

WEST OF M6 STRATEGIC CONNECTIVITY STUDY

OPTION APPRAISAL REPORT



FINAL

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OPTION APPRAISAL REPORT

**Cumbria Local Enterprise Partnership
Highways England**

Final

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1 INTRODUCTION

1.1 INTRODUCTION

1.1.1 WSP | Parsons Brinckerhoff was commissioned in December 2015 to undertake a 'West of M6 Strategic Connectivity Study' on behalf of the Cumbria Local Enterprise Partnership (LEP) and Highways England (HE).

1.1.2 The purpose of the study, as set out in the brief, is to examine the issues and constraints associated with the strategic road connectivity of the Port of Workington, and the route capability, resilience and reliability of the A595, A590 and A66 to the west of the M6.

1.2 OPTION ASSESSMENT

The report presents the results of the Option Assessment undertaken on schemes that have been prioritised for further development work. The prioritisation process and scheme assessment work is documented in this report, along with details of the study approach, objective setting and next steps for taking schemes forward.

1.3 STUDY AREA

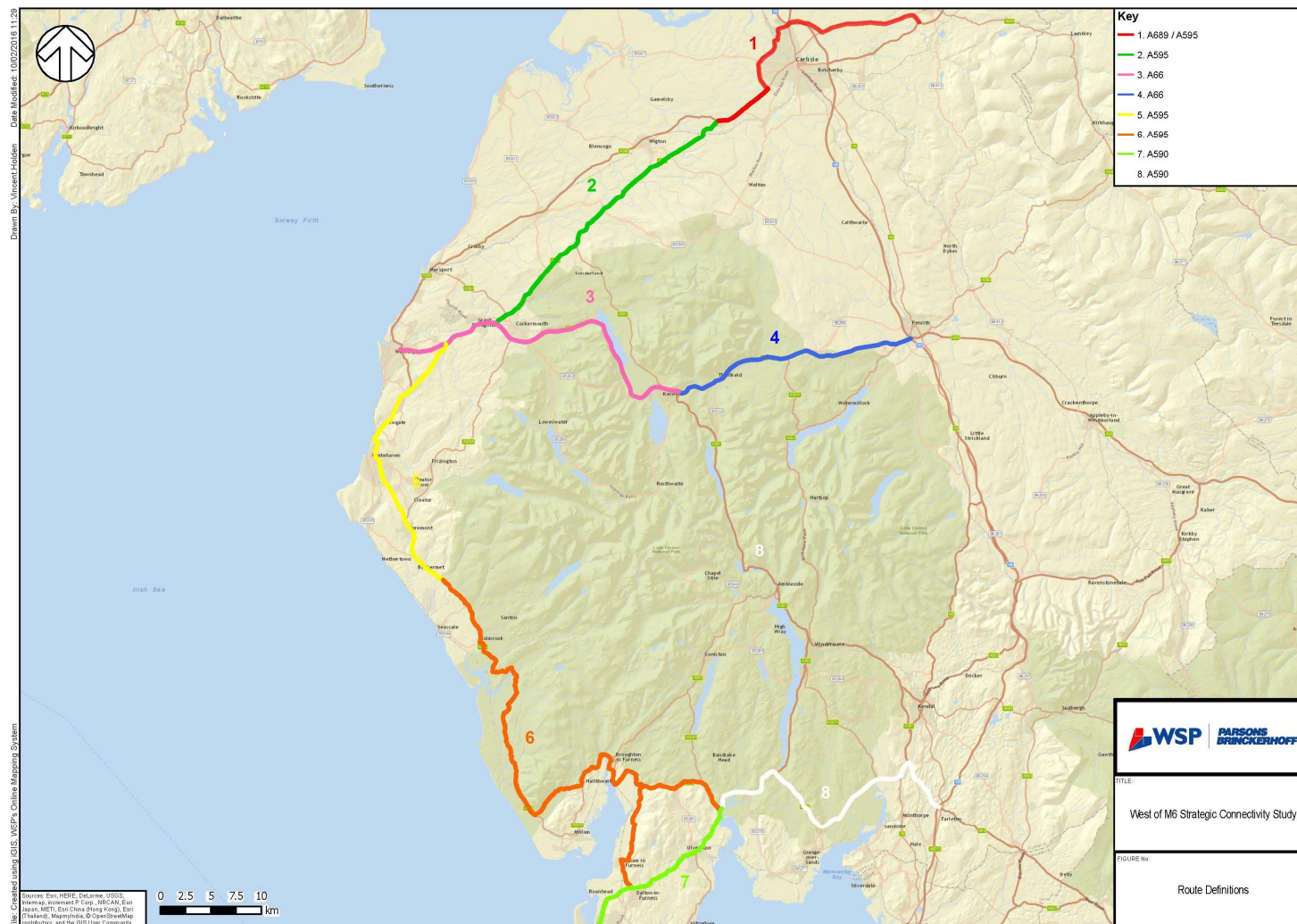
1.3.1 Cumbria is the third largest county in England, located in the north west of the country with Northumberland and Durham to the east, North Yorkshire to the south east and Lancashire to the south. The M6 runs throughout the entire length of Cumbria and is the only motorway in the county. The major links to the east of Cumbria are the A66 and A69, heading east towards Northumberland and Durham. Within the county, the A590, A595 and A66 are the primary routes.

1.3.2 The M6, the A66, most of the A590 and parts of the A595 make up the extent of the SRN within the county. Figure 1-1 below, shows the study area with Figure 1-2 showing the route sections assessed in the study.

Figure 1-1: West of M6 Strategic Connectivity Study Area



Figure 1-2: Route Definitions



1.4 STAKEHOLDER CONSULTATION

1.4.1 Two Stakeholder Reference Groups were established to provide input into the project.

1.4.2 The following groups and organisations make up the 'Informed Stakeholder Reference Group', and have been contacted to provide evidence as part of the issue identification stage of the study.

- A595 Action Group
- Campaign to Protect Rural England
- CKP Railways
- District Councils
- Parish Councils
- Friends of the Lake District
- Taylor and Hardy.

1.4.3 The following groups and organisations make up the 'Engaged Stakeholder Reference Group'; they were also contacted to provide evidence as part of the issue identification stage of the study and were subsequently invited to attend a resulting workshop session. They were also consulted on the Intervention Specific Objectives.

- Cumbria County Council
- Cumbria Local Enterprise Partnership
- Cumbria LEP Technical Officer Group (TOG) Organisations
- Cumbria Police
- Furness Economic Development Forum
- Kier Group
- Nuclear Transport Group Member Organisations
- Port of Workington

2 NEED FOR INTERVENTION

2.1 INTRODUCTION

2.1.1 This Section details the key points regarding current and future network performance, drawing on evidence collected in the study

2.1.2 It identifies the existing population and journey to work distributions identifying where key employment areas are located in Cumbria. It also sets out the most disconnected areas in West Cumbria from the M6 and identifies parts of the network that experience journey time reliability issues through either high vehicular demand or routeing through urban settlements.

2.1.3 It also sets out future socio-demographic changes that Cumbria is expected to achieve in the future including planned employment growth, background traffic growth and new housing developments. From analysis of all these indicators the need for intervention is clearly demonstrated for certain parts of the road network.

2.2 CURRENT TRANSPORT-RELATED PROBLEMS

Population Density

2.2.1 Figure 2-1 shows the key residential settlements in the county by density where most journeys to work will originate. Ulverston is the least densely populated key settlement with Whitehaven most densely populated. Parts of Carlisle and Kendal also demonstrate highly densely populated areas.

Figure 2-1: Cumbria Key Settlements Population Density



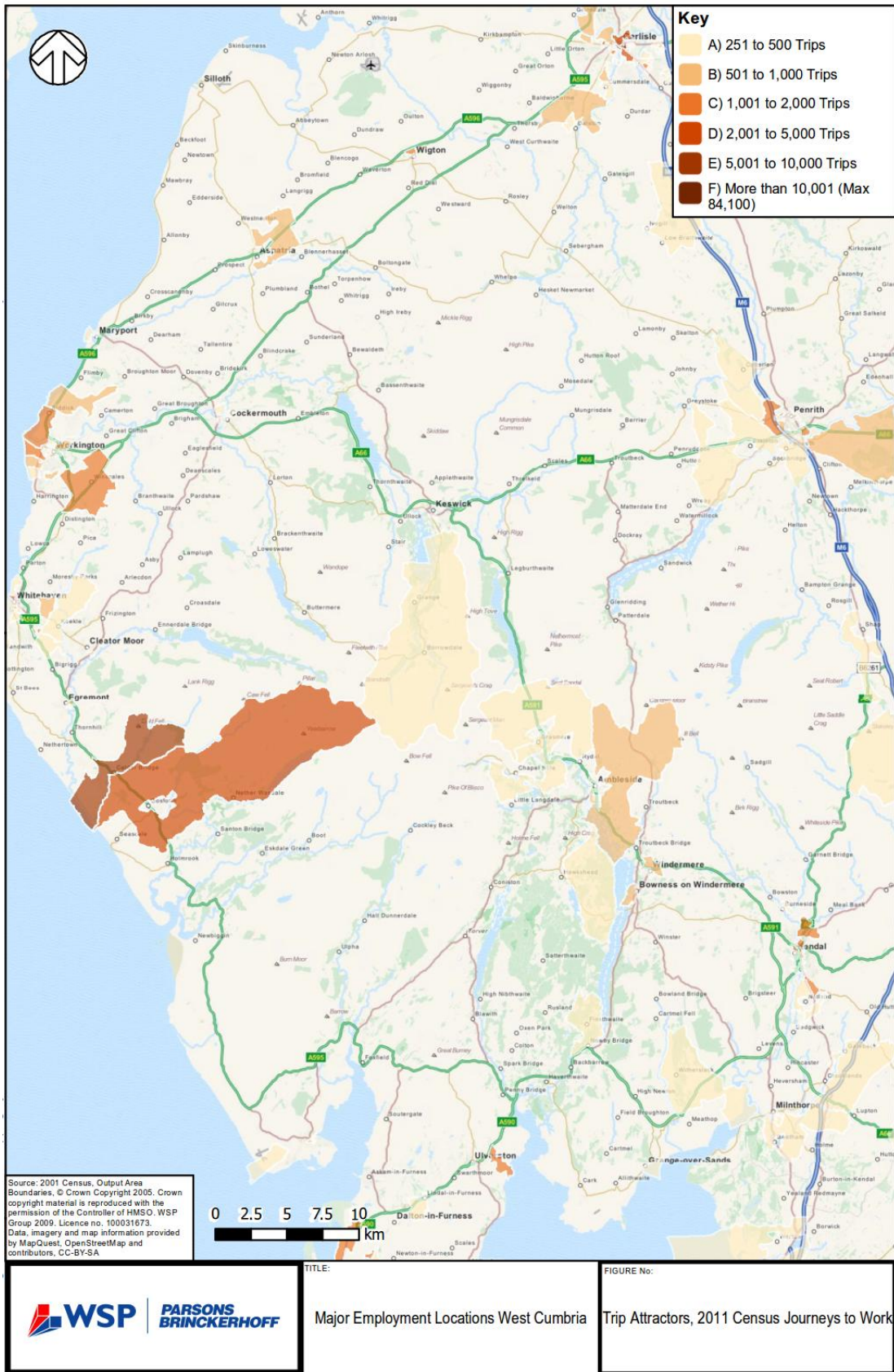
Travel to Work

2.2.2

Figure 2-2 shows the top trip attractors for journeys to work made in West Cumbria. It can be seen that:

- Sellafield attracts the most trips in West Cumbria (over 11,000 daily trips – all modes)
- Workington, Ulverston, Barrow in Furness, are large trip attractors in West and South Cumbria
- Carlisle, Kendal, Penrith are large trip attractors on the M6 Corridor

Figure 2-2: Ward Areas Employment Trip Attractors (Journey to Work Census 2011)

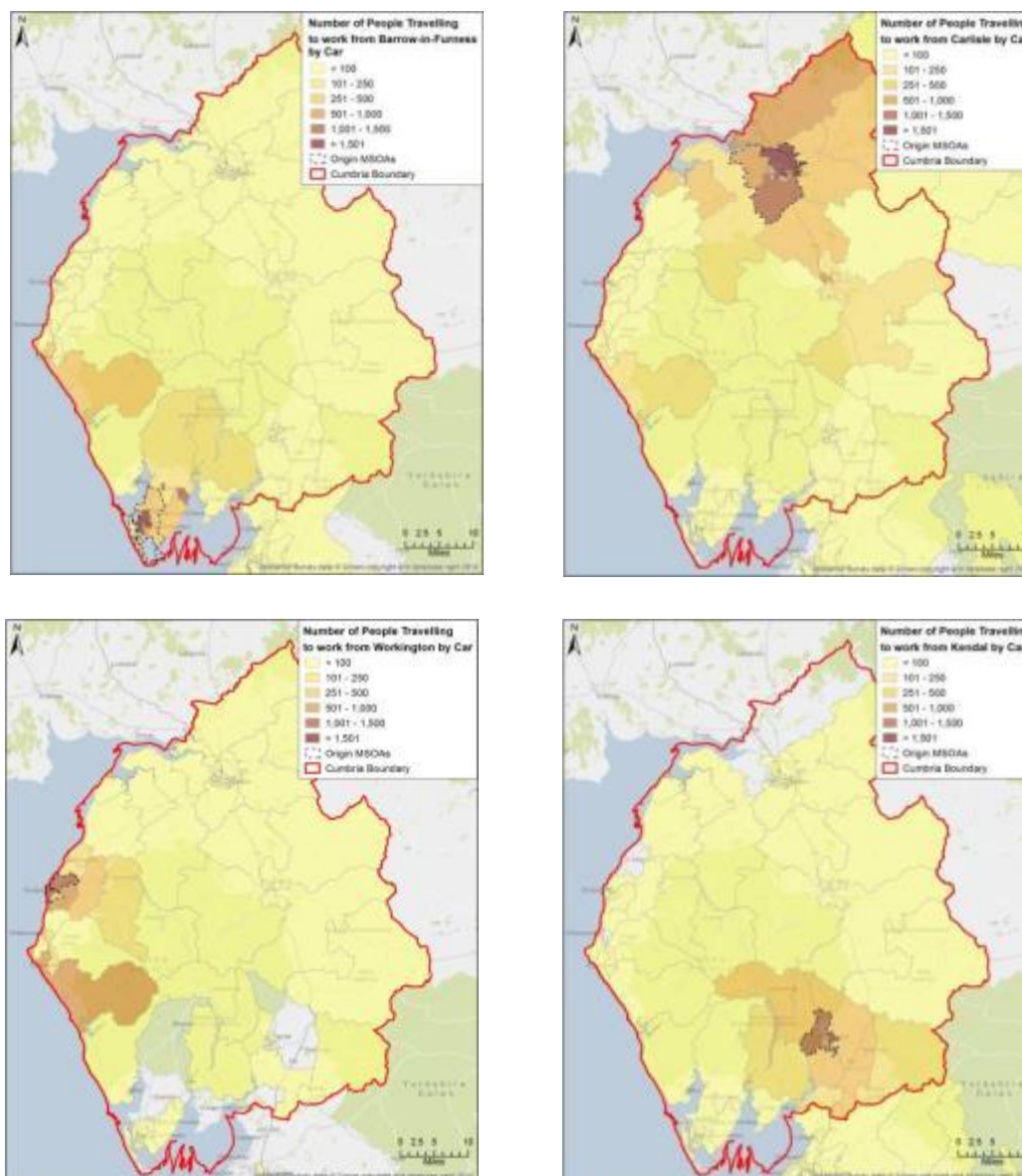


2.2.3

Figure 2-3 below shows the number and distribution of people travelling to work by car from the main settlements in Cumbria. It can be seen that:

- From Carlisle, Barrow and Workington, the Sellafield area attracts a reasonable proportion of long range trips.
- Carlisle produces the most journeys to work (as a function of its population). Trips from Carlisle have the greatest distance distribution of those considered below
- Journey to work trips from Workington are mainly limited to Workington and Sellafield
- Journeys to work trips from Barrow in Furness are generally contained within Barrow, Ulverston and Sellafield

Figure 2-3: Journey to Work Travel Distribution by Car (Barrow in Furness, Carlisle, Workington, Kendal)

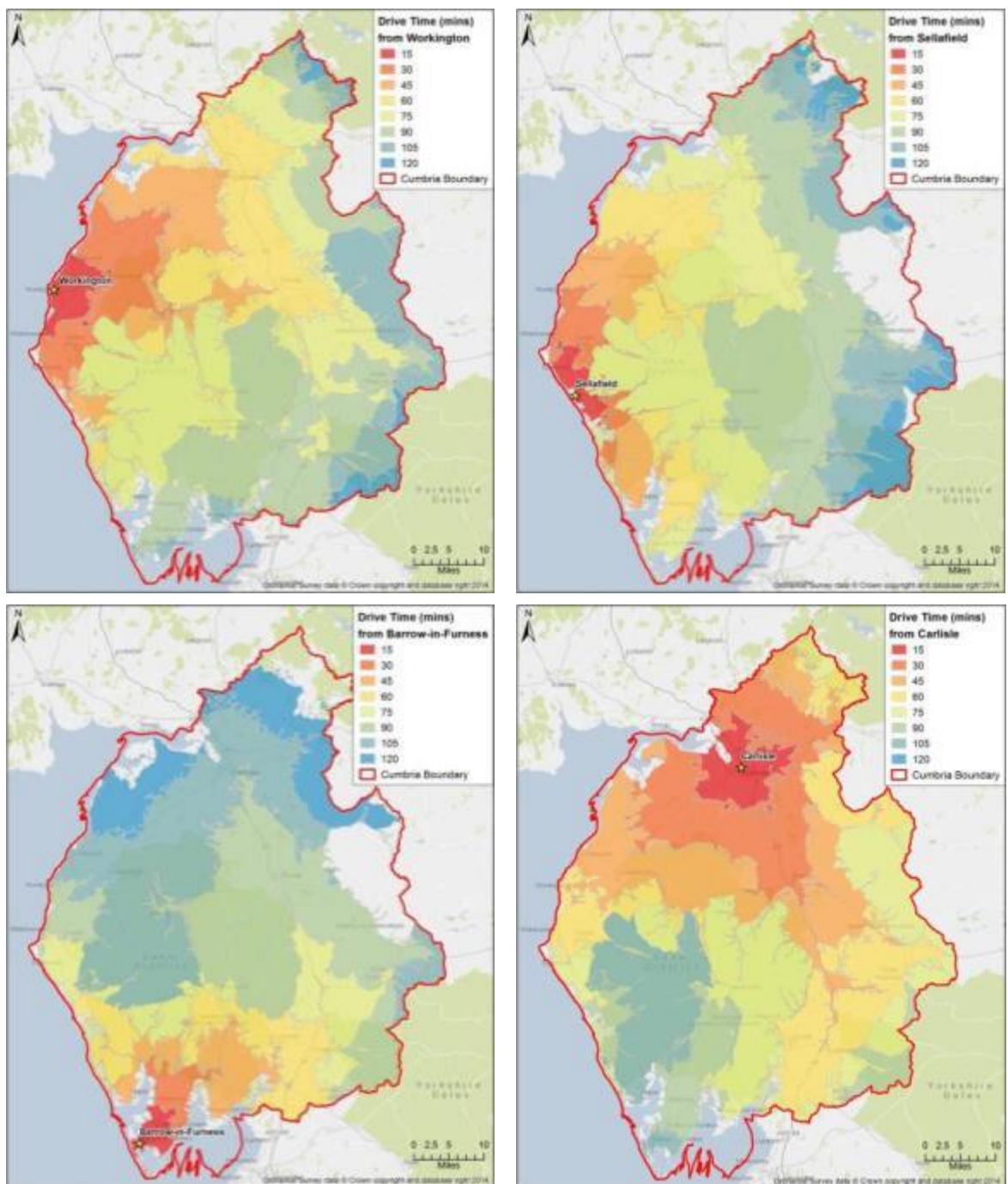


Journey Times

2.2.4 Drive time analysis reveals that

- It can take up to 2 hours to drive from one side of Cumbria to the other.
- Workington and Barrow in Furness are within one hour of the M6.
- Connectivity from Sellafield is generally poorer with one and a half hour drive times from the M6. This is due to the fact drivers will have to travel north to the A66 or south to the A590 before heading east.
- Lancashire can be reached from Carlisle within one hour

