



TRANSPORT AND INFRASTRUCTURE COMMITTEE

Wednesday 3 April 2019

9:30 a.m – 11:30 a.m

**Meeting Room 1, Incubator 2, Alconbury Weald Enterprise Campus,
Huntingdon, Cambs PE28 4WX**

AGENDA

Open to Public and Press

Number	Agenda Item	Mayor/ Lead Member/ Chief Officer	Papers	Pages
	Part 1 – Governance Items	Chair		
1.1	Apologies and Declarations of Interests	Chair	Oral	-
1.2	Minutes – 6 February 2019	Chair	Yes	3 - 6
1.3	Public Questions	Chair	No	-
1.4	Agenda Plan	Chair	Yes	7 - 8
	Part 2 - Delivery			
2.1	M11 Strategic Outline Case - Update	Chair/Chris Twigg – Transport Director	Yes	9 - 115
2.2	Bus Reform Task Force Engagement Plan	Chair/Chris Twigg – Transport Director	Yes	116 - 131
2.3	Performance Report – April 2019	Chair/Chris Twigg – Transport Director	Yes	132 - 134

Number	Agenda Item	Mayor/ Lead Member/ Chief Officer	Papers	Pages
	Part 4 – Date of next meeting			
3.1	Date: Wednesday 3 July 2019 – Incubator 2, Alconbury Weald Enterprise Campus, Huntingdon, Cambs PE28 4WX		-	-

The Transport and Infrastructure Committee currently comprises the following Members:

		Portfolio Responsibilities/Member	Board Member	Substitute Member
1	Chair	Portfolio Holder for Transport Chair of Transport Committee	James Palmer, Mayor	Cllr Charles Roberts
2	Member	Member for Cambridgeshire County Council	Cllr Ian Bates	Cllr Roger Hickford
3	Member	Member for Peterborough City Council	Cllr Peter Hiller	Cllr John Holdich
4	Member	Member for Cambridge City council	Cllr Lewis Herbert	Cllr Aiden Van de Weyer
5	Member	Member for Fenland District Council	Cllr Chris Seaton	Cllr David Oliver

The Combined Authority is committed to open government and members of the public are welcome to attend Committee meetings. It supports the principle of transparency and encourages filming, recording and taking photographs at meetings that are open to the public. It also welcomes the use of social networking and micro-blogging websites (such as Twitter and Facebook) to communicate with people about what is happening, as it happens.

Public speaking on the agenda items above is encouraged. Speakers must register their wish to speak by making a request in writing to the Democratic Services Manager (Tamar Oviatt-Ham) no later than 12.00 noon three working days before the day of the meeting. The request must include the name, address and contact details of the person wishing to speak, together with the full text of the question to be asked. For more information about this meeting, please contact Tamar Oviatt-Ham at the Cambridgeshire County Council's Democratic Services on Cambridge (01223) 715668 or by email at Tamar.Oviatt-Ham@cambridgeshire.gov.uk



**CAMBRIDGESHIRE
& PETERBOROUGH**
COMBINED AUTHORITY

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY **TRANSPORT AND INFRASTRUCTURE COMMITTEE: MINUTES**

Date: Wednesday, 6 February 2019

Time: 09.30am – 10.20am

Present: James Palmer (Mayor and Chairman), Councillors Ian Bates, Peter Hiller, Chris Seaton.

7. APOLOGIES AND DECLARATIONS OF INTERESTS

Apologies were received from Councillor Lewis Herbert.

8. MINUTES – 10 OCTOBER 2018

The minutes of the meeting held on 10 October 2018 were agreed as a correct record and signed by the Chairman. The action log was noted.

9. PUBLIC QUESTIONS

None received.

10. AGENDA PLAN

The agenda plan was noted.

11. A10 UPDATE

The Committee received a report on the progress of the A10 Corridor project and the next steps for the project. It provided further clarity following the publication of guidance on the Major Roads network (MNR) in late December 2018, and how this would inform the further work on the programme of works, particularly the A10 Dualling project. The report also provided updates on the Lancaster Way/A142 Witchford Road roundabouts.

In discussing the report Members;

- Queried whether there would be an opportunity to look at the route from Chatteris to Ely. The Mayor clarified that this had not been looked at but could be considered as an option in the future. Currently the Business Case did not show beyond Ely. The Mayor explained that the M11 North had been talked about in Government and that the Combined Authority would monitor the discussions on this. If that route came forward this would then take the pressure off the A142.
- Noted that Cambridgeshire County Council would have data on the route from Chatteris to Ely in relation to volumes on congestion.
- Raised concerns in relation to the timings of the project going forward particularly in relation to how the two developers would work together. The Interim Transport

Director clarified that there had been a piece of work last summer on how all of the work on the A10 corridor would come forward. South Cambridgeshire District Council had been set to determine planning permission in September 2018 but this had been delayed. The Mayor explained that there was a requirement for the Developers to come together and a request was in on this. This work was due to start from June 2020 and this would need to be factored into the timescales. The Mayor also updated the Committee on the proposal for the train operator to provide eight train carriages between Kings Lynn and Cambridge.

- Highlighted that there was a lot of empty accommodation that could be utilised including Ministry of Defence property. The Mayor acknowledged that it was frustrating that these properties were sitting empty and that there had been discussions on how they should be utilised, which he would follow up on.
- Queried what was planned for the Lancaster Way scheme. Officers explained that a feasibility study had been undertaken and a design for the scheme had been developed. Grovemere Property Ltd, who developed Lancaster Way, had applied for, and secured funding from the Combined Authority through the Growth Fund in order to deliver the requirements from the Section 106. Completion of the A142/A10 roundabout without delivering improvements to the Lancaster Way roundabout would only provide a short term improvement to the congestion in the area. The Combined Authority was working with partners to evaluate whether other sources of funding would be available to implement an intervention on the Lancaster Way roundabout.
- Noted that a report would be brought forward to the Combined Authority Board to propose that the Combined Authority move to the next step, a Strategic Outline Business case, specifically for the A10 Dualling project, in March 2019.

It was resolved unanimously to:

- a) note the update on the A10 Corridor and its programme of works, including the guidance on the Major Roads Network.
- b) note that a further report will be brought forward to the Combined Authority Board to request approvals for the next steps in the A10 Dualling project in March 2019.

12. SOHAM STATION UPDATE

The Committee received a report setting out a status update on the Soham Station project. The Cambridgeshire and Peterborough Combined Authority assumed responsibility for the Soham Station project in June 2018, with the intention to accelerate delivery of the project. The report highlighted that the project was on track and negotiations with Network Rail in relation to the delivery of the scheme had resulted in a scheme that would cost less but deliver the same outcomes. A public information event had been scheduled at the end of February.

In discussing the report Members:

- Queried whether there would be any franchising issues that could potentially impact on the timescales of the project. The Mayor confirmed that the franchising discussions had been running concurrently with the technical process and no issues had been envisaged. The aim was for the project to be completed by 2023. Since the GRIP process had been linked this had taken significant time off the project. The Mayor explained that he had met the Rail Minister recently, who had been supportive of the project. In his discussions with the Minister he had given an update on the lack of carriages on the train between Kings Lynn and Cambridge and more efficient use of the Fenland Station and the need for it to be a commuter line. Ely North Junction and the Cambridge South Station project had also been discussed. The Mayor also updated the Committee on his meeting with Network Rail East where Alconbury Station had been discussed and that it was essential for the success of the enterprise zone. He had also discussed the need for the Stansted trains to stop at Cambridge North Station.
- The issues of trains heading north was discussed regarding the increase from two to four tracks which would make trains faster going to Edinburgh. It was understood that this scheme was not currently proceeding.

It was resolved unanimously to:

note the current status of the Soham Rail station project.

13. PROJECT MANAGEMENT SYSTEM UPDATE

The Committee received a report that detailed the background on funding routes and project assurance frameworks for the Transport and Infrastructure Schemes, and the implications of these for the Combined Authority.

In discussing the report Members:

- Complemented the team on clearly setting out the Transport Delivery Process.
- Requested assurance that Local Transport Plans were included in the process.

It was resolved unanimously to:

note the Transport Delivery Process and the funding implications outlined within the report.

14. PERFORMANCE REPORT – NOVEMBER 2018

The Committee received a report that contained the Transport Performance Dashboard that had been produced in line with the Combined Authority's strategic policy.

In discussing the report Members:

- Welcomed the clarity of the dashboard giving both the Committee and general public a clear and transparent view of performance in relation to the transport projects.

It was resolved unanimously to:

note the current activity within the Transport Team and be aware of status and progress to date.

15. DATE OF NEXT MEETING

It was resolved unanimously to:

note the date of the next meeting Wednesday 3 April 2019 – Incubator 2, Alconbury Weald Enterprise Campus, Huntingdon.

Chairman

TRANSPORT AND INFRASTRUCTURE COMMITTEE AGENDA PLAN

Updated on 20.03.19



Notes

Committee dates shown in bold are confirmed.
Committee dates shown in italics are TBC.

The definition of a key decision is set out in the Combined Authorities Constitution in Chapter 6 – Transparency Rules, Forward Plan and Key Decisions, Point 11 <http://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/CPCA-Constitution-.pdf>

- * indicates items expected to be recommended for determination by Combined Authority Board
- + indicates items expected to be confidential, which would exclude the press and public.

Draft reports are due with the Democratic Services Officer by 10.00 a.m. eight clear working days before the meeting.
The agenda dispatch date is five clear working days before the meeting.

The following are standing agenda items which are considered at every Committee meeting:

- Minutes of previous meeting and Action Log
- Agenda Plan
- Performance Report

Committee date	Agenda item	Lead officer	Report to CA Board for decision	Reference if key decision	Deadline for Reports	Agenda despatch date
03.04.19	M11 Strategic Outline Case - Update	Katie Randall	No	N/A	21.03.19	26.03.19
	Bus Reform Task Force	Jack Philo	No	N/A		

Committee date	Agenda item	Lead officer	Report to CA Board for decision	Reference if key decision	Deadline for Reports	Agenda despatch date
03.07.19					20.06.19	25.06.19
02.10.19					19.09.19	24.09.19
08.01.20					18.12.19	23.12.19
01.04.20					20.03.20	24.03.20

To be programmed:



TRANSPORT AND INFRASTRUCTURE COMMITTEE	AGENDA ITEM No: 2.1
3 APRIL 2019	PUBLIC REPORT

M11 STRATEGIC OUTLINE CASE - UPDATE

1.0 PURPOSE

- 1.1. This report provides an update to the Transport Committee of the work undertaken for the M11 Extension Project, the results of that work, and the recommended next steps.
- 1.2. The Transport Committee is requested to agree to revisit the M11 Extension project.

<u>DECISION REQUIRED</u>	
Lead Member:	Mayor James Palmer
Lead Officer	Chris Twigg – Director of Transport
Forward Plan Ref: N/A	Key Decision: No
The Transport and Infrastructure Committee is recommended to: (a) Note the findings of the M11 Extension Strategic Outline Business Case; and (b) Agree to revisit the M11 Extension project once the outcome of the A47 and A10 funding bids are known.	Voting arrangements Simple majority of all Members

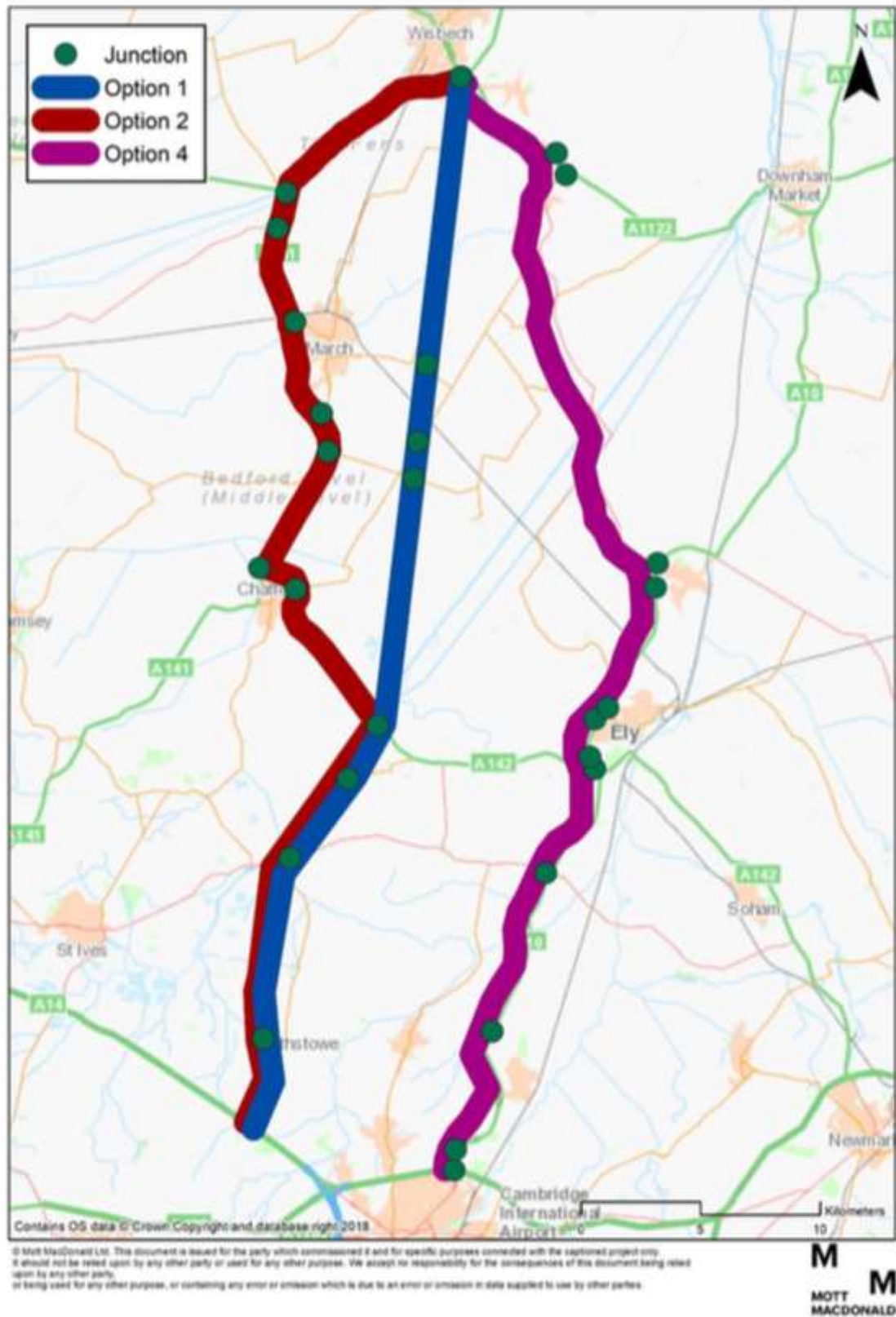
2.0 BACKGROUND

- 2.1 In June 2017, the Combined Authority approved the commissioning of an A47 extension to M11 Feasibility Study in order to understand the feasibility, viability, benefits and impacts of connecting the M11 in the Cambridgeshire area to the A47 in the Guyhirn / Wisbech area.
- 2.2 This work was intrinsically linked to the existing work to upgrade the A10. An additional strategic north-south corridor between Cambridge and the Guyhirn / Wisbech area could form part of a route considered for the A10 upgrade; and a scheme of such scale would have impacts over a wide area, with traffic diversion an intended consequence of any such scheme.
- 2.3 As a result, the work undertaken on the M11 Extension scheme has been considered in the context of the intended A10 Corridor Project.

M11 Extension Study Results

- 2.4 The transport study was commissioned to explore whether investment in new highway capacity in the corridor would help to address the spatial inequality that presently exists between the north and south of the county by improving accessibility to Greater Cambridge's thriving employment opportunities, as well as encouraging needed investment into north Cambridgeshire.
- 2.5 The report found that, consistent with the findings of the Cambridge and Peterborough Independent Economic Review (CPIER) report, the north and south of Cambridgeshire are two very distinct economies. Both Greater Cambridge and north Cambridgeshire are experiencing stress, albeit of very differing sorts: Greater Cambridge's rapid jobs growth combined with housing supply constraints has pushed house prices out of the reach of many residents and prospective employees; north Cambridgeshire is struggling to attract high value industries, leading to significant levels of localised socio-economic deprivation.
- 2.6 A series of options were developed for the study that were based around potential westerly, central and easterly north-south link corridors. These options all connect from the A14 in the south (as a direct connection to the existing M11 was not judged feasible due to the large number of existing roads currently served by junction 14 of the M11) to the A47 in the north of the study area. All options took account of key constraints in their development, in particular the internationally significant Ouse Washes site from an environmental perspective, and the mixed geotechnical conditions of much of the central and northern parts of the county. The shortlisted set of corridors and prospective junction locations on these corridors is shown below. The Committee is requested to note that these have been assessed to understand the relative merits of increasing highway capacity and connectivity in three broad areas; they are not intended to be definitive proposals and no detailed design or route-planning work was undertaken in preparing this study.

Figure 1: Shortlisted Broad Corridor Options for the M11-A47 Link



- 2.7 Assessment of the transport impacts of these options show that each option offers overall network performance benefits as well as significantly faster journey times between the north and south of the study area. Each option also offers different localised benefits to the road network; a “westerly” corridor could provide significant relief to the constrained roads around Huntingdon and St Ives, for example.
- 2.8 All of the shortlisted options have a positive benefit-cost ratio, suggesting that they all have merit for more detailed investigation.

