levels of potential impact to landscape and visual receptors. All improvement strategies would result in changes to the rural landscape character and views from residential properties, active travel routes, local roads and other locations within the surrounding landscape.

Improvement Strategy 3 would be likely to have the least adverse effects on the rural landscape and least visual effects on scattered rural properties of all the improvement strategies but the most significant effects on the townscape and visual receptors along the existing A75 within Springholm and Crocketford. Of the remaining (offline) improvement strategies, Improvement Strategy 4 would be likely to have the least adverse landscape and visual effects, followed by Improvement Strategies 2 and 5, then Improvement Strategy 1 and Improvement Strategy 6 likely to have the greatest adverse effects. Further details on the landscape and visual effects of each improvement strategy are summarised as follows.

Improvement Strategy 1

Improvement Strategy 1 would be likely to have a significant adverse effect on both landscape and visual receptors. Significant effects would result from permanent changes to the landform and pattern on high ground with several hills and surrounding topography permanently altered, impacts on the landscape pattern, severance and loss of woodland (including Ancient Woodland Inventory (AWI)), habitat corridors, green networks (including

along Urr Water and various minor watercourses) and boundary features including drystone walls together with the introduction of the new road infrastructure and traffic into the rural landscape. This improvement strategy would result in loss and severance of AWI woodlands and likely impacts on undulating landform north of Auchenreoch Loch. There is also potential for indirect effects (on views) of this option from Terregles Local Landscape Character Area (LLA). The length of the improvement strategy, its partly elevated position in the landscape and proximity to settlements including Brae, Kirkpatrick Durham, Old Bridge of Urr, Clarebrand, Crocketford and numerous individual properties to the north of the existing A75 would be likely to result in significant visual effects. The rural setting north of Auchenreoch Loch would be affected, with the visual receptors at The Inn on the Loch impacted, though there would be benefits on the south side of the loch from reduced traffic on the existing A75. This improvement strategy would result in beneficial landscape and visual effects along the existing A75 route including improved townscape and visual amenity within Springholm and Crocketford.

Improvement Strategy 2

Improvement Strategy 2 would be likely to have a significant adverse effect on both landscape and visual receptors. Significant effects would result from permanent changes to the landform and pattern on high ground with several hills and surrounding topography permanently altered, impacts on the landscape pattern, severance and loss of woodland (including AWI), habitat corridors, green networks and boundary features. The central section of this improvement strategy, which follows the same route as Improvement Strategy 1, would result in loss and severance of AWI woodlands and likely impacts on undulating landform north of Auchenreoch Loch. Residents of Kirkpatrick Durham, Brae and north facing properties in Crocketford and rural properties would be likely to experience adverse visual effects. The rural landscape north of Auchenreoch Loch would be affected, with the visual receptors at The Inn on the Loch impacted, though there would be benefits on the south side of the loch from reduced traffic on the existing A75. This improvement strategy would result in beneficial landscape and visual effects along the existing A75 route including improved townscape and visual amenity within Springholm and Crocketford.

Improvement Strategy 3

Improvement Strategy 3 is online and would therefore result in the least adverse effects on the rural landscape and visual effects on rural properties but would have significant adverse effects on the townscape and visual amenity within Springholm and Crocketford. Visual effects on residents, workers and visitors in the two villages during construction are likely to be significant, as a result of widening and potential demolition of properties along the existing A75. During operation, visual effects are likely to be significantly worse than those currently experienced, due to road widening and removal of existing screening features, including

buildings which currently screen the existing A75 from neighbouring areas, particularly as space for mitigation measures would be limited.

Improvement Strategy 4

Improvement Strategy 4 is considerably shorter than Improvement Strategies 1, 2, 5 and 6 and closer to the existing A75. This improvement strategy, which follows the lower valley slopes and valley floor avoiding hills and AWI woodland, and severing a relatively small number of field boundary features/green corridors would have less significant adverse landscape effects than Improvement Strategies 1, 2, 5 and 6, while providing improved townscape and visual amenity in the bypassed settlements of Springholm and Crocketford. However, it would potentially affect the landscape setting of a group of listed buildings at Newbank Mill. The reduction/removal of traffic on the existing A75 alongside Auchenreoch Loch would slightly improve the landscape setting of the loch and enhance visual amenity. There is the potential for significant effects on rural views currently experienced from residential properties in Springholm, Crocketford and Brandedleys Holiday Park.

Improvement Strategy 5

Improvement Strategy 5 is considered likely to have broadly similar overall levels of landscape and visual effects to Improvement Strategy 2, but with the most significant landscape and visual effects likely to result from the route crossing high ground of Barfil Hill, Cairny Hill, Longshot Hill and the northern slopes of Tan Hill. This improvement strategy would also result in changes to the landscape pattern and severance and loss of woodland, habitat corridors, green networks and boundary features. Visual receptors in Springholm, Crocketford and Hardgate as well as rural properties would likely be affected by views of this improvement strategy. The reduction/removal of traffic on the existing A75 alongside Auchenreoch Loch would improve the landscape setting of the loch and enhance visual amenity. This improvement strategy would result in beneficial landscape and visual effects along the existing A75 route including improved townscape and visual amenity within Springholm and Crocketford.

Improvement Strategy 6

Improvement Strategy 6 is the second longest and would likely have the most significant adverse effect to landscape and visual receptors south of the existing A75. Significant effects would result from permanent changes to the landform on high ground including several hills, impacts on the landscape pattern, severance and loss of woodland (including native woodlands), habitat corridors and green networks (including along Urr Water and various minor watercourses) together with the introduction of the new road infrastructure and traffic into the rural landscape. There is also potential for indirect effects (on views) of this improvement strategy from Terregles Local Landscape Character Area (LLA). The length of

the improvement strategy, its elevated position in the landscape and its proximity to numerous individual properties and several settlements, most notably Hardgate and Haugh of Urr, would be likely to result in significant visual effects. Parts of this improvement strategy run close to National Cycle Network (NCN) 7 so would likely have adverse visual effects on cyclists. This improvement strategy would result in beneficial landscape and visual effects along the existing A75 route resulting from reductions in traffic, including improved townscape and visual amenity within Springholm and Crocketford.

5.3.4 Biodiversity

A high level assessment of the improvement strategies in relation to biodiversity was undertaken. The proposed scheme, regardless of the improvement strategies selected, is likely to result in some adverse effects to biodiversity at a local level in relation to habitat loss and fragmentation, and the associated effects on notable and protected species.

Improvement Strategies 1 and 6 would likely have the greatest impact on biodiversity in general as they cover the greatest total area and both will involve construction of a river crossing over Urr Water, resulting in a greater potential impact on aquatic habitats and species. Improvement Strategy 1 is also likely to result in a greater loss of AWI which is considered to be irreplaceable habitat, compared to other improvement strategies.

Improvement Strategy 5 would also involve construction of a river crossing over Urr Water. In addition, Improvement Strategy 5 lies partially within Milton Loch Site of Special Scientific Interest (SSSI), therefore, construction and operation of the proposed scheme may directly and indirectly impact the SSSI. Improvement Strategy 5 also covers the largest area of woodland recorded in the Native Woodland Survey of Scotland (NWSS) of all improvement strategies.

As all six improvement strategies are in relatively close proximity to each other, the protected and notable species present are likely to be similar across all improvement strategies, provided habitat across the improvement strategies is similar. The proposed scheme may provide minor beneficial effects to biodiversity if habitat enhancement is employed beyond the level required for mitigation. Field surveys will be required at DMRB Stage 2 to provide further information on the habitats and species likely to be impacted by the proposed scheme.

5.3.5 Geology, Soils and Groundwater

A range of baseline data has been reviewed and used to identify relevant geology, soils and groundwater receptors. The receptors identified for the improvement strategies are agricultural soils, human health, groundwater and surface waters.

In accordance with relevant industry guidance, an assessment was undertaken on the potential effects on these receptors from the implementation of the proposed scheme and their potential significance. The following significant effects were identified for all improvement strategies unless otherwise stated:

- Physical removal or permanent sealing of agricultural land and/or peat.
- Reduction or loss of soil function(s) due to stripping, handling and storage, through mechanisms such as compaction or erosion.
- Potential mobilisation of contamination and/or surface water runoff into Milton Loch SSSI (Improvement Strategy 5 only).
- Spills and leaks of construction runoff could impact groundwater quality.
- Routine road runoff discharge or spills and leaks increase the risk of pollution.

In conclusion, potential significant effects were similarly identified across all improvement strategies. With the exception of Improvement Strategy 5 where additional potential significant effects were identified for surface water due to its proximity to Milton Loch SSSI.

The risk of potential significant effects being realised is highest for Improvement Strategies 1 and 6 as they cover the greatest total area. Improvement Strategy 5 is the next most likely to have significant effects due to its length and proximity to Milton Loch SSSI, followed by Improvement Strategy 2, then Improvement Strategy 4 and 3 due to their smaller total areas.

The identified effects on soils are due to land take and would need to be mitigated through route optioneering or future design mitigation measures.

5.3.6 Material Assets and Waste

At this stage, all improvement strategies have been assessed to have similar significance for adverse effects. All improvement strategies are likely to have moderate and significant effects on regional and Scotland-wide waste receptors and are likely to have large and significant effects on regional material asset and mineral safeguarding area receptors.

As is proportionate at DMRB Stage 1, estimated quantities for materials required and waste generated from the proposed scheme have not been taken into consideration. Assumptions have been made based on approximate improvement strategy lengths and indicative maximum number of new major structures required. Table 5-2 summarises the outcome of this assessment, using a ranking from 1st (likely to have the most significant effect) to 6th (likely to have the least significant effect).

Table 5-2: Likely Significance of Effect of Material Assets and Waste from Improvement Strategies

Improvement Strategy	**Likely Significance of Effect of Material Assets and Waste (Ranked in Order From Most to Least)**
Improvement Strategy 1	1st
Improvement Strategy 6	2nd
Improvement Strategy 2	3rd
Improvement Strategy 5	4th
Improvement Strategy 4	5th
Improvement Strategy 3	6th

However, due to the high level nature of information available at this stage, Table 5-2 does not account for the potential effects of demolition waste as a result of the proposed scheme. This will need to be assessed in further stages of assessment in order to gain clarity on the effects of construction, excavation and demolition waste generated by the proposed scheme.

5.3.7 Noise and Vibration

It is likely that the construction phase would result in some temporary significant adverse effects for some noise sensitive receptors close to the construction works for any of the improvement strategies. Significant adverse effects can usually be mitigated through the implementation of a Construction Environmental Mitigation Plan (CEMP). Construction phase impacts and effects will be considered in more detail at DMRB Stage 2 and 3.

The operation phase would result in changes in road traffic noise for noise sensitive receptors, depending on their location relative to the proposed scheme. The overall effects are likely to be similar whichever improvement strategy is selected, although Improvement Strategy 3 is less likely to result in any significant beneficial effects. Operational phase impacts and effects will be considered in more detail at DMRB Stage 2 and 3.

5.3.8 Population and Human Health

The population and human health assessment focuses on land take, accessibility and health impacts on communities and receptors. All improvement strategies potentially involve land take that could impact on residential, agricultural, commercial and community receptors and could result in likely significant effects. Improvement Strategy 3, which largely involves online improvements, could result in likely significant effects for receptors adjacent to the road, arising from construction activities and operational traffic, but could involve less total land

take than the other improvement strategies. The improvement strategies that involve creation of offline road space (1, 2, 4, 5, and 6) may have fewer accessibility impacts for communities through construction and operation as the existing road infrastructure could be utilised; however, community severance could be an issue.