Figure 2-4: Drive Time by Car (Workington, Sellafield, Barrow in Furness, Carlisle)



Route Section Traffic Flows

2.2.5

Key routes within the study area have been split into eight sections in order to facilitate detailed analysis. The eight routes are described below and shown in Figure 1-2:

- **Route 1:** A689 / A595 (A69 to A596)
- **Route 2:** A595 (A596 to A66)
- **Route 3:** A66 (Port of Workington to Keswick)
- **Route 4:** A66 (Keswick to M6 J40)
- **Route 5:** A595 (A66 to Calder Bridge)
- **Route 6:** A595 and A5092 (Calder Bridge to Dalton in Furness and A590 River Leven)
- **Route 7:** A590 (Barrow in Furness to Greenodd)
- **Route 8:** A590 (Greenodd to M6 J36)

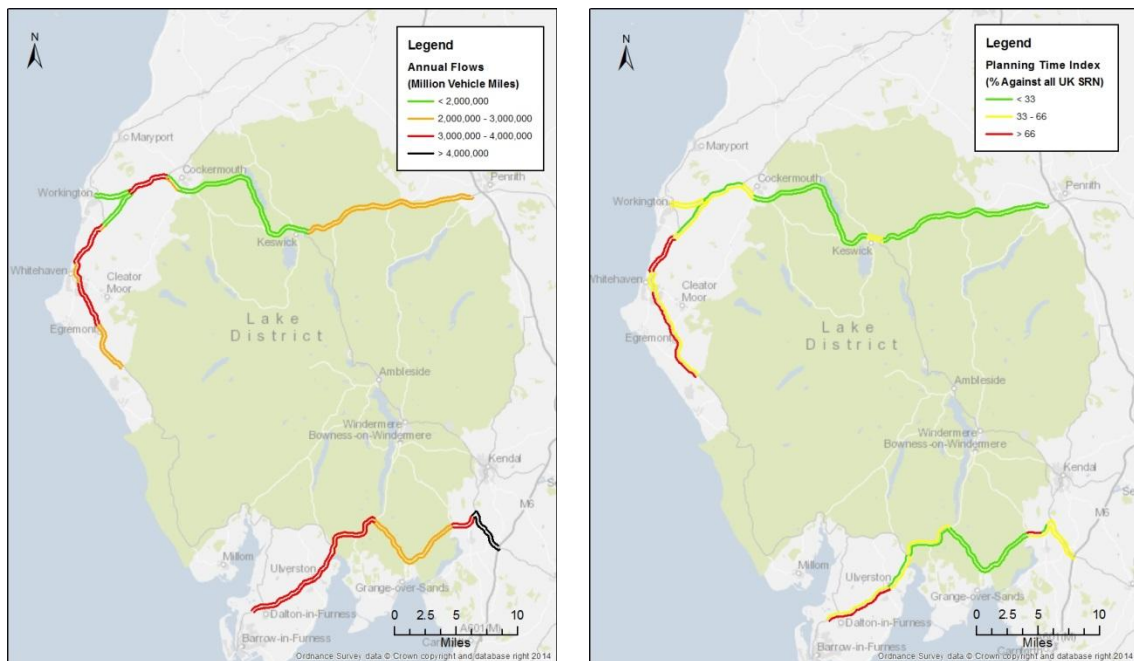
2.2.6

The traffic counts used for the AADT and HGV percentages represent the most appropriate data available and comes from a combination of HATRIS TRADS count sites and Department for Transport traffic counts. Table 2-1 summarises the average AADT on each section, the highest count on each section, the proportion of HGVs, and ranks the average AADTs from highest to lowest. The table shows that Sections 7 and 8 have the highest average flows, by a notable margin.

Table 2-1: Summary Rank of Traffic Flows and HGV proportions

| | AVERAGE AADT | % HGV | MAX AADT | RANK HIGHEST FLOW (AVE AADT) |
|-----------|--------------|-------|----------|------------------------------|
| Section 1 | 10,940 | 7% | 15,886 | 5 |
| Section 2 | 8,541 | 6% | 9,030 | 7 |
| Section 3 | 9,779 | 8% | 10,607 | 6 |
| Section 4 | 15,422 | 9% | 19,202 | 3 |
| Section 5 | 14,147 | 5% | 22,461 | 4 |
| Section 6 | 4,755 | 5% | 6,504 | 8 |
| Section 7 | 18,786 | 8% | 21,006 | 2 |
| Section 8 | 23,474 | 8% | 26,320 | 1 |

Figure 2-5: Annual Flows and Planning Time Index (SRN data)



2.2.7

The SRN data reveals that:

- The busiest section of the SRN west of the M6 is the A590 between M6 and A591
- The most continuously busy section of the SRN is the A590 from M6 to Barrow in Furness
- The busiest part of the A595 is between Workington and Egremont
- The A66 is in the middle third (33%-66%) of delayed roads when compared to the national SRN.
- The following routes (both directions) are in the top third of SRN roads for delays
 - A590 Ulverston to Barrow in Furness
 - A66, Workington to A595
 - A595, A66 to Distington
 - A595, Whitehaven to Sellafeld
- The following sections are the most unreliable routes in West Cumbria
 - A590 Ulverston to Barrow in Furness (WB)
 - A595, Workington to Whitehaven (both directions)
 - A595, Sellafeld to Whitehaven (NB)

Freight Demand

2.2.8

Within West Cumbria, the following sections are shown to have the greatest tonnage in 2014:

- A590, M6 to Ulverston
- A66, Port of Workington to A595
- A595, A689 to A596

2.2.9 Additionally, the A66 (M6 to A595) and A595, (A66 to A596) are also shown as high HGV flow routes.

2.2.10 HGV speed data demonstrates the following areas of the SRN are subject to slower HGV speeds

- A595 (Workington to Sellafield)
- A590 (Ulverston to Barrow in Furness)

Ports and Connectivity

2.2.11 The Ports of Heysham and Workington have a relatively small throughput in the context of the north, however, there is more roll on roll off tonnages from Heysham and Workington than the sum of Tyne, Tees, Blyth and Sunderland. Drive time from the Ports in West Cumbria (Workington, Barrow, Silloth and Whitehaven) range from 45 minutes to 1hr to the M6.

Rail

2.2.12 The West Coast Mainline travels parallel to the M6, providing a fast north south route through Cumbria. Other rail lines exist west of the M6 including the Cumbrian Coast Line which runs from Carlisle to Barrow-in-Furness, and the Furness Line which runs from Barrow-in-Furness eastwards to Carnforth. There is also the Lakes Line which runs from Kendal to Windermere. There is no direct east – west rail line through the heart of the county with the only options being to travel north, through Maryport and onto Carlisle, or to travel south, stopping at several local stations before reaching the mainline at Lancaster.

2.2.13 Despite there being no direct east – west route across Cumbria, most of the county is relatively well served in terms of station provision. Drive time isochrones from each of the county's the railway stations shows that most of the county (excluding the Lake District National Park), and by extension most of the population, is within 15 minutes drive of a station.

2.2.14 Rail freight data demonstrates that the West Coast Mainline is the main Scotland to England route for rail freight. The west Cumbria rail routes carry relatively small freight tonnage.

Road Safety

2.2.15 Based on the Personal Injury Collisions per Billion Vehicle Kilometres (PICs / BVKM), the following route has a higher than average safety record of those assessed:

- Section 1
- Section 2

2.2.16 Based on the proportion of Killed or Seriously Injured (KSI), the following routes have a higher than average safety record of those assessed:

- Section 2
- Section 3
- Section 4
- Section 5
- Section 6
- Section 7
- Section 8

- 2.2.17 A spatial assessment of collisions was undertaken by a road safety engineer along each of the route sections and the following clusters were identified, shown in Table 2-2.

Table 2-2: Accident Clusters on each of the eight routes

| SECTION | CLUSTER 1 | CLUSTER 2 | CLUSTER 3 | CLUSTER 4 | CLUSTER 5 | CLUSTER 6 |
|---------|--|----------------------------------|--------------------|-------------------------|---------------------------|---------------------------------|
| 1 | Barras Lane / A595 | | | | | |
| 2 | A595 / High Waverbridge | Cockbridge / A595 | A595 / A5086 | A595 / A66 | | |
| 3 | A66 / Braithwaite | A66 / A5086 | A66 / A595 | A66 Broughton Cross | A66 / Moor Road | |
| 4 | NA | | | | | |
| 5 | A595 / Winscales | A595 / Parton | A595 / New Road | A595 / Inkerman Terrace | A595 / Egremont Road | A595 at Bigrigg |
| 5 | A595 / A5086 | A595 / Main Street | A595 / Blackbeck | | | |
| 6 | A595 / Ravensglass to Muncaster Bridge | A595 / Becksie | A595 / A5093 | A595 / Buckman Hall | A595 / Grizebeck | A5092 / A590 |
| 7 | A590 / A591 | A590 / A5074 | A590 / Lindale | A590 / A592 | A590 / Backbarrow | A590 / Greenodd to Haverthwaite |
| 8 | A590 / Newland | A590 / Oubas Hill / Canal Street | A590 / County Road | A590 / Three Bridges | A590 / Lindal to Seg Lane | A590 / Ulverston Rd |
| 8 | A590 / Walney Road / Park Road | | | | | |

Resilience, Flood Risk and Diversion Routes

- 2.2.18 Many of the roads within Cumbria are susceptible to issues that force closure. When discussing the priority of any potential issues or improvements, it is important to first understand how the network currently deals with these issues or closures.

- 2.2.19 As of 16/02/16 there were 41 current road closures in Cumbria. Some of these were caused by the Christmas Flooding of 2015 and some route sections were disrupted during the 2015 floods. It is acknowledged that closures may displace traffic onto the routes covered by this study and there have, in the past, been other incidents that have closed the study sections due to a variety of factors including flooding and collisions. As such, it is critical that these sections not only have diversion routes, but diversion routes capable of suitably dealing with the additional traffic.

Flood Risk

- 2.2.20 Other than collisions, flooding is a major contributor to road closures and the overall resilience of a road. From analysis of flood zones, it is possible to ascertain the likelihood of the section to suffer from flooding and to what degree. The data shows that Sections 7 and 8 suffer from the worst flood risk, covering large portions of the route.

Diversion Routes

2.2.21 Of the 22 total diversion routes on the SRN across the study area, 10 of the routes are not suitable for all vehicles. This can be further broken down into the routes being unsuitable for HGVs in both directions, unsuitable for HGVs in one direction and unsuitable for vehicles over 16m.

2.2.22 A further issue that can affect the suitability of the diversion routes is the fact that some travel through flood risk areas meaning that, if an incident occurs during a period of flooding, there may be no diversion route available at all.

Other Stakeholder Identified Constraints

2.2.23 Consultation was also undertaken in February 2016 to invite responses to questions relating to the performance and issues with the route sections.

Forecast Traffic Demand

2.2.24 In order to establish an estimate of the likely future situation on the study routes, TEMPRO (version 6) and WebTAG NTM has been used to forecast the growth for light vehicles and HGVs respectively. Average day factors have been established for the study sections, shown in Table 2-3. As the exact breakdown of the type of HGVs is not known for all routes, an average of 'HGV Rigid' and 'HGV Articulated' has been used.

Table 2-3: TEMPRO and NTM Growth Factors 2014 - 2030

| SECTION | AREA | GROWTH FACTOR | PERCENTAGE CHANGE |
|-----------|-------------------|---------------|-------------------|
| 1 | Carlisle | 1.244 | 24.4% |
| 2 | Allerdale | 1.197 | 19.7% |
| 3 | Allerdale | 1.197 | 19.7% |
| 4 | Eden | 1.222 | 22.2% |
| 5 | Copeland | 1.238 | 23.8% |
| 6 | Copeland | 1.238 | 23.8% |
| 7 | Barrow-in-Furness | 1.201 | 20.1% |
| 8 | South Lakeland | 1.226 | 22.6% |
| All (HGV) | North West | - | 11.1% |

2.2.25 The growth of approximately 20% will therefore exacerbate any safety and capacity issues on the road network across all route sections assessed in the study.

2.3 ISSUES MAPPED

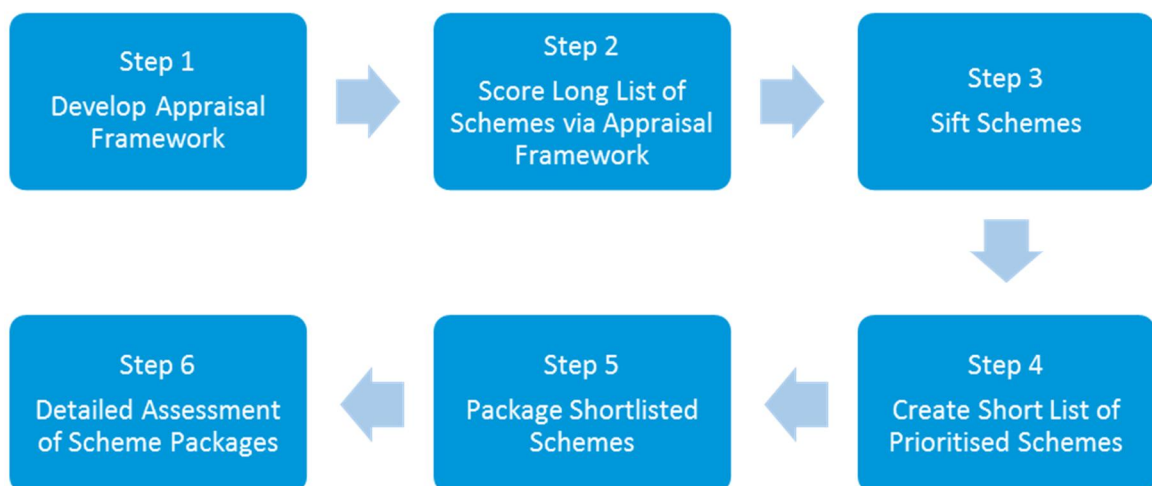
Following detailed analysis of all the evidence and from Stakeholder feedback, the issues have been mapped across the road network. These are presented in Appendix A

3 OPTION GENERATION

- 3.1.1 A long list of interventions was generated and collated through evidence gathering of transport and land use related indices, and through consultation with representatives from the Stakeholder Reference Groups. Information about the individual schemes was recorded in an EAST (Early Assessment and Sifting Tool) appraisal summary table, which allows information to be presented about schemes in a clear and consistent format.
- 3.1.2 EAST is not designed to make recommendations in its standard format. The Department for Transport's Transport Analysis Guidance (TAG) therefore recommends that specific criteria or thresholds are set to determine which options pass or fail the sifting process.

3.2 PRIORITISATION OF THE LONG LIST

- 3.2.1 As EAST is not designed to make recommendations, a project focused appraisal framework has been developed in order to assess the long list of interventions against a range of key criteria in line with the study objectives. A schematic of a six step process is detailed below:



- 3.2.2 The Appraisal Framework was developed using EAST categories, but with a focus of appraisal in line with the Intervention Specific Objectives (**Step 1**).
- 3.2.3 Following the assessment of the schemes through the appraisal framework (**Step 2**), a sifting process was undertaken with a view to ranking schemes that met specific criteria which aligned with the objectives of the West of M6 Connectivity Study (**Step 3**). The Intervention Specific Objectives are presented in Figure 3.1.
- 3.2.4 Any schemes meeting or exceeding the prioritisation criteria were then added to the Short List of Prioritised Schemes (**Step 4**). These shortlisted schemes were then packaged (**Step 5**) and taken forward for further development and assessment (**Step 6**).

Figure 3-1: West of M6 Strategic Connectivity Study Objectives



Cumbria's Strategic Economic Plan Themes - The Four Pronged Attack

| | |
|---|---|
| 1 | Advanced manufacturing growth |
| 2 | Nuclear and energy excellence |
| 3 | Vibrant rural and visitor economy |
| 4 | Strategic Connectivity of the M6 Corridor |

| SEP Theme Alignment | | WoM6 Study Theme | West of M6 Strategic Connectivity Study Objectives |
|---------------------|--|---------------------|--|
| | | Economic Growth | Support the economic growth objectives of the Northern Powerhouse and Cumbria Growth agenda |
| | | | Improve access to regional economic centres and local growth sites served by the A590 / A66 / A595 / A5092 |
| | | Connectivity | Ensure the improvement, enhancement and long-term development of the SRN and West of M6 Strategic Routes through improved national connectivity across the wider network |
| | | | Improve the A590 / A66 / A595 / A5092 for access to strategic economic sites for freight traffic |
| | | | Maintain and improve access for tourism served by the A66 and A590 |
| | | Network Performance | Improve (and as a minimum maintain) access to services (including health) and jobs for all local road users |
| | | | Improve journey time reliability for road users |
| | | | Reduce the number and seriousness of incidents involving road users, including NMUs |
| | | Environment | Improve the resilience of the routes to the impact of events such as severe weather events and roadworks including diversion routes |
| | | | Minimise adverse impacts on the environment and where possible optimise environmental improvement opportunities. |
| | | | Reduce the impact of the routes on severance for local communities |

3.3 STEP 1 – DEVELOPING THE APPRAISAL FRAMEWORK

- 3.3.1 The criteria in the appraisal framework are based upon key categories from the EAST assessment, in order to maintain consistency with Transport Business Case principles. Some of these categories have been tailored to better fit the context of the West of M6 study.
- 3.3.2 Table 3-1 lists the various categories and sub-categories of the EAST appraisal process, and provides a justification for the respective inclusion or exclusion in the West of M6 appraisal framework.
- 3.3.3 In total, ten sub-categories have been taken forward. These are:
- Scale of Impact;
 - Fit with Wider Objectives;
 - Fit with West of M6 Study Objectives;
 - Economic Growth;
 - Carbon Emissions;
 - Social and Distributional Impact and the Regions;
 - Local Environment;
 - Wellbeing;
 - Expected Value for Money Category; and
 - Practical Feasibility.