Further Work

- 2.9 Significant further work will be required to progress the M11 – A47 Link. One of the key strategic questions is the relationship of this scheme to other projects under development for the Combined Authority’s Local Transport Plan, as well as its relative priority. Other key planning and design questions for further assessment would include:
- (a) Confirming the scale and timing of housing and employment growth in the Combined Authority area over the longer term through the Non-Statutory Spatial Framework, taking account of the higher growth scenario that is being developed as part of Cambridgeshire county Council’s Cambridge Sub-Regional Model;
 - (b) Whether any additional investment would be required at the junction of the new highway with the A14, and how many “last mile” impacts of additional journeys within Greater Cambridge itself would be managed, including the relationship with emerging proposals for the Cambridge Autonomous Metro (CAM);
 - (c) How this scheme interacts not only with CAM, but also other Combined Authority transport priorities; and
 - (d) How and at what cost the impacts from any scheme on the Ouse Washes, and other environmental designations, can be mitigated.
- 2.10 Given the scale of the M11 – A47 Extension project, the financial implications to bring the project to completion are significant. The table below shows point estimates for the three scheme options.

Cost Summary (£m, 2018 prices)

	Option 1 (Central Route)	Option 2 (Westerly Route)	Option 3 (Easterly Route)
Scheme Estimate	1,062.06	1,184.19	1,247.39

Source: Mott MacDonald

- 2.11 In order to move to the next stages, the Combined Authority would likely need to commit several million pounds of revenue funding towards progressing the scheme to the next phase. The primary source of funding for projects of such significant scale is the Road Investment Strategy (RIS) funding stream. RIS2 is

currently under consideration and will run from 2020-25. The Combined Authority is promoting the A47 for consideration in the RIS2 funding round. As a result, any application for funding of an M11 Extension scheme would need to be considered for a RIS3 funding round (assuming it comes forward), which would be expected to run from 2030 – 2035.

Next Steps

- 2.12 The M11 – A47 Extension Project was approved for feasibility work in June 2017. In the second half of 2018, the Cambridgeshire and Peterborough Combined Authority undertook a prioritisation exercise of its schemes which culminated in the 2019-20 CPCA Business Plan, approved by the CA Board in January 2019. The business plan outlined the key projects that the Combined Authority will undertake over the next year, including the A47 and the A10. The M11 is not one of the key priority projects for the next year, and the cost to progress to the next stage of work would be significant.
- 2.13 Both the A47 and the A10 projects are targeting external funding sources this year. The A47 is currently seeking funding through the RIS2 programme; the A10 intends to move forward with an application to the Large Local Majors scheme. Successfully securing funding for these schemes would have a significant impact on the M11 Extension scheme.
- 2.14 As a result, it is recommended that this project does not proceed at this time, and that the M11 Extension project is revisited once the outcome of the bids for funding for the A47 and A10 are understood.

3.0 FINANCIAL IMPLICATIONS

- 3.1. There are no financial implications to not moving forward with the M11 Extension project at this time; there is no allocated budget for the M11 Extension project within the Medium Term Financial Plan 2019/20.

4.0 LEGAL IMPLICATIONS

- 4.1. There no legal implications to not moving forward with the M11 Extension project at this time.

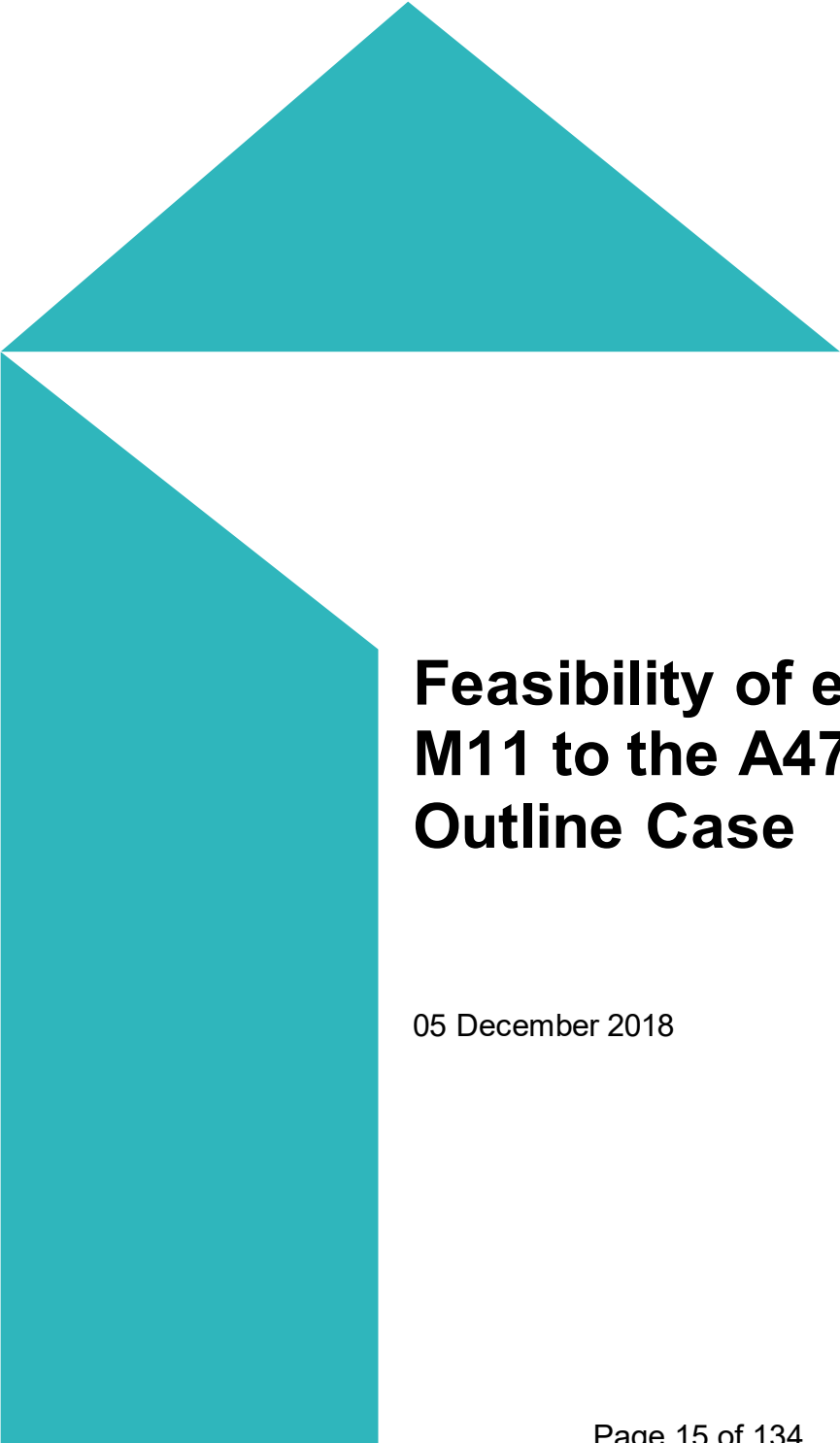
5.0 SIGNIFICANT IMPLICATIONS

- 5.1. No other significant implications are anticipated.

6.0 APPENDICES

- 6.1. Appendix 1 – M11 to A47 Extension Strategic Outline Case

<u>Source Documents</u>	<u>Location</u>
<p>List background papers:</p> <p>Combined Authority Board Report, <i>Strategic Transport and Infrastructure Schemes</i>, June 2017</p>	<p>List location of background papers</p> <p>http://cambridgeshirepeterborough-ca.gov.uk/assets/Combined-Authority/Agenda-and-items.pdf</p>



Feasibility of extending the M11 to the A47: Strategic Outline Case

05 December 2018

Mott MacDonald
22 Station Road
Cambridge CB1 2JD
United Kingdom

T +44 (0)1223 463500
F +44 (0)1223 461007
mottmac.com

Feasibility of extending the M11 to the A47: Strategic Outline Case

05 December 2018

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
1	05/10/18	JK EB GG	OS HC	MS	First Draft
2	05/12/18	JK	OS	OS	Final

Document reference: 38974CC01 | 1 | A

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

Executive summary	1
1 Introduction	6
1.1 Description of Project	6
1.2 Project Strategic Objectives	9
1.3 Structure of the Study	9
1.4 Policy and Development Planning Context	11
1.4.1 Regional and Local Economic and Spatial Policy	11
1.4.2 Committed Transport Projects	13
1.5 Summary of Study Methodology	14
1.5.1 Socio-economic baseline	14
1.5.2 Traffic Modelling	15
1.5.3 Constraints Assessments	18
1.5.4 Cost estimates	19
1.5.5 Option Appraisal	19
2 Strategic Case	20
2.1 Economic and Social Context	20
2.1.1 The Greater Cambridge economy	20
2.1.2 The economy of north Cambridgeshire	21
2.1.3 The social context	22
2.1.4 Highway links	24
2.1.5 Public transport	25
2.1.6 Summary	26
2.2 Travel Demand and Performance	26
2.2.1 Current Travel Demand	26
2.2.2 Summary	29
2.3 Impacts of Growth	30
2.3.1 Travel demand on the network resulting from the emerging strategy	30
2.3.2 Volume over capacity	31
2.3.3 Summary	34
2.4 Addressing the Challenges	35
2.5 Constraints Assessment	36
2.5.1 Ecology and Nature Conservation – the Ouse Washes	36
2.5.2 Geotechnical Constraints	36
2.5.3 Summary	38
2.6 Outline of Options	39
2.6.1 Option 1: 'Roman Road' Central Corridor	39
2.6.2 Option 2: Western Corridor	41
2.6.3 Option 3: A10 Corridor + Western	42

2.6.4	Option 4: A10 Corridor + A1101 Corridor	44
2.6.5	Option 5: A10 Corridor + A1122 Corridor	45
2.7	Initial Shortlisting of Options	47
2.7.1	Definition of Sifting Criteria	47
2.7.2	Results of Shortlisting Assessment	47
2.8	Model Testing	49
2.8.1	Network Analysis	51
2.8.2	Option Demand	51
2.8.3	Journey Time and Reliability	57
2.8.4	Sensitivity Testing	64
2.8.5	Model Results Summary	70
3	Financial Case	71
3.1	Methodology	71
3.2	Assumptions and exclusions	71
3.3	Capital Costs	71
3.3.1	Baseline costs	71
3.3.2	Risk allowances	72
3.3.3	Point Estimate	72
3.4	Operating Costs	73
3.5	Cost Profile	73
4	Economic Case	74
4.1	INSET Appraisal	74
4.1.1	Definition of Sifting Criteria	75
4.1.2	Scoring of Options	76
4.1.3	Weighting of Criteria	79
4.1.4	Results of Shortlisting Assessment	79
4.2	Transport-User Benefit Assessment Methodology	80
4.3	Assumptions	80
4.4	Appraisal of Economic Benefits	81
4.4.1	Scheme Costs	81
4.4.2	Risk and Optimism Bias	81
4.4.3	Present Value of Costs	82
4.4.4	Value for Money	82
4.4.5	Value for Money Statement	83
4.5	Sensitivity testing	83
5	Commercial Case	85
5.1	Introduction	85
5.2	Outline of Procurement Options	85
5.3	Programme Implications and Risk	85

6	Management Case	86
6.1	Introduction	86
6.2	Evidence of Similar Projects	86
6.3	Governance Arrangements	86
6.4	Preliminary Indications of Delivery Timeline	87
6.5	Communications and Stakeholder Engagement	89
6.6	Risk Management Strategy	89
6.7	Monitoring and Evaluation	90
7	Summary and Conclusions	91
7.1	Recommended Strategy	91
7.2	Next Steps	92

Executive summary

This report sets out the findings of a transport study that has undertaken a preliminary assessment of the case for investing in a major new highway link between the M11 in the south of Cambridgeshire and the A47 in the north of the county. The study has been commissioned to explore whether investment in new highway capacity in the corridor would help to address the spatial inequality that presently exists between the north and south of the county by improving accessibility to Greater Cambridge's thriving employment opportunities, as well as encouraging needed investment into north Cambridgeshire.

The study has been commissioned by Cambridgeshire County Council on behalf of the Cambridgeshire and Peterborough Combined Authority.

Two distinct economies with limited interaction

The north and south of Cambridgeshire are two very distinct economies. Greater Cambridge is a high productivity, high wage economy specialising in sectors such as computing, pharmaceuticals and biotechnology. In contrast, the economy of north Cambridgeshire has lower productivity and lower wage employment with a focus on agrobusiness.

Both Greater Cambridge and north Cambridgeshire are experiencing stress, albeit of very differing sorts. For Greater Cambridge, rapid jobs growth combined with housing supply constraints has pushed house prices out of the reach of many residents and prospective employees. In contrast, north Cambridgeshire is struggling to attract high value industries, leading to significant levels of localised socio-economic deprivation.

Congestion vs. Connectivity

Despite their proximity as the crow flies, the north and south of Cambridgeshire have relatively limited interaction. Challenges in travelling between the two areas are a significant factor behind this, with north/south corridors in the county being generally of limited capacity, low quality, and often indirect routing, such as the A141, the A142 and the A1122/A1101. Around Cambridge, a further challenge is the significant and sustained peak period congestion experienced on many of the approach roads to the city's major employment centres. These factors lead north Cambridgeshire to look to Peterborough as a major economic centre, driven in part by the relative accessibility advantages offered by the A47 trunk road.

These twin transport challenges of connectivity and congestion mean that journey times during peak periods between north Cambridgeshire and Greater Cambridge can take significantly over an hour despite a distance of under 35 miles. As a result, residents of north Cambridgeshire, unlike those of the east and west of the county, or of areas further afield in Hertfordshire, Suffolk or Bedfordshire, are not able to credibly access employment opportunities in the city. The most recent employment data shows that only 100 people commute to work in the City of Cambridge from Wisbech, compared with over 600 from Bury St Edmunds, a similarly sized settlement situated a comparable distance from the city but with higher-capacity, more legible highway network connections supplemented by a dedicated public transport alternative.

Case for major highway investment in the context of a wider transport programme

Tying north Cambridgeshire into the “Cambridge phenomenon” is only likely to be achieved through a significant transport investment programme.

Traffic modelling undertaken for this study indicates that, outside the Greater Cambridge area, traffic speeds are not generally being hindered by road pinch points or junction bottlenecks but by the low-quality highway provision in the existing road corridors. So while action to address key constraints, such as on junctions with the A14, together with wider non-car measures, are important in addressing the significant congestion experienced in the south of the area covered by the Cambridgeshire and Peterborough Combined Authority (CPCA), without investment to improve north/south highway standards and legibility, it is unlikely that journey times will be reduced to the level where commuting to Cambridge becomes a viable option for north Cambridgeshire residents.

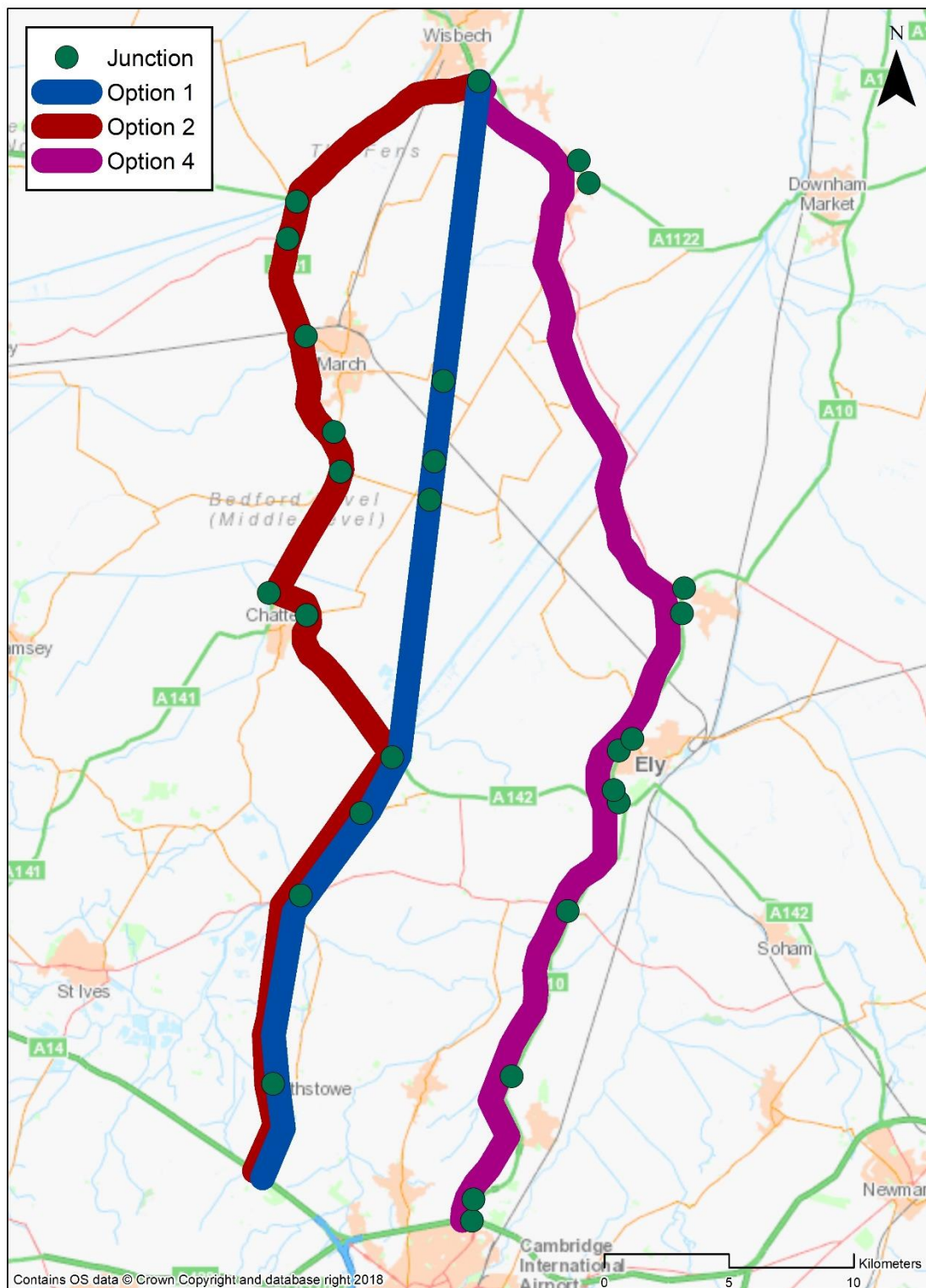
At the same time, while there is evidence that radial commuter journeys to Greater Cambridge employment opportunities are dominated by car use, any investment in a new M11-A47 Link road is likely to need to be accompanied by a wider package of public transport investments, which are outside of the scope of this study but which are being explored by the CPCA and its partners through parallel study and scheme development work, and through the preparation of the CPCA’s Local Transport Plan. Alongside these potential transport improvements, it is likely that wider policy measures – such as skills and business support initiatives – will also be required to address north Cambridgeshire’s socio-economic deprivation.