For human health, all improvement strategies have the potential to result in a change to health determinants related to air quality, noise, pollution, landscape amenity and severance/accessibility. Construction traffic and activities have the potential to increase dust and noise and vibration and result in temporary disruption in access to facilities relied upon for health (for example medical facilities). During operation, an increase in traffic could result in an increase in air and noise pollution, which could particularly impact on vulnerable populations (for example children and the elderly). Land take could result in permanent changes in access to community assets relied upon for physical activity and social cohesion (for example green/open space). Outputs of the relevant environmental assessments have been considered and at this stage, it is concluded that it is not possible to differentiate between improvement strategies in terms of likely significant effects on health outcomes. It is noted that likely significant effects are dependent on design and mitigation that is yet to be determined.

5.3.9 Road Drainage and the Water Environment (RDWE)

The RDWE assessment reviewed a range of baseline data to identify relevant surface water, hydromorphology and flood risk receptors. The assessment was undertaken in accordance with relevant industry guidance to identify the potential effects on these receptors and their significance from the implementation of the proposed scheme. Table 5-3 shows the potential significant effects identified (pre-mitigation) for the sub-elements of the RDWE assessment.

All sub-elements of the RDWE DMRB Stage 1 Assessment have been scoped in for both the construction and operation phases, and will be assessed as part of DMRB Stage 2. Surface water supply has not been assessed due to the high level information available at this stage in the process. This sub-element has been retained for full assessment at a later stage.

Table 5-3: Scope of the RDWE Assessment for DMRB Stage 1

Sub-element	**Effect Identified (Construction Phase)**	**Effect Identified (Operational Phase)**	**Improvement Strategy**	**Potential Significance of Effect (pre-mitigation) (Construction and Operational phases)**
Surface water quality	Release of fine sediments and pollutants from construction runoff and other construction activities (for example use and fuelling of plant, runoff from stockpiles and stripped land).	Polluted runoff/accidental spillages from new road surfaces entering the road drainage system and entering into watercourses.	All improvement strategies	Large or Very Large
Hydromorphology	Temporary alterations to the bed and banks of watercourses and release of sediment during construction with the potential to alter morphological features, sediment dynamics and flow dynamics.	Operation of culverts, bridges and outfalls, representing changes to the morphological condition, sediment dynamics and flow dynamics of the watercourse.	▪ 1 ▪ 2 ▪ 3 ▪ 4 ▪ 5 ▪ 6	▪ Large or Very Large ▪ Moderate or Large ▪ Moderate or Large ▪ Moderate or Large ▪ Large or Very Large ▪ Large or Very Large

Sub-element	Effect Identified (Construction Phase)	Effect Identified (Operational Phase)	Improvement Strategy	Potential Significance of Effect (pre-mitigation) (Construction and Operational phases)
Flood risk	Temporary decreases in floodplain storage and displacement of flood water.	Decrease in floodplain storage and displacement of flood water.	All improvement strategies	To be determined at later design stage
Flood risk	Compaction of land to create level surfaces leading to changes in infiltration rates and increased runoff rates.	Increases in runoff rates due to increases in impermeable areas.	All improvement strategies	To be determined at later design stage
Flood risk	Alteration of below ground level flows potentially leading to groundwater flooding elsewhere.	Alteration of below ground level flows potentially leading to groundwater flooding elsewhere.	All improvement strategies	To be determined at later design stage
Flood risk	Potential for in-channel works in areas of flood risk	Alteration of below ground level flows potentially leading to groundwater flooding elsewhere.	All improvement strategies	To be determined at later design stage

The identified effects on RDWE as presented in Table 5-3 are those considered without mitigation. Some of these effects would be mitigated using the measures outlined in the Road Drainage and the Water Environment Chapter of this EAR. At later design stages, as more detailed design information becomes available, additional mitigation measures, including embedded mitigation, may be required to reduce any potential effect as far as reasonably practicable.

5.3.10 Climate

A high level qualitative assessment of the improvement strategies has been undertaken at DMRB Stage 1 as summarised in Table 5-4. This is due to limited design and traffic data which is a common constraint at this early stage of the process. Improvement Strategy 1 is entirely offline, crosses Urr Water and would likely require the most new major structures. It is therefore likely to require more construction works (and would likely result in higher construction GHG emissions) than the other improvement strategies. Improvement Strategy 3, which is online, would not require as many new major structures to be constructed as most other improvement strategies and is likely to result in the least construction and associated GHG emissions.

Due to the broadly defined nature of the improvement strategies, the numbers of retaining walls, culverts and minor bridges (expected length of less than 20m) have not been included in Table 5-4. Minor structures will be assessed at DMRB Stage 2.

Table 5-4: High-level qualitative assessment

Improvement Strategy	Approximate Length (km)	Crosses Urr Water	Indicative Number of New Major Structures
Improvement Strategy 1	19.0	Yes	4
Improvement Strategy 2	12.4	No	2
Improvement Strategy 3	5.4	No	1
Improvement Strategy 4	6.0	No	2
Improvement Strategy 5	11.0	Yes	1
Improvement Strategy 6	17.2	Yes	3

The likely receptors related to the proposed scheme's vulnerability to climate change were identified in the Climate chapter of the EAR along with their vulnerable elements and the likely impacts for the relevant climate events. The types of receptors are not expected to differ considerably between the improvement strategies as many of the receptor types are

common to them all, with the exception of those with major water crossings (for example bridges).

As all six improvement strategies are in relatively close proximity to each other, the climate conditions currently, or projected to be, experienced in the study area are considered to be the same for each improvement strategy. Therefore, in terms of direct exposure to adverse weather conditions, all the receptors, regardless of the improvement strategy, are considered to be at a similar risk, with the exception of those with major water crossing (for example bridges), which would be at a higher risk. Therefore, at DMRB Stage 2 further work is required to inform the selection process for a preferred route option.

5.3.11 Cumulative Effects

The cumulative effect assessment identified that the following receptors may be subject to combined effects:

- Residents in close proximity to the improvement strategies.
- Users of community facilities.
- Public open spaces.
- Public Rights of Way (PRoW).
- Agricultural land holdings.
- Peatland.

There have been no major developments identified that would contribute to cumulative effects. Land allocated for development by Dumfries and Galloway Council through the Local Development Plan (LDP2) was recorded within 2km of the improvement strategies. All 11 of the allocations are situated within the 2km of Improvement Strategies 1 and 6. This means that Improvement Strategy 1 and 6 are likely to have the largest potential for cumulative effect on the surrounding area, given the number of allocations. The list of developments and allocations will be reviewed at DMRB Stage 2.

5.4 Summary

Of all the environmental factors included as part of the EAR, only Air Quality concluded at this stage that the proposed scheme is likely to have no significant effects.

The following environmental factors reported the potential for likely significant (adverse) environmental effects:

- Landscape and Visual - changes to the rural landscape character and views from residential properties, active travel routes, local roads and other locations within the surrounding landscape.
- Biodiversity - habitat loss and fragmentation and loss of protected species.
- Geology, Soils and Groundwater – disturbance and runoff of contaminants, loss of agricultural land and or peat, reduction or loss of soil function(s), groundwater contamination and impacts to groundwater levels.
- Material Assets and Waste – potential impacts to regional material assets and mineral safeguarding area receptors.
- Noise and Vibration – temporary construction noise may impact sensitive receptors in the surrounding area.
- Road Drainage and Water Environment – potential for likely significant effects was reported in relation to surface water quality, hydromorphology and flood risk.
- Climate – Increase in GHG emissions dependent on improvement strategy selected and the vulnerability of the proposed scheme to climate change as all improvement strategies will be impacted equally by extreme weather conditions.

The potential effects identified are based on a worst case, high level, desktop review. It is expected that through design development and implementation of mitigation measures at subsequent DMRB stages that the scale and significance of effects could be reduced.

6. Traffic and Economic Assessment

6.1 Introduction

The A75 Trunk Road between Drummore and Allanton roundabouts experiences Annual Average Daily Traffic (AADT) flows of approximately 9,000 vehicles a day based on the most recent full year of data available. Traffic volumes are highest east of the assessment corridor, with 10,700 vehicles recorded between Garroch and Drummore roundabouts in 2024. A gradual decrease is observed heading west with 9,300 vehicles a day (for 2023 as more recent data at this site was not available) in Crocketford and 9,000 vehicles a day south of Springholm. Further west outwith the assessment corridor, traffic volumes reduce further, with approximately 6,200 vehicles a day recorded in 2024 south of Allanton Roundabout.

The A75 Trunk Road is an important freight route within Scotland and both overall traffic levels and HGV traffic can increase significantly in relation to the ferry arrivals and departures to and from the ports at Cairnryan. Freight movement along the A75 is crucial to the local, regional and national economies and the transfer of goods between Northern Ireland, Scotland, and England. HGV traffic accounts for approximately 13% to 16% of the total traffic levels within the assessment corridor.

Safety on the A75 Trunk Road within the assessment corridor has been identified as an ongoing concern. Although the overall accident rate is slightly higher than the national average for equivalent non built-up roads, the proportion of serious accidents is lower than the national average. However, the rate of fatal accidents is slightly higher than the national average. There has been a relatively consistent level of personal injury accidents on the A75 over the last few years.

Due to the mix of vehicles using the route including HGVs, caravans, and agricultural vehicles, there is a relatively wide range of vehicle speeds. There are various locations along the A75 Trunk Road where slower-moving vehicles can cause delays, particularly on rural single carriageway sections where the national speed limit applies and limits HGVs to 40mph.

When incidents or planned maintenance occur on the A75, the recommended diversion routes are often via minor roads that pass through small villages and can result in significantly longer journey distances and increased travel times. The recommended diversion route for the assessment corridor, between Garroch Loaning (U225) and Haugh of Urr Road End (B794), adds approximately 9km of additional distance travelled compared to using the A75. Between 2018 and 2024, this section experienced 11 incidents resulting in either a lane or full road closure.

6.2 Baseline Traffic Conditions

6.2.1 Traffic Data

As previously explained in the Traffic and Safety Characteristics section of the Existing Conditions chapter of this report , AADT flows along the A75 have been determined using Automatic Traffic Counter (ATC) data obtained from Transport Scotland's National Traffic Data System (NTDS), with the assessment corridor between Drummore and Allanton Roundabouts containing two permanent ATC sites. Three further ATC sites are situated outside the assessment corridor; one east of Drummore Roundabout, another east of Garroch Roundabout and the third south of Allanton Roundabout. These five sites each provide data with varying degrees of reliability.

The ATC located in Crocketford (JTC00375) recorded 64% data coverage for 2024, missing data for most of January and from September through to the end of December. As the months missing data include the typically lowest traffic volumes, it was determined that the AADT flow recorded for 2024 would not be representative of typical conditions. Consequently, 2023 data has been utilised as the next best year with sufficient coverage to provide a representative AADT. The 2023 AADT at the site in Crocketford was 9,300 vehicles. The most reliable data is reported from a counter situated approximately 2km south of Springholm (ATC115321), which achieved 100% coverage for 2024 and recorded an AADT of 9,000 vehicles.

The three additional ATCs are located outside the assessment corridor and beyond more major junctions that impact on traffic flows. The counter east of Drummore Roundabout (ATCSW022) reports an AADT of 10,700 vehicles for 2024. However, this counter has a low level of data reliability, with only 40% coverage for 2024, with complete data only available for September, October, and December. Due to the absence of alternative years with greater coverage, the average of September and October has been utilised, as both months are typically representative of the full year. Data has also been collated from a traffic counter east of Garroch Roundabout (ATC09036). This site reported an AADT of 16,000 vehicles for 2024. The other is located south of Allanton Roundabout on the Castle Douglas Bypass (ATC09015) and reported an AADT of 6,200 vehicles for 2024.