Table 3-1: Justification of Categories for inclusion Appraisal Framework

| GROUP HEADING | SUB-CATEGORY | INCLUDED IN ASSESSMENT? | REASON |
|---------------|--------------------------------------|-------------------------|--|
| Strategic | Scale of Impact | ✓ | To assess the extent to which the intervention alleviates the identified problem. |
| | Fit with wider objectives | ✓ | To assess the extent to which the intervention supports DfT and TfN objectives. |
| | Consensus over outcome | ✗ | Not relevant at this initial stage of assessment. |
| | Fit with West of M6 Study Objectives | ✓ | To assess the extent to which the intervention supports the four study themes of the West of M6 Study: Economic Growth, Connectivity, Network Performance and Environment. |
| Economic | Economic Growth | ✓ | To assess the expected impact of the intervention in regards to facilitating economic growth through improving connectivity, reliability, resilience and delivery of planned developments. |
| | Carbon Emissions | ✓ | To assess the expected impact of the intervention on carbon emissions. |
| | SDI & the Regions | ✓ | To assess both the expected social and distributional impacts of the intervention in terms of accessibility / affordability / availability / acceptability for vulnerable groups, and impacts on regional imbalance. |
| | Local Environment | ✓ | To assess the expected impact of the intervention in regards to air quality, noise, landscape and streetscape. |
| | Well being | ✓ | To assess the impact of the intervention in regards to severance, physical activity, KSIs, crime and improving access to good and services. |
| | Expected VfM Category | ✓ | To assess the value for money of the intervention. |
| Managerial | Implementation Timetable | ✗ | Interventions are to be considered regardless of the timescales for intervention. |
| | Practical Feasibility | ✓ | To assess how realistic it will be to deliver the intervention. |
| | Quality of Evidence | ✗ | Interventions are to be considered regardless of the current level of available evidence. |
| Financial | Capital costs (£) | ✗ | Interventions are to be considered regardless of the level of capital cost. |
| | Revenue Costs (£) | ✗ | Interventions are to be considered regardless of the level of revenue cost. |
| | Cost Risk | ✗ | Interventions are to be considered regardless of cost risk. |
| Commercial | Flexibility of Option | ✗ | Interventions are to be considered regardless of the flexibility of timescales for intervention. |

Table 3-2: Appraisal Framework Scoring

| STRATEGIC (MAX OF 15 POINTS) | | | ECONOMIC (MAX OF 25 POINTS) | | | | | VALUE FOR MONEY (MAX OF 5 POINTS) | MANAGERIAL/ FINANCIAL/ COMMERCIAL (MAX OF 5 POINTS) | |
|------------------------------|---------------------|-------------------------------|--|---------------------|----------------------|-----------------------|-----------------------|-----------------------------------|---|---------------------------|
| CATEGORY: | 1A) SCALE OF IMPACT | 1B) FIT WITH WIDER OBJECTIVES | 1C) FIT WITH WEST OF M6 STUDY OBJECTIVES | 2A) ECONOMIC GROWTH | 2B) CARBON EMISSIONS | 2C) SDI & THE REGIONS | 2D) LOCAL ENVIRONMENT | 2E) WELLBEING | 3A) EXPECTED VALUE FOR MONEY | 4A) PRACTICAL FEASIBILITY |
| 1 Point | Low | No Fit | Large Negative Impact | | | | | Poor <1 | 1. Low | |
| 2 Points | 2. | Supports 1 Objective | Moderate / Slight Negative Impact | | | | | Low 1-1.5 | 2. | |
| 3 Points | 3. Minimal | Supports 2 Objectives | Minimal Impact | | | | | Med 1.5-2 | 3. | |
| 4 Points | 4. | Supports 3 Objectives | Moderate / Slight Positive Impact | | | | | High 2-4 | 4. | |
| 5 Points | 5. High | Supports all 4 Objectives | Large Positive Impact | | | | | Very High >4 | 5. High | |

- Each intervention has been assessed against the ten categories.
- Each of the ten categories carry a total of 5 available points.

3.4 STEP 2 – SCORING THE SCHEME

3.4.1 Each intervention in the long list was then scored against the ten sub-categories forming the appraisal framework. The ten sub-categories have been weighted equally, each using a five point assessment scale based on the definitions set out in Table 3-2. Points are accumulated based on the scoring achieved under each of the ten sub-categories.

3.5 STEP 3 – SIFTING THE SCHEMES

3.5.1 In order to create a short list of schemes, a specific prioritisation criteria was developed to reflect:

- Alignment of the intervention with the study objectives;
- Forecasted economic impacts of the intervention; and
- The expected value for money and practical feasibility of delivering the intervention.

3.5.2 This reflects the performance against the five categories of the Transport Business Case without being too prescriptive for this strategic level of assessment.

3.5.3 The prioritisation criteria are detailed in Table 3-3

Table 3-3: Prioritisation Criteria for Sifting

- **Strategic score greater than 9**
 - Max of 15 points in available from the three Strategic sub-categories 1A – 1C.
- **Economic score greater than 15**
 - Max of 25 points in available from the five Strategic sub-categories 2A – 2E.
- **Expected Value for Money score greater than 1**
 - Max of 5 points in available from sub-category 3A.
- **Feasibility Score greater than 1**
 - Max of 5 points in available from sub-category 4A.

3.5.4 These thresholds were chosen in order to establish a range of transport solutions reflecting the objectives of the study, and identify a sensible number of distinct and feasible options for further development and assessment.

3.5.5 For the Managerial, Financial and Commercial aspects of the assessment, it was deemed that a consideration of the general value for money and feasibility of a scheme would be sufficient at this stage. This would immediately rule out any schemes expected to result in a poor value for money. Likewise, it would rule out any schemes that were expected to be very difficult to deliver, that result in a very low feasibility of delivery.

3.5.6 Only schemes satisfying the criteria outlined in Table 3-3 were added to the short list of prioritised schemes as part of this study.

3.6 STEP 4 – CREATING THE SHORTLIST

PRIORITISED SCHEMES

3.6.1 The Short List of prioritised schemes satisfying the sifting criteria is detailed in Table 3-6.

3.6.2 Location plans of each of the Prioritised Schemes are provided in Appendix B.

SCHEMES NOT PRIORITISED AT THIS STAGE OF THE STUDY

3.6.3 Some schemes which have been sifted during the appraisal process were very close to being on the shortlist. These schemes perform well against some of the criteria in EAST, but when accounting for all of the criteria, including the Study Specific Objectives, did not make the study shortlist.

3.6.4 The current tool used for the prioritisation process can be used to reassess schemes if government or local objectives and policies change. For example, if safety and sustainability becomes a priority, then the schemes can be easily recast, and a new priority list created.

3.6.5 There are several locations on the network where multiple options have been proposed to mitigate the identified issues. Where this is the case, only the top scoring option has been prioritised for further study work and included on the shortlist. Those scheme options missing out on this basis are identified in Table 3-7 with an asterisk (*). It should be noted that if this scheme is taken forward by other partner organisations such as Highways England, then options relating to the scheme identified in this study should be revisited. An example of this is as follows:

- Lake Bassenthwaite Option 1 – Maintain Existing Standard (50mph westbound and 70mph eastbound) scores 35 points and has not taken forward for further assessment.
- Lake Bassenthwaite Option 2 – Use Eastbound Route Single Lane in both directions scores 33 points and has not been taken forward for further assessment.
- Lake Bassenthwaite Option 3 – Upgrade to Dual Carriageway Standard (70mph) scores 36 points and has been taken forward for further assessment.

3.6.6 Finally, some schemes are omitted based on an assessment of their practical feasibility, whereby if a scheme scores “1. Low” it is omitted from the shortlist. However, these schemes should be considered in future studies should changes in land use and technology improve the feasibility of delivery.

3.6.7 A full list of schemes that were un-prioritised and not taken forward for further consideration at this stage are detailed in Table 3-7 with summary tables (Table 3-4 and Table 3-5) presented below.

Table 3-4: Summary of Schemes Prioritised by Highway Authority

| | Highways England | CCC |
|-----------------------|------------------|----------|
| Link Improvements | 7 | 4 |
| Bypass Schemes | 2 | 3 |
| Junction Improvements | 14 | 1 |
| Resilience Schemes | 6 | 1 |
| Total | 29 | 9 |

Table 3-5: Summary of Schemes Prioritised by route section

| SECTION | SECTION NAME | NO OF SCHEMES |
|----------------|---|----------------------|
| 1 | A689/A595 Brampton to Thursby | 1 |
| 2 | A595 Thursby to Cockermouth | 2 |
| 3 | A66 Workington to Keswick | 7 |
| 4 | A66 Keswick to Penrith | 1 |
| 5 | A595 Workington to Calder Bridge | 12 |
| 6 | A595 / 5092 Calder Bridge to Greenodd / Dalton | 1 |
| 7 | A590 Barrow to Greenodd | 9 |
| 8 | A590 Greenodd to M6 | 5 |
| | Total | 38 |

3.6.8 The greatest concentration of schemes are on Highways England's Strategic Road Network with a total of 29 schemes identified. Schemes on CCC local highway network total 9.

3.6.9 The Section with the highest concentration of schemes is Section 5, Workington to Calder Bridge with a total of 12 schemes closely followed by Section 7, A590 Barrow to Greenodd with 9 schemes, highlighting these sections as a priority for intervention to deliver the objectives of the Study.

Table 3-6: Prioritised Schemes

| SECTION | REF | OPTION | STRATEGIC | ECONOMIC | VFM | FEASIBILITY | TOTAL | PRIORITISED |
|---------|---------------------------------------|---|-----------|----------|-----|-------------|-------|-------------|
| 1 | 1-A | A595 Carlisle Southern Link Road | 13 | 17 | 2 | 3 | 35 | ✓ |
| 2 | 2-A | A595 Bothel Improvements | 11 | 17 | 2 | 4 | 34 | ✓ |
| | 2-E | A595 Moota Capacity Improvements | 11 | 17 | 3 | 3 | 34 | ✓ |
| 3 | 3-A | Port of Workington Access Bridge | 11 | 19 | 5 | 5 | 40 | ✓ |
| | 3-B | Port of Workington to A66 New Link Road | 11 | 17 | 2 | 2 | 32 | ✓ |
| | 3-C | A66 / A596 / Ramsay Brow Junction Improvements / Widening | 13 | 20 | 4 | 2 | 39 | ✓ |
| | 3-F | A66 Brigham-Broughton Safety Improvements | 10 | 16 | 4 | 4 | 34 | ✓ |
| | 3-G | A66 / A595 Junction Improvements (West) | 13 | 20 | 4 | 3 | 40 | ✓ |
| | 3-G | A66 / A595 Junction Improvements (East) | 13 | 20 | 4 | 3 | 40 | ✓ |
| 4 | 3-K | A66 Lake Bassenthwaite Resilience - Option 3 Dual 70mph both ways | 13 | 19 | 2 | 2 | 36 | ✓ |
| 4 | 4-D | A66 Scales/Troutbeck Climbing Lanes | 11 | 17 | 3 | 2 | 33 | ✓ |
| 5 | 5-A | A595 / A597 / B5306 Junction signalisation | 13 | 20 | 3 | 3 | 39 | ✓ |
| | 5-B | A595 Low Moresby Junction | 11 | 16 | 3 | 4 | 34 | ✓ |
| | 5-E | A595 / Pelican Garage / New Road Junction Improvement | 13 | 20 | 4 | 3 | 40 | ✓ |
| | 5-F | A595 Whitehaven Relief Road - Option 1 - Single carriageway development route | 13 | 19 | 3 | 3 | 38 | ✓ |
| | 5-I | A595 / Inkerman Terrace Junction Improvements | 14 | 20 | 4 | 3 | 41 | ✓ |
| | 5-K | A595 / Homewood Road Junction Improvements | 14 | 20 | 4 | 3 | 41 | ✓ |
| | 5-L | A595 / Mirehouse Junction Improvements | 14 | 20 | 4 | 4 | 42 | ✓ |
| | 5-N | A595 Bigrigg Bypass | 12 | 17 | 2 | 3 | 34 | ✓ |
| | 5-P | A595 Egremont Junctions - Increase ICD of both roundabouts | 14 | 20 | 4 | 3 | 41 | ✓ |
| | 5-R | A595 Beckermat Junction and Moorside / Sellafield Access Improvements | 15 | 20 | 4 | 3 | 42 | ✓ |
| | 5-T | A595 Calder Bridge Bypass | 10 | 16 | 2 | 2 | 30 | ✓ |
| 5-Y | A595 Capacity Improvements | 12 | 17 | 2 | 2 | 33 | ✓ | |
| 6 | 6-K | Grizebeck Bypass | 11 | 18 | 2 | 3 | 34 | ✓ |
| 7 | 7-A | A590 Geotechnical Issue at Greenodd | 11 | 18 | 3 | 3 | 35 | ✓ |
| | 7-C | A590 Junction Improvements in Ulverston | 11 | 20 | 3 | 2 | 36 | ✓ |
| | 7-C | A590 Junction Improvement in Swarthmoor | 11 | 16 | 3 | 2 | 32 | ✓ |
| | 7-G | Lindal-in-Furness Resilience | 11 | 17 | 3 | 3 | 34 | ✓ |
| | 7-H | A590/A595 Junction Improvement | 11 | 20 | 3 | 3 | 37 | ✓ |
| | 7-I | A590 / Ulverston Road Junction Improvement | 11 | 20 | 2 | 3 | 36 | ✓ |
| | 7-I | Offline scheme between Ulverston and Dalton-in-Furness | 12 | 16 | 2 | 2 | 32 | ✓ |
| | 7-J | Ulverston Bypass connecting in with A590 near Swarthmoor (Southern bypass) | 11 | 17 | 2 | 3 | 33 | ✓ |
| N/A | A590 Dualling - Greenodd to Ulverston | 12 | 17 | 2 | 4 | 35 | ✓ | |
| 8 | 8-A | A590 Dualling - Greenodd to Haverthwaite | 12 | 17 | 3 | 2 | 34 | ✓ |
| | 8-A | A590 2+1 - Haverthwaite to Newby Bridge | 11 | 16 | 3 | 2 | 32 | ✓ |
| | 8-A | A590 2+1 - Newby Bridge to Ayside | 12 | 17 | 3 | 2 | 34 | ✓ |
| | 8-A | A590 Dualling - Town End to Levens | 12 | 17 | 3 | 4 | 36 | ✓ |
| | 8-E | Newby Bridge Flooding Alleviation | 10 | 18 | 3 | 4 | 35 | ✓ |

Table 3-7: Un-prioritised Schemes

| | REF | OPTION | STRATEGIC | ECONOMIC | VFM | FEASIBILITY | TOTAL | PRIORITISED |
|---|-----|---|-----------|----------|-----|-------------|-------|-------------|
| 1 | 1-B | A595 Upgrade - Barras Brow | 8 | 16 | 1 | 3 | 28 | x |
| | 1-C | A595 Cardewlees Roundabout Upgrade | 8 | 16 | 2 | 3 | 29 | x |
| 2 | 2-B | A595 Allerdale Improvements - Option 1 | 8 | 14 | 1 | 3 | 26 | x |
| | 2-B | A595 Allerdale Improvements / Red Dial - Option 2 | 9 | 16 | 3 | 3 | 31 | x |
| | 2-C | A595 Mealsgate / Aldersceugh Safety Improvements | 9 | 16 | 4 | 5 | 34 | x |
| | 2-D | A595 Red Dial Resilience Improvements | 9 | 14 | 1 | 3 | 27 | x |
| 3 | 3-D | A66 Stainburn Roundabout Congestion Mitigation | 7 | 15 | 2 | 4 | 28 | x |
| | 3-E | A66 Broughton Bends Safety Improvements | 9 | 16 | 4 | 5 | 34 | x |
| | 3-H | A66 / A5086 Lamplugh Junction Safety Improvements | 8 | 16 | 4 | 5 | 33 | x |
| | 3-I | A66 / Lambfoot Rake Staggered Junction Safety Improvements (Embleton) | 8 | 16 | 4 | 5 | 33 | x |
| | 3-J | A66 Embleton Junction Improvements | 8 | 16 | 4 | 5 | 33 | x |
| | 3-K | A66 Lake Bassenthwaite Resilience - Option 1 – Maintain Existing Standard* | 12 | 19 | 2 | 2 | 35 | ✓ |
| | 3-K | A66 Lake Bassenthwaite Resilience - Option 2 – Single carriageway both ways | 12 | 17 | 3 | 1 | 33 | x |
| | 3-M | A66 / Thornthwaite Jct Safety Improvements | 8 | 16 | 2 | 3 | 29 | x |
| | 3-N | A66 Braithwaite “central” Junction Safety Improvements | 8 | 16 | 2 | 3 | 29 | x |
| | 3-O | A66 Braithwaite “south” Junction Safety Improvements | 8 | 16 | 2 | 3 | 29 | x |
| | 3-P | A66 Portinscale Junction Visibility Improvements | 9 | 16 | 2 | 4 | 31 | x |
| | 3-Q | A66 / B5289 High Hill Junction Safety Improvements | 8 | 16 | 2 | 5 | 31 | x |
| | 3-R | A66 Workington to Keswick Layby Improvements | 8 | 16 | 2 | 4 | 30 | x |
| | 3-S | A66 / A591 / A5271 Crosthwaite Roundabout Safety Improvements | 8 | 16 | 2 | 3 | 29 | x |
| 4 | 4-A | A66 High Briery Interchange Safety Improvements | 8 | 16 | 3 | 3 | 30 | x |
| | 4-B | A66 Link Improvements at Threlkeld | 9 | 16 | 4 | 4 | 33 | x |
| | 4-C | A66 Scales Cycle Route | 9 | 16 | 1 | 3 | 29 | x |
| | 4-E | A66 Beckses Junction Improvements | 9 | 16 | 2 | 3 | 30 | x |
| | 4-F | A66 (Highgate Farm) Realignment | 8 | 16 | 2 | 2 | 28 | x |
| | 4-G | A66 Penruddock to Rheged Safety Improvements | 8 | 16 | 4 | 3 | 31 | x |
| | 4-H | A66 Deceleration and Pedestrian Improvements at Stainton. | 8 | 15 | 2 | 3 | 28 | x |
| | 4-I | A66 Rheged Roundabout Lining Improvements | 8 | 15 | 2 | 5 | 30 | x |
| 5 | 5-C | A595 Realignment at Lowca | 11 | 17 | 1 | 3 | 32 | x |
| | 5-D | A595 Parton Five Junctions Ghost Island | 9 | 17 | 2 | 4 | 32 | x |
| | 5-F | A595 Whitehaven Bypass - Option 2* - Dual carriageway (National speed) | 13 | 19 | 2 | 2 | 36 | ✓ |
| | 5-M | A595 / Scalegill Road Junction Improvements | 8 | 16 | 2 | 4 | 30 | x |
| | 5-O | A595 / Clintz Road Roundabout / A5086 Junction Capacity and Safety Improvements | 9 | 16 | 3 | 3 | 31 | x |