A project to support and enable growth

The Combined Authority believes that a project of the scale of a potential M11-A47 Link is unlikely to be viable based on existing development plans for the area alone. To this end, all traffic modelling in the study has been based on a transformative growth scenario derived from existing strategic planning underway at the CPCA for its Non-Statutory Spatial Framework. The M11-A47 Link is designed to facilitate this transformative growth scenario by enabling greater connectivity, faster journey times to help reduce spatial inequality between north and south Cambridgeshire.

A range of route alignments have merit for further investigation

A series of options were developed for the study based around potential westerly, central and easterly north/south link corridors. These options all connect from the A14 in the south (as a direct connection to the existing M11 was not judged feasible due to the large number of existing roads currently served by junction 14 of the M11) to the A47 in the north of the study area. All options took account of key constraints in their development, in particular the internationally significant Ouse Washes site from an environmental perspective, and the mixed geotechnical conditions of much of the central and northern parts of the county. The shortlisted set of corridors and prospective junction locations on these corridors is shown in Figure 1. Importantly, these have been assessed to understand the relative merits of increasing highway capacity and connectivity in three broad areas; these are not intended to be definitive proposals and no detailed design or route-planning work was undertaken in preparing this study.

Figure 1: Shortlisted Broad Corridor Options for the M11-A47 Link

© Mott MacDonald Ltd. This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to use by other parties.

M
MOTT
MACDONALD

Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

Assessment of the transport impacts of these options show that each option offers overall network performance benefits as well as significantly faster journey times between the north and south of the study area. For example, an M11-A47 Link following a “central” alignment may be able to reduce journey times during the peak by around 40 minutes relative to today under free-flowing conditions, achieving journey times of just over half an hour from Wisbech to the connection with the A14. This is comparable to journey times from existing commuter centres to Cambridge such as Bury St. Edmunds. Each option also offers different localised benefits to the road network; a “westerly” corridor could provide significant relief to the constrained roads around Huntingdon and St. Ives, for example.

After taking account of the estimated order-of-magnitude costs of delivering each of these options, the strongest economic case appears to be for an easterly alignment approximately in the A10 corridor to Ely (as is already proposed through the A10 Ely to Cambridge scheme), before broadly following the A1101 corridor to connect near Wisbech with the A47. However, all of the shortlisted options have a positive benefit-cost ratio suggesting that they all have merit for more detailed investigation.

Relationship of this link to other LTP projects, particularly A10 South, is critical

The purpose of this preliminary study has been to identify whether there is a case for progressing more detailed assessment of a new highway connection between the north and south of Cambridgeshire. The answer from this feasibility assessment is clear; in the context of the Combined Authority’s commitment to supporting the ongoing employment growth of Greater Cambridge while ensuring all areas of the Combined Authority can prosper, a strategic and economic case can be made for investment in a new north/south highway capacity to better connect currently isolated parts of north Cambridgeshire.

Significant further work will be required to progress the M11-A47 Link. A key strategic question is the relationship of this scheme to other projects under development for the Combined Authority’s Local Transport Plan, as well as its relative priority. For this study, an initial sensitivity test has been undertaken which indicates there may be a case for the westerly or central M11-A47 Link corridors even should the A10 Ely to Cambridge project proceed. However, this scenario will need testing further, alongside other major schemes such as the proposed A47 dualling between Peterborough and Wisbech, the third river crossing between the A141 and the A14 near Huntingdon and the March-Wisbech rail scheme. This comparison is needed to ensure that the benefits of the different schemes are not mutually exclusive.

Other key planning and design questions for further assessment in developing the M11-A47 Link will include:

- Confirming the scale and timing of housing and employment growth in the Combined Authority area over the longer term through the Non-Statutory Spatial Framework, taking account of the higher growth scenario that is being developed as part of Cambridgeshire County Council’s Cambridge Sub-Regional Model D-Series (an updated demand scenario for the model);
- Whether any additional investment would be required at the junction of the new highway with the A14, and how any “last mile” impacts of additional journeys within Greater Cambridge itself would be managed, including the relationship with emerging proposals for the Cambridge Autonomous Metro (CAM);

- How this scheme interacts not only with CAM, but also other Combined Authority transport priorities; and
- How and at what cost the impacts from any scheme on the Ouse Washes, and other environmental designations, can be mitigated.

Other areas for detailed assessment that have been outside of the scope of this study include:

- The governance structure and procedural routes for progressing the M11-A47 Link, in particular whether it is envisaged as a highway under the jurisdiction of the Combined Authority or Highways England and under what powers such a scheme might be taken forward;
- Buildability questions for a new link of this scale, such as spoil import and removal in a largely challenging geotechnical environment;
- The procurement arrangements for a new link of this scale; and
- How the highway would be funded, including the role of other public-sector funding sources and, importantly given Combined Authority thinking more widely, the potential to capture private sector contributions and investment, given its scale is likely to exceed existing Combined Authority budgets.

1 Introduction

This document presents the Strategic Outline Case for a high standard road connecting the M11 in the Cambridge area to the A47 in the Guyhirn / Wisbech area. This prospective new link road is intended to support business investment and growth in north Cambridgeshire and would improve access from north Cambridgeshire to the rapidly growing economy of Greater Cambridge.

1.1 Description of Project

In November 2017, Mott MacDonald was appointed by Cambridgeshire County Council, on behalf of the Cambridgeshire and Peterborough Combined Authority (CPCA), to undertake a feasibility study into improving transport connections between Greater Cambridge and north Cambridgeshire. The study is one of several commissions issued by the CPCA, following its establishment in March 2017, with the aim of assessing expected growth in the combined authority area and the potential infrastructure investments required to accommodate this identified development.

The CPCA wishes to understand the feasibility, viability, benefits and impacts of improved transport connectivity between Cambridge and its immediate environs (defined in this report as the city of Cambridge and the area immediately around the city in South Cambridgeshire District) and north Cambridgeshire and its adjacent areas (Fenland District along with northern parts of Huntingdonshire and East Cambridgeshire districts, as well as the surrounding districts of South Holland and King's Lynn and West Norfolk). Figure 1.1 below shows the local authority boundaries in Cambridgeshire and bordering counties. In particular, the CPCA would like to understand the case for a new high standard road link connecting the M11 in the Cambridge area to the A47 in the Guyhirn / Wisbech (Fenland District) area.

The map displays the Greater Cambridge area, including the following local authority districts:

- South Holland
- King's Lynn and West Norfolk
- Fenland
- Huntingdonshire
- East Cambridgeshire
- South Cambridgeshire
- Cambridge (indicated by a purple dot)
- Wisbech (indicated by a purple dot)

The map also shows the M11 and A47 roads. An inset map in the top right corner shows the location of the study area within the United Kingdom, with a red box highlighting the region around Cambridge.

Legend

- Key Town (indicated by a purple dot)
- Local Authority District (Cambridgeshire) (indicated by a black outline)
- Local Authority District (outside Cambridgeshire) (indicated by a blue outline)

Scale

0 10 20 30 Kilometres

Scale in A3

1:450,000

Rev

Rev	Date	Drawn	Description	Checked	Approved
01	22/11/2018	ER	Final Information	CW	OS

Greater Cambridge

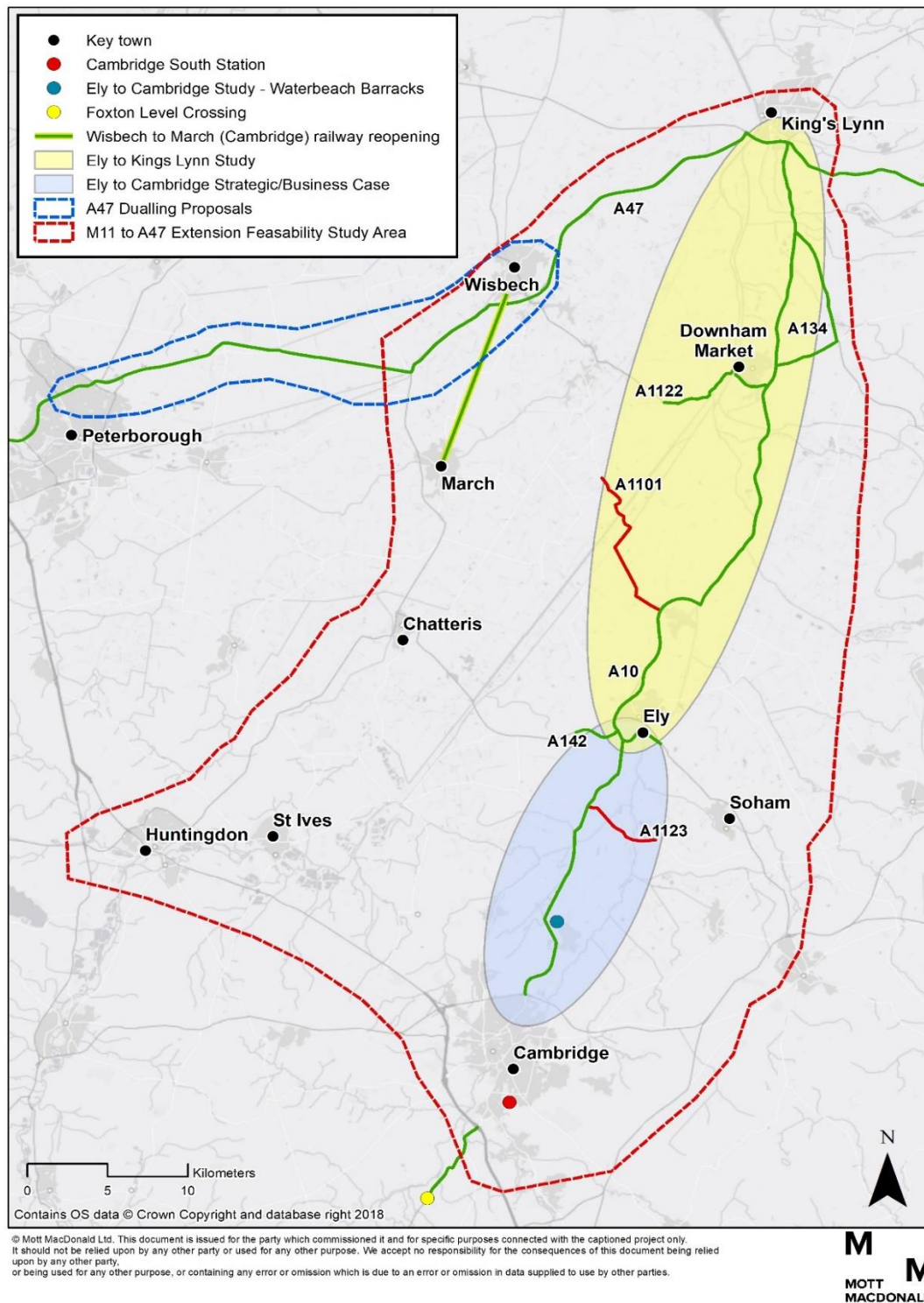
MOTT MACDONALD

35 Newhall Street
Birmingham
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

Contains OS data © Crown Copyright and database right 2018.

Figure 1.2 sets out the core study area for the M11- A47 Link Study in the context of other transport studies underway in the area that are being led by the CPCA, Cambridgeshire County Council and the Greater Cambridge Partnership.

Figure 1.2: Indicative core study area for M11-A47 link study

Source: Mott MacDonald (contains Ordnance Survey data)

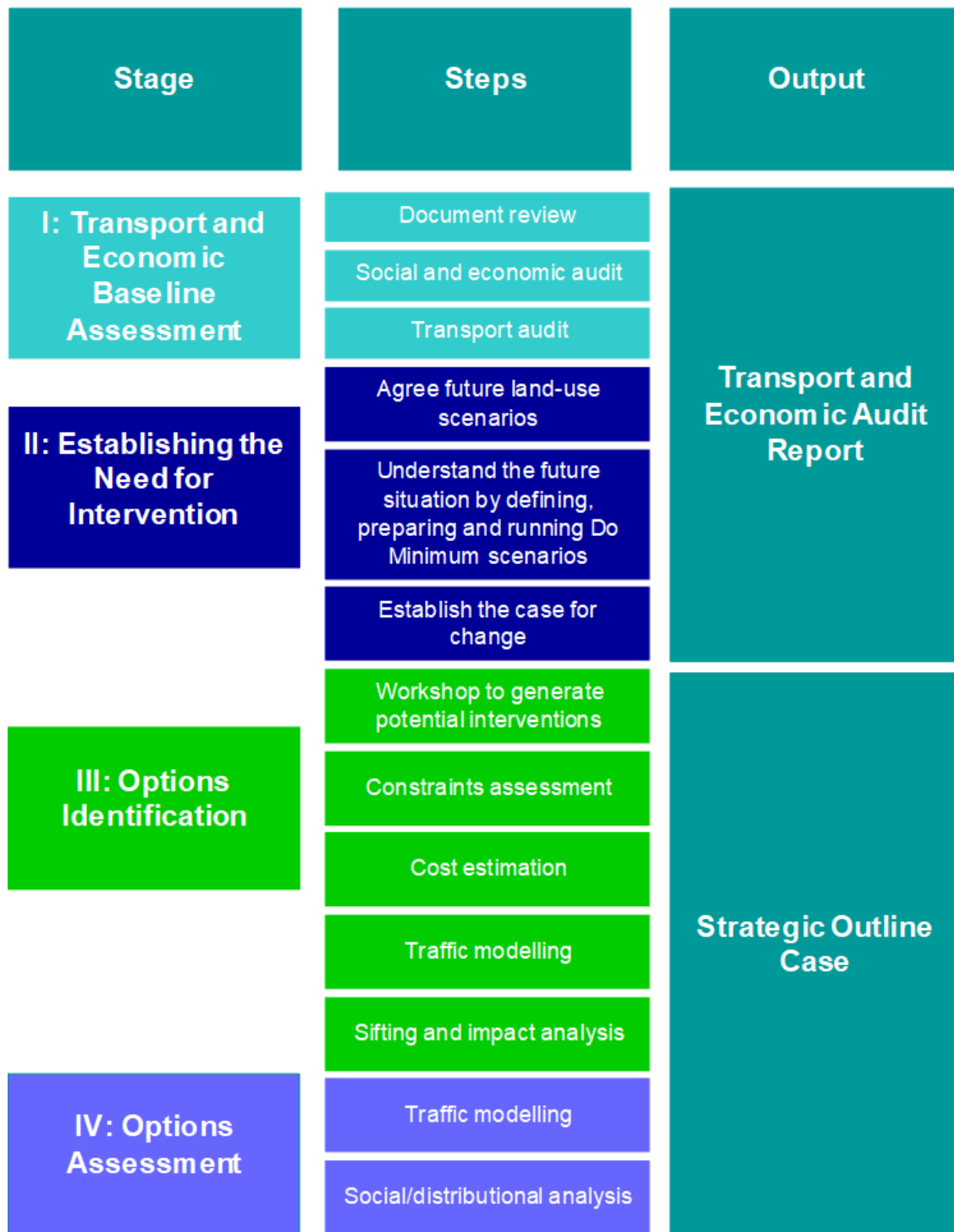
1.2 Project Strategic Objectives

The CPCA has identified the strategic objectives of the proposed new route as follows:

- To improve labour market accessibility via improving access from the north of Cambridgeshire to the rapidly growing economy of Greater Cambridge;
- To support business investment and growth within the north of Cambridgeshire via a step change in the connectivity to Cambridge;
- To promote inclusive growth by helping to reduce spatial inequalities across Cambridgeshire and share and expand the benefits of the success of the Greater Cambridge area; and
- To support land utilisation in north Cambridgeshire by stimulating demand for commercial property, stimulating housing demand and helping to rejuvenate / address imbalances in the housing market.

1.3 Structure of the Study

The study has been structured into four stages with a number of intermediate steps and two main deliverables, as shown in Figure 1.3. In addition, the two deliverables are summarised in a public non-technical summary document.

Figure 1.3: Study structure and outputs

Source: Mott MacDonald

The required outputs from the M11-A47 Study are:

- *Transport and Economic Audit Report*. An assessment of the current transport network and socio-economic conditions (including spatial inequalities) within the study area in order to identify and define the need for intervention. This report was delivered in April 2018.
- *Strategic Outline Case*. This report provides an assessment of future travel demand, potential route alignments in the study area to address this demand taking account of environmental, heritage and geotechnical constraints, initial thinking on design and construction specifications, cost estimates of identified options, and an economic appraisal of these options.
- *Summary document*. A non-technical summary of the Audit Report and Feasibility Study suitable for a non-technical audience, and appropriate for use at any future public consultation on the proposals.

This document – the Strategic Outline Case – is the second deliverable of this commission. Its main aims are:

- To identify a set of options in the study area for more detailed appraisal;
- To develop the options in more detail in terms of design, costings and their transport-user and wider economic effects, as well as their social and distributional impacts, to determine whether the options might have merit for further development. From this, a preferred option for more detailed development can be identified; and
- To set out clear direction for how the preferred option(s) can be progressed through future development work and the likely timeframes for doing so.