While these locations lie outside the assessment corridor, they provide context for understanding traffic flow variations along the wider A75 Trunk Road. Garroch Roundabout serves as a key access point for significant attractor sites, including Dumfries and Galloway Royal Infirmary, with increased traffic flows between this junction and Dumfries. Similarly, the Allanton Roundabout functions as an access point for the A745, one of the main routes into Castle Douglas to the east.

Figure 6-1 illustrates the varying traffic levels along the length of the route, including the three traffic counters highlighted above that lie outwith the assessment corridor. The AADT traffic flows at various locations are also shown in Appendix A, Figure A6-1. The analysis presented in Figure 6-1 considers both the 2024 counts, where available, as well as the previous seven years (2018-2024). Each column on the graph represents where counts are available for that specific year and location. Columns have been included for counters with incomplete records, such as the A75 Crocketford site, utilising all available data for that year. While these figures may not fully represent annual trends in AADT, they have been incorporated to provide additional context. Where no data is available for a year, no column is present in Figure 6-1.

The general trend along the route indicates that traffic increased slightly between 2018 and 2024 in three of the four locations which recorded sufficient data in both years. The section east of the Garroch Roundabout consistently recorded the highest levels of traffic, with volumes generally decreasing heading west towards the Allanton Roundabout. A notable decrease in traffic was observed across all locations in 2020, likely due to the COVID-19 travel restrictions, followed by some evidence of traffic volumes recovering back to similar pre-COVID levels in the subsequent years. The section east of the Garroch Roundabout experienced a significant increase of almost 50% from 2020 to 2024, though overall traffic decreased from approximately 17,000 vehicles in 2018 to approximately 16,000 vehicles in 2024. Within the assessment corridor, flows at Crocketford increased from approximately 8,800 vehicles in 2018 to approximately 9,300 vehicles in 2023, an increase of 5.7%, with the traffic flow of 9,800 vehicles in 2024 an 11.4% rise over the 2018 flow, though the 2024 data is not based on a full year. Flows at the traffic counter south of Springholm decreased by 6.3% from approximately 9,600 vehicles in 2018 to approximately 9,000 vehicles in 2024.

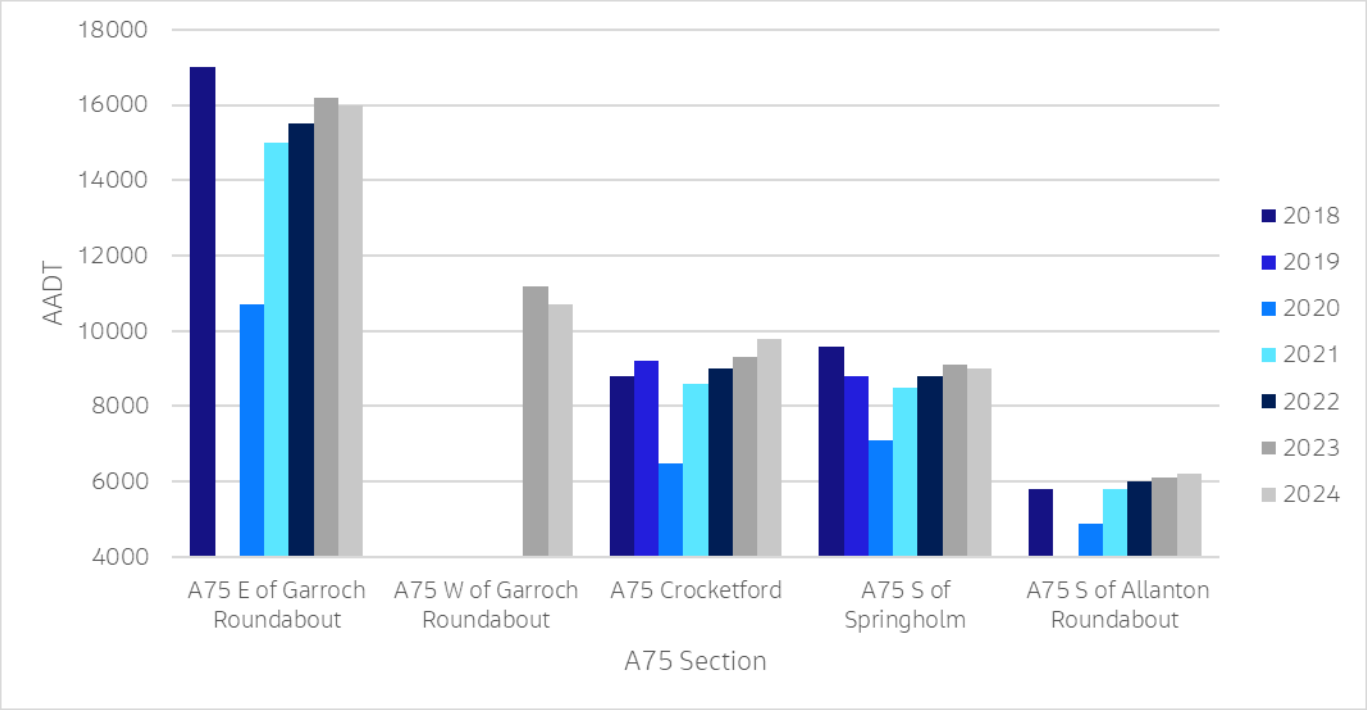


Figure 6-1: AADT Traffic along the A75 Trunk Road (between E of Garroch Roundabout and S of Allanton Roundabout)

Figure 6-2 shows the average daily traffic volume at the NTDS site locations in Crocketford and to the south of Springholm, based on the latest year of complete data that is available at the count sites. The data has been analysed to determine separate weekday and weekend profiles. The data reveals a typical weekday morning peak occurring at 08:00, followed by relatively consistent traffic volumes throughout the day until the weekday afternoon peak is observed between 15:00 and 17:00, with a subsequent decrease in traffic flow after 17:00. Weekend traffic volumes demonstrate a different pattern, with a slower build-up to the morning peak occurring later, around 11:00 and an afternoon peak at 15:00. The traffic flow profiles between the Crocketford and the south of Springholm count locations are very similar.

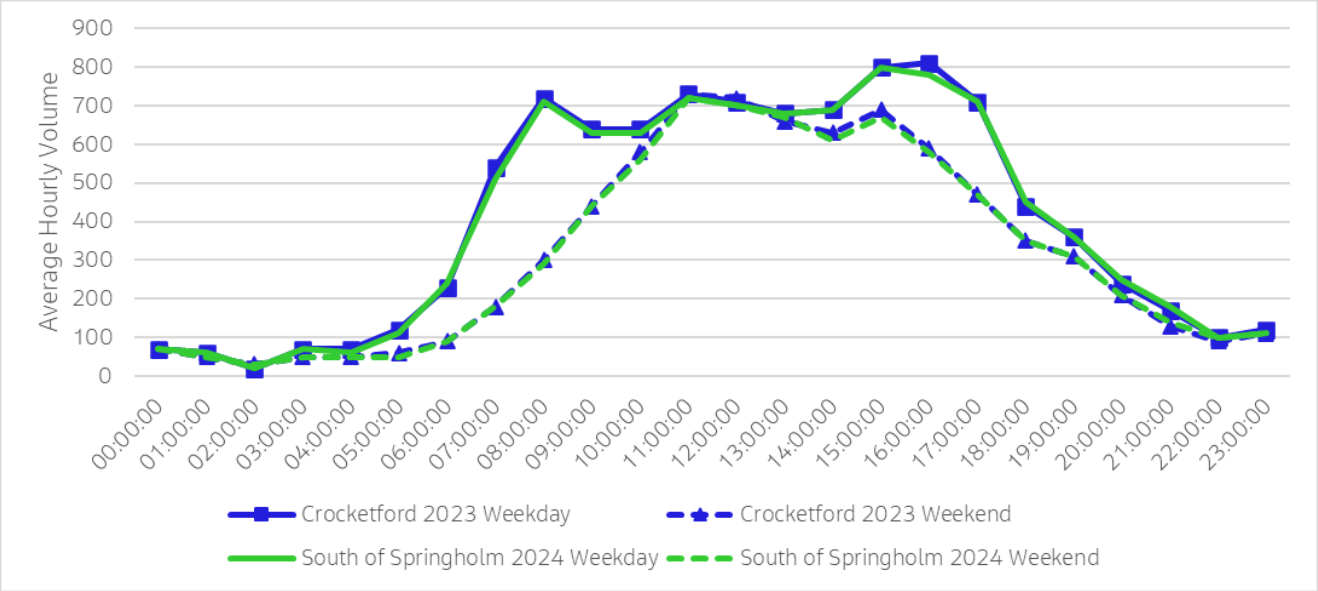


Figure 6-2: Daily traffic variations

6.2.2 Traffic Composition and Characteristics

Further analysis of the ATC data has been undertaken to identify vehicle classification and speed distributions, as presented in Table 6-1. Due to data availability constraints at the counter in Crocketford, 2019 is the most recent year for which detailed vehicle classification data by direction is available and was used to establish baseline speed and class statistics. For this reason, the dates used in this analysis and presented in Table 6-1 are not consistent with the years used in the volumetric analysis presented in the Traffic Data section in the Existing Conditions chapter of this report. The proportion of Heavy Goods Vehicles (HGVs) range between 12% and 16% of the total traffic volume. Average speeds were recorded at just over 50mph on the A75 south of Springholm, with significantly lower speeds of between approximately 25mph and 28mph in Crocketford. Only marginal differences in speed and HGV percentages were recorded between the eastbound and westbound directions.

Table 6-1: Traffic composition and characteristics

Location	Eastbound	Westbound
Daily Percentage HGV south of Springholm (2024)	14%	13%
Daily Percentage HGV Crocketford (2019)	16%	16%
Mean Speed (mph) south of Springholm (2024)	53	52

Location	Eastbound	Westbound
Mean Speed (mph) Crocketford (2019)	25	28

6.2.3 Seasonal Variation

Figure 6-3 illustrates the average daily traffic volume for each month recorded at the Crocketford and south of Springholm traffic counters, using the most recent year with complete data. The monthly traffic volumes show some seasonal variation in traffic patterns on the existing A75, with noticeably higher volumes evident during the summer months, peaking in August. Springholm experiences a peak of 10,900 vehicles in August, while Crocketford reaches 10,400 vehicles, representing increases of 21% and 12% over the AADT of 9,000 vehicles and 9,300 vehicles, respectively. These summer peaks likely reflect increased tourism and holiday travel in the region, including travel to and from Northern Ireland. Conversely, winter months, particularly December and January, show the lowest traffic volumes, with Springholm's January count of 7,600 vehicles and Crocketford's 7,400 vehicles significantly below the AADT.