| | REF | OPTION | STRATEGIC | ECONOMIC | VFM | FEASIBILITY | TOTAL | PRIORITISED |
|---|-----|--|-----------|----------|-----|-------------|-------|-------------|
| 5 | 5-Q | A595 Thornhill Access Improvements | 9 | 16 | 2 | 4 | 31 | ✘ |
| | 5-V | A595 Calder Bridge Safety Improvements | 9 | 16 | 2 | 3 | 30 | ✘ |
| | 5-W | A595 - implementation of bus lanes on wide sections of carriageway. | 9 | 21 | 4 | 2 | 36 | ✘ |
| | 5-Z | A595 Development Route | 12 | 16 | 1 | 3 | 32 | ✘ |
| 6 | 6-A | New higher bridge at Holmrook Bridge | 9 | 15 | 1 | 2 | 27 | ✘ |
| | 6-B | A595 Resilience at Ravenglass | 11 | 17 | 1 | 2 | 31 | ✘ |
| | 6-C | A595 Resilience at Muncaster | 11 | 17 | 1 | 2 | 31 | ✘ |
| | 6-D | A595 Waberthwaite | 7 | 14 | 2 | 3 | 26 | ✘ |
| | 6-F | Bootle Bypass | 9 | 16 | 2 | 3 | 30 | ✘ |
| | 6-G | Realignment of A595 between Whitbeck and Whicham. | 7 | 14 | 1 | 2 | 24 | ✘ |
| | 6-H | Realignment of A595 between Whicham and Halthwaites. | 9 | 14 | 1 | 2 | 26 | ✘ |
| | 6-I | Bridge over estuary, providing realignment of A595 at Duddon Valley between | 11 | 19 | 1 | 2 | 33 | ✘ |
| | 6-I | Bridge over estuary, providing realignment of A595 between Haverigg and Askam. | 11 | 21 | 1 | 2 | 35 | ✘ |
| | 6-J | Foxfield to Kirkby-in-Furness link road | 10 | 17 | 1 | 2 | 30 | ✘ |
| | 6-K | Grizebeck Signals | 9 | 17 | 3 | 4 | 33 | ✘ |
| | 6-L | A5092 Lowick Green to Greenodd | 10 | 14 | 2 | 3 | 29 | ✘ |
| | 6-M | Safety improvements on A595 at Askham & Grizebeck | 9 | 16 | 2 | 4 | 31 | ✘ |
| 7 | 7-B | A590 Dualling between Barrow and Greenodd | 11 | 15 | 1 | 2 | 29 | ✘ |
| | 7-D | A590 NMU Connectivity improvements in Ulverston and Swarthmoor. | 8 | 17 | 2 | 5 | 32 | ✘ |
| | 7-J | Ulverston Bypass connecting in with A590 near Swarthmoor (north tunnel) | 11 | 21 | 1 | 2 | 35 | ✘ |
| | 7-L | Widening of A590 North Road, Barrow | 9 | 16 | 3 | 2 | 30 | ✘ |
| 8 | 8-A | A590 Dualling- Haverthwaite to Newby Bridge* | 11 | 16 | 2 | 2 | 31 | ✔ |
| | 8-B | Haverthwaite Junction Improvements | 9 | 16 | 2 | 2 | 29 | ✘ |
| | 8-C | Improved signage between Haverthwaite and Newby Bridge | 9 | 16 | 4 | 3 | 32 | ✘ |
| | 8-D | New A590 direct link between Ayside and Haverthwaite | 11 | 19 | 2 | 1 | 33 | ✘ |
| | 8-F | Lindale NMU improvements | 9 | 15 | 2 | 4 | 30 | ✘ |
| | 8-G | A590/A5074 Gilpin Bridge. Junction improvements | 7 | 15 | 2 | 2 | 26 | ✘ |
| | 8-H | New direct link between Levens and tying back in with A590 near Stainton. | 11 | 19 | 1 | 2 | 33 | ✘ |
| | 8-I | Morecambe Bay Bridge | 10 | 21 | 1 | 1 | 33 | ✘ |

There are several locations on the network where multiple options have been proposed to mitigate the identified issues. Where this is the case, only the top scoring option has been prioritised for further study work and included on the shortlist. Those scheme options missing out on this basis are identified in Table 3-7 with an asterisk () and orange tick.

3.7 STEP 5 – PACKAGE PRIORITISED SCHEMES

3.7.1 The next step in the process was to identify a sensible number of distinct and feasible options for further development and assessment.

3.7.2 It was agreed by the study team that the packaging of some individual schemes into ‘an option’ would provide greater benefit to the study so that more schemes can be appraised, although as combinations of schemes. This allows sensible numbers of packaged options to be appraised further.

3.7.3 Multiple schemes have been packaged together if they are located in close proximity and are expected to have a direct impact upon one another.

3.7.4 Schemes have been packaged individually where it is expected that they address localised impacts, and would not have a direct impact on other prioritised schemes.

3.7.5 A total of 38 schemes have been prioritised into 30 packages. These are detailed in the following paragraphs by route section.

SECTION 1: CARLISLE TO THURSBY

3.7.6 One scheme has been prioritised for further assessment:

Package 1

→ A595 Carlisle Southern Link Road

3.7.7 This scheme is the only intervention identified on Section 1 of the study area to be prioritised It is therefore packaged as an individual scheme.

SECTION 2: THURSBY TO COCKERMOUTH

3.7.8 Two schemes have been prioritised for further assessment:

Package 2

→ A595 Bothel Improvements

→ A595 Moota Capacity Improvements

- 3.7.9 Both schemes address capacity issues and are located in close proximity. As the schemes are expected to interact with each other, the project team have combined these together as one option termed Package 2.

SECTION 3: WORKINGTON TO KESWICK

- 3.7.10 Seven schemes have been prioritised for further assessment:

Package 3

- Port of Workington Access Bridge

Package 4

- Port of Workington to A66 New Link Road

Package 5

- A66 / A596 / Ramsay Brow Junction Improvements / Widening

Package 6

- A66 Brigham-Broughton Safety Improvements

Package 7

- A66 / A595 Junction Improvements (West)
- A66 / A595 Junction Improvements (East)

Package 8

- A66 Lake Bassenthwaite Resilience - Option 3

- 3.7.11 The A66 / A595 East and West junction improvements are capacity enhancements and directly interact with each other, located at the extents of the A66 junction with the A595 near Bridgefoot in the east and Papcastle in the west.
- 3.7.12 The other schemes in prioritised along Section 3 address specific localised issues and are packaged individually.

SECTION 4: KESWICK TO PENRITH

- 3.7.13 One scheme has been prioritised for further assessment:

Package 9

- A66 Scales / Troutbeck Climbing Lanes

- 3.7.14 This scheme is the only intervention identified on Section 4 of the study area to be prioritised. It is therefore packaged as an individual scheme.

SECTION 5: WORKINGTON TO GOSFORTH

3.7.15 Twelve schemes on Section 5 have been prioritised for further assessment.

Package 10

→ A595 / A597 / B5306 Junction signalisation

Package 11

→ A595 Low Moresby Junction

Package 12

→ A595 / Pelican Garage / New Road Junction Improvement

→ A595 / Inkerman Terrace Junction Improvements

→ A595 / Homewood Road Junction Improvements

→ A595 / Mirehouse Junction Improvements

Package 13

→ A595 Whitehaven Bypass – Option 1 - Single carriageway development route

Package 14

→ A595 Bigrigg Bypass

Package 15

→ A595 Egremont Junctions - Increase ICD of both roundabouts

Package 16

→ A595 Beckermest Junction and Moorside / Sellafeld Access Improvements

Package 17

→ A595 Calder Bridge Bypass

Package 18

→ A595 Capacity Improvements

3.7.16 Four junction improvement schemes have been combined into Package 12, due to their close proximity and direct impacts upon each other

3.7.17 All other schemes prioritised in Section 5 are recommended to be taken forward as individual packages. These address a range of issues in regards to Capacity, Connectivity and Resilience.

SECTION 6: GOSFORTH TO DALTON-IN-FURNESS / GREENODD

3.7.18 One scheme has been prioritised for further assessment:

Package 19

→ Grizebeck Bypass

3.7.19 This scheme is the only intervention identified on Section 6 of the study area to be prioritised. It is therefore packaged as an individual scheme.

SECTION 7: BARROW-IN-FURNESS TO GREENODD

3.7.20 Nine schemes have been prioritised to address issues on Section 7 of the study area.

Package 20

→ A590 Geotechnical Issue at Greenodd

Package 21

→ A590 Junction Improvements in Ulverston

Package 22

→ A590 Junction Improvements in Swarthmoor

Package 23

→ Lindal-in-Furness Resilience

Package 24

→ A590 / A595 Junction Improvement

→ A590 / Ulverston Road Junction Improvement

Package 25

→ Offline scheme between Ulverston and Dalton-in-Furness

Package 26

→ Ulverston Bypass connecting in with A590 near Swarthmoor (Southern bypass)

Package 27

→ A590 Dualling - Greenodd to Ulverston

3.7.21 Two schemes have been packaged together in Package 24 due to their proximity addressing key capacity issues at junctions on the A590 near Dalton-in-Furness. All other schemes have been packaged individually.

SECTION 8: GREENODD TO M6 JUNCTION 36

3.7.22 Five schemes have been prioritised for further consideration.

Package 28

→ A590 Dualling - Greenodd to Haverthwaite

→ A590 2+1 - Haverthwaite to Newby Bridge

→ A590 2+1 - Newby Bridge to Ayside

Package 29

→ A590 Dualling - Town End to Levens

Package 30

→ Newby Bridge Flooding Alleviation

- 3.7.23 Three schemes have been consolidated to provide Package 28. Each of these individual schemes involve capacity enhancements along sections of the A590 between Greenodd and Ayside. Due to the similar nature of the scheme, it has been deemed more appropriate to consider these as a single package for further assessment.

SUMMARY

- 3.7.24 This paper has presented the process of appraising and sifting the long list of schemes identified for improving connectivity west of the M6 in line with the Intervention Specific Objectives. The paper has identified the need to prioritise schemes from the long list using information gathered during the EAST process.
- 3.7.25 It has outlined the requirement to develop a focussed Appraisal framework, which assesses each of the long-list schemes against specific criteria.
- 3.7.26 Schemes have been scored against ten sub-categories of this appraisal framework, considering the Strategic, Economic, Managerial, Commercial and Financial aspects of each.
- 3.7.27 Schemes were then sifted by applying a prioritisation criteria, based upon previous project experience and agreed with the client, in order to filter out those schemes that don't support the key criteria of the West of M6 study.
- 3.7.28 This sifting enabled the creation of a short-list of schemes to take forward for further consideration. A total of 38 schemes were included on the shortlist, and then prioritised as 30 scheme packages. The individual schemes by section are detailed below in Table 3-8.

Table 3-8: Summary of Schemes Prioritised by route section

| SECTION | SECTION NAME | NO OF SCHEMES |
|---------|--|---------------|
| 1 | A689/A595 Brampton to Thursby | 1 |
| 2 | A595 Thursby to Cockermonth | 2 |
| 3 | A66 Workington to Keswick | 7 |
| 4 | A66 Keswick to Penrith | 1 |
| 5 | A595 Workington to Calder Bridge | 12 |
| 6 | A595 / 5092 Calder Bridge to Greenodd / Dalton | 1 |
| 7 | A590 Barrow to Greenodd | 9 |
| 8 | A590 Greenodd to M6 | 5 |
| | Total | 38 |

4 APPRAISAL OF SCHEMES

4.1 RESULTS SUMMARY

4.1.1 This section presents the results of a number of different packages of schemes to improve connectivity from the M6 to West Cumbria. The findings show that there are a number of schemes that could be delivered to improve connectivity and to provide economic, environmental and resilience benefit.

4.1.2 Each scheme identified in the prioritisation process has been assessed in further detail. This has included:

- Engineering assessment to identify potential scheme layouts
- Updated cost assessment
- Environmental appraisal
- Economic benefits assessment

4.1.3 Following this further assessment, Table 4-4 provides a summary of all the scheme assessment scores for each package. Each scheme is scored against the definitions outlined in the tables below.

Table 4-1: Scale of Impact Definition

| RATING | IMPACT | DEFINITION |
|--------|--|--|
| 1 | Very small overall impact | Would have a very small positive impact, possibly with undesirable consequences |
| 2 | Minor impact | Would have a modest overall impact |
| 3 | Moderate impact | Expected to have a reasonably significant impact on the problem identified |
| 4 | Significant impact | Expected to significantly alleviate the problem |
| 5 | Fully addresses the identified problem | Expected to fully solve the identified problem, without any undesirable consequences |

Table 4-2: Fit with Wider Transport and Government Objectives

| RATING | IMPACT | DEFINITION |
|--------|----------------|---|
| 1 | Poor fit | There is significant conflict with other policies / options affecting the study area which needs to be resolved. Possibly also conflicts with other modes. |
| 2 | Low fit | There is some conflict with other policies / options or modes. |
| 3 | Reasonable fit | Overall the option fits well with other policies affecting the study area. |
| 4 | Good fit | The option fits very well with other policies affecting the study area. |
| 5 | Excellent fit | Option complements other policies / proposals affecting study area, has no negative impacts on other modes or outcomes and demonstrates 'doing more with less'. |

Table 4-3: Fit with West of M6 Objectives

| RATING | DEFINITION |
|--------|---|
| 1 | No fit |
| 2 | Supports one West of M6 Study Objective |
| 3 | Supports two West of M6 Study Objectives |
| 4 | Supports three West of M6 Study Objectives |
| 5 | Supports all four West of M6 Study Objectives |

Figure 4-1: Deliverability Categories used in Appraisal

| | | | | | | | | | | | | |
|---------------------------|---|----------|-------------|----------|-------|-----------|----------|----------|----------|-----------|--------|--|
| Deliverability Categories | Journey Time Range Benefits £M if Available (2010 prices) | >100M | 50-100M | 10-50M | 5-10M | 1-5M | <1M | | | | | |
| | Scheme Cost Range | 100M+ | 50-100M | 10-50M | 5-10M | 2.5- 5.0M | 1.0-2.5M | 0.5-1.0M | 250-500k | 100 - 250 | 0-100k | |
| | Delivery Timescales Short <3 years Medium 3 - 7 years Long > 7 years | >7 years | 3 - 7 years | <3 years | | | | | | | | |

- 4.1.4 Some schemes are not categorised into any of the above deliverability categories. This is where schemes are currently being progressed independently of this study and the costs and journey time savings are currently unknown.
- 4.1.5 Table 4-5 provides an overview of the social and environmental appraisal undertaken for each scheme. Detailed environmental appraisal was not undertaken for those schemes which have been or are being progressed independently of this study.

Table 4-4: Package Summary Table – Scale of Impact, Fit with Objectives, Economic Growth and Deliverability

| Package | Scheme | Economic Impacts and Strategic Fit | | | Study Objectives | | | | | Deliverability | | |
|---------|---|------------------------------------|---------------------------|-----------------|--------------------------------------|-----------------|--------------|---------------------|-------------|---|-------------------|---|
| | | Scale of Impact | Fit with wider objectives | Economic Growth | Fit with West of M6 Study Objectives | Economic Growth | Connectivity | Network Performance | Environment | Journey Time Range Benefits EM if Available (2010 prices) | Scheme Cost Range | Delivery Timescales Short <3 years Medium 3 - 7 years Long >7 years |
| 1 | A595 Carlisle Southern Link Road | 5 | 3 | 5 | 5 | ✓ | ✓ | ✓ | ✓ | >100M | 50-100M | >7 years |
| 2 | A595 Bothel Improvements / A595 Moota Capacity Improvements | 4 | 3 | 4 | 4 | ✓ | ✓ | ✓ | | 5-10M | 2.5-5.0M | <3 years |
| 3 | Port of Workington Access Bridge | 3 | 5 | 5 | 4 | ✓ | ✓ | ✓ | | | 2.5-5.0M | <3 years |
| 4 | Port of Workington to A66 New Link Road | 4 | 2 | 4 | 4 | ✓ | ✓ | ✓ | | 5-10M | 50-100M | >7 years |
| 5 | A66 / A596 / Ramsay Brow Junction Improvements / Widening | 3 | 4 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | <1M | 0.5-1.0M | <3 years |
| 6 | A66 Brigham-Broughton Safety Improvements | 3 | 4 | 3 | 3 | ✓ | | ✓ | | | 2.5- 5.0M | <3 years |
| 7 | A66 / A595 Junction Improvements (East & West) | 3 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 1.0-2.5M | <3 years |
| 8 | A66 Lake Bassenthwaite Resilience - Option 3 | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 50-100M | 10-50M | >7 years |
| 9 | A66 Scales/Troutbeck Climbing Lanes | 3 | 3 | 4 | 4 | ✓ | ✓ | ✓ | | 1-5M | 10-50M | 3 - 7 years |
| 10 | A595 / A597 / B5306 Junction signalisation | 3 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | | | |
| 11 | A595 Low Moresby Geotechnical Resilience | 4 | 4 | 5 | 4 | ✓ | ✓ | ✓ | | | | 3 - 7 years |
| 12 | 1) Pelican Garage, 2) Inkerman Terrace, 3) Homewood Road, 4) Mirehouse Road | 4 | 5 | 5 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 2.5- 5.0M | <3 years |
| 13 | A595 Whitehaven Bypass - Option 1 - 60mph - single lane | 5 | 4 | 5 | 4 | ✓ | ✓ | ✓ | | >100M | 100M+ | >7 years |
| 14 | A595 Bigrigg Bypass | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 100M+ | >7 years |
| 15 | A595 Egremont Junctions - Increase ICD of both roundabouts | 4 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 0.5-1.0M | <3 years |
| 16 | A595 Beckermat Moorside / Sellafield Improvements | 5 | 5 | 5 | 4 | ✓ | ✓ | ✓ | | | | 3 - 7 years |
| 17 | A595 Calder Bridge Bypass | 3 | 4 | 4 | 3 | ✓ | | ✓ | | | 10-50M | 3 - 7 years |
| 18 | A595 Dualling between Whitehaven and Egremont and Egremont to Calder Bridge | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 100M+ | >7 years |
| 19 | Grizebeck Bypass | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 5-10M | 3 - 7 years |
| 20 | A590 Geotechnical Issue at Greenodd | 3 | 5 | 4 | 4 | ✓ | | ✓ | ✓ | | | <3 years |
| 21 | A590 Junction Improvements in Ulverston | 3 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | | 2.5- 5.0M | <3 years |
| 22 | A590 Junction Improvement in Swarthmoor | 3 | 5 | 4 | 4 | ✓ | ✓ | ✓ | | | 5-10M | <3 years |

| Package | Scheme | Economic Impacts and Strategic Fit | | | Study Objectives | | | | | Deliverability | | |
|---------|--|------------------------------------|---------------------------|-----------------|--------------------------------------|-----------------|--------------|---------------------|-------------|---|-------------------|--|
| | | Scale of Impact | Fit with wider objectives | Economic Growth | Fit with West of M6 Study Objectives | Economic Growth | Connectivity | Network Performance | Environment | Journey Time Range Benefits £M if Available (2010 prices) | Scheme Cost Range | Delivery Timescales Short <3 years Medium 3 - 7 years Long > 7 years |
| 23 | Lindal-in-Furness Resilience | 3 | 5 | 4 | 4 | ✓ | | ✓ | ✓ | | | <3 years |
| 24 | A590/A595 & A590 / Ulverston Road Junction Improvement | 3 | 4 | 4 | 4 | ✓ | ✓ | ✓ | | | | |
| 25 | Offline scheme between Ulverston and Dalton-in-Furness | 4 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 10-50M | >7 years |
| 26 | Ulverston Bypass connecting in with A590 near Swarthmoor (Southern bypass) | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | >100M | 50-100M | >7 years |
| 27 | A590 Dualling - Greenodd to Ulverston | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 10-50M | 3 - 7 years |
| 28 | 1) Dualling - Greenodd to Haverthwaite & 2) 2+1 - Haverthwaite to Newby Bridge & 3) 2+1 - Newby Bridge to Ayside | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 50-100M | 100M+ | >7 years |
| 29 | A590 Dualling - Town End to Levens | 4 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 5-10M | 10-50M | 3 - 7 years |
| 30 | Newby Bridge Flooding Alleviation | 3 | 5 | 4 | 3 | | | ✓ | ✓ | | | <3 years |

Note Package 10 and 24 have not been progressed any further as detailed assessment work revealed original identified problems did not warrant any further development solutions at these locations.