1.4 Policy and Development Planning Context

1.4.1 Regional and Local Economic and Spatial Policy

1.4.1.1 Cambridgeshire and Peterborough Combined Authority

The Cambridgeshire and Peterborough Devolution deal between the seven local authorities covering Cambridgeshire and Peterborough and the Greater Cambridge Greater Peterborough LEP was signed in March 2017 and the CPCA was established by statutory order at this time. In May 2017, a directly elected mayor was chosen for the Cambridgeshire and Peterborough area for the first time as part of the UK Government's devolution agenda.

The Mayor's aim is to deliver substantial economic growth across Cambridgeshire and Peterborough and to maintain and improve the region's status as a net contributor to the UK economy. The aim is for economic output of Cambridgeshire and Peterborough to double in the next 25 years. This will be achieved by accelerating housing delivery in sustainable communities across Cambridgeshire and Peterborough, supported by transport improvements along with additional economic development policies.

The Mayor and Combined Authority are in the process of developing a hierarchy of economic and spatial plans to guide economic and spatial development in Cambridgeshire and Peterborough, as discussed below.

Recognising the varying levels of development of these plans, the M11-47 Link study has been developed to align as far as possible with their expected findings, but the detailed assumptions used in developing the study (such as in relation to future spatial development patterns) are likely to differ to those adopted once this planning process is finalised.

Cambridgeshire and Peterborough Independent Economic Review

The final report of the Cambridgeshire and Peterborough Independent Economic Review (CPIER) was published in September 2018. The CPIER was developed by an independent commission. Key findings of particular relevance to the M11-A47 Link study included:

- The Combined Authority area comprises three economies, namely the prosperous, skilled and high-wage economy of Greater Cambridge, the industrial and logistics-based economy of Peterborough, and the agricultural and market town-based economy of the Fens;
- The requirement for a tailored approach for these three distinct economies and in particular for public intervention to tackle some of the most entrenched deprivation in parts of the Fens, where rural communities have struggled to maintain distinctive high-value industries; and
- The need to undertake a review of housing requirements within the Combined Authority based on the potential for higher growth in employment than currently forecast, aligned to a package of transport and other infrastructure projects to alleviate the growing pains of Greater Cambridge.

Non-Statutory Spatial Framework

The Combined Authority is in the process of developing a Non-Statutory Spatial Framework to act as a framework for planning across the Combined Authority area, and for the future development of Local Plans.

The Spatial Framework is being developed in two phases. The first phase, which was adopted in March 2018, articulates the existing development strategy for the Combined Authority from adopted and emerging local plans through to 2031/36. This phase notes how the majority of the planned development in the Combined Authority area will occur in major sites (1,000 plus homes). The second phase, which has yet to be published, will assess spatial development options across the Combined Authority area beyond 2031/2036.

Local Transport Plan

The Combined Authority is in the process of developing a new Local Transport Plan (LTP). The revised LTP will be completed by Spring 2019. The Mayor has prepared an Interim Transport Strategy Statement to guide development of the new LTP and provide guidance for transport projects currently being or soon to be developed.

The Interim Transport Strategy included a number of major projects along each of the key corridors of the Combined Authority area (of which the M11-A47 Link is one), as shown in Table 1.1.

Table 1.1: Mayoral Interim Transport Strategy Statement Schemes

Corridor / Area	Transport Schemes
Metro	Cambridge Autonomous Metro
North - South	A10 upgrade, M11 extension, Ely Rail Improvements, Soham Station, Cambridge Rail Capacity Study, Huntingdon Third River Crossing
East – West (North)	A47 Dualling Peterborough to Wisbech, Wisbech Rail, Wisbech Access, Wisbech Garden Town
East - West (South)	Oxford to Cambridge Expressway (A428), Cambridge South Station; A505 corridor, East-West Rail

Source: Mayoral Interim Transport Strategy Statement, 2017 (CPCA)

The relative priority of these and other potential schemes in the LTP has yet to be established. Within this list of schemes, the Combined Authority makes the distinction between two types of projects:

- Type 1 - those projects that can delivered with planned growth
- Type 2 - those projects that will enable and require growth beyond current plans.

Type 2 projects are inherently linked to decisions made through the Non-Statutory Spatial Framework. It is expected the M11-A47 Link will be a Type 2 project.

1.4.2 Committed Transport Projects

The traffic modelling contained in this report includes the following committed transport projects in the baseline Do Minimum case, as these projects are either underway or have already been approved. This list of schemes has been agreed as appropriate with officers from the Combined Authority and Cambridgeshire County Council.

A14 Improvements – Huntingdon bypass

The £1.5bn A14 Cambridge to Huntingdon improvement scheme includes a major new bypass to the south of Huntingdon and upgrades to 21 miles of the A14. Work officially started in November 2016 and the new road is expected to open to traffic by the end of 2020.

As part of the current A14 improvement works, the road is currently being widened to three lanes each way between junction 31 at Girton and junction 33 at Milton. These works include improvements to the Milton Interchange between the A14 and the A10.

Ely Southern By-Pass

The Ely southern bypass is a new road that will shorten the route of the A142 around the south of Ely to ease congestion in and around the town. The new route will remove the need for heavy goods vehicles to use the railway level crossing and avoid an accident-prone low-bridge. The bypass is expected to open October 2018.

Kings Dyke improvements

King's Dyke level crossing is an at-grade level crossing between the A605 Peterborough to Whittlesey road and the railway line between Peterborough and Ely. This crossing has caused significant delays to traffic. Cambridgeshire County Council plans to divert the A605 around the level crossing using a bridge to avoid the railway line. The designs are nearing completion and construction is set to start early 2019.

A47 Guyhirn junction improvements

Highways England plans to improve the Guyhirn junction between the A47 and the A141. The plan aims to increase the size of the roundabout and create three lanes on all approaches to the junction. It also aims to widen the existing carriageway on the River Nene Bridge to accommodate an additional lane of traffic. Works are set to start in 2020 and the new junction is planned to open in 2021.

Northstowe Northern Access Road and new roundabout for Southern Access Road

Northstowe is a new town located on the former RAF Oakington barracks that will provide 10,000 new homes when completed. As part of Phase 2 of the scheme, a two-and-a-half-mile access road will be built to the north of the site, along with an improved roundabout for the southern access road.

A428 dualling between Caxton Gibbet (west of Cambridge) and the A1, includes a grade separated junction at the Black Cat Roundabout

Highways England plans to upgrade the A428 from the Caxton Gibbet roundabout west of Cambridge to the A1. The preferred route is planned to be announced in late 2018 and construction is set to start in 2021/22.

1.5 Summary of Study Methodology

1.5.1 Socio-economic baseline

Analysis of the economic and social baseline for the project is primarily based on analysing public socio-economic data from the Office of National Statistics (ONS), as well as bespoke data (such as that from the East of England Forecasting Model (EEFM)).

Focus is placed on comparing data from Fenland District with that of Cambridge City as proxies for the north and south of Cambridgeshire. While Fenland District is not an exact proxy for the north Cambridgeshire functional economic area – which includes parts of Huntingdonshire and East Cambridgeshire districts and parts of the City of Peterborough, or the wider “Fenland¹ Economy” – this comparative approach has been used due to availability of multiple types of data at a local authority level. Where necessary, the analysis throughout also considers the wider geography of the study area, particularly through using Geographical Information Systems (GIS) for mapping key indicators.

More detail on the approach used to develop the socio-economic baseline is set out in the *M11-A47 Link: Transport and Economic Audit* report, included as an appendix to this study.

¹ The Fens is not a precisely defined geographic area, but is generally seen to include parts of Fenland, Huntingdonshire and East Cambridgeshire districts, as well parts of the City of Peterborough local authority area and, outside of Cambridgeshire, parts of Norfolk and Lincolnshire and small parts of Suffolk.

1.5.2 Traffic Modelling

Traffic modelling for the M11-A47 Link was undertaken using a cordoned-down, and locally revalidated, version of Highways England's South East Regional Transport Model (SERTM), a regional highways model based on the SATURN software package. Future year demand within SERTM is generated by growth factors derived from the National Trip End Model (NTEM), as modified by assumptions on additional housing and employment growth above those specified in the NTEM, as detailed below.

For the M11-A47 Link study, Mott MacDonald modelled the potential transport impacts of an enhanced growth "M11-A47 Link" scenario over the period to 2041 in the context of the proposed highway intervention. This was to reflect the expectation that the M11-A47 Link would be a "Type 2" project (refer section 1.4), but that growth forecasts from the Non-Statutory Spatial Framework were unavailable when the study was under development.

To develop this growth scenario Mott MacDonald considered:

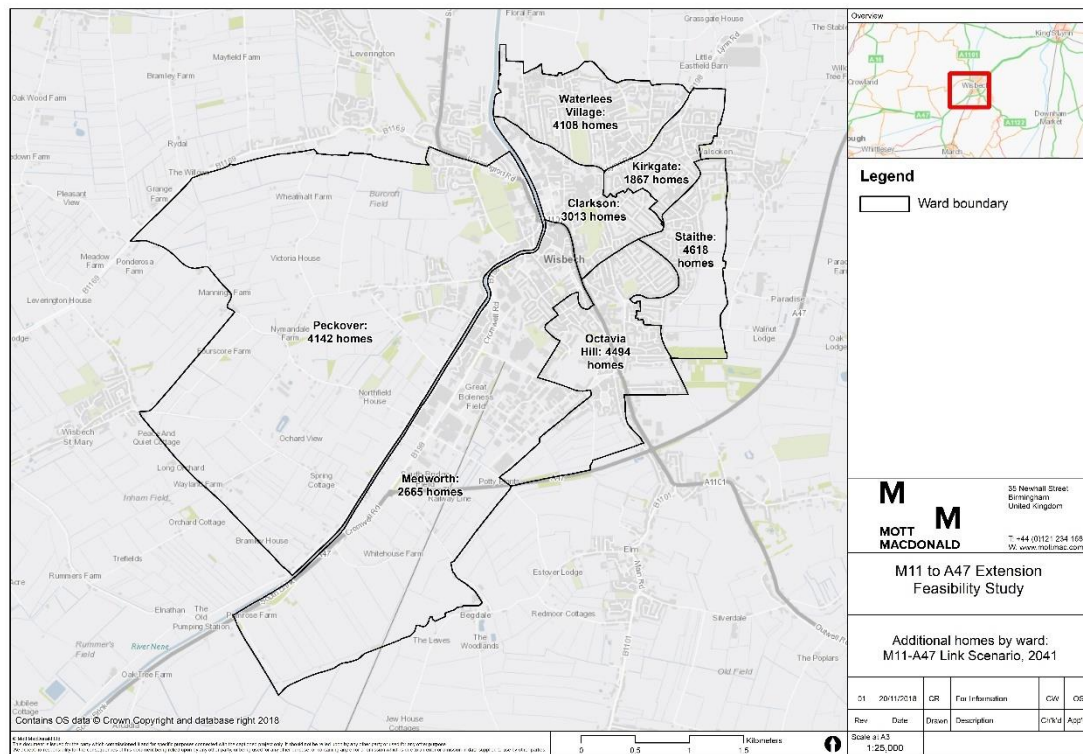
1. Additional housing growth in the study area;
2. Additional employment growth in the study area; and
3. Journey-to-work trip destinations for this additional housing growth.

Forecasts for additional housing growth in the study area were taken from NTEM forecasts extracted from the SERTM model for the CPCA area for 2031 and 2041. These forecasts were cross-checked with data from Cambridgeshire County Council's Research Group² (CCCRG), which aggregates planning authority local plans for the CPCA area, and were found to be broadly consistent.

For the M11-A47 Link scenario, the number of net new dwellings was increased by around 10,000 by 2041 compared to NTEM housing growth forecasts, which represents additional growth of 8%. These additional dwellings were assumed to be allocated primarily to wards in and around the Wisbech urban area. This was intended to be consistent with the Wisbech Garden Town proposal, which is being developed by Wisbech Town Council, Fenland District Council and Cambridgeshire County Council. This proposal envisages an additional 10-12,000 dwellings in Wisbech³. The additional dwellings forecast by ward in Wisbech are shown in Figure 1.4.

² 2015-based Population and Dwelling Stock Forecasts, Cambridgeshire Insight, <http://opendata.cambridgeshireinsight.org.uk/dataset/2015-based-population-and-dwelling-stock-forecasts-cambridgeshire-and-peterborough>

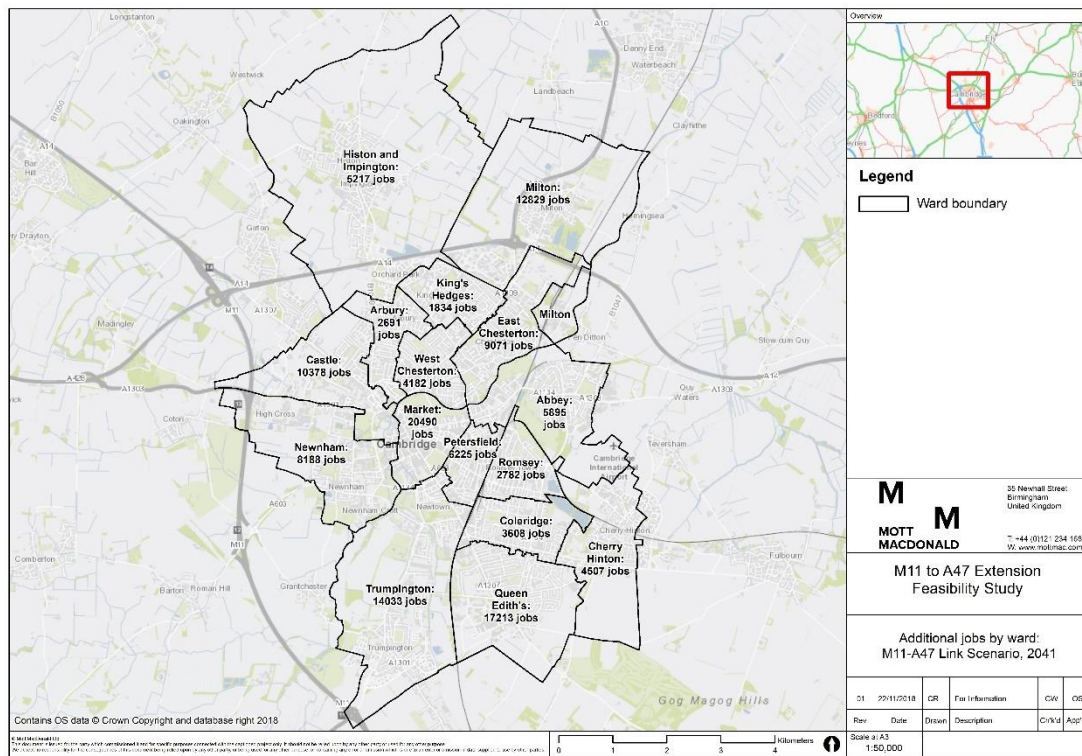
³ Wisbech 2020 Vision, <http://www.wisbech2020vision.co.uk/gardentown>

Figure 1.4: Additional Homes Forecast by Ward for 2041

Source: Mott MacDonald

Forecasts for additional employment growth in the study area were taken from NTEM forecasts extracted from the SERTM model for the CPCA area for 2031 and 2041. For the M11-A47 Link scenario, the number of new net jobs was increased by 14,000 by 2041 compared to NTEM employment growth forecasts, which represents additional growth of 20%. These additional jobs were allocated primarily to wards in and around Greater Cambridge. This was intended to be consistent with the strategic objective of the M11-A47 study to improve “access from the north of Cambridgeshire to the rapidly growing economy of Greater Cambridge”. It also reflects recent trend employment growth in the city (employment in Cambridge grew by 16% between 2010 and 2016, compared to 9% in the CPCA area as whole⁴). This level of growth is in line with current methodologies and therefore does not represent an aspirational level of growth. The additional jobs forecast by ward for 2041 are shown in Figure 1.5 below.

⁴ Cambridge Econometrics, East of England Forecasting Model, 2016.

Figure 1.5: Additional Jobs Forecast by Ward for 2041

Source: Mott MacDonald

The final step of the traffic scenario modelling was to develop assumptions for the distribution of journeys originating from the additional dwellings under the M11-A47 Link scenario. This reflects that these future residents may have different travel patterns to today's residents due to the large increase in employment opportunities available in Greater Cambridge under the M11-A47 Link scenario. The link itself is also likely to lead to greater north-south interaction by making such movements easier. This effect was reflected in the variable demand element of the modelling undertaken as part of the 'with-link' scenario tests. The redistribution of existing trips is also considered by the model.

DIADDEM 5 software was used to test how sensitive the model is to this variable demand element, using SATURN for the highway assignment module. However, this is represented as a sensitivity test only as it is not fully in line with WebTAG guidance at this feasibility stage.

Variable demand modelling was carried out for the Do Something assignments only, while the Do Minimum was assumed to remain fixed. Therefore, it is expected that the results would overestimate the economic benefits because destination choice and trip frequency are fixed in the Do Minimum.

More detail on the traffic modelling methodology is set out in the *M11-A47 Link: Modelling Report*, included as an appendix to this study.