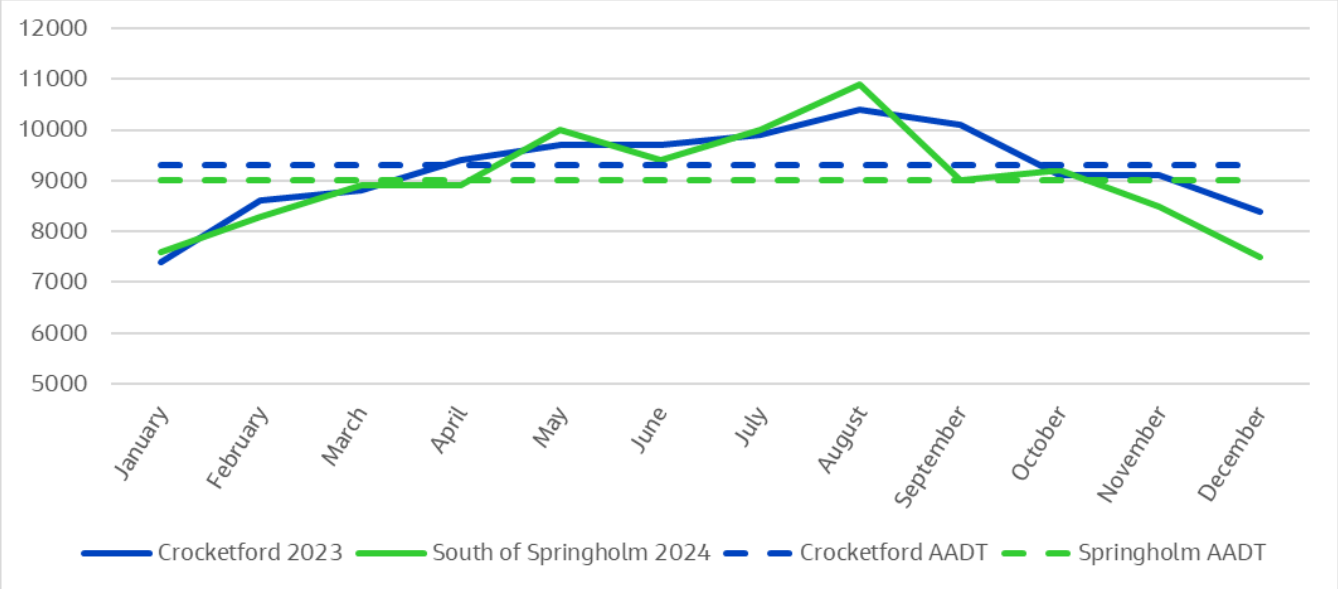
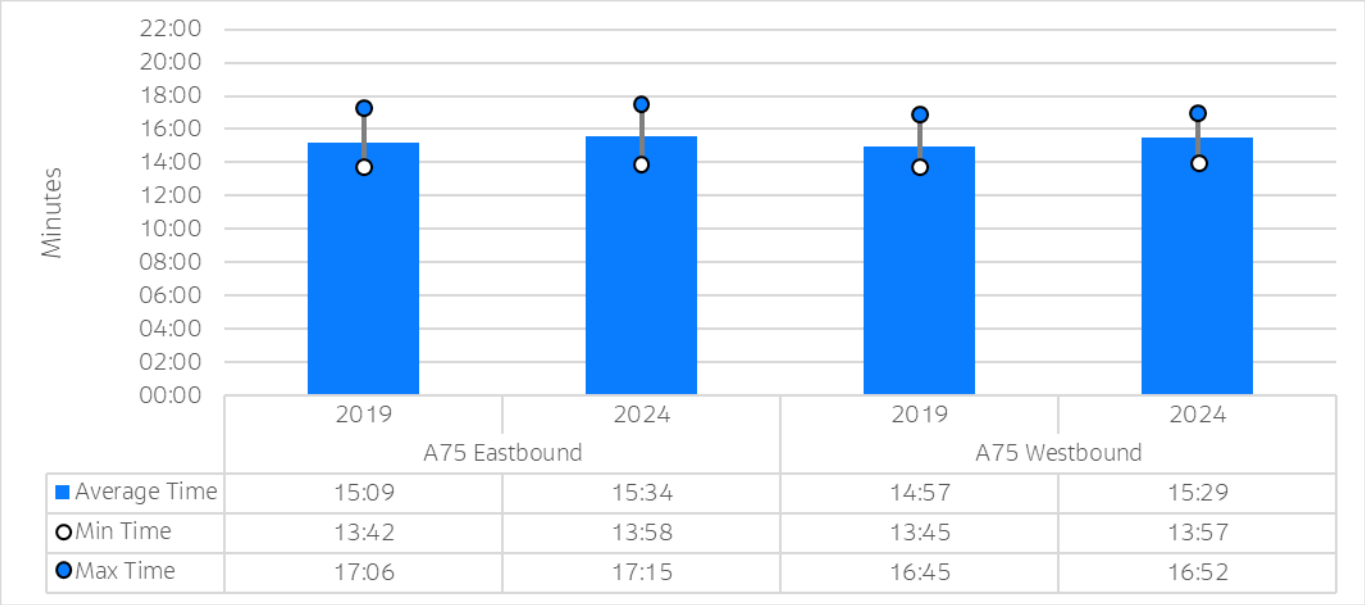


Figure 6-3: Monthly traffic variations

6.2.4 Journey Times

Journey times on the A75 Trunk Road have been evaluated for the assessment corridor between the Drummore and Allanton Roundabouts using data obtained through INRIX for 2019 and 2024. Figure 6-4 shows the comparison of the daily average (weekday & weekend) eastbound and westbound journey times for 2019 and 2024, as well as the daily average minimum and maximum journey times.

Analysis of this data reveals marginal differences in journey times between 2019 and 2024 for both directions. Changes in average journey times are less than one minute, with a similar degree of variation in maximum and minimum journey times. These small differences suggest that journey times along this section of the A75 have remained relatively stable over the five-year period. The average journey time across the entire day is approximately 15 minutes and 30 seconds in the eastbound direction and 15 minutes in the westbound direction.



	A75 Eastbound 2019	A75 Eastbound 2024	A75 Westbound 2019	A75 Westbound 2024
Average Time	15:09	15:34	14:57	15:29
Min Time	13:42	13:58	13:45	13:57
Max Time	17:06	17:15	16:45	16:52

Figure 6-4: A75 Journey Times

Given this similarity, the subsequent analysis focuses solely on the 2024 daily traffic profile, providing a representative view of current conditions. Figure 6-5 shows the average journey time by time of day for both the eastbound and westbound directions, and presented for weekday and weekend periods.

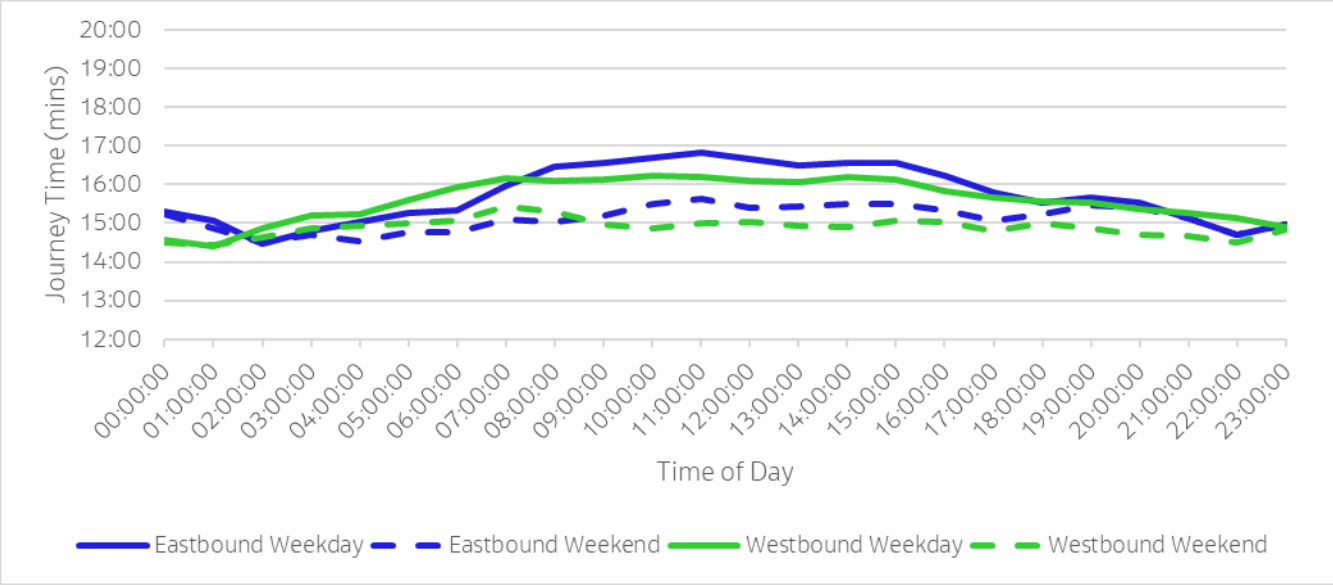


Figure 6-5: Average journey times by hour (2024)

Journey times eastbound typically increase around 07:00 in the morning, correlating with the observed rise in AADT on the assessment corridor. The journey time increases until reaching a maximum peak around 11:00 before gradually decreasing as the day progress. Westbound weekday journey times exhibit a comparable pattern, albeit with an earlier onset of increased travel times, beginning at approximately 05:00, and then maintaining a relatively steady journey time throughout the day. In contrast, weekend journey times display a generally flatter profile in both directions with lower maximum journey times in both directions than the equivalent average weekday.

The average journey time across the weekday is approximately 15 minutes and 45 seconds eastbound and 15 minutes and 35 seconds westbound. This average decreases by between 50 seconds eastbound and 25 seconds westbound during weekends.

Further analysis of average daily journey times for 2024 on a monthly basis has been undertaken. Despite the observed increase in AADT during summer months, which typically suggests seasonal traffic fluctuations, there appears to be no significant adverse impact on journey times. As illustrated in Figure 6-6, journey times remain relatively consistent at approximately 15 minutes and 30 seconds in both the eastbound and westbound direction throughout the year.

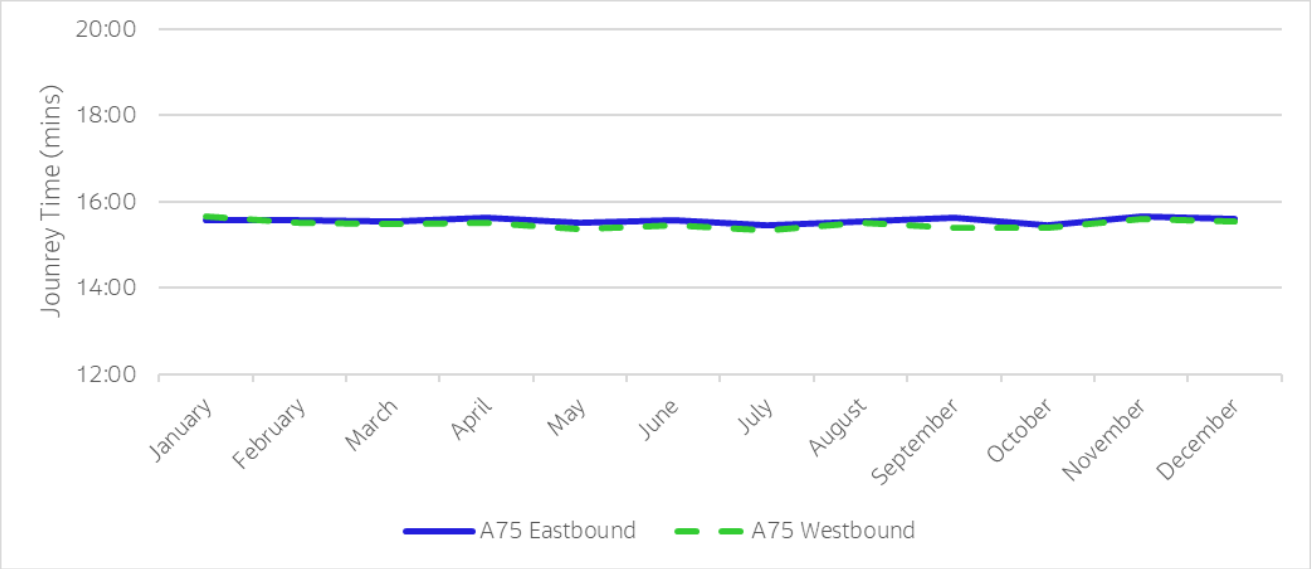


Figure 6-6: Average journey times by month (2024)

6.2.5 Accident Data

Transport Scotland has provided recorded personal injury accident data for the full A75 Trunk Road from Gretna to Stranraer covering the period from 2012 to 2024. Although accident data for a minimum five year period is typically used in accident analysis, the data was requested over this longer period to allow for analysis of the pre- and post-COVID pandemic accident trends. This approach was adopted due to the likely atypical travel behaviours experienced during periods in 2020 and 2021 when travel restrictions were in place in response to the pandemic, and data from 2020 and 2021 has been excluded as part of the analysis.