Package 3, 6, 11, 16, 17, 20, 21, 22, 23, 30 do not have journey time benefit range categories or in some cases, costs categories. These schemes are either in development, have limited definition, or previous work has been undertaken using a different approach to journey time benefit assessment and cost definition.

Table 4-5: Package Summary – Scheme Cost, Assessment Score, Social Impact Appraisal and Environmental Appraisal Summary

| Package | Scheme | Social Impact Appraisal | | | | | | | Environment | | | | | | | |
|---------|---|---------------------------------------|---------------------|------------|---------------------|---------------------|------------------------|---------------------|----------------------------------|---------------------|-------------------|-------------------|-----------------------|-------------------|---------------------|------------|
| | | Physical Activity | Journey Quality | Security | Accidents | Accessibility | Personal Affordability | Severance | Option Values and Non-Use Values | Noise | Air Quality | Greenhouse Gas | Landscape / Townscape | Heritage | Biodiversity | Water |
| 1 | A595 Carlisle Southern Link Road | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 2 | A595 Bothel Improvements / A595 Moota Capacity Improvements | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 3. Slight Adverse | 3. Slight Adverse | 5. Slight Benefit | 3. Slight Adverse | 4. Neutral | 4. Neutral | 4. Neutral |
| 3 | Port of Workington Access Bridge | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 4 | Port of Workington to A66 New Link Road | 5. Slight Benefit | 6. Moderate Benefit | 4. Neutral | 6. Moderate Benefit | 6. Moderate Benefit | 4. Neutral | 2. Moderate Adverse | 4. Neutral | 2. Moderate Adverse | 3. Slight Adverse | 5. Slight Benefit | 1. Large Adverse | 1. Large Adverse | 2. Moderate Adverse | 4. Neutral |
| 5 | A66 / A596 / Ramsay Brow Junction Improvements / Widening | 4. Neutral | 4. Neutral | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 5. Slight Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral |
| 6 | A66 Brigham-Broughton Safety Improvements | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 7 | A66 / A595 Junction Improvements (East & West) | 4. Neutral | 5. Slight Benefit | 4. Neutral | 5. Slight Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 5. Slight Benefit | 5. Slight Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral |
| 8 | A66 Lake Bassenthwaite Resilience-Option 3 | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 5. Slight Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 3. Slight Adverse | 3. Slight Adverse | 5. Slight Benefit | 1. Large Adverse | 3. Slight Adverse | 2. Moderate Adverse | 4. Neutral |
| 9 | A66 Scales/Troutbeck Climbing Lanes | 5. Slight Benefit | 5. Slight Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 3. Slight Adverse | 3. Slight Adverse | 5. Slight Benefit | 2. Moderate Adverse | 4. Neutral | 2. Moderate Adverse | 4. Neutral |
| 10 | A595 / A597 / B5306 Junction signalisation | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 11 | A595 Low Moresby Geotechnical Resilience | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 12 | 1) Pelican Garage, 2) Inkerman Terrace, 3) Homewood Road, 4) Mirehouse Road | 4. Neutral | 5. Slight Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 5. Slight Benefit | 5. Slight Benefit | 2. Moderate Adverse | 4. Neutral | 3. Slight Adverse | 4. Neutral |
| 13 | A595 Whitehaven Bypass - Option 1 - 60mph - single lane | 5. Slight Benefit | 6. Moderate Benefit | 4. Neutral | 7. Large Benefit | 7. Large Benefit | 4. Neutral | 3. Slight Adverse | 4. Neutral | 1. Large Adverse | 5. Slight Benefit | 7. Large Benefit | 1. Large Adverse | 4. Neutral | 3. Slight Adverse | 4. Neutral |

| Package | Scheme | Social Impact Appraisal | | | | | | | Environment | | | | | | | |
|---------|---|---------------------------------------|---------------------|------------|---------------------|------------------|------------------------|-------------------|----------------------------------|---------------------|---------------------|---------------------|-----------------------|-------------------|---------------------|------------------|
| | | Physical Activity | Journey Quality | Security | Accidents | Accessibility | Personal Affordability | Severance | Option Values and Non-Use Values | Noise | Air Quality | Greenhouse Gas | Landscape / Townscape | Heritage | Biodiversity | Water |
| 14 | A595 Bigrigg Bypass | 4. Neutral | 5. Slight Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 7. Large Benefit | 4. Neutral | 7. Large Benefit | 6. Moderate Benefit | 7. Large Benefit | 1. Large Adverse | 4. Neutral | 3. Slight Adverse | 4. Neutral |
| 15 | A595 Egremont Junctions - Increase ICD of both roundabouts | 5. Slight Benefit | 5. Slight Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 5. Slight Benefit | 5. Slight Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral |
| 16 | A595 Beckermot Moorside / Sellafield Improvements | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 17 | A595 Calder Bridge Bypass | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 18 | A595 Dualling between Whitehaven and Egremont and Egremont to Calder Bridge | 4. Neutral | 5. Slight Benefit | 4. Neutral | 7. Large Benefit | 4. Neutral | 4. Neutral | 3. Slight Adverse | 4. Neutral | 2. Moderate Adverse | 2. Moderate Adverse | 7. Large Benefit | 1. Large Adverse | 1. Large Adverse | 2. Moderate Adverse | 4. Neutral |
| 19 | Grizebeck Bypass | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 5. Slight Benefit | 4. Neutral | 4. Neutral | 5. Slight Benefit | 6. Moderate Benefit | 1. Large Adverse | 4. Neutral | 2. Moderate Adverse | 4. Neutral |
| 20 | A590 Geotechnical Issue at Greenodd | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 21 | A590 Junction Improvements in Ulverston | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 22 | A590 Junction Improvement in Swarthmoor | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 23 | Lindal-in-Furness Resilience | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 24 | A590/A595 & A590 / Ulverston Road Junction Improvement | Not appraised in detail in this study | | | | | | | | | | | | | | |
| 25 | Offline scheme between Ulverston and Dalton-in-Furness | 5. Slight Benefit | 7. Large Benefit | 4. Neutral | 7. Large Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 3. Slight Adverse | 5. Slight Benefit | 7. Large Benefit | 1. Large Adverse | 4. Neutral | 1. Large Adverse | 4. Neutral |
| 26 | Ulverston Bypass connecting in with A590 near Swarthmoor (Southern bypass) | 5. Slight Benefit | 6. Moderate Benefit | 4. Neutral | 7. Large Benefit | 7. Large Benefit | 4. Neutral | 3. Slight Adverse | 4. Neutral | 1. Large Adverse | 5. Slight Benefit | 7. Large Benefit | 1. Large Adverse | 3. Slight Adverse | 2. Moderate Adverse | 4. Neutral |
| 27 | A590 Dualling - Greenodd to Ulverston | 4. Neutral | 5. Slight Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 4. Neutral | 4. Neutral | 2. Moderate Adverse | 2. Moderate Adverse | 6. Moderate Benefit | 1. Large Adverse | 3. Slight Adverse | 2. Moderate Adverse | 1. Large Adverse |

| Package | Scheme | Social Impact Appraisal | | | | | | | | Environment | | | | | | |
|---------|--|---------------------------------------|---------------------|------------|---------------------|---------------|------------------------|-------------------|----------------------------------|---------------------|---------------------|---------------------|-----------------------|-------------------|------------------|------------|
| | | Physical Activity | Journey Quality | Security | Accidents | Accessibility | Personal Affordability | Severance | Option Values and Non-Use Values | Noise | Air Quality | Greenhouse Gas | Landscape / Townscape | Heritage | Biodiversity | Water |
| 28 | 1) Dualling - Greenodd to Haverthwaite & 2) 2+1 - Haverthwaite to Newby Bridge & 3) 2+1 - Newby Bridge to Ayside | 4. Neutral | 7. Large Benefit | 4. Neutral | 7. Large Benefit | 4. Neutral | 4. Neutral | 3. Slight Adverse | 4. Neutral | 2. Moderate Adverse | 2. Moderate Adverse | 6. Moderate Benefit | 1. Large Adverse | 1. Large Adverse | 1. Large Adverse | 4. Neutral |
| 29 | A590 Dualling - Town End to Levens | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 6. Moderate Benefit | 4. Neutral | 4. Neutral | 3. Slight Adverse | 4. Neutral | 3. Slight Adverse | 3. Slight Adverse | 6. Moderate Benefit | 1. Large Adverse | 3. Slight Adverse | 1. Large Adverse | 4. Neutral |
| 30 | Newby Bridge Flooding Alleviation | Not appraised in detail in this study | | | | | | | | | | | | | | |

Note Package 1, 3, 6, 10, 11, 16, 17, 20, 21, 22, 23, 24 and 30 have not been subject to environmental appraisal as these schemes are either in development, has limited definition, or previous work has been undertaken using a different approach to environmental appraisal.

4.2 POTENTIAL TIMESCALES FOR DELIVERY OF SCHEMES

4.2.1 The schemes have been further subdivided into the following categories to demonstrate the timescales associated with the potential deliverability of each project if funding were made available to commence the design.

- Short - < 3 Years
- Medium 3 to 7 years
- Long > 7 Years

4.2.2 The following tables summarise the short, medium and long term schemes identified as priorities in this study.

Table 4-6: Short Term Schemes – Less than 3 years to deliver following commencement of design.

| Package | Short Term Schemes < 3 Years Scheme | Economic Impacts and Strategic Fit | | | | Study Objectives | | | | Deliverability | | |
|---------|---|------------------------------------|---------------------------|-----------------|--------------------------------------|------------------|--------------|---------------------|-------------|---|-------------------|--|
| | | Scale of Impact | Fit with wider objectives | Economic Growth | Fit with West of M6 Study Objectives | Economic Growth | Connectivity | Network Performance | Environment | Journey Time Range Benefits £M if Available (2010 prices) | Scheme Cost Range | Delivery Timescales Short <3 years Medium 3 - 7 years Long > 7 years |
| 2 | A595 Bothel Improvements / A595 Moota Capacity Improvements | 4 | 3 | 4 | 4 | ✓ | ✓ | ✓ | | 5-10M | 2.5-5.0M | <3 years |
| 3 | Port of Workington Access Bridge | 3 | 5 | 5 | 4 | ✓ | ✓ | ✓ | | | 2.5-5.0M | <3 years |
| 5 | A66 / A596 / Ramsay Brow Junction Improvements / Widening | 3 | 4 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | <1M | 0.5-1.0M | <3 years |
| 6 | A66 Brigham-Broughton Safety Improvements | 3 | 4 | 3 | 3 | ✓ | | ✓ | | | 2.5- 5.0M | <3 years |
| 7 | A66 / A595 Junction Improvements (East & West) | 3 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 1.0-2.5M | <3 years |
| 12 | 1) Pelican Garage, 2) Inkerman Terrace, 3) Homewood Road, 4) Mirehouse Road | 4 | 5 | 5 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 2.5- 5.0M | <3 years |
| 15 | A595 Egremont Junctions - Increase ICD of both roundabouts | 4 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | 1-5M | 0.5-1.0M | <3 years |
| 20 | A590 Geotechnical Issue at Greenodd | 3 | 5 | 4 | 4 | ✓ | | ✓ | ✓ | | | <3 years |
| 21 | A590 Junction Improvements in Ulverston | 3 | 5 | 4 | 5 | ✓ | ✓ | ✓ | ✓ | | 2.5- 5.0M | <3 years |
| 22 | A590 Junction Improvement in Swarthmoor | 3 | 5 | 4 | 4 | ✓ | ✓ | ✓ | | | 5-10M | <3 years |
| 23 | Lindal-in-Furness Resilience | 3 | 5 | 4 | 4 | ✓ | | ✓ | ✓ | | | <3 years |
| 30 | Newby Bridge Flooding Alleviation | 3 | 5 | 4 | 3 | | | ✓ | ✓ | | | <3 years |

Table 4-7: Medium Term Schemes – 3 to 7 years to deliver following commencement of design.

| Medium Term Schemes 3 - 7 Years | | Economic Impacts and Strategic Fit | | | Study Objectives | | | | | Deliverability | | |
|------------------------------------|---|------------------------------------|---------------------------|-----------------|--------------------------------------|-----------------|--------------|---------------------|-------------|---|-------------------|--|
| Package | Scheme | Scale of Impact | Fit with wider objectives | Economic Growth | Fit with West of M6 Study Objectives | Economic Growth | Connectivity | Network Performance | Environment | Journey Time Range Benefits £M if Available (2010 prices) | Scheme Cost Range | Delivery Timescales Short <3 years Medium 3 - 7 years Long > 7 years |
| 9 | A66 Scales/Troutbeck Climbing Lanes | 3 | 3 | 4 | 4 | ✓ | ✓ | ✓ | | 1-5M | 10-50M | 3 - 7 years |
| 11 | A595 Low Moresby Geotechnical Resilience | 4 | 4 | 5 | 4 | ✓ | ✓ | ✓ | | | | 3 - 7 years |
| 16 | A595 Beckermot Moorside / Sellafield Improvements | 5 | 5 | 5 | 4 | ✓ | ✓ | ✓ | | | | 3 - 7 years |
| 17 | A595 Calder Bridge Bypass | 3 | 4 | 4 | 3 | ✓ | | ✓ | | | 10-50M | 3 - 7 years |
| 19 | Grizebeck Bypass | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 5-10M | 3 - 7 years |
| 27 | A590 Dualling - Greenodd to Ulverston | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 10-50M | 3 - 7 years |
| 29 | A590 Dualling - Town End to Levens | 4 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 5-10M | 10-50M | 3 - 7 years |

Table 4-8: Long Term Schemes – More than 7 years to deliver following commencement of design.

| Long Term Schemes >7 Years | | Economic Impacts and Strategic Fit | | | Study Objectives | | | | | Deliverability | | |
|-------------------------------|--|------------------------------------|---------------------------|-----------------|--------------------------------------|-----------------|--------------|---------------------|-------------|---|-------------------|--|
| Package | Scheme | Scale of Impact | Fit with wider objectives | Economic Growth | Fit with West of M6 Study Objectives | Economic Growth | Connectivity | Network Performance | Environment | Journey Time Range Benefits £M if Available (2010 prices) | Scheme Cost Range | Delivery Timescales Short <3 years Medium 3 - 7 years Long > 7 years |
| 1 | A595 Carlisle Southern Link Road | 5 | 3 | 5 | 5 | ✓ | ✓ | ✓ | ✓ | >100M | 50-100M | >7 years |
| 4 | Port of Workington to A66 New Link Road | 4 | 2 | 4 | 4 | ✓ | ✓ | ✓ | | 5-10M | 50-100M | >7 years |
| 8 | A66 Lake Bassenthwaite Resilience - Option 3 | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 50-100M | 10-50M | >7 years |
| 13 | A595 Whitehaven Bypass - Option 1 - 60mph - single lane | 5 | 4 | 5 | 4 | ✓ | ✓ | ✓ | | >100M | 100M+ | >7 years |
| 14 | A595 Bigrigg Bypass | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 100M+ | >7 years |
| 18 | A595 Dualling between Whitehaven and Egremont and Egremont to Calder Bridge | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 100M+ | >7 years |
| 25 | Offline scheme between Ulverston and Dalton-in-Furness | 4 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 10-50M | 10-50M | >7 years |
| 26 | Ulverston Bypass connecting in with A590 near Swarthmoor (Southern bypass) | 5 | 3 | 5 | 4 | ✓ | ✓ | ✓ | | >100M | 50-100M | >7 years |
| 28 | 1) Dualling - Greenodd to Haverthwaite & 2) 2+1 - Haverthwaite to Newby Bridge & 3) 2+1 - Newby Bridge to Ayside | 5 | 2 | 5 | 4 | ✓ | ✓ | ✓ | | 50-100M | 100M+ | >7 years |