1.5.3 Constraints Assessments

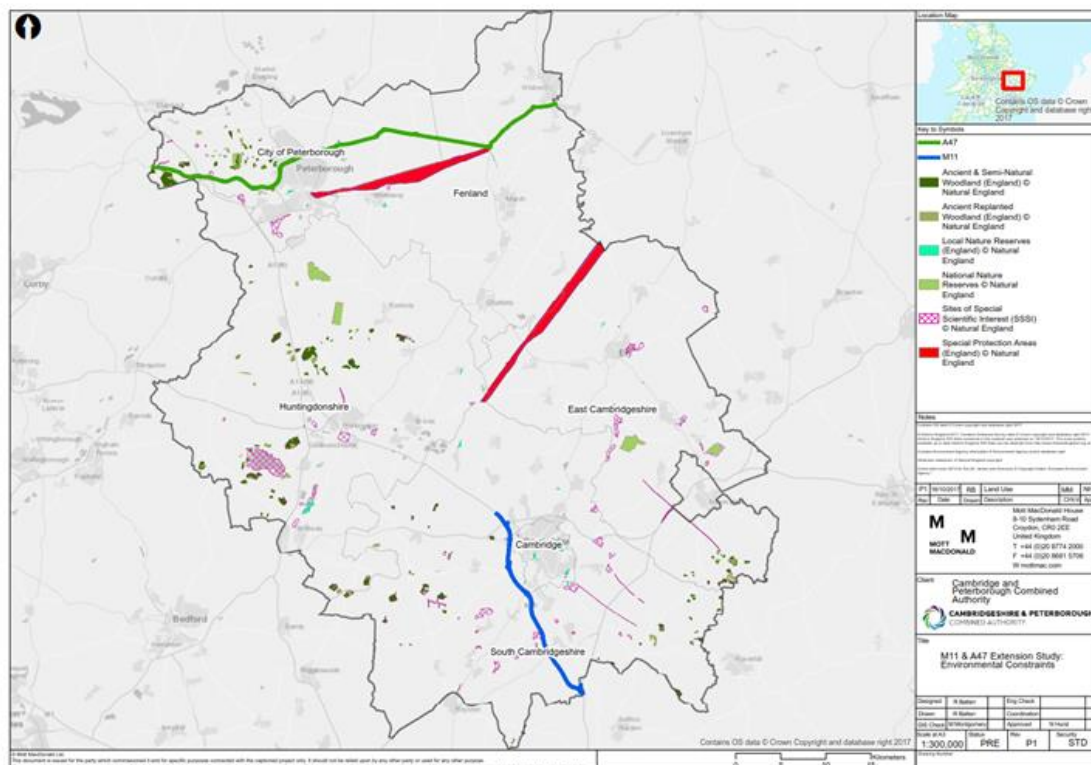
The major environmental and geotechnical constraints within the study area have been identified through a desk-based exercise. The environmental constraints report has been produced using existing information about the following constraints:

- Air Quality
- Cultural Heritage
- Ecology and Nature Conservation
- Landscape
- People and Communities – Social
- People and Communities – Travellers
- Noise and Vibration
- Road Drainage and the Water Environment

While the environmental constraints report uses the structure set out in Highways England's Design Manual for Roads and Bridges (DMRB), the report is not to be considered as a DMRB deliverable. It will be necessary to adopt the DMRB assessment process at the appropriate time, taking in the Screening, Scoping, Simple and Detailed Assessment tasks as appropriate.

The geotechnical report summarises available ground related information for the study area and identifies high level potential geotechnical hazards or risks which may place a constraint against the proposed route selection. The report has been produced with reference to the freely available information published by the British Geological Society.

Figure 1.6: Major Environmental constraints in the study area



Source: Mott MacDonald based on Ordnance Survey data

More detail on the environmental and geotechnical constraints methodology is set out in the *M11-A47 Link: Environmental Constraints Report* and the *M11-A47 Link: High Level Geotechnical Review*, included as appendices to this study.

1.5.4 Cost estimates

The financial cost estimates were developed in line with national standards and guidance for individual elements of each route option. These estimates are high level range-finding costs that are designed to give a sense of the order of magnitude of the costs involved with building each option, rather than being a detailed breakdown of the precise costs of each option.

The cost estimates were benchmarked against cost estimates for other similar projects, such as the estimated cost of dualling the A10 from the *A10 Cambridge to Ely Corridor Study*, in order to ensure that these estimates are sensible.

It is common practice when schemes and measures are in the early stages of their assessment for there to be a number of exclusions. These include consultancy and procurement, as well as the cost of improving the existing junctions at either Bar Hill or Milton on the A14 to provide capacity for the new M11-A47 Link. However, for the purposes of assessing the economic performance of the packages, factors reflecting optimism bias, risk and other elements including an assumed uplift for land costs have been applied.

1.5.5 Option Appraisal

Five potential broad-brush options for the M11-A47 Link were initially developed. From this long list of options, an initial multicriteria assessment was undertaken to identify a short list of three options that would go forward to detailed modelling and appraisal.

For the modelling and appraisal, a “Do Minimum” option was developed which included the committed schemes set out in section 1.4.2. The three short-listed “Do Something” options were compared against the “Do Minimum” option. A sensitivity test was run on one of these options to assess the case for their investment in the context of the proposed A10 improvement scheme from the A14 to Ely proceeding.

The calculation of the benefits of the M11-A47 Link scenario compared to the Do Minimum scenario was carried out using the latest version of the Department for Transport’s (DfT’s) transport users benefit appraisal (TUBA) software and the Department’s latest transport analysis guidance (WebTAG) data book containing the economic parameters. Annualisation factors from the modelled time periods were calculated using appropriate long term automatic traffic count data.

In addition, Mott MacDonald’s Investment Sifting and Evaluation Tool (INSET) tool was used to assess the wider case (including non-monetisable impacts) for each of the shortlisted “Do Something” options.

2 Strategic Case

The purpose of the Strategic Case is to provide a wider narrative of the issues and opportunities in the study area that demonstrate a need for intervention. It considers the baseline conditions, case for change, and identifies and assesses a series of alternative options to meet the study objectives.

2.1 Economic and Social Context

Two distinct economies, with limited interaction

Greater Cambridge, at the southern end of the proposed M11-A47 link road, and north Cambridgeshire, at the northern end, are two distinct economies with limited interaction. Greater Cambridge is currently the fastest growing city economy in the UK, with a focus on knowledge intensive sectors such as information and communications, and professional, scientific and technical services. This results in high levels of economic output, and consequently wages, per capita. However, the success of the Greater Cambridge area has resulted in house prices rising very rapidly, leading to extended journey to work times as employees commute in from areas where housing is more affordable. A high proportion of these journeys are by car, which has led to congestion on major routes causing increased journey times, especially in peak hours, and reduced reliability.

In contrast, the economy of north Cambridgeshire, particularly Fenland District, underperforms across key economic indicators relative to the CPCA average and the national average. This is due to the structure of the area's economy. It is a predominantly rural economy characterised by its strong agro-food sector (agriculture and manufacturing as well as connected logistics activity). Fenland is a relatively low-wage, low-skilled and low-productivity economy and continues, in certain places, to experience high levels of social deprivation despite having relatively good housing affordability. Nevertheless, it has been a growing and relatively high employment economy, except for the recession period of 2007-2010. In this way, north Cambridgeshire is different to many deprived settlements in former industrial areas, which frequently experience high levels of unemployment and year-on-year population decline.

A major problem in north Cambridgeshire is connectivity, with poor north-south transport links, in terms of both public transport and road. Primary highways are of poor quality and the routes they take are indirect. This leads to north Cambridgeshire being cut off from the growing economy of Greater Cambridge. As a result, there is more of a relationship between north Cambridgeshire and Peterborough because of the more developed east/west road links, especially the A47.

2.1.1 The Greater Cambridge economy

The Greater Cambridge economy is a world leader in science and innovation and a major research hub.

The sub-region is home to world-leading research centres such as the MRC Laboratory for Molecular Biology, the Babraham Institute for immunology research, and the Wellcome Sanger Institute for genome research. The University of Cambridge, which is among the world's top universities, attracts global talent, fosters innovation and encourages business spin-outs. Cambridge has been at the forefront of the development of disruptive technologies, ranging

from drug modelling, DNA sequencing and alternative fuels to network computing, inkjet printing, low power semiconductors, speech recognition software and telecommunications.

This entrepreneurial environment and concentration of people focused on science and engineering is attracting international businesses to invest in the area. More than 25 of the world's largest corporations have established operations in Cambridge, including Amazon, Apple, HP, Illumina, Microsoft, Sanofi, Siemens and Qualcomm. AstraZeneca has chosen Cambridge for its global research headquarters for 2,000 staff.

Cambridge is currently the fastest growing city economy in the UK, ahead of other high performing city regions such as Oxford and Milton Keynes according to a recent report by CEBR⁵. It has transformed from a city characterised by a high rate of start-ups to a city where major companies have chosen to locate their headquarters.

2.1.2 The economy of north Cambridgeshire

The economy of north Cambridgeshire is focused on production activities (agriculture and manufacturing) and lower value-added retail and supporting services serving the rural hinterland areas. These are relatively low productivity, low growth sectors and employees in these sectors are likely to have lower skill levels to those in the high productivity, high growth sectors prevalent in the City of Cambridge and its surrounding area.

Fenland District has been used in this study as a proxy for the wider north Cambridgeshire economy. Table 2.1 sets out an economic snapshot comparing Fenland District to the Cambridge City economy, the CPCA economy and regional and national averages.

Across the key indicators, Fenland performs relatively poorly. GVA per worker, a measure of labour productivity, and GVA per capita, a measure of economic prosperity, are the lowest of all CPCA authorities and are significantly below the average for England and Wales. In addition, economic activity and employment rates in Fenland, although relatively in line with the national average, are the lowest in the CPCA area.

Table 2.1: Economic snapshot – key indicators

	Fenland	Cambridge	CPCA	East	England and Wales
Population, 000s, 2016	100.2	131.8	849.0	6,130.5	58,381.2
Employees, 000s, 2016 (workplace based)	34.0	100.8	432.2	2,714.0	26,784.0
GVA, £m, 2015	2,225	5,917	24,215	145,651	1,488,952
Economic activity rate (16-64 population), 2016	78.6%	79.9%	81.0%	79.9%	77.9%
Unemployment (aged 16-64), 2016	5.9%	2.6%	4.1%	3.9%	4.9%
GVA per capita, 2015	£22,436	£45,200	£28,786	£23,970	£25,722
GVA per worker, 2011 prices*	£34,617	£58,584	£43,694	£41,644	£43,369*

Source: Population estimates, Business Register and Employment Survey (BRES), Regional Accounts, Workforce Jobs and Annual Population Survey (APS), all ONS. *Based on EEFM model and relates to UK rather than England and Wales.

⁵ Produced with the Centre for Economics and Business Research (CEBR), the UK Powerhouse report provides a quarterly estimate of gross value added (GVA) and job creation within 45 UK cities 12 months ahead of the Government's official figures.

An analysis of the contribution of key industry sectors to the economies of Fenland and Cambridge, shown in Table 2.2, underlines the very different composition of these local economies within the study area. To an extent this would be reflected in any comparison between an urban and rural economy in the UK. However, on the one hand, the major contribution of agriculture and manufacturing to the Fenland economy and, on the other, the contribution of information and communication and business services to the Cambridge economy is significantly more pronounced than a comparison between most urban and rural areas would show.

Table 2.2: GVA by industry as proportion of total, 2015

	Fenland	Cambridge	CPCA	East	England and Wales
All industries (£m)	2,225	5,917	24,215	145,651	1,488,952
Agriculture, forestry and fishing (A)	7.0%	-	-	1.1%	0.6%
Manufacturing (C)	23.4%	2.3%	12.9%	11.3%	9.9%
Production (BDE)	1.5%	-	-	2.0%	2.6%
Construction (F)	5.8%	1.7%	4.8%	7.8%	5.9%
Distribution, transport, accommodation and food (GHI)	17.3%	12.0%	16.9%	20.4%	18.8%
Information and communication (J)	1.3%	13.2%	7.4%	5.4%	6.9%
Financial and insurance activities (K)	1.8%	2.7%	3.5%	3.9%	7.5%
Real estate activities (L)	9.9%	10.0%	11.1%	13.7%	13.0%
Business service activities (MN)	12.7%	25.2%	16.1%	18.0%	12.7%
Public administration, education and health (OPQ)	15.7%	28.0%	19.7%	17.0%	18.1%
Other services and household activities (RST)	3.5%	3.9%	3.7%	4.3%	4.0%

Source: Regional Accounts, ONS, 2015. – denotes where figures were unavailable. Shading shows the three industry groupings that account for the largest proportions of total GVA per area.

2.1.3 The social context

2.1.3.1 Spatial Inequality

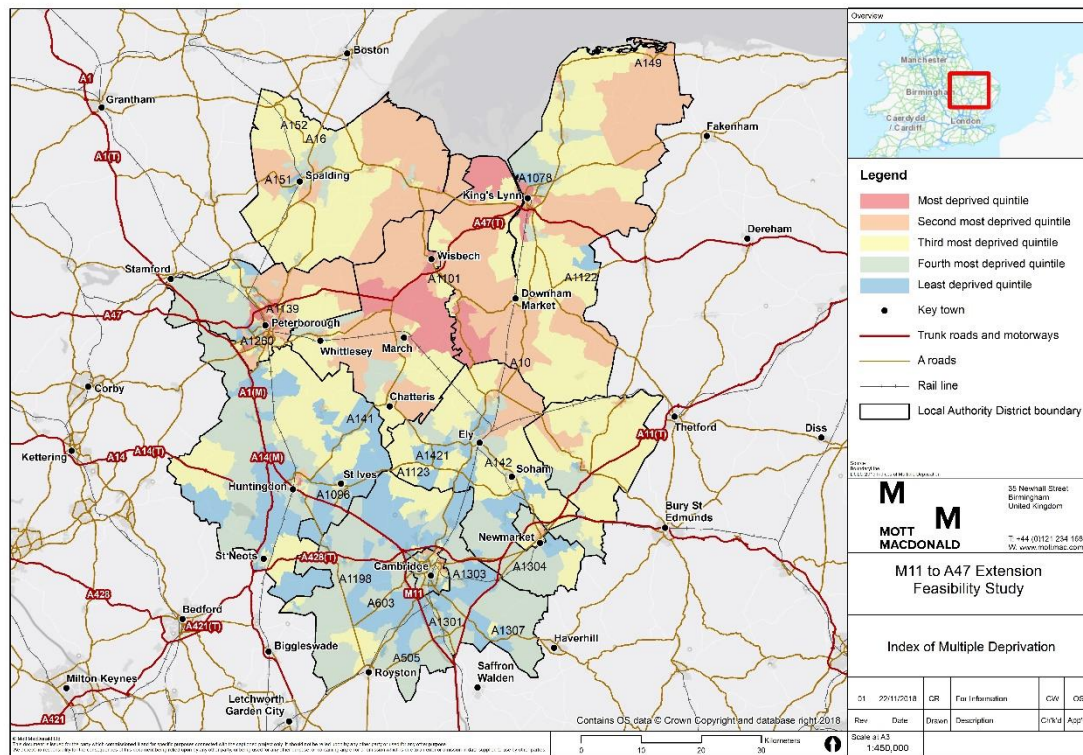
Levels of deprivation⁶ vary across the CPCA area. Overall levels of deprivation are relatively low, with the most deprived areas located in pockets in the north of the area and the least deprived areas covering most of the south and west of the area.

Figure 2.1 shows the ranking of areas within Cambridgeshire and Peterborough in terms of the index of multiple deprivation. Cambridgeshire has 16 LSOAs in the 20% most deprived

⁶ The Index of Multiple Deprivation (IMD) measures relative deprivation across England. The IMD combines domains of deprivation, such as economic, health and housing to rank every lower super output area (LSOA) in England. These LSOAs can then be grouped into quintiles ranging from the most to the least deprived.

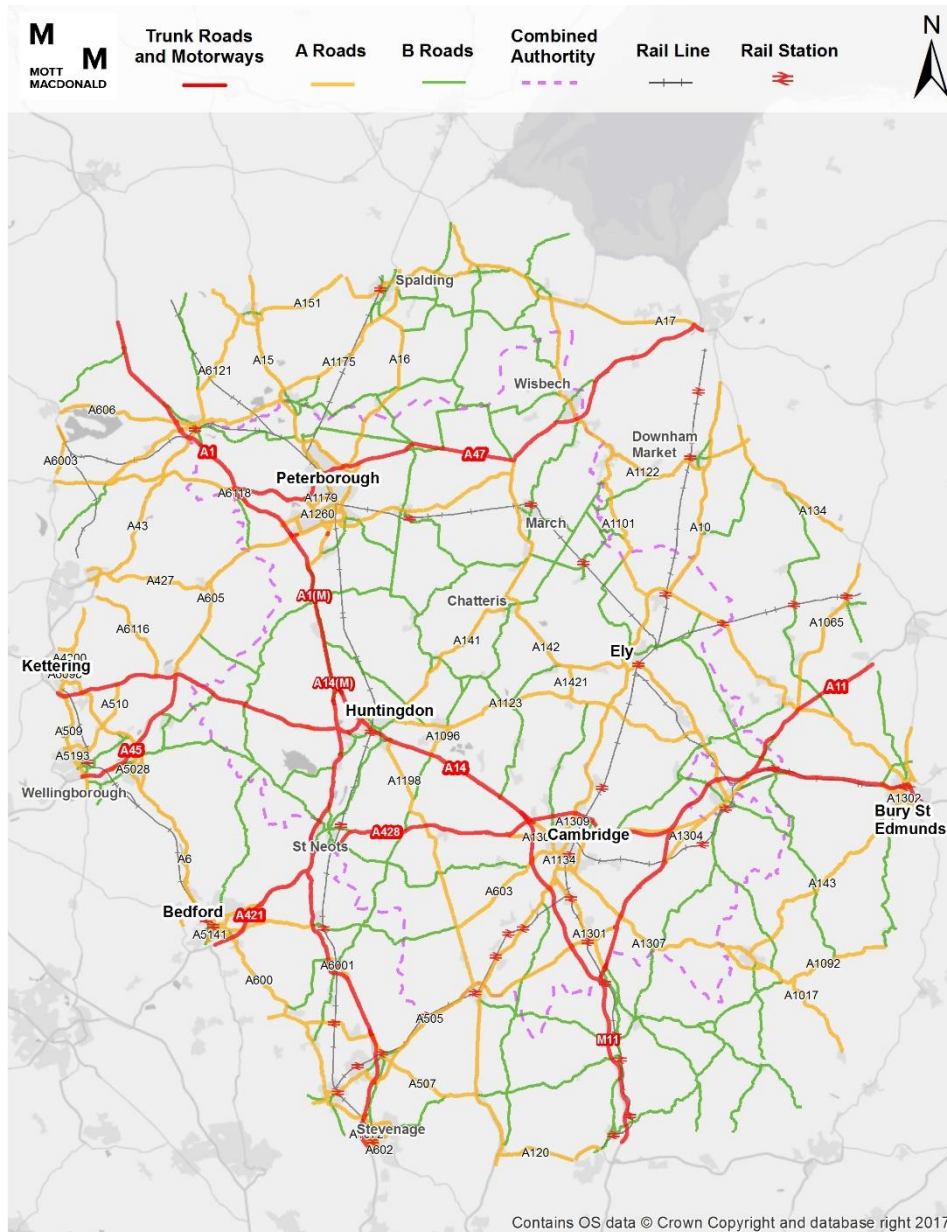
nationally. Two are in Cambridge City, two are in Huntingdonshire and 12 are in Fenland. Within the study area, there are severe pockets of deprivation in and around Wisbech and March. In general, Figure 2.1 suggests a contrast between the levels of low deprivation in the south of the study area (broadly in a line running from near Bury St Edmunds, through Ely, Chatteris and to the south of Peterborough) and the north of the study area, where levels of deprivation are higher.