Table 6-2 summarises the accident data for the A75 Trunk Road and presents the number of recorded accidents by severity for the period from 2014 to 2023. It includes the proportion of accidents by severity for the A75 Trunk Road and compares this to the national average severity proportions for all non built-up Trunk A roads in Scotland, derived from the most recent national statistics published in the Reported Road Casualties Scotland 2023. Note that Reported Road Casualties Scotland 2023 only includes accident severities per road class for the period between 2014 and 2023. For reference, 'non built-up' roads have posted speed limits over 40mph.

The table also presents the accident numbers by severity for the entire period from 2014 to 2023 excluding 2020 and 2021, and the five year period from 2017 to 2023 excluding 2020 and 2021.

Table 6-2: A75 Trunk Road Accident Severity 2014 -2023

Period	Fatal	Serious	Slight	Total	Fatal (%)	Serious (%)	Slight (%)
A75 2014-2023	18	87	243	348	5%	25%	70%
A75 2014-2023 (Excluding 2020-2021)	15	69	216	300	5%	23%	72%
A75 2017-2023 (Excluding 2020-2021)	8	51	130	189	4%	27%	69%
National (Non-Built Up Trunk A Roads) 2014-2023	380	2430	3667	6477	6%	38%	57%
National (Non-Built Up Trunk A Roads) 2014-2023 (Excluding 2020-2021)	327	2093	3236	5656	6%	37%	57%
National (Non-Built Up Trunk A Roads) 2017-2023 (Excluding 2020-2021)	190	1217	1623	3030	6%	40%	54%

*Note that serious accidents include accidents that were classified as very serious, moderately serious and less serious from 2019 onwards.

Analysis of accident data for the A75 Trunk Road from 2014 to 2023 reveals that approximately 5%, 25%, and 70% of accidents were classified as fatal, serious, and slight, respectively. Excluding COVID-impacted years (2020 and 2021) for the same period, the data shows a small decrease in serious accidents and a corresponding increase in slight accidents, while the proportion of fatal accidents remains consistent.

Compared to the national severity rates for the same period, the A75 data indicates a similar proportion of fatal accidents. However, there is a lower proportion of serious accidents on the A75 compared to the national level for equivalent roads, with 13% fewer serious accidents for the A75 from 2014 to 2023 compared to the national non built-up Trunk A Road average for 2014 to 2023.

For the 2017 to 2023 period (excluding COVID impacted years of 2020 and 2021), the A75 shows a slightly higher proportion of serious accidents (27%) compared to the longer-term

period from 2012 to 2024 (23%), although this is lower than the national level for the same period (40%).

Accident rates have also been calculated for the full A75 route between Gretna (to/from the A74(M) Slip Road) and Stranraer (to/from the A75/A77 Innermessan junction) subject to speed limits over 40mph, as well as separately for the two sections of A75 through Crocketford and Springholm which are subject to a 30mph posted speed limit. Both calculations have utilised the longer time period of 2012-2024 to allow for a more comprehensive examination of longer-term accident trends. These rates have been compared to the equivalent national rates for built-up and non built-up Trunk A Roads, where built-up roads have a speed limit of up to 40mph and non built-up roads have a speed limit of over 40mph. The national level built-up Trunk A Road rates have been compared to the sections of the A75 that are subject to a 30mph limit through Crocketford and Springholm, and non built-up Trunk A Road rates used for the full A75 route excluding the two villages.

Table 6-3 and Table 6-4 provides the accident rates for the full A75 route (excluding the two villages) and the 30mph sections through Crocketford and Springholm respectively, compared to the national average for equivalent trunk A roads. The accident rates are expressed as Personal Injury Accidents per Million Vehicle Kilometres (PIA/MvKM). This metric allows for a standardised comparison of accident rates across the A75 Trunk Road sections with the equivalent national averages, and takes account of the number of PIAs and the volume of traffic on each road segment, with rates also calculated for the pre- and post-COVID periods. The ratio of the local rate to the national rate is included in each table to identify where the local rate is higher than the national rate i.e. has a ratio greater than 1.0. Note that the national accident rate is only currently available to the end of 2023; however, this does not materially impact the comparison ratio shown.

Table 6-3: A75 Trunk Road Full Route Accident Rates

Period	**A75 Accident Rate (PIA/MvKM)**	**National Non Built-Up Trunk A Road Accident Rate (PIA/MvKM)**	**Local/National Accident Rate Ratio**
2012-2024	0.085	0.080	1.1
2012-2024 (Excluding 2020-2021)	0.088	0.085	1.0
2012-2019 (Pre-COVID)	0.091	0.093	1.0
2018-2024 (Excluding 2020-2021)	0.079	0.064	1.2
2022-2024 (Post-COVID)	0.082	0.055	1.5

The ratio for the A75 route for the 2012 to 2024 period is 1.1 indicating that the accident rate calculated for the A75 is higher than the national rate for equivalent roads. In the pre-COVID period (2012-2019), the ratio was 1.0, indicating parity with the national rate. However, the period of 2022 to 2024, after the travel restrictions imposed during COVID-19 pandemic were lifted (post COVID-19) shows a marked increase, with the ratio rising to 1.5 albeit this is over a shorter three year time period. The most recent five year period (2018-2024, excluding 2020-2021) has a calculated a ratio of 1.2, again indicating that the local accident rate calculated for the A75 is higher than the equivalent national rate.

Table 6-4: A75 Trunk Road 30mph sections Springholm and Crocketford accident Rates

Period	**Crocketford Accident Rate (PIA/MvKM)**	**Springholm Accident Rate (PIA/MvKM)**	**National Built-Up Trunk A Road Accident Rate (PIA/MvKM)**	**Crocketford/ National Accident Rate Ratio**	**Springholm/ National Accident Rate Ratio**
2012-2024	0.096	0.086	0.134	0.7	0.6
2012-2024 (Excluding 2020-2021)	0.111	0.099	0.147	0.8	0.7
2012-2019 (Pre-COVID)	0.077	0.082	0.167	0.5	0.5
2018-2024 (Excluding 2020-2021)	0.119	0.087	0.077	1.5	1.1
2022-2024 (Post-COVID)	0.194	0.146	0.065	3.0	2.2

The long-term trend (2012-2024) shows that the local accident rate for the 30mph sections of the A75 in both villages has a ratio of less than 1.0 and thus the local accident rates are lower than the national average. The trend is similar when excluding the COVID-affected years where again with ratios less than 1.0 the local accident rates are lower than the equivalent national accident rates.

However, when considering the recent year time periods, the pattern changes and suggests the accident rate on the A75 in the villages is greater than the national rate for equivalent built-up trunk A roads. For the five year period from 2018 to 2024 (excluding 2020 and

2021), the calculated ratios for the 30mph sections of the A75 within both villages are higher than 1.0 indicating that the local accident rates on these sections of the A75 are higher than the national average accident rates. The shorter three year post-COVID period (2022-2024) shows the highest ratios indicating local rates on these sections of the A75 that are up to three times higher than the equivalent national rates.

The locations of the recorded accidents on the A75 within and in the immediate vicinity of the assessment corridor for the five year period from 2018 to 2024 (excluding 2020-2021) are shown in Appendix A, Figure A6-2.

6.3 Public Transportation and Ferry Provision

6.3.1 Bus Services

There are several bus services in operation in the settlements along the A75. The A75 between Stranraer and Dumfries is covered by the Stagecoach West Scotland 500 bus service, stopping at most of the towns and villages along the route including Springholm and Crocketford. To traverse the entire A75, passengers must connect to the service 79 bus at Dumfries to continue their journey to Gretna. In addition, Stagecoach operates services 75 and 416 providing connections between Newton Stewart and Stranraer, and services 79 and 179 connecting Dumfries to Gretna and Carlisle. It should be noted that in June 2025, Stagecoach announced that it would be ending most of its services in the Dumfries and Galloway region by the end of August 2025 including the 500 service which operates along the A75. At the time of writing, it is not known whether another operator will take over the routes.

Public transport services in the assessment corridor and surrounding regional area are provided by multiple operators. McCalls Coaches and Dumfries and Galloway Council offer services that serve both Springholm and Crocketford. Houston Coaches also operates in the region; however, their routes do not include stops in either Springholm or Crocketford. The 502 and 503 services operated by McCalls stops in both Springholm and Crocketford and provides connections between Dumfries and Castle Douglas. Dumfries and Galloway Council operate service number 555 which stops in both Springholm and Crocketford, running between Dumfries and Castle Douglas / Kirkcudbright. Bus services that operate on the A75 at some point within the assessment corridor and their frequencies are shown in Table 6-5, based on information collated for bus operation in May 2025.

Table 6-5: Bus Services and Frequency on the A75 within the Assessment Corridor

Service No.	Route	Operator	Approx. Frequency
500	Dumfries - Stranraer	Stagecoach West Scotland	6 per day (Mon-Fri)
502	Dumfries - Castle Douglas	McCalls Coaches	5 per day (Mon-Sat)
502 A	Kirkcudbright - Castle Douglas	McCalls Coaches	12 per day (Mon-Sat)
503	Dumfries - Springholm - Castle Douglas	McCalls Coaches	8 per day (Mon-Sat)
555	Dumfries - Castle Douglas / Dumfries - Kirkcudbright	Dumfries and Galloway Council Buses	2 per day (Mon-Fri)

These service routes are shown in Appendix A, Figure A6-3.

6.3.2 Cairnryan Port Ferry Services

Ferry services operate from the ports at Cairnryan, including Loch Ryan Port approximately 1.5 miles north of Cairnryan. Two commercial operators, P&O Ferries and Stena Line, provide services to Northern Ireland with distinct schedules as follows:

- P&O Ferries offers a route between Cairnryan Port and Larne, located about 20 miles north of Belfast. The crossing time is approximately two hours. During the week, there are six departures from Cairnryan, with a reduced schedule of five departures on Saturdays and four on Sundays. P&O Ferries initiates its service at 04:00 with the last ferry embarking at 23:59. Their schedule includes six departures from Cairnryan from Tuesday to Friday, five on Saturdays and Mondays, and four on Sundays.
- Stena Line operates between Loch Ryan Port and Belfast, with a crossing time of around 2 hours and 15 minutes. The Stena Line ferry service commences its daily operations with the first departure at 03:30, continuing throughout the day until the final crossing at 23:30. Their schedule includes six departures from Loch Ryan from Tuesday to Friday, five on Saturdays and Mondays, and four on Sundays.