4.3 NEXT STEPS

- 4.3.1 This report has presented the evidence gathering, objective setting and option generation process undertaken for the study. It presents the Intervention Specific Objectives and the long list of options considered for prioritisation. It has shortlisted schemes, packaged them where appropriate, and developed them in more detail to understand how likely a scheme is to be delivered. Decision makers can use the information presented in this report to understand the likely benefits and costs associated with each scheme, and the impact on society and on the environment.
- 4.3.2 Schemes are presented in short, medium and long term time ranges to allow decision makers to plan ahead for promoting schemes as the economic growth planned in Cumbria is realised.
- 4.3.3 The summary table (Table 4.4) presents the strategic fit of each scheme and can be used to easily interpret how each scheme meets the individual objectives of this study. Economic benefits associated with journey time savings are presented along with the associated costs. At this stage of the study, the benefits and costs are presented in broad range categories and have only been subject to feasibility design at this stage. Hence there are no benefit cost ratios presented in this report. However, it can be seen that some schemes do not provide much journey time benefit in relation to the cost, and therefore it is unlikely that these schemes would progress in the future based on the assumptions used in this study,
- 4.3.4 In order to prioritise the schemes for delivery following the conclusion of this study, it will be important to consider the following.
- Impact of the scheme in relieving the existing problem
 - Availability of funding

4.4 FUNDING MECHANISMS

- 4.4.1 The two overarching considerations in identifying appropriate funding sources for any UK infrastructure schemes and programmes are:
- Who benefits from the infrastructure, and therefore, who has both a legal obligation and a financial incentive to contribute.
 - The cost and logistics of obtaining the funding; this is to say that although some parties might either be legal or moral beneficiaries of the new infrastructure, the costs and bureaucracy necessary to collect their contributions have to be borne in mind in developing a funding model. Attracting sufficient funding is the primary goal with equitability of contributions a consideration for political leaders.
- 4.4.2 There is no overall standard, statutory or prescribed process, or framework for seeking funding for a programme of infrastructure improvements such as that identified in this report. This is because in general, public and private sector funding tends to be attached to or associated with individual schemes which consider the costs and benefits of each scheme in isolation. Therefore a bespoke composite solution, promoted by one party, and delivered by many parties, for the specific programme of infrastructure improvements is the best compromise in the absence of any standard model.
- 4.4.3 In general, the public sector is best placed to lead, and in many instances have to act first due to the benefits of public infrastructure accruing to many parties in the private sector. The private sector is often reluctant to act in a cohesive and composite manner (as an effective single entity) and often look to the public sector to act in their collective interest. Therefore Cumbria's approach in identifying what infrastructure is required to support economic growth should be logically extended to leading the development of a funding framework to pay for the infrastructure. The split responsibilities in the public sector for transport infrastructure (Transport for the North, Highways England, Network Rail, Train Operating Companies and Local Highway Authorities) also necessitate a single party in the public sector taking the lead to guide public sector investment in transport infrastructure within an economic geography to integrate the investment within the spatial planning context. The private sector's role in the development of a funding

framework will be dependent on their willingness to engage both directly as interested parties (land & property owners, transport operators) and more generally through the Local Enterprise Partnerships (LEP). The private sectors' buy in and political support for the funding framework developed is important and essential if any of the funding requires voluntary agreements with the private sector. The following capital funding sources are currently available:

- Local Highway Authority Government Grants
- Highways England Existing Programme and the Route Investment Strategy refresh
- Private developer funding (Section 106 Monies or CIL)
- Cumbria LEP
- Central Government Local Major Scheme Investment Programme
- Cumbria's own capital on account or from future asset sales
- Banks (Indirect lending)
- Institutional Investors (Pension Funds)
- Capital receipts to the Council from the sale of Council owned development land (if any is present)

4.4.4 There is a range of possible funding sources and funding mechanisms to fund the identified schedule of Infrastructure identified in this report. Key conclusions are:

- The majority of the schemes assessed in further detail will have several different types of positive impact on the local and regional economy and it is important to distinguish between 'wider economic benefits' that cannot readily be converted into a revenue stream and those that can give rise to actual cashflows capable of paying back a proportion of the initial capital investment.
- The preferred funding mechanism must be capable of realistic implementation.
- Developer and other private sector contributions should be maximised before public sector contributions are offered to fund infrastructure.

4.5 WIDER ECONOMIC BENEFITS

4.5.1 By reducing journey times and costs, improving reliability, resilience and safety in Cumbria, new schemes would improve connectivity between people and places. This could lead to:

- an increase in productivity from static agglomeration impacts such as increased competition, increased access to a skilled labour market and an increase in trade opportunities.
- an increase in investment through dynamic agglomeration impacts such as relocating employment and housing to locations with improved access to opportunities.

4.5.2 The Northern Powerhouse Independent Economic Review (2016) sought to characterise the North's economic position and the drivers underpinning its performance, and identify opportunities where 'pan-Northern' effort can sensibly support existing 'local' activities. It identifies implications for transport:

- Better transport connectivity within and between cities matters for the North's growth prospects for a number of reasons: investment in skills is more likely where there is access to well-paid jobs; foreign investors are more likely to be attracted to locations that are well connected to global markets, with access to a well-qualified workforce; and firms are more likely to specialise and innovate in areas with deep and extensive labour markets.
- Growth in the knowledge-based 'Prime' and 'Enabling' capabilities should be expected to lead to increases in the number of high-skilled workers employed in urban areas in general and city centres in particular.
- However, not all the 'Prime' and 'Enabling' capabilities have predominantly urban locations – the Advanced Manufacturing and Logistics capabilities are typically located in out-of-town

locations, where good access to, and connectivity between, road and/or rail networks beyond the cities is crucial. Growth in the 'Prime' and 'Enabling' capabilities will support growth in other sectors of the wider economy, and jobs in these sectors and the people who work in them are predominantly located in the North's towns and cities. In addition, a strengthened and more prosperous Northern economy will stimulate more housing demand, and the location of this will also have a major impact on future travel patterns and transport demand.

4.5.3

In the context of the West of M6 Strategic Connectivity Study, the report highlights:

- Significant elements of the Prime and Enabling capabilities are highly dependent on road travel, notably Advanced Manufacturing and Logistics. Economic growth will lead to increased demand for road travel across the North. This would be the case even if there were substantial and transformative investment in public transport provision. Accordingly, targeted investment in new road infrastructure will be warranted to enhance the reliability and resilience of road travel, reduce journey times and improve the connections offered by the North's road networks.
- Global connectivity (ports and airports) is also critical if the North's Smart Specialisation opportunities are to be realised fully. This applies to people – to meet customers, suppliers and collaborators – and for the import and export of goods.

4.5.4

Improvements in road connectivity in Cumbria West of the M6 are therefore likely to bring about more and wider economic benefits than simply just journey time savings. Cumbria has a number of 'Prime' and 'Enabling' Capability assets including those identified in Table 4-9.

Table 4-9: Cumbria's 'Prime' and 'Enabling' Capability Assets

| Advanced Manufacturing (Prime) | Energy (Prime) | Health Innovation (Prime) | Logistics (Enabling) | Higher (Enabling) |
|--------------------------------|---------------------------------------|---------------------------|------------------------|-----------------------|
| BAE | Cumbria Nuclear Solutions | GSK | Carlisle Airport | UoCL Westlakes Campus |
| DONG Energy | Dalton Nuclear Institute | | BAE Logistics Facility | University of Cumbria |
| GSK | James Fisher Nuclear | | Port of Workington | |
| Innovia | National Nuclear Laboratory | | Stobart Group | |
| Pirelli | React Engineering | | | |
| Siemens | Safety Critical | | | |
| Tritech | Sellafield | | | |
| | TIS | | | |
| | Nuclear Technology Innovation Gateway | | | |

4.5.5

In the context of the above, further appraisal of infrastructure schemes identified in this report should include the assessment of the wider benefits. This would allow investment opportunity and productivity effects to be captured in further detail, and provide further evidence to invest in the Transport Infrastructure in Cumbria in accordance with revised DfT WebTAG guidance due to be consulted on and published.

Appendix A

IDENTIFIED ISSUES MAPS

Section 1



Capacity / Reliability

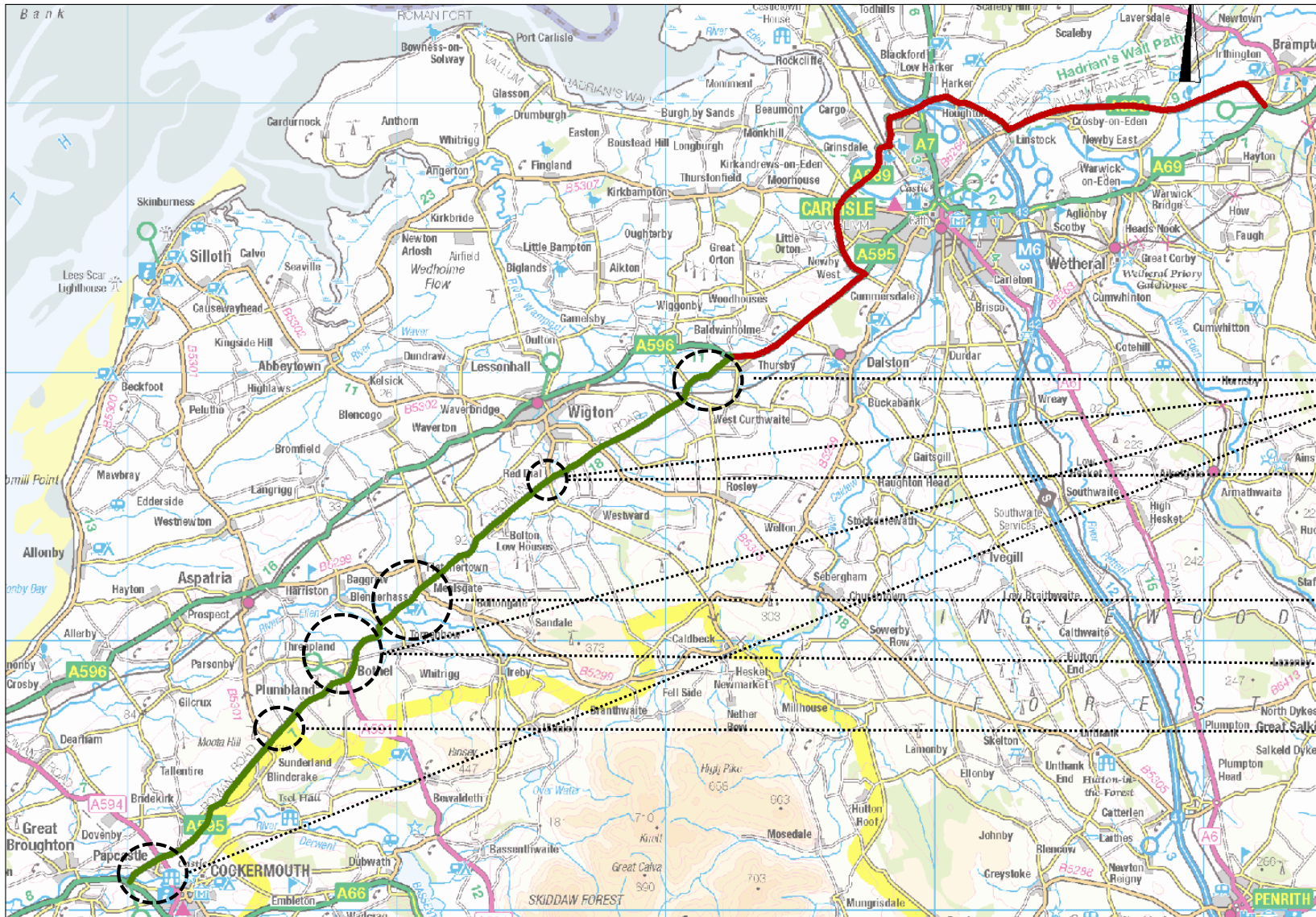
Safety

1-A

1-B

1-C

Section 2



Capacity / Reliability

Safety

Resilience

2-B

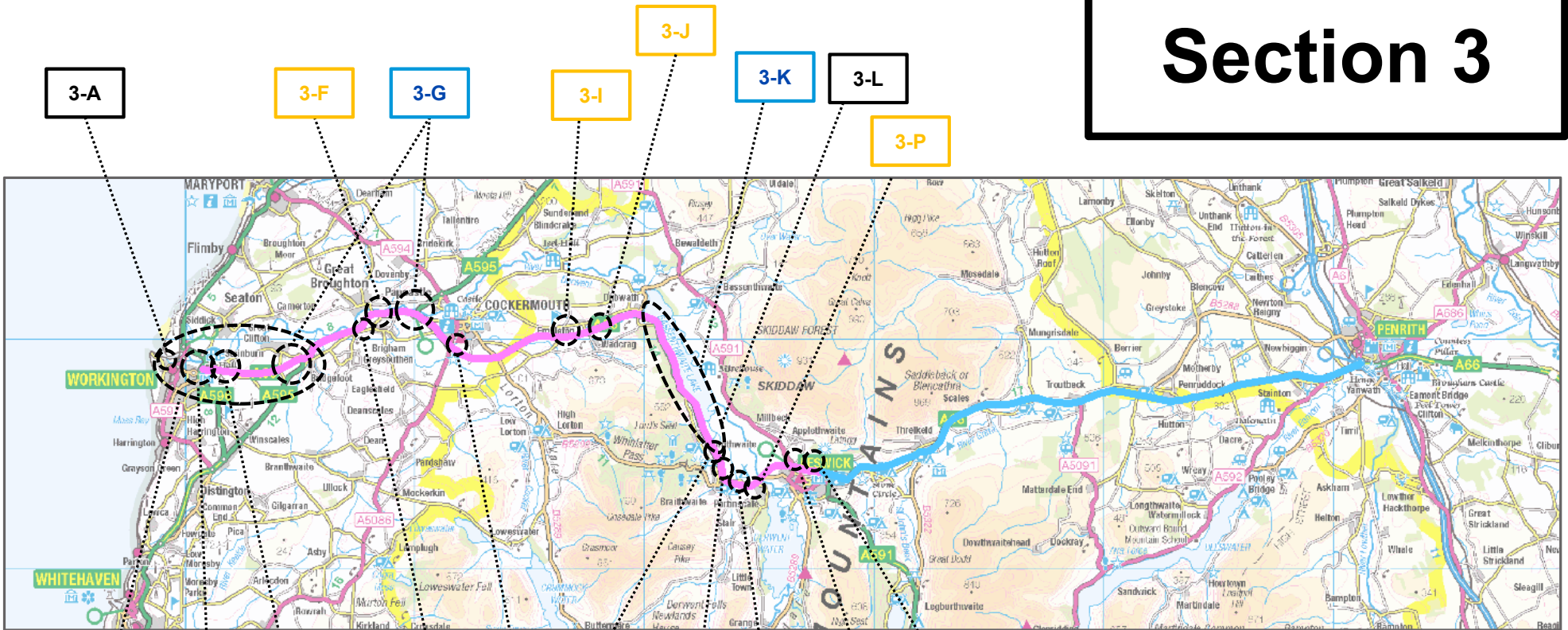
2-D

2-C

2-A

2-E

Section 3



Capacity / Reliability

Safety

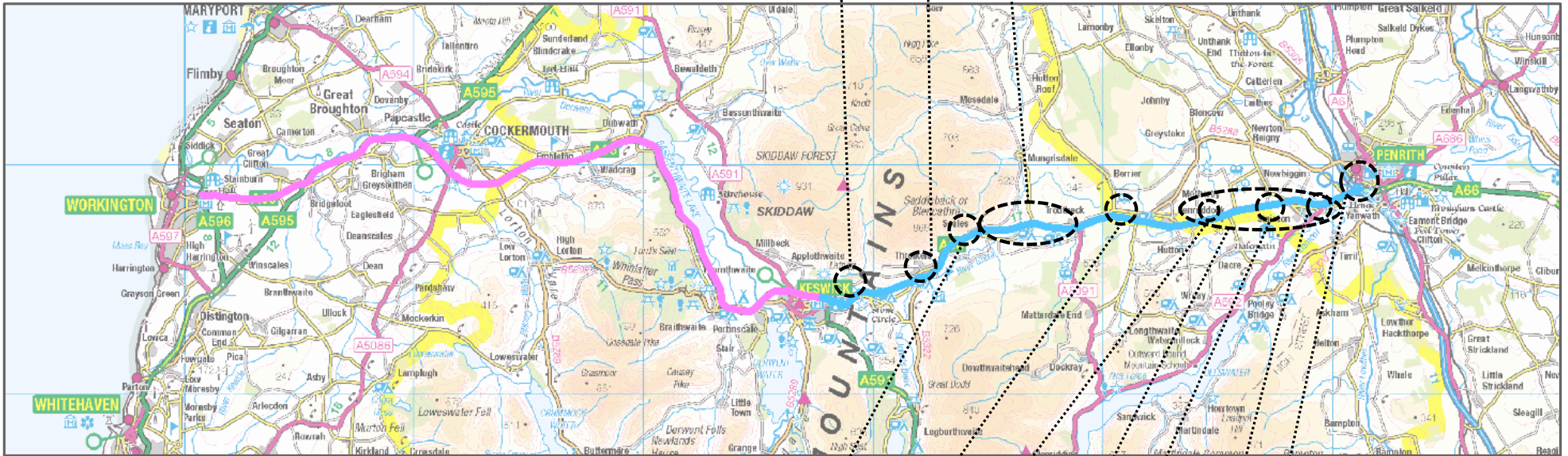
Connectivity

Resilience

Not mapped:

3-R: Lay-bys

Section 4



4-A

4-B

4-D

4-C

4-E

4-F

4-G

4-H

4-I

4-J

Capacity / Reliability

Safety

Connectivity

Resilience

Capacity / Reliability

Safety

Resilience

Connectivity

NMU

Section 5

Not mapped:

5-F: Whitehaven Congestion

5-G: Sellafield Redistribution

5-S: Sellafield New Access

5-V: Calder Bridge Accidents

5-W: Width Issues

5-X: Inappropriate for HGVs

5-Y: Emergency Evacuations

5-Z: Low Speeds

5-Z1: Congestion

5-Z2: Employment Site Connectivity

5-A

5-B

5-C

5-D

5-N

5-O

5-Q

5-R

5-U

5-E

5-J

5-H

5-I

5-K

5-L

5-M

5-P

5-T



Section 6

6-A

6-B

6-C

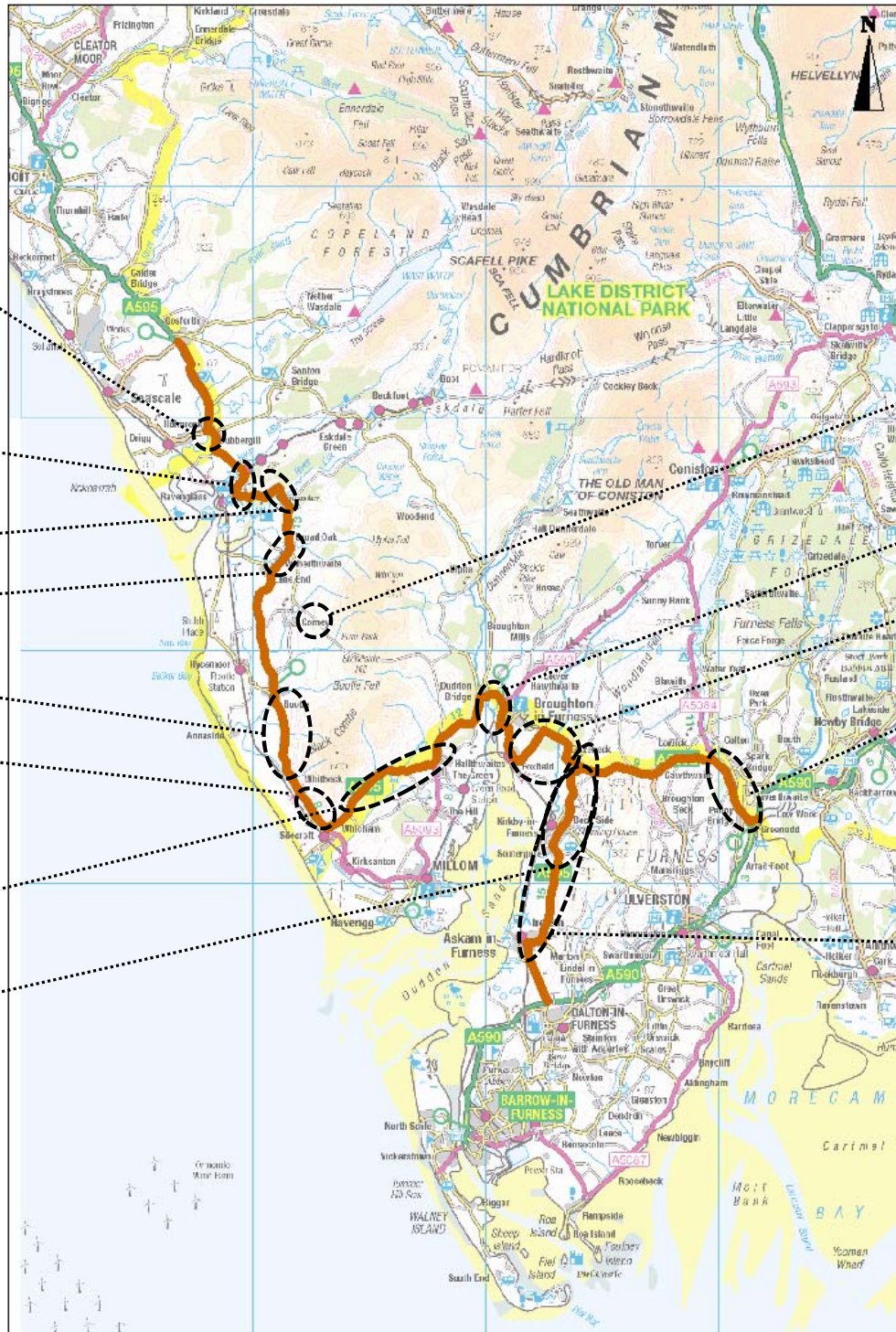
6-D

6-F

6-G

6-H

6-K



6-E

6-I

6-J

6-L

6-M

Capacity / Reliability

Safety

Resilience

Capacity / Reliability / Safety

Capacity/Resilience/ Safety

Not mapped:

6-N: Cross Movements

6-O: A595 unreliable near Millom

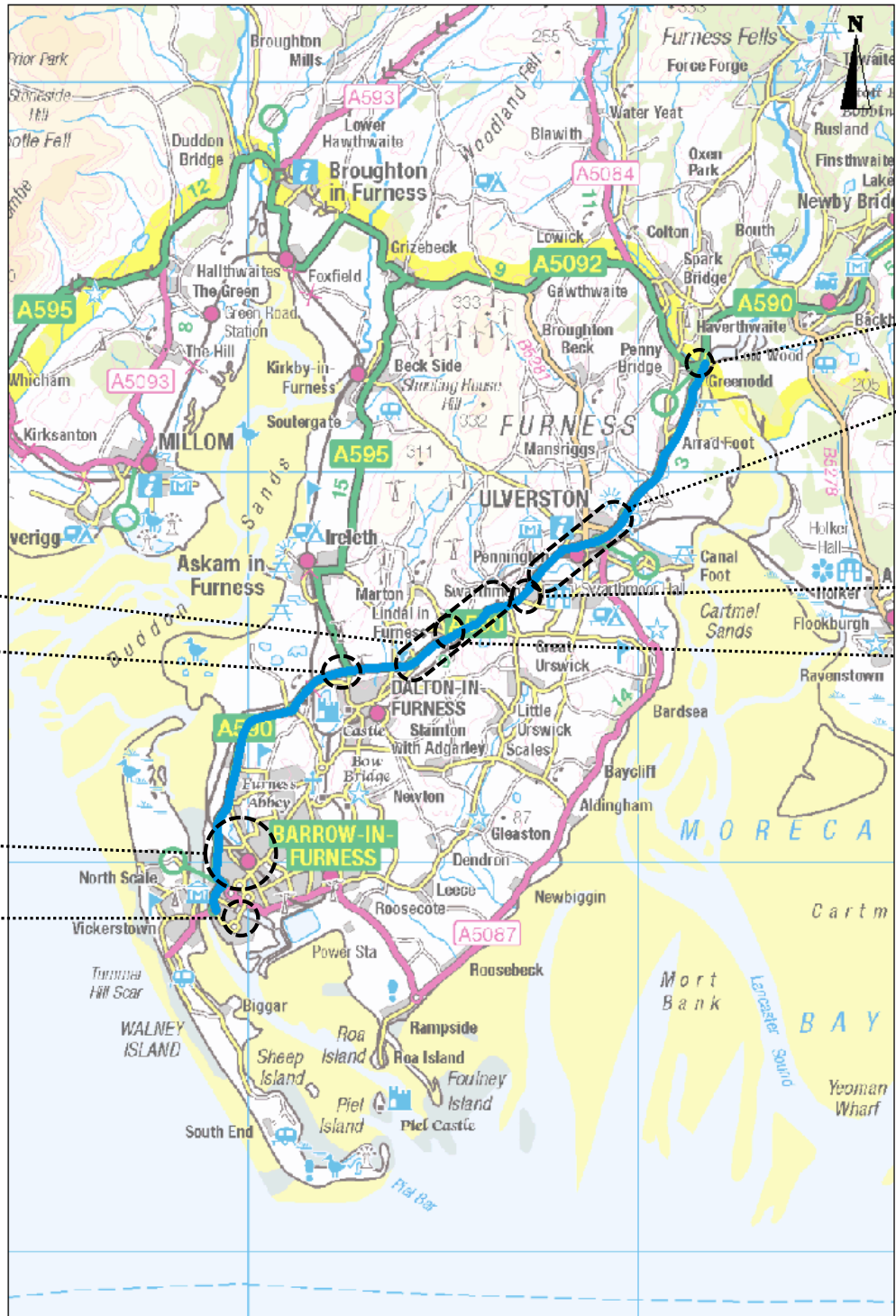
Section 7

7-I

7-H

7-K

7-L



7-A

7-C, D

7-E

7-F, G

Capacity / Reliability

Safety

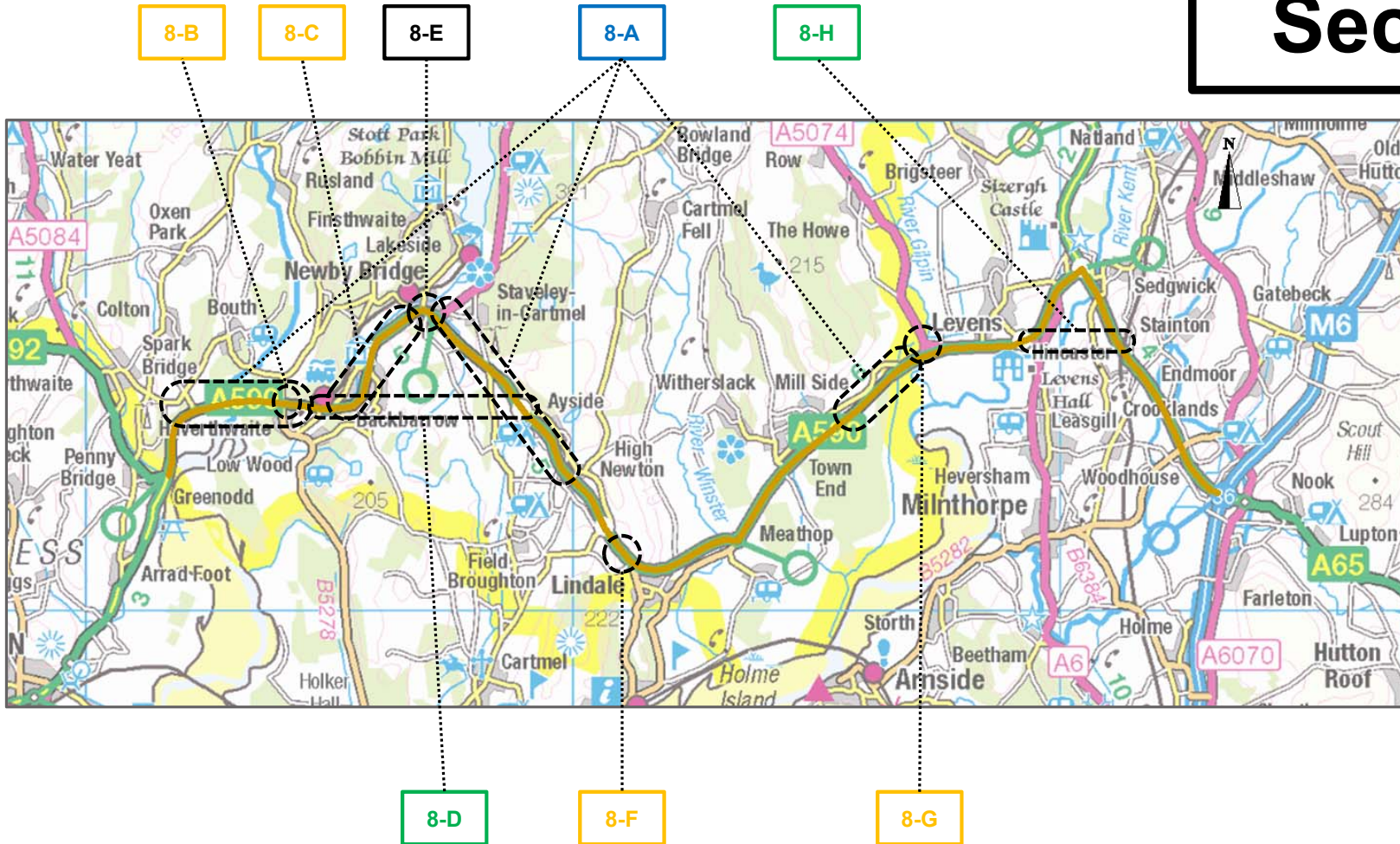
Resilience

Not mapped:

7-B: Single / Dual Carriageway Discontinuity

7-J: Barrow to Ulverston Bypass Option

Section 8



Capacity / Reliability

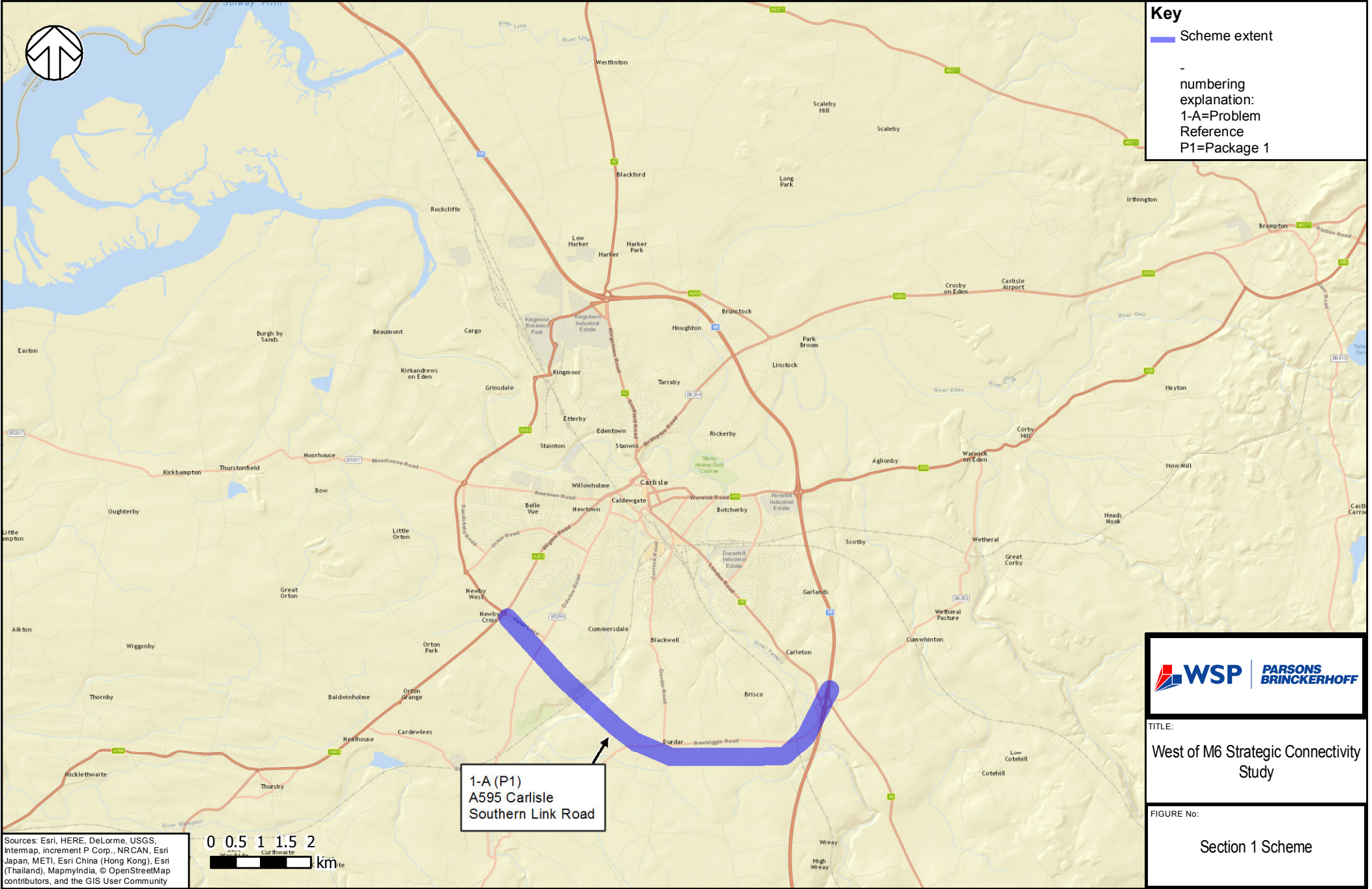
Safety

Resilience

Connectivity

Appendix B

PACKAGE LOCATIONS



1-A (P1)
A595 Carlisle
Southern Link Road

Key

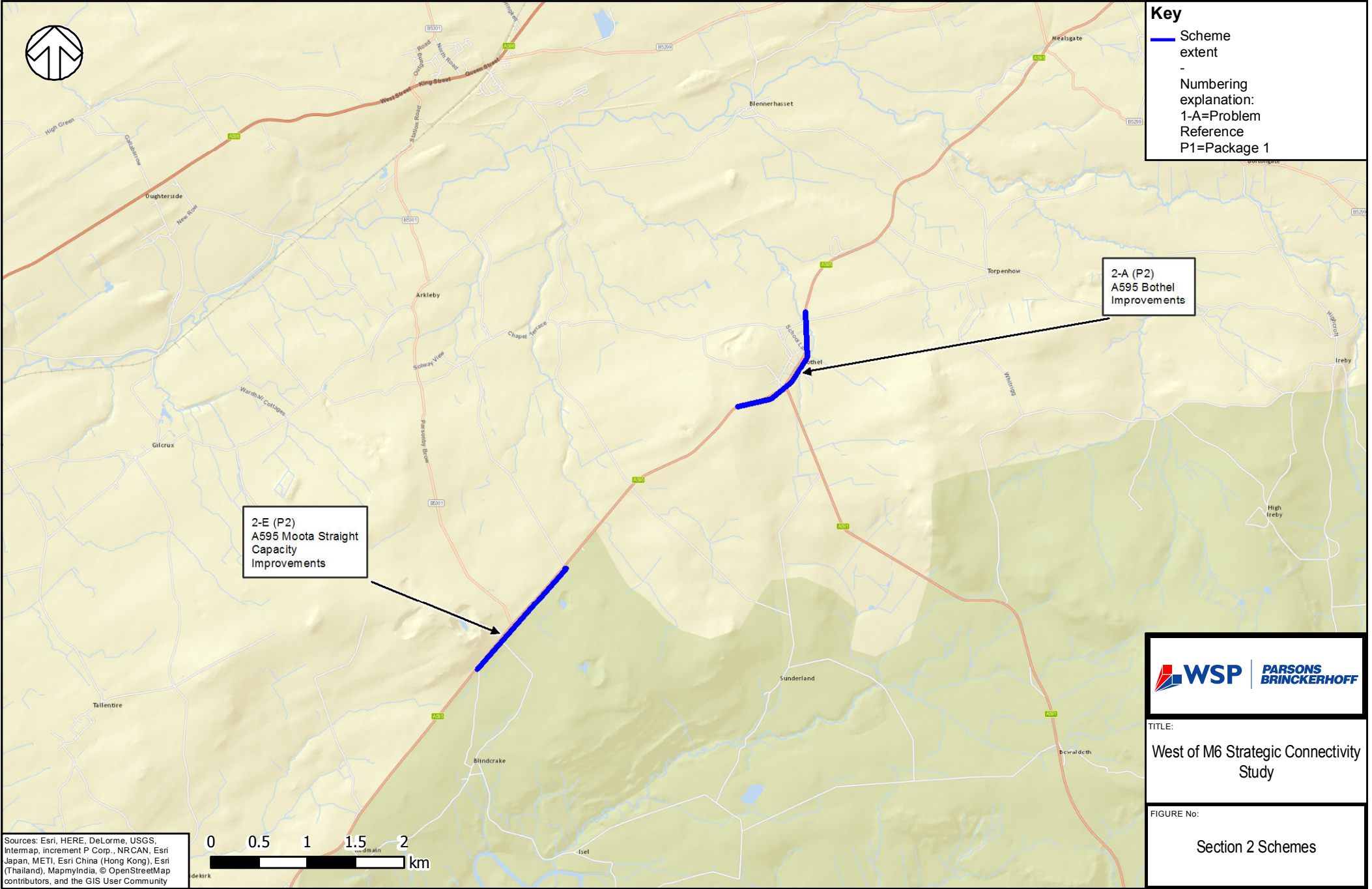
- Scheme extent
- numbering explanation:
1-A=Problem Reference
P1=Package 1