Figure 2.1: Index of Multiple Deprivation (IMD), 2015



Source: Index of Multiple Deprivation (IMD), Ministry for Housing, Communities and Local Government (MHCLG)

The indices of deprivation consist of nine domains which combine to give an overall ranking. Within this ranking, the very high level of deprivation in north Cambridgeshire wards in the education, skills and training domain is notable. For example, over 70% of all LSOAs in Fenland are in the most deprived 10% nationally for education, skills and training.

Figure 2.4: Cambridgeshire's strategic transport network

Source: Mott Macdonald, contains Ordnance Survey data

2.1.4 Highway links

Highway connectivity across the county is underpinned by a network of strategically important roads. Cambridge is well served by routes that link the city to key locations nearby – the M11 to Stansted Airport and London, the A14 to Huntingdon and Newmarket, the A10 to Ely and Royston and the A428 to St Neots, Bedford and Milton Keynes.

The A10, M11 and the A14 to Newmarket all run broadly in parallel with a rail route. The A10 is single carriageway road. The M11, A14 and A428 are motorways or dual carriageway A-roads

(although the A428 is dual carriageway for only part of its route) and form part of the national Strategic Road Network operated by Highways England.

However, Figure 2.4 shows that the north of Cambridgeshire is poorly served by highway links. Routes from the Fenland towns of Wisbech, March, Chatteris and Whittlesey to Cambridge are indirect and of poor quality. Other than the A1/A14 from Peterborough to Cambridge, the main road running north-south in Cambridgeshire is the A10, which leads from Kings Lynn and Downham Market in Norfolk via Ely to the Milton Interchange on the A14 just north of Cambridge. This road provides only indirect access to Cambridge from the market towns in north Cambridgeshire as its route lies at the east of the county. The routes from these market towns to the A10 are indirect and often on minor roads.

The A10 itself is only a single carriageway route, yet it carries the highest north-south traffic flows in Cambridgeshire. It carries between 1,000 and 2,000 passenger car units (PCUs) southbound towards Cambridge in the morning peak hour, and a similar flow northbound in the evening peak/peak hour according to Cambridgeshire County Council's Cambridge Sub-Regional Model (CSRM). This concentration of travel demand results in significant congestion, which can extend almost the full length of the A10 from Ely to Cambridge in the morning peak and from Cambridge to Ely in the evening peak hours.

In the west of the study area, the A141 connects Huntingdon to the A47 at the Guyhirn roundabout. This alternative north-south route is also of single carriageway standard with at-grade junctions. Guyhirn roundabout is one of the biggest pinch points in the area, so congestion is currently experienced here. Congestion is also experienced in the southern sections of this highway during peak periods, particularly around Huntingdon and on the approaches to the A14.

2.1.5 Public transport

The map shows that Cambridge is well served by fixed public transport infrastructure. Several rail routes converge at Cambridge station, which lies just to the south east of the city centre. These provide direct regional links to Peterborough, Kings Lynn, Norwich, Ipswich, Stevenage, Newmarket, Ely, March and Stansted Airport, as well as frequent services to London Liverpool Street and London Kings Cross, and an hourly service to Birmingham. Cambridge railway station is the busiest in the East of England and was used by almost 11.5 million passengers in 2016/17. A new station was opened in May 2017 at Cambridge North, about 3km north east of the city centre. This station allows access to employment opportunities at Cambridge Science Park and Cambridge Business Park, as well as serving residents living nearby.

Cambridgeshire Guided Busway provides high speed bus access from Huntingdon, St. Ives and the growing new town of Northstowe to Cambridge Science Park, the city centre, Cambridge station and Cambridge Biomedical Campus. The busway accounted for 4.1 million passenger journeys between May 2017 and May 2018.

North Cambridgeshire is less well served by fixed public transport infrastructure. The rail route from Peterborough to Ipswich provides a service to Whittlesey, March and Ely, with limited direct services to Cambridge. Wisbech does not currently have a railway station. There are also east-west bus services in the north of Cambridgeshire, most notably the X1 that links Peterborough with Norwich. East-west provision is better than north-south provision, mirroring the pattern of the highways network.

2.1.6 Summary

The overview of existing strategic transport links in Cambridgeshire shows that Greater Cambridge is well served by highway links and public transport. North Cambridgeshire is poorly served by transport links both within the Combined Authority area and to areas outside of it. In general, east/west corridors are more developed in the north of the Combined Authority area than north/south corridors, and this is a contributing factor to increase levels of economic deprivation. Poor north-south roads, allied to a lack of public transport, mean that there are extended journey times of over an hour between Fenland market towns such as Wisbech and March and Cambridge. At the same time, the strong growth of employment in Cambridge has resulted in increased levels of commuting from outside the area, which has led to congestion on many of the key roads and junctions around the city.

2.2 Travel Demand and Performance

South and north of county have distinctive, disconnected journey patterns

This section considers the current travel demand in the study using Census travel to work statistics. This data source is focussed on journeys to work, which have a key impact on the economic performance of an area.

2.2.1 Current Travel Demand

2.2.1.1 Cambridge and Fenland Commuter Journeys

The major commuting journeys for Cambridge and Fenland within the Combined Authority are shown in Table 2.3. Fenland has been selected as proxy for travel pattern in north Cambridgeshire more generally.

The flows in the diagrams show the numbers of people resident in an area who commute to the selected destination.

Table 2.3: Cambridge and Fenland commuting populations

Currently residing in (origin)	Place of work (destination)	
	Cambridge	Fenland
Cambridge	33,704	81
East Cambridgeshire	7,206	626
Fenland	1,003	19,515
Huntingdonshire	4,716	842
Peterborough	647	2,190
South Cambridgeshire	23,367	243
Outside Cambridgeshire	14,260	6,018
Total	84,903	29,515

Source: ONS - Census 2011

Table 2.3 indicates that north Cambridgeshire and Greater Cambridge are two distinct areas in terms of travel to work. This is unsurprising given the socio-economic context described above and the current relative lack of transport connectivity between the two.

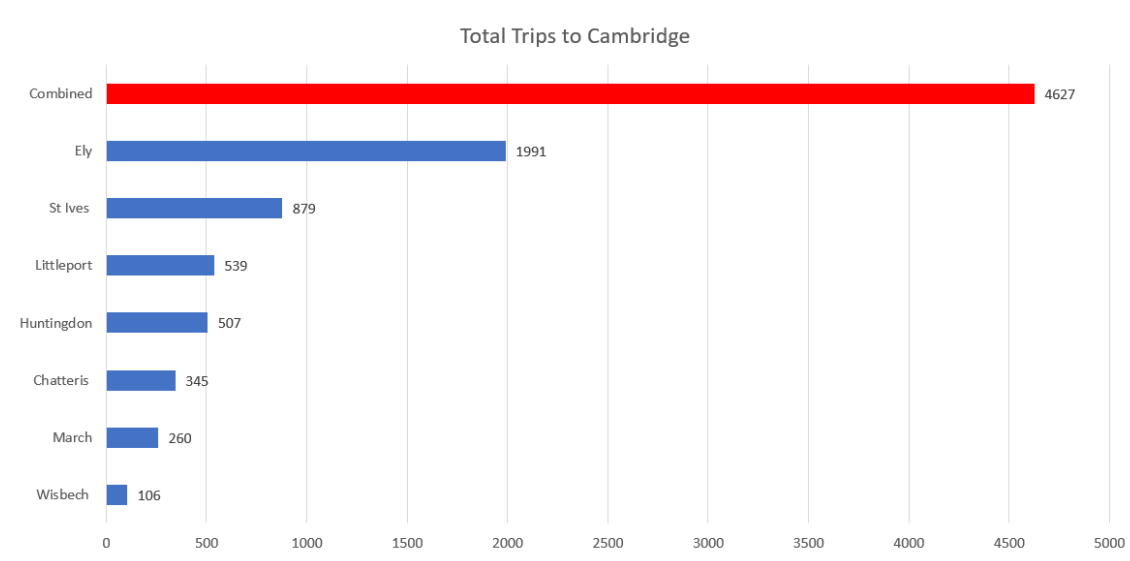
Employment in Greater Cambridge tends to draw upon employees residing in Cambridge City itself, South Cambridgeshire and East Cambridgeshire, with more limited commuting from the southern wards of Fenland and western wards of Huntingdonshire.

In contrast, commuter flows to and from Fenland are more closely aligned to the A47 corridor, particularly towards Peterborough as a major employment centre.

2.2.1.2 Travel to Work – Market Towns

These journey to work patterns are reinforced if we look at the data for the individual market towns in the study area. Figure 2.5 shows the number of commuting trips made from seven CPCA market towns⁷ to the City of Cambridge.

Figure 2.5: Total trips to Cambridge



Source: ONS census 2011

Figure 2.5 indicates both the popularity of Cambridge as a trip attractor, given the high-quality employment opportunities it offers, as well as a clear correlation between journey time taken (by any mode) and scale of commuter flows. It is notable that the data is from the 2011 Census prior to the opening of the Guided Busway with indications from other sources being that commuter flows from Huntingdon and St Ives are likely to have increased substantially since its opening. Patronage data shows that the Guided Busway carried 341,139 passengers in August 2018, while the twelve-month rolling average total was 4.19 million passengers.

A comparison to towns outside of the CPCA area is enlightening. The 2011 Census journey to work data for trips from Bury St Edmunds to Cambridge shows around 600 Bury St Edmunds residents are employed in Cambridge. For Wisbech, on the other hand, only 106 residents are employed in Cambridge despite the two towns being a similar size and a similar distance, as the

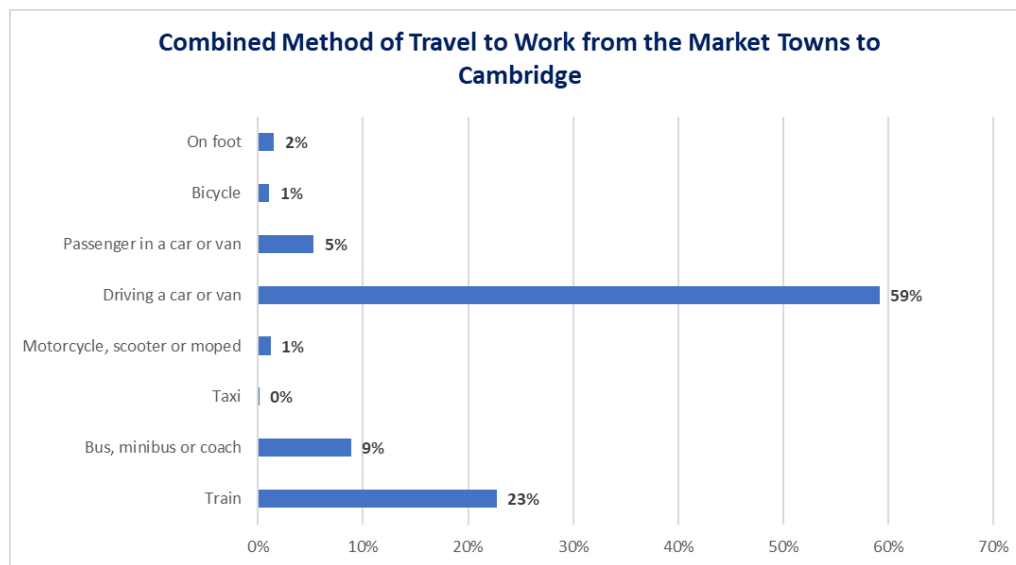
⁷ Ely has been included in this analysis due to its similar size to a number of the comparator settlements despite its being a city.

crow flies, to Cambridge. This is likely to be in part due to the differentials in transport provision between the two towns and Cambridge.

2.2.1.3 Mode Share – Market Towns

Figure 2.6 summarises the combined commuting trips made from the seven market towns to Cambridge by method of travel to work.

Figure 2.6: Method of Travel to Work from the Market Towns to Cambridge

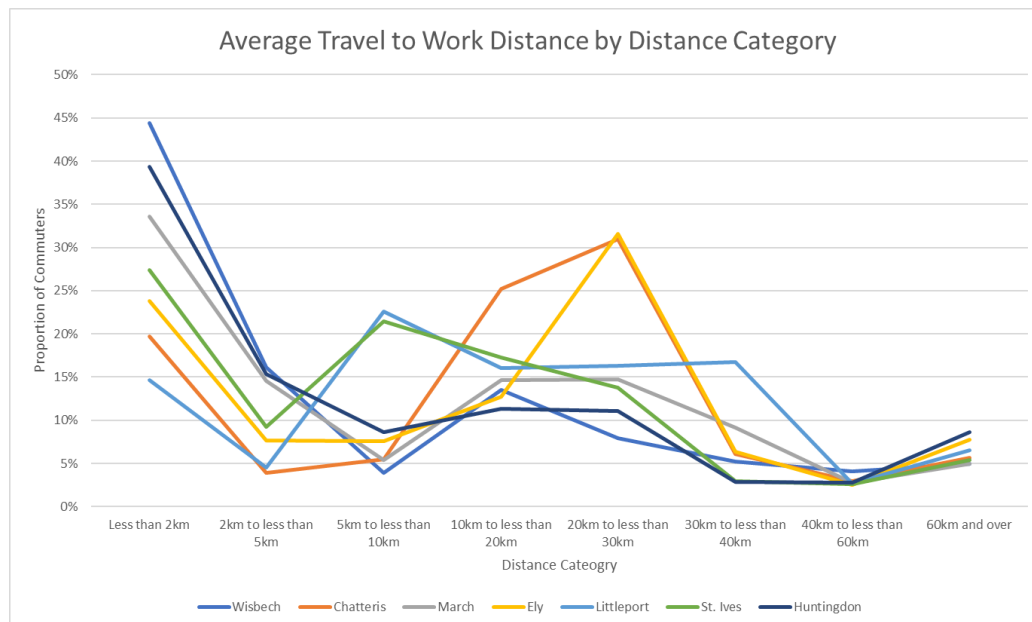


Source ONS – Census 2011

The figures show that private vehicles represent most commuting trips from the market towns to both Peterborough and Cambridge. The only corridor with substantial flows by public transport (noting, again, this data predates the opening of the Guided Busway) is on the Littleport - Ely-Cambridge corridor, which benefits from regular semi-fast rail services.

2.2.1.4 Commuter Travel Distance

Figure 2.7 shows the proportion of people who travel in each distance band for journeys to work for each of the seven CPCA market towns.

Figure 2.7: Distance Travelled to Work by Distance Categories, Market Towns

Source ONS – Census 2011

While the data for each town varies, it is notable that a relatively small proportion of commuters travel over 20 km for work. Since Littleport is 35km away from Cambridge by the most direct route, the relatively higher proportion of workers from Littleport travelling 30km to 40km is assumed to be due to jobs in Cambridge. It is also notable that in each case there is an uplift in journeys to work in the “60km and over” band. These longer distance commuter patterns are experienced across the East and South East of England and are due to longer distance commuter movements to London.

2.2.2 Summary

The City of Cambridge is the largest destination for intra-authority commuter trips within the study area. The catchment area of the city within the CPCA area is concentrated on South Cambridgeshire and from places on key radial highways and public transport links – such as Ely, St. Ives and Huntingdon – in East Cambridgeshire and Huntingdonshire.

In contrast, very few people commute from north Cambridgeshire to Cambridge with Peterborough being a much greater attractor for commuters from north Cambridgeshire. This is consistent both with the socio-economic analysis presented in Section 2.1 and the availability of transport.

To an extent, these journey to work patterns therefore reflect existing infrastructure provision, with east/west road corridors (such as the A14 and A47) being generally more developed and of higher capacity than north/south road corridors, as well as the availability of direct public transport provision to Cambridge within the study area.

Analysis of the distance travelled for journeys to work in the study area shows that, while most commuter journeys are short distance, a significant minority are willing to travel longer distances for work. Whether the Greater Cambridge area, because of the similarities of its labour and housing markets to London, will be able to support similar commuter journey patterns in future

is uncertain, as is whether commuters will be willing (as they primarily commute at present to Greater Cambridge) to make those longer-distance journeys by road. Existing evidence from Bury St Edmunds – Cambridge commuter patterns suggest that significant numbers of commuters are prepared to make these kinds of journeys where there is a direct, legible, high-quality highway connection.

2.3 Impacts of Growth

Growth will intensify existing challenges, particularly for south of county

In this section, we set out the implications for the road network of future growth in transport demand in the absence of investment beyond those projects set out in our Do Minimum scenario (refer section 1.4.2).