On a typical weekday, there are a total of 12 arrivals and 12 departures each day to and from the ports at Cairnryan, providing a number of options for connections to Northern Ireland. Table 6-6 demonstrates the departure and arrival times of ferry services to and from the ports at Cairnryan.

Table 6-6 Cairnryan Ferry Services Departure and Arrival Times

Ferry Departure Time	Ferry Operator	Ferry Arrival Time	Ferry Operator
03:30	Stena Line	05:52	Stena Line
04:00	P&O Ferries	06:00	P&O Ferries
07:30	Stena Line	09:52	Stena Line
08:00	P&O Ferries	10:00	P&O Ferries
11:30	Stena Line	13:52	Stena Line
12:00	P&O Ferries	14:00	P&O Ferries
15:30	Stena Line	17:52	Stena Line
16:00	P&O Ferries	18:00	P&O Ferries
19:30	Stena Line	21:52	Stena Line
20:00	P&O Ferries	22:00	P&O Ferries
23:30	Stena Line	01:52	Stena Line
23:59	P&O Ferries	02:00	P&O Ferries

6.4 Future Conditions

The analysis of data presented in the Baseline Traffic Conditions section of this chapter indicates a general trend of increasing traffic levels between the period from 2018 to 2024, particularly since 2021 following the atypical decrease in travel demand and traffic levels that occurred in 2020 due to the impact of COVID-19. At this stage it is anticipated that forecasts of future travel demand will be derived from the national-level Transport Model for Scotland (TMfS) and will reflect the current 'With Policy' and 'Without Policy' scenarios that have been developed to inform the TMfS future year demand forecasts. The 'With Policy' scenario captures policy ambitions leading to lower levels of motorised traffic demand, and currently this still reflects the previous target to reduce car vehicle-kilometres travelled by 20% (of 2019 levels) by 2030, whereas the 'Without Policy' scenario has no policy ambitions and reflects higher levels of motorised traffic demand.

The opening year has been assumed to be 2035 for the purpose of the DMRB Stage 1 Assessment, and the design year is therefore assumed to be 2050 (opening year plus 15 years). TMfS includes forecast models through to a 2045 forecast year and thus a process of extrapolation will need to be developed to determine demand forecasts that represent the 2050 forecast year.

For the purpose of this DMRB Stage 1 Assessment, an estimate of the likely changes in forecast traffic levels within the assessment corridor has been obtained from the TMfS for the 'With Policy' and 'Without Policy' scenarios on the A75 at selected locations east and west of Crocketford for the selected future years of 2030, 2035 and 2045. In the 'With Policy' scenario, traffic levels are anticipated to reduce in the future, with an approximate traffic reduction of up to 21% in 2045 compared to the 2018 base year for the AM peak period, and an approximate reduction of 17% for the PM peak period. Traffic reductions in the Interpeak period between the AM and PM peak periods shows a lesser reduction of approximately 10% in 2045 compared to the 2018 base year.

The forecast demand in the 'Without Policy' scenario appears to indicate a slight reduction in traffic flow in the AM and PM peak periods in 2030 compared to the 2018 base year, but growth in traffic by 2045. The increase in traffic from TMfS in 2045 is approximately 6% in the AM peak period and 9% in the PM peak period compared to the 2018 base year. The Interpeak period is estimated to have higher growth than the two peak periods, with traffic levels in 2045 approximately 13% higher than the 2018 base year.

At the next stage of scheme assessment consideration will be given to additional sensitivity testing to reflect any potential new car vehicle kilometre reduction targets that may be set at a national level. This will inform the DMRB Stage 2 scheme assessment and the potential impacts on the route options that will be developed.

New and planned development in and around the area is also likely to have an impact on movements on the A75 Trunk Road. The Dumfries and Galloway Local Development Plan 2 (LDP2), as the latest available published plan, and the land-use developments it contains were collated to inform the national models including the TMfS, with the demand changes reflected through the 'With Policy' and 'Without Policy' scenarios noted above.

The LDP2 positions Dumfries as the Regional Capital, outlining strategic investments to reinforce this status. The plan sets an ambitious housing supply target for Dumfries of 2,798 units by 2029, comprising 2,134 market housing units and 664 affordable housing units. Concurrently, Stranraer is allocated a housing supply target of 509 units within the same timeframe. As a region, the LDP2 anticipates a total housing supply of 5,282 to be provided by 2029.

6.5 Effect of Improvement Strategies

This section outlines the anticipated impacts in broad terms of the six improvement strategies. At this stage in the scheme assessment process, the assessment of likely effects of the improvement strategies has been undertaken on a qualitative basis. A more detailed assessment process will be undertaken during the DMRB Stage 2 Scheme Assessment with

quantitative outputs being provided by the traffic models to evaluate the operational and economic performance of the proposed route options.

6.5.1 Effects on Safety

It is anticipated that all six improvement strategies will have a positive contribution in terms of overall safety. All route options within the improvement strategies taken forward to DMRB Stage 2 will be designed in accordance with latest standards and therefore are anticipated to provide a safer route.

At this stage, all offline improvement strategies (Improvement Strategies 1, 2, 4, 5 and 6) are expected to have the potential to reduce local accident rates, including for Killed or Seriously Injured accidents. This aligns well with the scheme objective of reducing local accident rates and severity through reducing KSIs by 65% in line with Road Safety Framework targets, and contributing to improving safety on the A75 trunk road.

Improvement Strategy 3, which would be an online improvement, is not considered likely to significantly reduce the number or severity of accidents and would therefore have a more limited contribution to improving safety than the other improvement strategies.

While some of the improvement strategies may result in slightly longer travel distances than using the existing A75 Trunk Road, they are likely offer substantial benefits in terms of traffic reductions within Springholm and Crocketford. The removal of strategic through traffic from the existing A75 within and between the villages Springholm and Crocketford is anticipated to reduce potential conflicts between local and strategic traffic, as well as reducing conflicts with active travel users including walking, wheeling, cycling and horse riding.

6.5.2 Changes in Traffic Patterns

All offline improvement strategies are anticipated to result in a traffic reduction in the two villages. Improvement Strategy 3 is online and is anticipated to result in no significant change in traffic volumes passing through the villages.

In considering the offline improvement strategies, whilst Improvement Strategies 1 and 2 would result in a traffic reduction in the two villages they are anticipated to have the lowest levels of reduction of the offline strategies due to their increased length over the existing A75. Improvement Strategies 1 and 2 are also likely to require a higher number of intermediate junctions to connect to the existing local road network compared to the other offline improvement strategies, and as they are less direct may not necessarily provide an attractive alternative to the existing A75.

Improvement Strategies 4 and 5 are likely to have higher levels of traffic reductions in the two villages compared to Improvement Strategies 1 and 2. Both these improvement strategies are

likely to be shorter in length than the existing A75 route and are likely to have a lower number of junctions connecting to the local road network, although junction connections in Improvement Strategy 5 may be more complex than those for Improvement Strategy 4.

Improvement Strategy 6 is anticipated to have the highest level of traffic reduction in Springholm and Crocketford as it would be shorter in length than the existing A75 and is a more direct alternative for longer distance traffic. It would likely have a lower number of connecting junctions than Improvement Strategies 1 and 2, and although it would also require connections with the existing Allanton and Drummore roundabouts it would provide a more consistent 60mph speed limit over a longer distance than any of the other improvement strategies.

6.5.3 Changes to Journey Time Variability

All six improvement strategies are expected to reduce journey time variability to some degree. Although it is recognised that the extent of these benefits may vary depending on additional factors such as the cross section, the length of the improvement strategy, the potential number of at-grade junctions and design speed that will be considered in more detail for the route options to be developed as part of the DMRB Stage 2 Scheme Assessment.

Improvement Strategies 1 and 2 would have potential journey time variability benefits. However, the potential benefits are likely to be partially offset by the increased length of these two improvement strategies compared to the existing A75 and the need for a higher number of junctions, potentially at-grade, to connect to the local road network.

Improvement Strategy 3, as the online strategy, is expected to provide the least journey time variability benefits as it is likely to be subject to the same speed limits as the existing A75 including the 30mph sections passing through the two villages.

Improvement Strategies 4, 5, and 6 all have the potential to provide greater journey time variability benefits than Improvement Strategies 1 and 2. Of these Improvement Strategy 6 is considered likely to perform best at this stage due to the longer length of the improvement strategy allowing for more consistent speeds, as well as it providing a shorter distance travelled between the potential tie-in locations compared to the existing A75. Although the number of potential intermediate junctions for Improvement Strategy 6 would likely be higher than Improvement Strategies 4 and 5, at this stage the impacts associated with the increased junction interactions are not anticipated to be as significant as those from Improvement Strategies 1 or 2.

6.5.4 Changes to Resilience

The offline improvement strategies, specifically 1, 2, 4, 5 and 6 are anticipated to increase the overall resilience of the road network in response to incidents occurring on either the existing A75 or the proposed scheme. These would provide alternative diversion routes in response to incidents, thereby improving traffic management responses during both planned events and unforeseen incidents. The offline improvement strategies would also be expected to provide additional benefits in terms of incident response and recovery times over any online improvement strategies.

In contrast, Improvement Strategy 3, which is online, is anticipated to offer limited additional resilience in response to incidents on either the existing A75 or the potential improvement strategy route. The proximity of any new route to the existing A75 limits its effectiveness as an alternative route during incidents, potentially constraining the road network's capacity and the efficient management of disruptions.

6.6 Economics

The majority of the improvement strategies would be anticipated to result in various economic benefits including journey time benefits and reductions in journey time variability. The exception would be Improvement Strategy 3, which is likely to maintain the current speed limits including the 30mph limits within Springholm and Crocketford.

The improvement strategies are likely to offer enhanced resilience benefits that have the potential to enhance operational efficiency, minimise disruption, and improve overall infrastructure management, leading to a more streamlined and cost-effective maintenance process. This increased resilience is likely to contribute to a more reliable and efficient road network, leading to benefits for both local traffic and longer distance traffic including traffic travelling to and from the ports at Cairnryan.

A key benefit of the offline improvement strategies is the reduction in traffic within the villages of Springholm and Crocketford through the removal of longer distance traffic travelling on the A75 Trunk Road. The significant reduction in traffic volumes is expected have placemaking and accessibility benefits in the villages, potentially encouraging increased use of active travel modes such as walking, wheeling and cycling, and promoting local land use opportunities.

More detailed quantitative analyses and assessments will be undertaken as part of the DMRB Stage 2 Scheme Assessment including the use of traffic models and the evaluation of economic benefits. This will assist in identifying the preferred route option and will inform the Outline Business Case to be prepared for the preferred route option.

The economic appraisal of route options at the DMRB Stage 2 scheme assessment stage will be conducted using the Department for Transport's (DfT) TUBA program. This assessment will be integrated into the DMRB Stage 2 process and Outline Business Case preparation, aiming to generate a comprehensive economic analysis. The appraisal will report on the standard Transport Economic Efficiency results including the Present Value of Benefits (PVB) and Present Value of Costs (PVC), which will be used to calculate the overall Benefit to Cost Ratios (BCR) for the route options at DMRB Stage 2. In addition, consideration will be given to establishing Wider Economic Impacts (WEIs) as the scheme progresses.

7. Key Findings and Recommendations

7.1 Introduction

The following sections summarise the key findings of the DMRB Stage 1 Assessment, specifically the potential impacts of the improvement strategies as identified by the Engineering, Environmental and Traffic and Economic Assessments.