TITLE:
West of M6 Strategic Connectivity Study

FIGURE No:
Section 1 Scheme

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



Key

- Scheme extent
-
- Numbering explanation:
1-A=Problem Reference
P1=Package 1

2-E (P2)
A595 Moota Straight
Capacity
Improvements

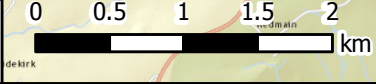
2-A (P2)
A595 Bothel
Improvements



TITLE:
West of M6 Strategic Connectivity
Study

FIGURE No:
Section 2 Schemes

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Key

- Scheme extent
- Scheme location
- Numbering explanation:
1-A=Problem Reference
P1=Package 1

3-A (P3)
Port of Workington
Access Bridge

3-B (P4)
Port of Workington to
A66 New Link Road

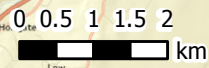
3-C (P5)
A66/A596/Ramsay
Brow Junction
Improvements/
Widening

3-GI (P7)
A66/A595 Junction
Improvements
(West)

3-F (P6)
A66
Brigham-Broughton
Safety Improvements

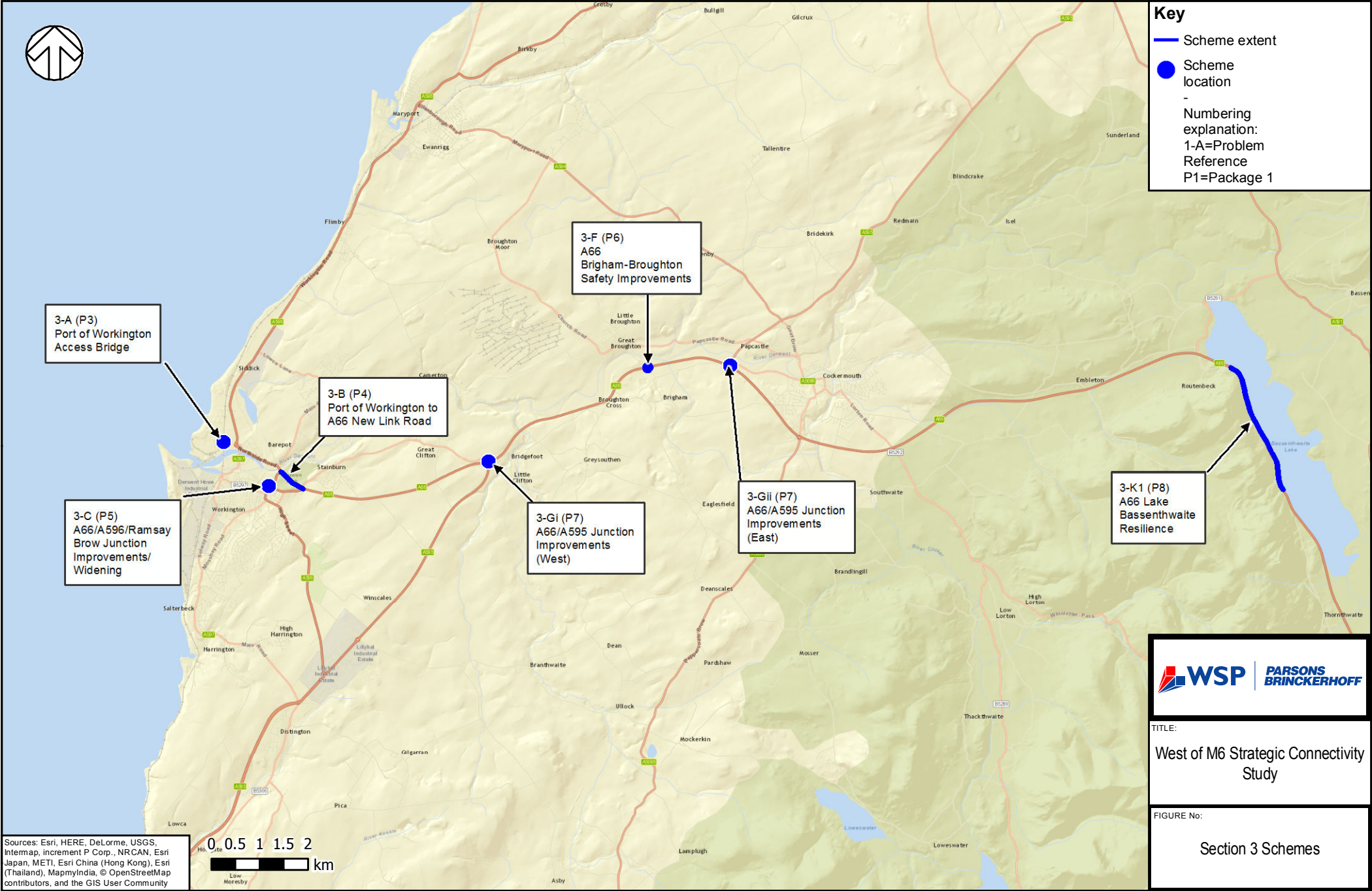
3-GII (P7)
A66/A595 Junction
Improvements
(East)

3-K1 (P8)
A66 Lake
Bassenthwaite
Resilience



TITLE:
West of M6 Strategic Connectivity
Study

FIGURE No:
Section 3 Schemes





Key

- Scheme extent
-

Numbering explanation:
1-A=Problem Reference
P1=Package 1

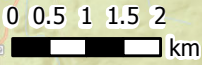
4-D (P9)
A66 Scales/
Troutbeck Climbing
Lanes



TITLE:
West of M6 Strategic Connectivity Study

FIGURE No:
Section 4 Scheme

Sources: Esri, HERE, DeLorme, USGS, Intemap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



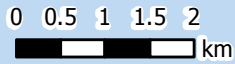


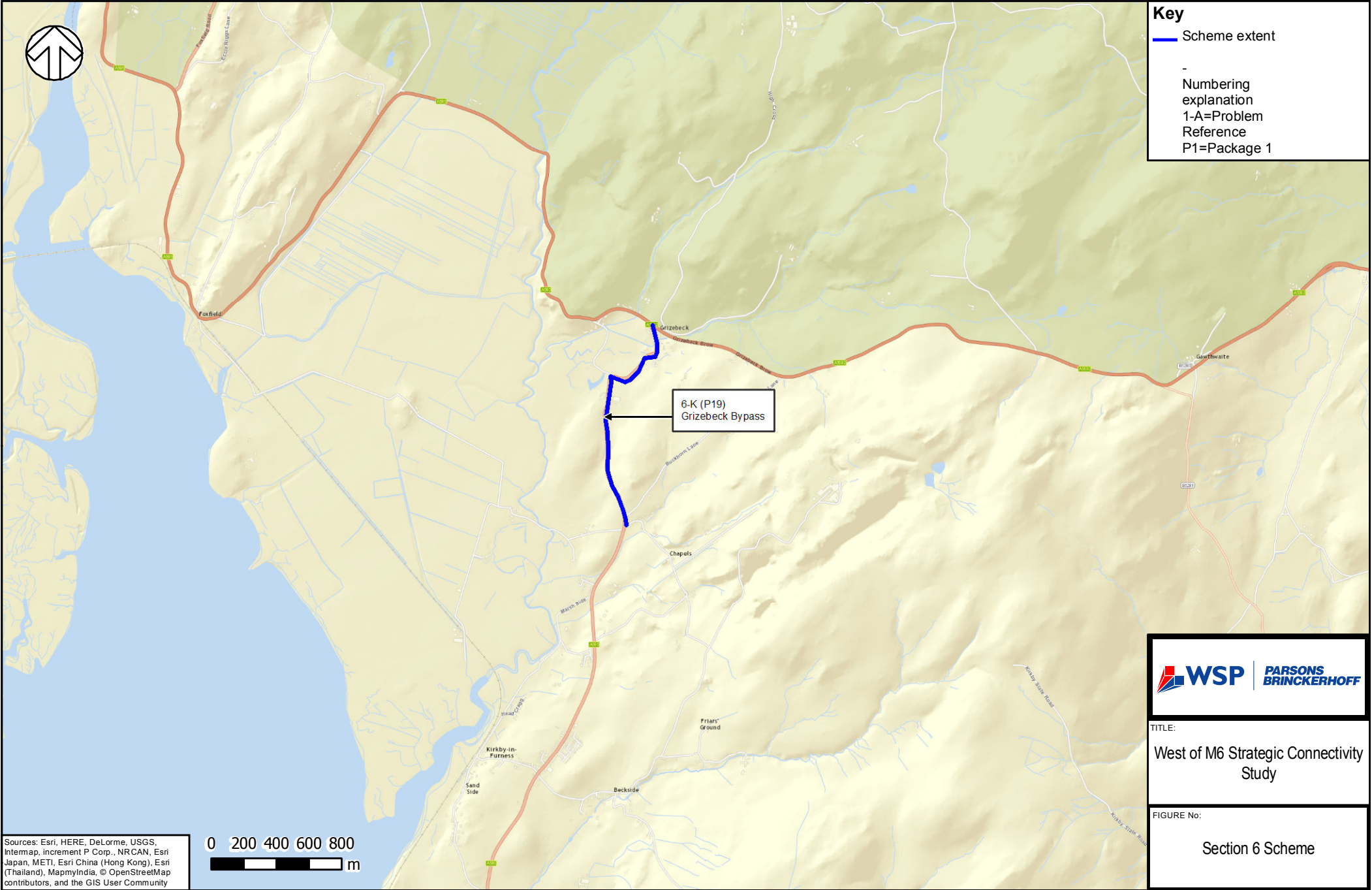
Key

- █ Scheme extent
- █ Scheme extent
- Scheme location
-
- Numbering explanation:
1A=Problem Reference
P1=Package 1



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0 200 400 600 800
m

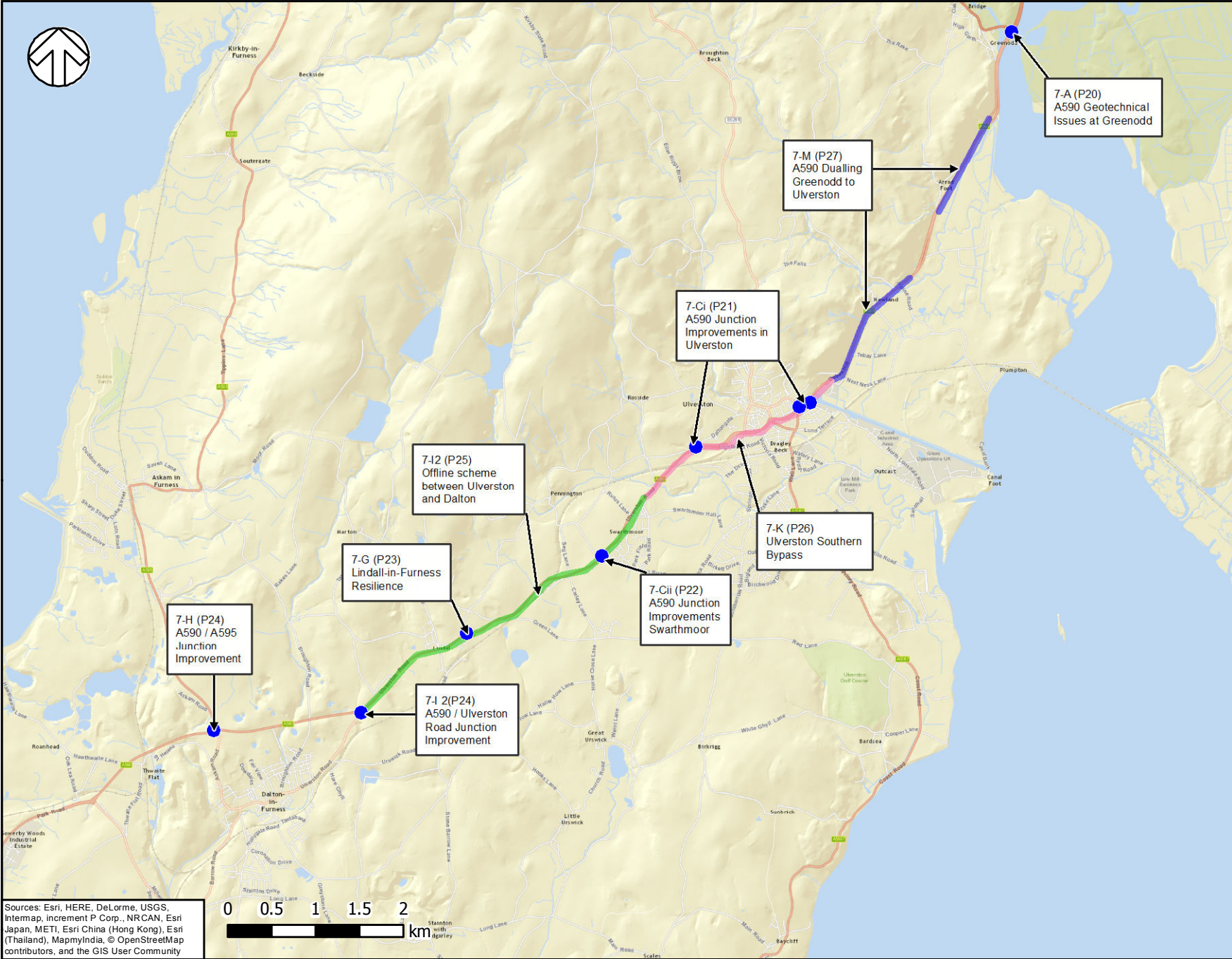
Key

- Scheme extent
-
- Numbering explanation
- 1-A=Problem Reference
- P1=Package 1



TITLE:
West of M6 Strategic Connectivity Study

FIGURE No:
Section 6 Scheme



Key

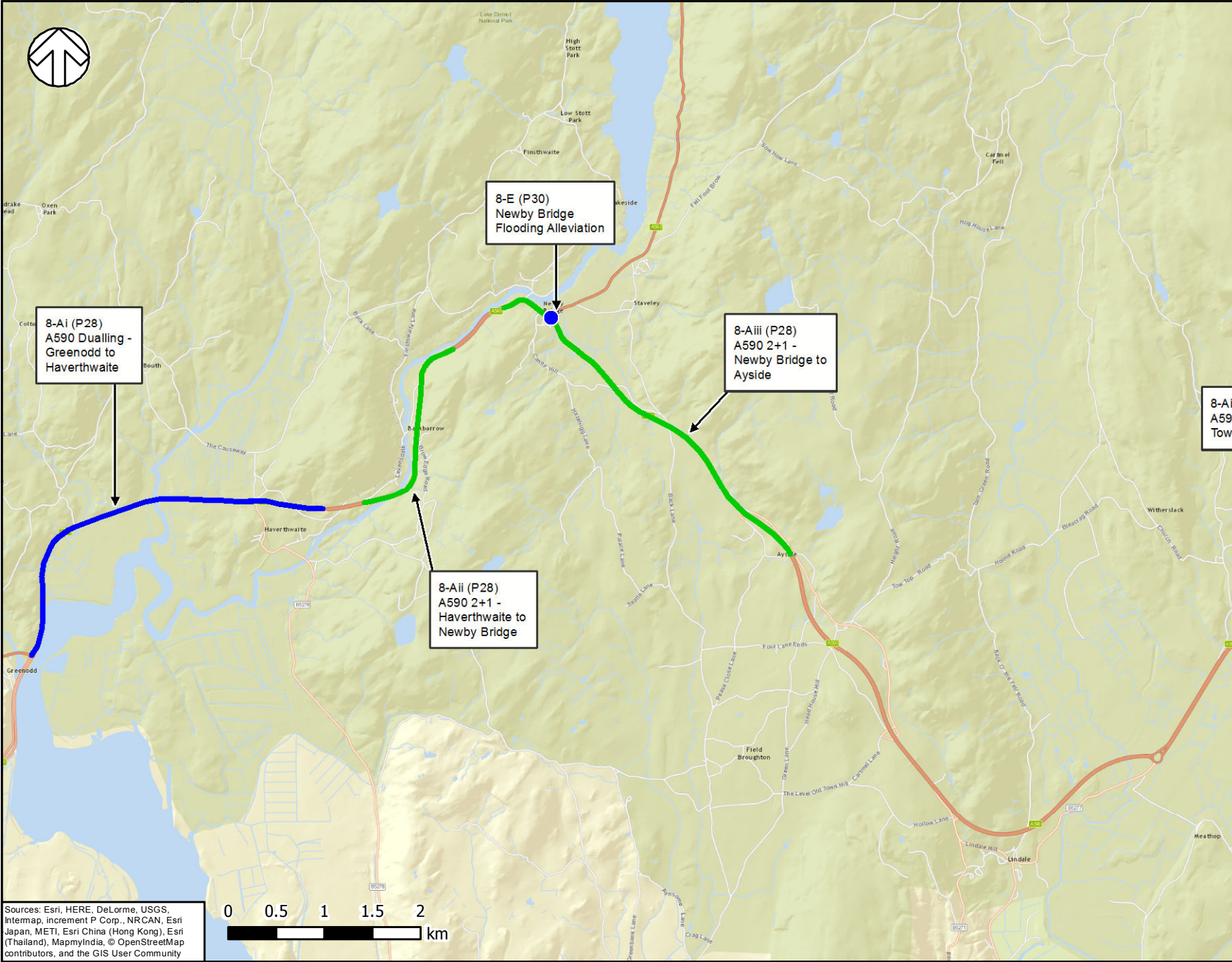
- Scheme extent
- Scheme extent
- Scheme extent
- Scheme Location

-
Numbering
explanation
1-A=Problem
Reference
P1=Package 1



TITLE:
West of M6 Strategic Connectivity
Study

FIGURE No:
Section 7 Schemes



8-Ai (P28)
A590 Dualling -
Greenodd to
Haverthwaite

8-E (P30)
Newby Bridge
Flooding Alleviation

8-Aiii (P28)
A590 2+1 -
Newby Bridge to
Ayside

8-Aii (P28)
A590 2+1 -
Haverthwaite to
Newby Bridge

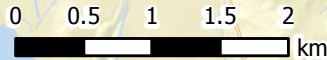
8-Aiv (P29)
A590 - Dualling
Town End to Levens

Key

- Scheme extent
- Scheme extent
- Scheme location

Numbering explanation:
1-A=Problem Reference
P1=Package 1

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TITLE:
West of Cumbria Strategic
Connectivity Study

FIGURE No:
Section 8 Schemes