As noted in section 1.5.2, we have extrapolated demand using TEMPRO factors extracted from the National Trip End Model for forecast growth in 2031 and 2041. In addition, we have assumed that an additional 5,600 housing units will be built in Wisbech by 2031 and an additional 10,400 units by 2041, reflecting the Wisbech Garden Town plan. At the same time, we have assumed that an additional 8,615 jobs above NTEM forecasts will be created in Cambridge by 2031, and an additional 14,000 jobs by 2041, as strong growth continues in Cambridge.

2.3.1 Travel demand on the network resulting from the emerging strategy

2.3.1.1 Network Statistics

Tables 2.4 and 2.5 below compare aggregate network statistics for 2031 and 2041 in the Do Minimum Scenarios against the 2015 base case.

The tables show that the job and housing projections in the 2031 Do Minimum scenario result in an increase of around 80,000 trips on the highway network. This increase in demand would lead to a 35% increase in total travel time during both peaks and an increase in total travel distance of 18% and 16% during the AM peak and PM peak respectively. In both cases, average speeds would reduce by 8kph.

The growth experienced in the 2041 Do Minimum scenario results in approximately 125,000 additional trips compared to the base year. During the AM Peak this results in a 59% increase in travel time, a 27% increase in total travel distance and a 20% (13kph) reduction in average speed compared to the base. The PM Peak shows similar increases in travel time, travel distance and reductions in average speed.

Overall, the tables show that in the absence of any intervention, beyond those investments set out in the “Do Minimum” scenario, increasing travel demand will lead to worsening network performance across the Combined Authority area, with higher journey times and slower speeds. The resulting increase in congestion is demonstrated by the increase in the “over-cap Q” statistic, which shows the queuing delay experienced by vehicles across the network waiting to undertake turning movements at junctions that are operating over capacity.

Table 2.4: Network Statistics comparison Do Minimum vs Base during the AM Peak

Network Stats	Base 2015	DM31	DM31-Base	% difference	DM41	DM41-Base	% difference
over-cap Q (pcu hrs)	12,406	24,184	11,777	95%	30,515	18,109	146%
total travel time (pcu hrs)	98,145	132,536	34,391	35%	155,808	57,663	59%
travel distance (pcu km)	6,106,169	7,179,251	1,073,082	18%	7,731,888	1,625,720	27%
average speed (kph)	62.2	54.2	-8	-13%	49.5	-13	-20%
Total trips loaded	323,404	402,589	79,185	24%	448,399	124,995	39%
Average trip length (km)	18.9	17.8	-1.0	-6%	17.2	-1.6	-9%

Source: Mott MacDonald

Table 2.5: Network Statistics comparison of Do Minimum vs Base during the PM Peak

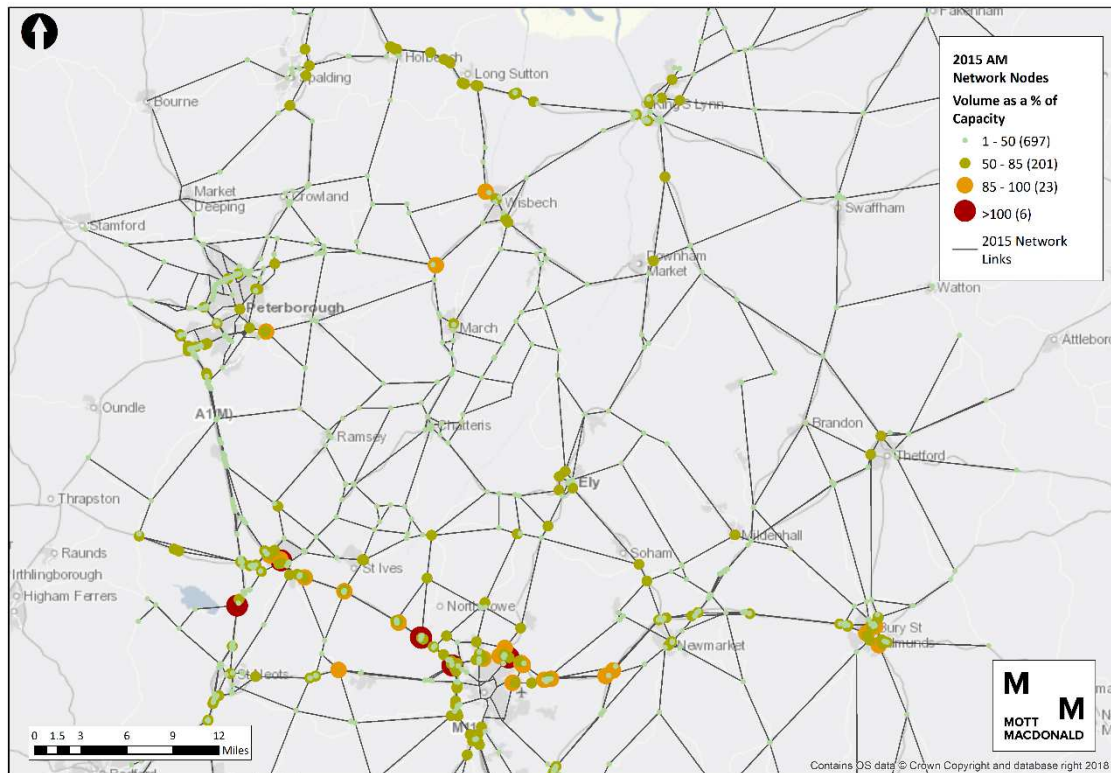
Network Stats	Base 2015	DM31	DM31-Base	% difference	DM41	DM41-Base	% difference
over-cap Q (pcu hrs)	11,727	25,491	13,764	117%	39,535	27,808	237%
total travel time (pcu hrs)	102,967	138,766	35,799	35%	162,375	59,408	58%
travel distance (pcu km)	6,318,459	7,356,244	1,037,786	16%	7,712,124	1,393,665	22%
average speed (kph)	61.4	53.0	-8	-14%	47.5	-14	-23%
Total trips loaded	344,142	424,850	80,709	23%	470,930	126,789	37%
Average trip length (km)	18.4	17.3	-1.0	-6%	16.4	-2.0	-11%

Source: Mott MacDonald

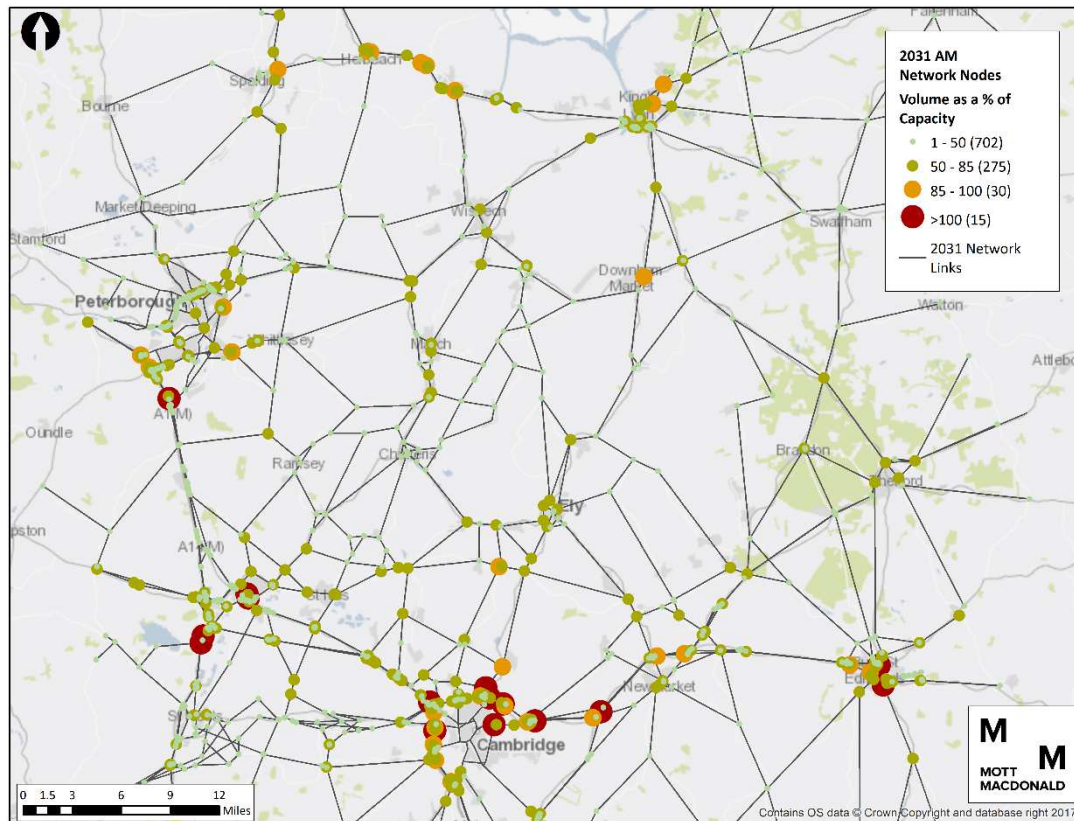
2.3.2 Volume over capacity

To understand where increased congestion is likely to take place across the study area, we have carried out a comparison of the volume over capacity (V/C) ratio at junctions across the study area during the base year and for both the 2031 and 2041 Do Minimum scenarios. The results are presented in Figures 2.8, 2.9 and 2.10 below. Junctions with a V/C ratio under 85% (shown in green) are deemed to be operating within their theoretical aggregate capacity. Junctions with a V/C ratio of between 85% and 100% (shown in orange) are operating over their operational capacity, while junctions with a V/C ratio over 100% are operating over their absolute capacity.

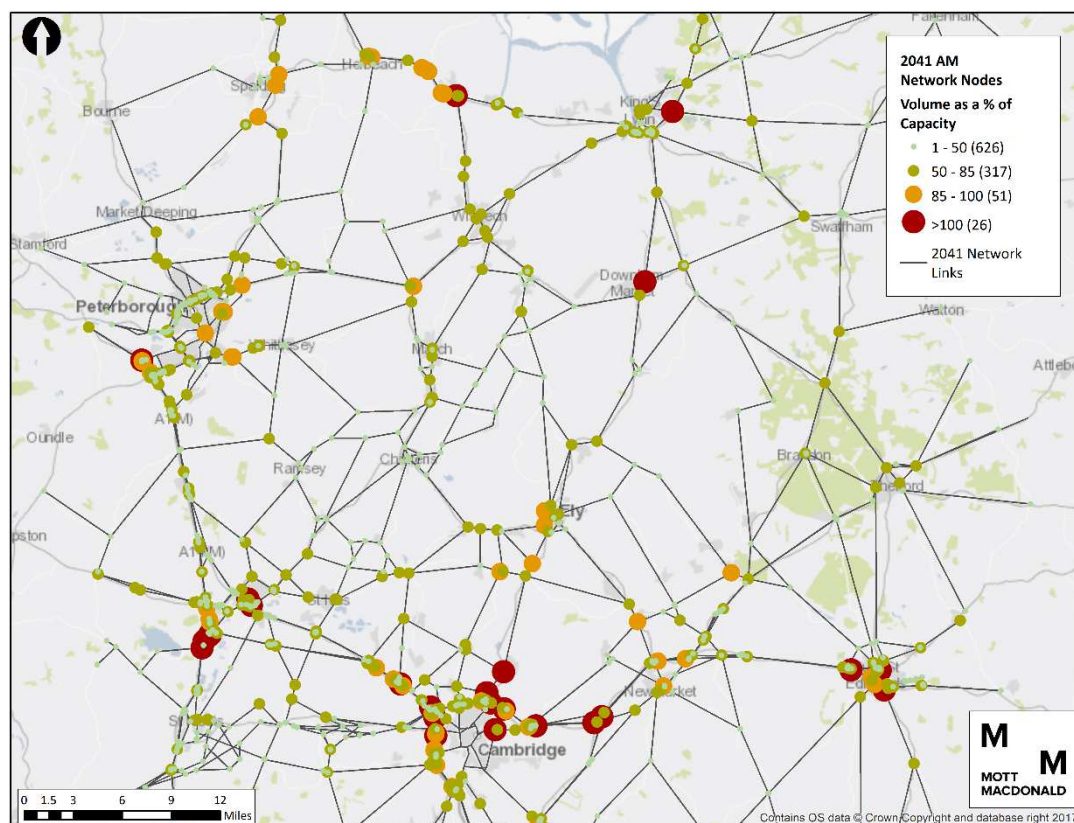
These figures show that growth in demand in the 2031 and 2041 scenarios leads to worsening congestion on key junctions on the highway network, especially those in the south of the CPCA area, as well as at junctions around CPCA market towns, such as Wisbech, March and in particular Ely.

Figure 2.8: Base 2015 AM Peak - Junction performance

Source: Mott MacDonald

Figure 2.9: Do Minimum 2031 AM Peak - Junction performance

Source: Mott MacDonald

Figure 2.10: DM 2041 AM - Junction performance

Source: Mott MacDonald

2.3.3 Summary

Travel demand is forecast to increase rapidly across the Greater Cambridge area in future years in the Do Minimum scenario due to the significant growth in housing and employment forecast over the study period, even with the existing very significant highway investments already committed for the area, such as the upgraded A14.

The results of the traffic modelling show that in the absence of any intervention other than those investments set out in the Do Minimum case, this rapid increase in travel demand will result in longer travel times, longer distance travelled and a reduction in average speed across the study area by 2041. The growth in travel demand also leads to a deterioration in performance at key junctions by 2041 in the Do Minimum scenario, especially on the A14, A10 and M11 around Cambridge.

These impacts are likely to inhibit access to the employment opportunities across Greater Cambridge using the key radial routes that feed the city as journey times and reliability deteriorate further relative to today. Given the “hub and spoke” spatial planning model adopted for Greater Cambridge, this may have implications for the city’s longer-term employment growth as potential employees will only be access work at an overall cost (in terms of travel time or housing cost) that they judge unacceptable relative to other options. For the north of Cambridgeshire, potential access to the south of the county will be even less viable than it is today, and existing east/west corridors (particularly the A47) will offer worse journey outcomes.

2.4 Addressing the Challenges

Connecting the north and south of Cambridgeshire would require major investment as part of a wider package of transport measures

The economic and social context outlined in Section 2.1 demonstrates that the north and south of the study area have very distinct economies with limited interaction. Current travel patterns within Cambridgeshire show that few people currently commute from north Cambridgeshire to Greater Cambridge. This reflects existing transport infrastructure, with east/west corridors generally having more capacity, and being of a higher standard, than north/south corridors. These combined challenges mean that journey times between north Cambridgeshire and Greater Cambridge in peak periods take significantly over an hour, even though the distance travelled is only around 35 miles. There is also currently no viable public transport alternative.

The strategic objectives for a potential M11-A47 Link are about achieving a “step change in connectivity” between the north and south of Cambridgeshire to improve the economic performance of the former by better tying it into the vibrant economy of the latter. Modelling of the strategic highway network over the next 25 years shows that existing committed measures, while significant, will not deliver this “step change in connectivity”; on the contrary, performance on existing north/south corridors will deteriorate relative to today, and increasing congestion around Greater Cambridge will have wider implications for other radial routes to the city also. There is the potential for wider strategic benefits from the scheme, including increased business investment in northern Cambridgeshire and the potential for increased housing in northern Cambridgeshire to reduce pressure on the overheated market due to improved journey to work times.

More limited interventions appear unlikely to achieve the study strategic objectives. Outside the south of the study area (such as peak access to the A14), there are relatively limited pinch points on the existing road network between the north and south of Cambridgeshire. Instead, the challenge is that highway links between the north and south of the county are indirect, frequently illegible and of poor quality. Addressing this is likely to require significant investment in new or improved highway infrastructure, although further assessment should also be undertaken of public transport options, noting the strong growth in demand for these services where available to Greater Cambridge.

Any investment in a new M11-A47 Link should be undertaken as part of a wider transport programme that will need to address other key transport challenges for the study area that are beyond the scope of this study. These include inadequate capacity, over the longer-term, on east/west corridors and, in particular, “last mile” access issues on roads to Greater Cambridge’s dispersed employment centres, such as the Biomedical Campus and Science Park. It is expected that this programme will be included in the CPCA’s forthcoming Local Transport Plan (LTP), which includes as one of its guiding principles delivering “economic growth and opportunity by connecting our dynamic workforce with a growing number of jobs.”⁸ The inter-relationship between any highway investment in the corridor, and emerging thinking on Cambridge Autonomous Metro (CAM) will also need to be borne in mind as that scheme, and the LTP, are developed further.

The remainder of this study sets out a range of potential highway options that have been identified to address the inadequate connectivity between the north and south of Cambridgeshire, and then tests and appraises them based on outcomes from the SERTM transport model and a series of wider criteria consistent with the study’s strategic objectives.

⁸ Paper tabled at the Cambridgeshire and Peterborough Combined Authority - Overview and Scrutiny Committee, 25th June 2018.

2.5 Constraints Assessment

Constraints are manageable; accommodating the internationally significant Ouse Washes in any design will be the key challenge

Prior to developing an initial long-list of potential options for the M11-A47 Link, an initial assessment was undertaken of environmental and geotechnical constraints that need to be taken into account in any highway design. Results from this analysis are summarised in this section and detailed in the *M11-A47 Link: Environmental Constraints Report* and the *M11-A47 Link: High Level Geotechnical Review*, included as appendices to this study.

The main constraints to be mitigated against are the Ouse Washes Ramsar site and the geotechnical constraints of the subsoil conditions. In any choice of route for the proposed M11-A47 link, consideration will have to be given to how these constraints will be alleviated.