They also describe how the improvement strategies compare in terms of their advantages and disadvantages and provide recommendations as to which improvement strategies should be taken forward for further assessment at DMRB Stage 2.

It is important to note that these recommendations do not preclude consideration of alternatives that may be appropriate at DMRB Stage 2. The recommendations indicate an improvement strategy which should, based on the level of assessment undertaken in this report, be considered further in accordance with a DMRB Stage 2 Assessment and which could potentially be developed in more detail to become the overall preferred route option.

7.2 Assessment of Improvement Strategies

7.2.1 Improvement Strategy 1

Following assessment of Improvement Strategy 1, the key findings are as follows:

- This improvement strategy aligns fairly well with the scheme objectives.
- Three Category B listed buildings, two non-designated historic buildings and one non-designated archaeological site lie within the improvement strategy.
- This improvement strategy is likely to have the lowest level of traffic reduction on the existing A75 of all the offline improvement strategies. It is longer and less direct than the equivalent section of the existing A75 and could therefore be seen as a less attractive alternative.
- It is likely that this improvement strategy will require a greater number of intermediate junctions to connect to the existing local roads network compared to the other improvement strategies.
- Whilst diverting some traffic away from built up areas, this improvement strategy would likely have significant adverse effects on the surrounding landscape as it is the longest.
- This improvement strategy intersects four ancient woodland parcels (3.99ha) and six parcels of native woodland (3.32ha). In addition, as it is the longest, this improvement strategy would likely result in a greater degree of habitat loss and fragmentation.

- This improvement strategy would involve significant land take potentially affecting residential, agricultural, commercial, and community receptors.
- This improvement strategy would likely have significant and/or large adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.
- This improvement strategy passes through undulating topography which would result in significant earthworks.
- There are additional constructability considerations associated with this improvement strategy due to its interaction with A712.
- This improvement strategy would likely be the most expensive as it is the longest.

Based on these key findings, Improvement Strategy 1 is less advantageous than Improvement Strategies 2, 4, 5 and 6. It is therefore recommended that Improvement Strategy 1 is not taken forward for further assessment at DMRB Stage 2.

7.2.2 Improvement Strategy 2

Following assessment of Improvement Strategy 2, the key findings are as follows:

- This improvement strategy aligns fairly well with the scheme objectives.
- Two Category B Listed Buildings and six non-designated archaeological sites lie within the improvement strategy.
- This improvement strategy is likely to have lower levels of traffic reduction on the existing A75 in comparison to other offline improvement strategies. It is longer and less direct than the equivalent section of the existing A75 and could therefore be seen as a less attractive alternative.
- It is likely that this improvement strategy will require a greater number of intermediate junctions to connect to the existing local roads network compared to some other improvement strategies.
- Whilst diverting some traffic away from built up areas, this improvement strategy would likely have significant adverse effects on the surrounding landscape.
- This improvement strategy intersects two areas of ancient woodland (1.07ha) and four parcels of native woodland (1.48ha). In addition, as it is the third longest, this improvement strategy would likely result in a greater degree of habitat loss and fragmentation.
- This improvement strategy would involve significant land take potentially affecting residential, agricultural, commercial, and community receptors however, the land take would be less than the longer improvement strategies.

- This improvement strategy would likely have significant and/or large adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.
- This improvement strategy passes through undulating topography which would result in significant earthworks however, these earthworks would be less significant than the longer improvement strategies.
- There are additional constructability considerations associated with this improvement strategy due to its interaction with A712.
- This improvement strategy would likely be the third most expensive.

Based on these key findings, Improvement Strategy 2 is more advantageous than Improvement Strategies 1, 3 and 6. It is therefore recommended that Improvement Strategy 2 is taken forward for further assessment at DMRB Stage 2.

7.2.3 Improvement Strategy 3

Following assessment of Improvement Strategy 3, the key findings are as follows:

- This improvement strategy does not align well with all scheme objectives. As it is online, it is unlikely to meet the scheme objective to reduce environmental impacts and severance caused by strategic traffic using the A75 Trunk Road within Springholm and Crocketford, with limited contribution to the other objectives.
- Seven Category B Listed Buildings, nine non-designated historic buildings and two non-designated archaeological sites lie within the improvement strategy.
- This improvement strategy would likely have the least adverse effects on the surrounding landscape as it is online.
- This improvement strategy intersects one area of ancient woodland (0.10ha) and three parcels of native woodland (1.26ha). In addition, as it is the shortest and is online, this improvement strategy would likely result in the lowest degree of habitat loss and fragmentation.
- This improvement strategy is the shortest and would likely involve the least total amount of land take however, as it is online, it is more likely to have a significant effect on residential, agricultural, commercial, and community receptors.
- This improvement strategy would likely have significant and/or large adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.
- This improvement strategy is online and would therefore not result in significant earthworks.
- This improvement strategy would likely be the second least expensive.

- This improvement strategy would not reduce traffic through the villages of Springholm and Crocketford.
- The buildability of this improvement strategy would be more challenging than others with significant traffic diversions likely required during construction. In addition, due to the urban setting of this improvement strategy, it is likely that significantly more utility diversions will be required in comparison to other improvement strategies.
- This improvement strategy would require additional health and safety measures during construction due to the proximity to the local community.

Based on these key findings, Improvement Strategy 3 is less advantageous than all other improvement strategies. Specifically, this improvement strategy fails to meet all the scheme objectives. It is therefore recommended that Improvement Strategy 3 is not taken forward for further assessment at DMRB Stage 2.

7.2.4 Improvement Strategy 4

Following assessment of Improvement Strategy 4, the key findings are as follows:

- This improvement strategy aligns well with the scheme objectives.
- Four Category B Listed Buildings, one non-designated historic building and two non-designated archaeological sites lie within the improvement strategy.
- This improvement strategy is likely to have higher levels of traffic reduction on the existing A75 in comparison to some other offline improvement strategies, particularly Improvement Strategies 1 and 2. It is shorter and more direct than the equivalent section of the existing A75.
- It is likely that this improvement strategy will require fewer intermediate junctions to connect to the existing local roads network compared to the other improvement strategies.
- This improvement strategy would likely have less significant adverse effects on the surrounding landscape as it is the second shortest.
- This improvement strategy intersects two parcels of native woodland (0.62ha). In addition, as it is the second shortest, this improvement strategy would likely result in a lesser degree of habitat loss and fragmentation.
- This improvement strategy would involve land take that potentially affects residential, agricultural, commercial, and community receptors however, the land take would be less than the longer improvement strategies.
- This improvement strategy would likely have significant and/or major adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.

- This improvement strategy passes through undulating topography which would result in significant earthworks however, these earthworks would be less significant than the longer improvement strategies.
- This improvement strategy would likely be the least expensive.

Based on these key findings, Improvement Strategy 4 is more advantageous than all other improvement strategies. It is therefore recommended that Improvement Strategy 4 is taken forward for further assessment at DMRB Stage 2.

7.2.5 Improvement Strategy 5

Following assessment of Improvement Strategy 5, the key findings are as follows:

- This improvement strategy aligns well with the scheme objectives.
- Four non-designated historic buildings and three non-designated archaeological sites lie within the improvement strategy.
- This improvement strategy is likely to have higher levels of traffic reduction on the existing A75 in comparison to some other offline improvement strategies, particularly Improvement Strategies 1 and 2. It is shorter and more direct than the equivalent section of the existing A75.
- It is likely that this improvement strategy will require fewer intermediate junctions to connect to the existing local roads network compared to other improvement strategies.
- Whilst diverting traffic away from built up areas, this improvement strategy would likely have significant adverse effects on the surrounding landscape.
- This improvement strategy intersects ten parcels of native woodland (6.38ha). Despite being the third shortest, this improvement strategy lies partially within the Milton Loch SSSI therefore it could result in a greater degree of habitat loss and fragmentation.
- This improvement strategy would involve significant land take potentially affecting residential, agricultural, commercial, and community receptors however, the land take would be less than the longer improvement strategies.
- This improvement strategy would likely have significant and/or large adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.
- This improvement strategy passes through undulating topography which would result in significant earthworks however, these earthworks would be less significant than the longer improvement strategies.
- This improvement strategy would likely be the third least expensive.

Based on these key findings, Improvement Strategy 5 is more advantageous than Improvement Strategies 1, 2, 3 and 6. It is therefore recommended that Improvement Strategy 5 is taken forward for further assessment at DMRB Stage 2.

7.2.6 Improvement Strategy 6

Following assessment of Improvement Strategy 6, the key findings are as follows:

- This improvement strategy aligns well with the scheme objectives.
- One Category B listed building, two non-designated historic buildings and three non-designated archaeological sites lie within the improvement strategy.
- This improvement strategy is likely to have the highest levels of traffic reduction on the existing A75 in comparison to all other improvement strategies. It is shorter and more direct than the equivalent section of the existing A75.
- It is likely that this improvement strategy will require a greater number of intermediate junctions to connect to the existing local roads network compared to some other improvement strategies.
- Whilst diverting traffic away from built up areas, this improvement strategy would likely have significant adverse effects on the surrounding landscape as it is the second longest.
- This improvement strategy intersects six parcels of native woodland (3.28ha). In addition, as it is the second longest, this improvement strategy would likely result in a greater degree habitat loss and fragmentation.
- This improvement strategy would involve significant land take potentially affecting residential, agricultural, commercial, and community receptors.
- This improvement strategy would likely have a significant and/or large adverse effects in relation to geology, materials and waste, noise and vibration and the water environment.
- This improvement strategy passes through undulating topography which would result in significant earthworks.
- There are additional constructability considerations associated with this improvement strategy due to its interaction with NCN7.
- This improvement strategy would likely be the second most expensive.

Based on these key findings, Improvement Strategy 6 is less advantageous than Improvement Strategies 2, 4 and 5. It is therefore recommended that Improvement Strategy 6 is not taken forward for further assessment at DMRB Stage 2.

7.3 Assessment of Additional Online Improvements

The assessment of improvement strategies also included a high level assessment of potential additional online improvements within the assessment corridor. The purpose of this high level assessment was to consider the potential impact of the improvement strategies on cross-section consistency within the assessment corridor, with cross-section to be determined at DMRB Stage 2, and potential operational road safety issues.

Various additional online improvements were considered, ranging from targeted safety interventions at existing accident clusters to larger scale improvements that would involve upgrading sections of the existing A75 within the assessment corridor.

It was assessed that additional online improvements would likely impact additional constraints and introduce additional costs as follows:

- From an engineering perspective, this would likely consist of additional impacts on properties and accesses, additional earthworks and additional constructability considerations.
- From an environmental perspective, any increase in the footprint of the existing A75 has potential to impact on additional environmental receptors such as listed buildings, woodland and other important habitats.

In terms of traffic and economics, while additional online improvements would likely introduce additional costs they would also likely realise additional economic benefits.

Any additional online improvements would likely be implemented as part of Improvement Strategies 2, 3, 4 or 5 as Improvement Strategies 1 and 6 already extend the entire length of the assessment corridor. Therefore, the additional constraints, costs and benefits identified were considered as part of Improvement Strategies 2, 3, 4 and 5.

The outcome of the high level assessment of potential additional online improvements was in line with the assessment of improvement strategies. While additional online improvements could negatively impact Improvement Strategies 2, 4 and 5 from an engineering and environmental perspective, they were still confirmed to be more advantageous than Improvement Strategies 1, 3 and 6. Specifically, when compared to the longer improvement strategies, a shorter improvement strategy with online improvements would likely require less materials, result in less waste and have an overall lesser impact on environmental receptors.

The requirement for potential additional online improvements will be assessed further at DMRB Stage 2.

7.4 Summary

The outcomes of the DMRB Stage 1 Assessment are summarised as follows in Table 7-1.

Table 7-1: Summary of improvement strategies

Improvement Strategy	Project Objectives	Environment	Engineering	Economics
Improvement Strategy 1	Good	Poor	Poor	Poor
Improvement Strategy 2	Good	Fair	Fair	Fair
Improvement Strategy 3	Poor	Fair	Poor	Poor
Improvement Strategy 4	Good	Good	Good	Fair
Improvement Strategy 5	Good	Fair	Fair	Good
Improvement Strategy 6	Good	Poor	Poor	Fair

Based on these outcomes, it is recommended that Improvement Strategies 2, 4 and 5 are taken forward to DMRB Stage 2 for further assessment.

8. Glossary

Above Ordnance Datum (AOD)	The mean sea level at Newlyn (UK) used as a base measurement on Ordnance Survey Maps for contours.
Alluvial deposits	Loose clay, silt, sand, or gravel that has been deposited by running water, typically in a stream bed or on a floodplain. It is generally geologically young and not solidified into rock.
Assessment	An umbrella term for description, analysis and evaluation.
At-grade (junction)	A junction arrangement at which two or more roads meet at the same level.
Average Annual Daily Traffic (AADT)	The total annual volume of traffic on a road divided by 365 days to give average daily traffic volumes.
Baseline	The existing conditions which form the basis or start point of an environmental or traffic assessment.
Bedrock	Hard rock that lies beneath superficial deposits of soil and sediment.
Biodiversity	Biological diversity, or richness of living organisms present in representative communities and populations.
Broadleaf	Deciduous, broadleaved trees.
Carriageway	Part of the road constructed for use by vehicular traffic. Carriageway includes turning lanes, bus lanes, crawler lanes and acceleration/deceleration lanes.
Catchment	An area defined by watersheds (For example hill summits and ridge lines) contributing flow to a point on a drainage system.
Chainage	A distance measured in metres along the centreline of a carriageway or railway. Used as location references.
Conifer	Coniferous, evergreen trees.
Conservation Area	Area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. Designated under section 61 Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

Core Path	Paths, waterways or any other means of crossing land to facilitate, promote and manage the exercise of access rights under the Land Reform (Scotland) Act 2003.
Culvert	A metal, wooden, plastic, or concrete conduit through which surface water can flow under or across roads.
Cut	The process of digging down and removing soil to create the road's intended level.
Differential Acceleration Lane (DAL)	A WS2+1 section of road on which the overtaking lane is provided for traffic accelerating away from a roundabout to cater for the differential acceleration between vehicles.
Departures from Standard	Where the design requirements outlined in the DMRB are not met, a Departure from Standard application must be submitted and accepted by the Overseeing Organisation to allow the sub-standard element to be included in the design.
Design Speed	The speed used to determine geometric features using design parameters set out in the DMRB.
Desirable Minimum	The minimum value associated with a geometric design feature, without relaxations or Departures from Standard.
Do-Minimum	Scenario assuming minimum interventions, which would likely need to take place in the absence of a proposed scheme. Provides the baseline for proposed scheme to be assessed against.
Effect	The result of change or changes on specific environmental resources or receptors.
Element	A component part of the landscape or environment (For Example roads, hedges, woodlands).
Embankment	A raised structure of earth or rock fill constructed above the natural ground level to elevate the roadway or track.
Environmental Appraisal Report (EAR)	An appraisal of key environmental constraints and potential environmental impacts associated with the proposed scheme.

Fill	Material deposited by man in ground depression or excavated area or to construct an embankment.
Flexible Pavement	Pavement constructed with a bituminous surface course, layers of quality aggregate and subgrade beneath which enables the pavement to deflect under load.
Floodplain	Land adjacent to watercourses, which are subject to regular flooding.
Fragmentation	Breaking up of an organism's habitat into smaller fragments that may vary in size.
Glacial Till	Part of glacial drift which was deposited directly by the glacier. It may vary from clays to mixtures of clay, sand, gravel and boulders.
Glaciofluvial	Pertaining to streams fed by melting glaciers, or to the deposits and landforms produced by such streams.
Grade Separated Junction	A junction arrangement that is separated by level from the through carriageway.
Ground Investigation	Exploratory investigation undertaken by drilling boreholes, excavating trial pits and various other techniques to determine the ground and groundwater conditions present, and the engineering properties of materials encountered.
Groundwater	Water that is present beneath Earth's surface in soil pore spaces and in the fractures of rock formations.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities
Headroom	The height clearance from existing ground level to the underside of a bridge deck.
Heavy Goods Vehicle (HGV)	Vehicles with 3 axles (articulated) or 4 or more axles (rigid and articulated).
Hydrology	The scientific study of the movement, distribution, and quality of water.

Impact	Any changes attributable to the proposed scheme that have the potential to have environmental effects (the causes of the effects).
Impermeable	Material that does not allow fluids to pass through it.
Landform	Combination of slope and elevation producing the shape and form of the land surface.
Landscape	Human perception of the land, conditioned by knowledge and identity with a place.
Landslide	A general term which can be used to represent a number of different types of downslope movement of material (including Debris Flow), ranging in volume and speed of movement. The term may also be used to describe historical landscape features which indicate that movement has occurred at some time in the past. Depending on the size and nature of the landslide, and the erosion which has occurred since, the visibility of such features and the accuracy with which their age can be determined is highly variable.
Lay-by	A part of the road set aside for vehicles to draw out of the traffic lanes and wait for short periods.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A – C(s).
Local Road	An A, B or C classified road (non-Trunk Road) typically operated by a local authority or council.
Made Ground	Material deposited by man, not natural.
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
Native	A species occurring naturally, in its normal geographic range.
Noise	Unwanted sound.

Parapet	A low protective wall along the edge of a bridge or other structure. Its primary functions are to provide safety by preventing people from falling. / A safety barrier installed on the edge of a bridge or retaining wall or similar structure where there is a vertical drop.
Peat / Peat Bog	A partially decomposed mass of semi-carbonised vegetation which has developed under waterlogged and anaerobic conditions, usually in bogs or swamps.
Plantation	An area in which trees have been intentionally planted.
Relaxations	A reduction of the design of a geometric design feature, below desirable minimum, where permitted in the DMRB.
Road Restraint System (RRS)	General name for vehicle restraint system or pedestrian restraint system used on the road.
Runoff	Water that flows over the ground surface to the drainage system. This occurs if the ground is impermeable or if permeable ground is saturated.
Scheduled Monument	A monument which has been scheduled by the Scottish Ministers as being of national importance under the terms of the 'Ancient Monuments and Archaeological Areas Act 1979'.
Scottish Transport Appraisal Guidance	A guide for transport practitioners working on Scottish based transport projects, or any other interested party, with access to the latest information and guidance that they will need when developing and assessing transport schemes and strategies.
Severance	The separation of communities from facilities and services they use within their community. Alternatively, in relation to agricultural land, the division of plots of land into separate land parcels, potentially affecting access or creating areas that may be impractical for agricultural use.

Sites of Special Scientific Interest (SSSI)	Areas of national importance. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species across Britain. The site network is protected under the provisions of Sections 28 and 19 of the Wildlife and Countryside Act 1981 as well as the Amendment Act 1985 and the Environmental Protection Act 1990.
STATS19	A collection of data for all road traffic accidents that resulted in a personal injury and were reported to the police within 30 days of the accident.
Statutory Bodies	Statutory Bodies are bodies that have been given statutory powers in relation to functions that are of a 'public' character.
Strategic Environmental Assessment (SEA)	The process by which information about the environmental effects of proposed plans, policies and programmes are evaluated.
Strategic Transport Projects Review 2 (STPR2)	STPR2 is a Scotland-wide review of the strategic transport network across all transport modes, including walking, wheeling, cycling, bus, rail and car, as well as reviewing wider island and rural connectivity.
Superficial Geology	The youngest, unlithified soils and sediments of the most recent period of geological time, the Quaternary, deposited during the last 2.6 million years and which overlie bedrock.
Surface Course	The top layer of pavement construction, typically flexible asphaltic material to provide durability, safety and resilience.
Sustainable Drainage Systems (SuDS)	A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.
Topography	The surface shapes and physical features on the ground and their arrangement.
Trunk Road	A major road, usually connecting large urban areas, ports, airports, and other strategic locations within a country. It's typically part of the national road network and is designed to carry high volumes of traffic over long distances.

Vehicle Activated Signs	Traffic signs that display a message or warning only when triggered by a specific characteristic of an approaching vehicle, such as its speed or type.
Viaduct	A long bridge-like structure, typically a series of arches, carrying a road or railway across a valley, river, or other obstacle. Viaducts are typically at a high elevation above the terrain being crossed.
Water Quality	The chemical and biological status of various parameters within the water column and their interactions, for example dissolved oxygen, indicator metals such as dissolved copper, or suspended solids (the movement of which is determined by hydrological process and forms geomorphological landforms).

9. Abbreviations

Abbreviation	Definition
AADT	Average Annual Daily Traffic
ALV	Alluvium
AMPS	Asset Management Performance System
AOD	Above Ordnance Datum
AQO	Air Quality Objectives
ARN	Affected Road Network
ATC	Automatic Traffic Counter
AWI	Ancient Woodland Inventory
BGS	British Geological Society
BRES	Business Register and Employment Survey
BT	British Telecom
CEMP	Construction Environmental Mitigation Plan
DAL	Differential Acceleration Lane
DMRB	Design Manual for Roads and Bridges
DZ	[Scotland's Census] Data Zone
EAR	Environmental Appraisal Report
GHG	Greenhouse Gas
GLF	Glaciofluvial
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
iRSS	Indicative Regional Spatial Strategy
ITS	Intelligent Transport Systems
JTs	Journey Times
LA	Local Authority
LDP	Local Development Plan
LiDAR	Light Detection and Ranging
LLA	Local Landscape Character Area

Abbreviation	Definition
LV	Limit Values
NCN	National Cycle Network
NCN7	National Cycle Network Route 7
NFRA	National Flood Risk Assessment
NTDS	National Traffic Data System
OAs	[Scotland's Census] Output Areas
PRoW	Public Rights of Way
PSSR	Preliminary Sources Study Report
PVA	Potentially Vulnerable Area
RDWE	Road Drainage and the Water Environment
RRS	Road Restraint Systems
RTS	Regional Transport Strategy
S2	Single Two-Lane Carriageway
SEPA	Scottish Environment Protection Agency
SFBB	Superfast Broadband
SIMD	Scottish Index of Multiple Deprivation
SSSIs	Sites of Special Scientific Interest
STAG	Scottish Transport Appraisal Guidance
STPR	Strategic Transport Projects Review
STPR2	Strategic Transport Projects Review 2
SuDS	Sustainable Drainage System
SWSTS	South West Scotland Transport Study
TILLD	Diamicton Till
TP	Topsoil
UCR	Union Connectivity Review
UFBB	Ultra-Fast Broadband
UXO	Unexploded Ordnance
VAS	Vehicle Activated Sign

Abbreviation	Definition
VMS	Variable Message Signs
WFD	Water Framework Directive
WCH	Walking, Cycling and Horse-riding
WS2+1	Wide Single 2+1 Carriageway

Appendix A. Figures

Appendix B. Bus Timetables