2.5.1 Ecology and Nature Conservation – the Ouse Washes

The main ecological constraint within the study area is the Ouse Washes Special Protection Area (SPA)/Ramsar site. This site, 30km long and up to 1 km wide, stretches from near St Ives, Cambridgeshire to Downham Market, Norfolk. The site is one of the country's few remaining washland habitats, with much of the area being submerged during winter, which acts as a floodwater storage system. The number of both breeding and overwintering birds which use the site are of international significance.

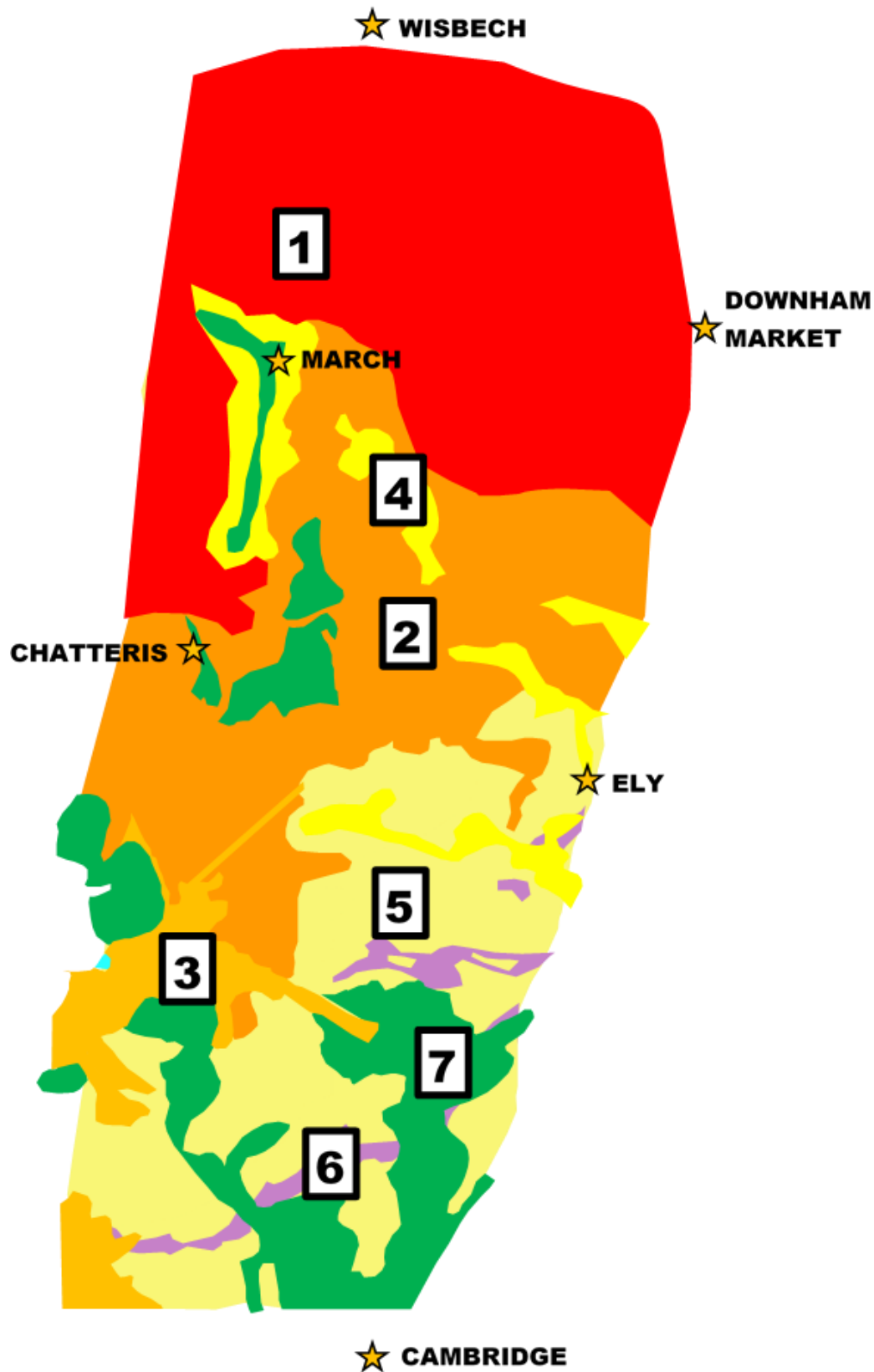
It is likely that any potential M11-A47 Link design would potentially have adverse effects on the Ouse Washes. The required land take would result in direct habitat loss and the severance and fragmentation of habitats. Any bridges or other tall structures that are needed to cross the Ouse Washes could block sight lines, making it easier for predators such as marsh harriers and sparrow hawks to successfully prey on other bird assemblages. The proposed scheme could also result in a change of drainage conditions, which would have an adverse impact on the character of the area.

It is unlikely that a new road would be permitted to cross the Ouse Washes in a location that does not currently have any road infrastructure. The impacts during both construction and operation would be high and would affect species and habitats of very high ecological value.

It may be possible to create a new road that crosses the Ouse Washes in a location where an existing road already bisects them, such as the A1122, A1101 and A142 crossings. This would potentially have less effect on the integrity of the site, as the existing road and the traffic using it already acts to displace sensitive ecological features. However, this option will still need to demonstrate that there would be no less damaging alternatives and that the project was being taken forward due to imperative reasons of overriding public interest.

2.5.2 Geotechnical Constraints

Figure 2.11 illustrates the likely magnitude of high level geotechnical risks likely to be present within the feasibility study area. The study area has been split into seven zones based on the underlying geological conditions. Broadly speaking, the higher the number, the lower the likely risk. Zones 1 and 2 in the north of the study area are underlain by the softest soils, the Barroway Drove Beds and Nordelph Peat. Zones 6 and 7 provide the most favourable road foundations in the study area.

Figure 2.11: Geotechnical Risk Map

Source: Mott MacDonald, based on British Geological Survey data

Zones 1, 2 and 3 have levels of geotechnical risk that are likely to influence the preferred route for the proposed scheme. These areas may pose problems for constructing a high standard road and this could increase the cost of the project. Table 2.6 below attributes each risk zone to a construction area and provides a high-level breakdown of the possible works required for each.

Table 2.6: Possible Construction Areas with a Summary of Potential Works Required

High Level Geotechnical Construction Areas	Description of Likely Works Required
A (Zones 1 and 2)	<ul style="list-style-type: none"> Deposits are highly likely to have a California bearing ratio (CBR) value of 2% or less and be far too thick to stabilise. Ground likely to be aggressive to buried infrastructure Sections of road at grade or on embankment is likely to require placing on load transfer structure supported on piles or concrete modulus columns. Other options are available. Material unlikely to be suitable for re-use. Material is likely to have to be imported to construct embankments and other earthworks elements. Should areas of cut be required (unlikely), side slopes will have to be retained with a structural or reinforced earth option. Any structures are likely to need piled foundations of reasonable to considerable length.
B (Zone 3)	<ul style="list-style-type: none"> Deposits are highly likely to have a CBR value of 2% or less and be far too thick to stabilise. With a high risk of long term settlement. Ground likely to be aggressive to buried infrastructure Sections of road at grade or on embankment is likely to require placing on load transfer structure supported on piles or concrete modulus columns. Material unlikely to be suitable for re-use. Material is likely to have to be imported to construct embankments and other earthworks elements. Should areas of cut be required (unlikely), side slopes will have to be retained with a structural or reinforced earth option. Any structures are likely to need piled foundations of reasonable to considerable length.
C (Zones 4 to 7)	<ul style="list-style-type: none"> Deposits are likely to have a CBR value of 2% with soft areas relatively easy to dig and replace or stabilise. There is a low to moderate risk of long term settlement or heave, but this could be mitigated by the selection of construction methodology. Some ground may be aggressive to buried infrastructure Sections of road at grade should be able to be built using the natural ground as its sub-formation, capping may be required in some areas. Areas of cut should be able to be constructed with slope angles of 1:3. Sections of embankment should be able to be constructed from site won material with slope angles of 1:3. Structures could possibly be supported on shallow foundations but may need to be piled.

Source: Mott MacDonald analysis

2.5.3 Summary

This section has outlined the major environmental and geotechnical constraints that underlie the proposed M11-A47 Link. The major environmental constraint is the Ouse Washes and the

possible need for the proposed road to cross this site. The main geotechnical constraint is the soft peaty soil found in the northern part of the study area, which has a high risk of long term settlement. These constraints will need to be fully assessed and accommodated in any design option. Other constraints – for example heritage constraints such as scheduled ancient monuments or high grade agricultural land – which exist in the study area are likely to be able to be avoided with minimal diversion (noting the scale of the proposed highway intervention), as set out in the technical appendices to this report.

2.6 Outline of Options

This section sets out the long-list of options for the M11-A47 Link that were developed for this study. Consistent with the project's strategic objectives and the findings of the Stages I and II of this project, only major highway interventions were considered in this study, although, as noted earlier, public transport investments could also have an important role to play in addressing the inadequate connectivity between the north and south of Cambridgeshire. This is being explored in a strategic context by the CPCA as they develop their thinking on the next iteration of the Local Transport Plan.

A longlist of five broad corridor options was drawn up for the M11-A47 link. These options were chosen to test the broad potential implications of a range of indicative road corridors between the A14 in the south of Cambridgeshire to Wisbech in the north. These options broadly follow western, central and eastern corridors within the study area.

All the corridor options are based on the working assumption that any new or upgraded highway provision would join the A14 in the south of the study area, either at the Milton Interchange or the upgraded Bar Hill Interchange on the A14. Further examination on exact tie-in locations would need to be subject to further work should proposals for the Link be taken forward on completion of this study but, at this stage, the working assumption has been made that extending the M11 northwards directly from M11 Junction 14 (the A14 Girton Interchange) was likely not to be feasible because of the large number of existing roads that meet at this already complex junction: the M11, the A14, the A428 and the A1307.

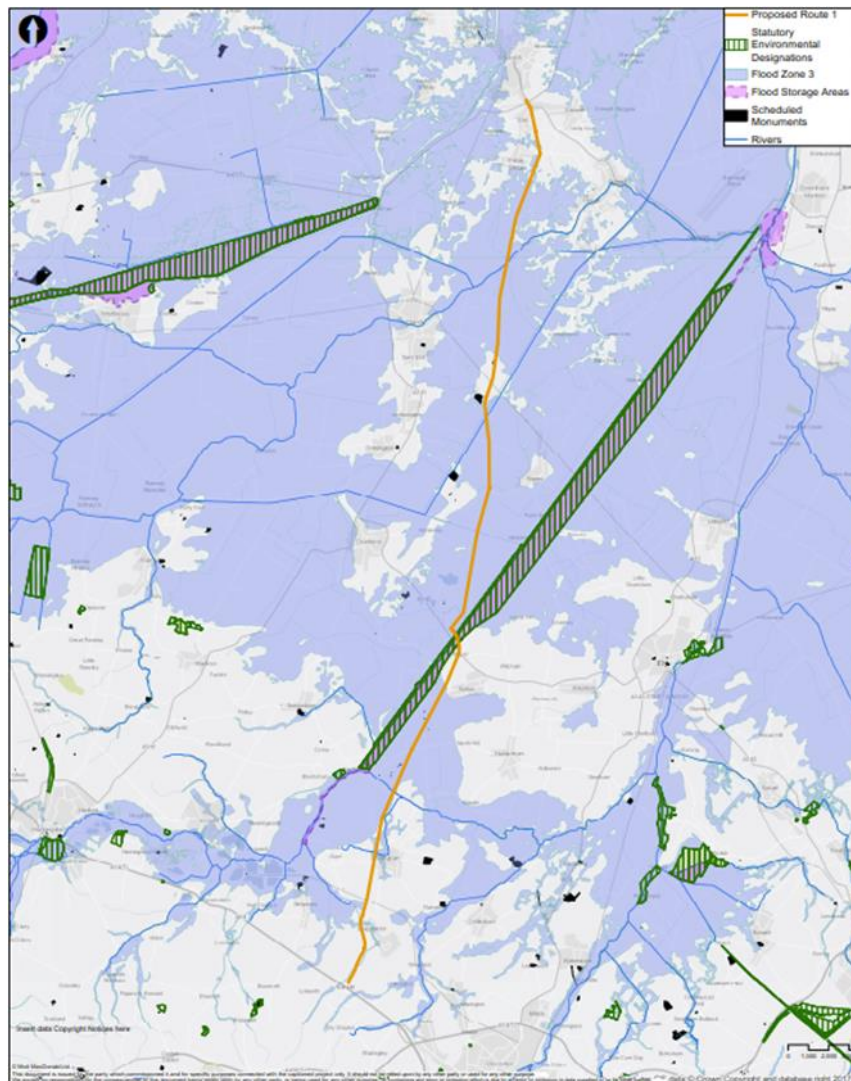
In the north of the study area, all corridor options are assumed to meet the A47 near Wisbech, whether at the Guyhirn roundabout or at the A1101/B1101 junction near Elm.

For the purposes of this assessment, all M11-A47 Link options are assumed to be of a dual carriageway standard with a designated central reservation and grade separated junctions. Also, the assessment is based on broad indicative corridors only at this stage to test the general principles of new/improved highway infrastructure. Detailed work on route alignments, highway design specification and junction design and configuration would need to follow should local partners and decision-makers be minded to take the proposals forward to the next stage in the design and assessment process.

Each of the five corridor options considered is described below.

2.6.1 Option 1: 'Roman Road' Central Corridor

This option was drawn up to give an illustration of the potential impact of provision of a direct route between the M11 and Wisbech. An indicative corridor is shown in Figure 2.12.

Figure 2.12: Option 1 – Indicative Corridor

Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

The southern end of this corridor option connects to the A14 at the Bar Hill interchange. It then heads northwards, following the B1050 dual carriageway around Northstowe before continuing north on a relatively direct trajectory towards Wisbech. The option is assumed to cross the Ouse Washes around the existing A142 alignment at Mepal and then head directly northwards to Wisbech, joining the A47 at the A1101/B1101 junction near Elm.

In total, the option is around 48 km in length.

For the purposes of this initial assessment, junctions have been assumed at the following locations:

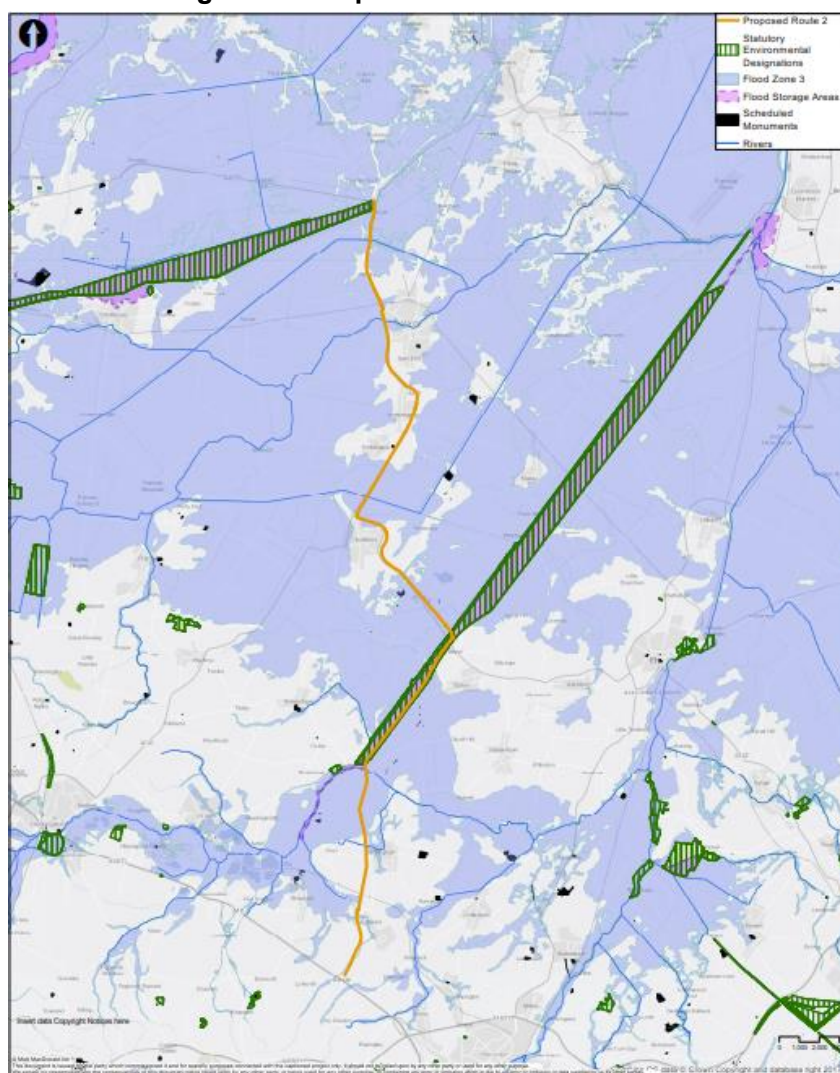
- A14 Bar Hill interchange
- Longstanton
- A1123 east of Earith
- B1381 south west of Sutton

- A142 at Mepal
- B1093 west of Manea
- B1098 east of Wimblington
- B1099 east of March
- A1101/B1101 junction north of Elm

2.6.2 Option 2: Western Corridor

This option aligns to the western side of the study area. The option tested is shown in Figure 2.13. This option is intended to be more accessible to the intermediate settlements between Cambridge and Wisbech, such as Chatteris and March.

Figure 2.13: Option 2 – Indicative Corridor



Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

The southern end of this option connects to the A14 at the Bar Hill interchange. It follows the route of the B1050, including the existing dual carriageway, around Northstowe. It is then assumed to head northwards to the B1381/A1123 junction, following the western edge of the Ouse Washes and to cross the Ouse Washes around the existing A142 alignment at Mepal. It then broadly follows the existing A142 corridor to the north of Chatteris before following the A141 corridor to connect with the A47 at the Guyhirn roundabout.

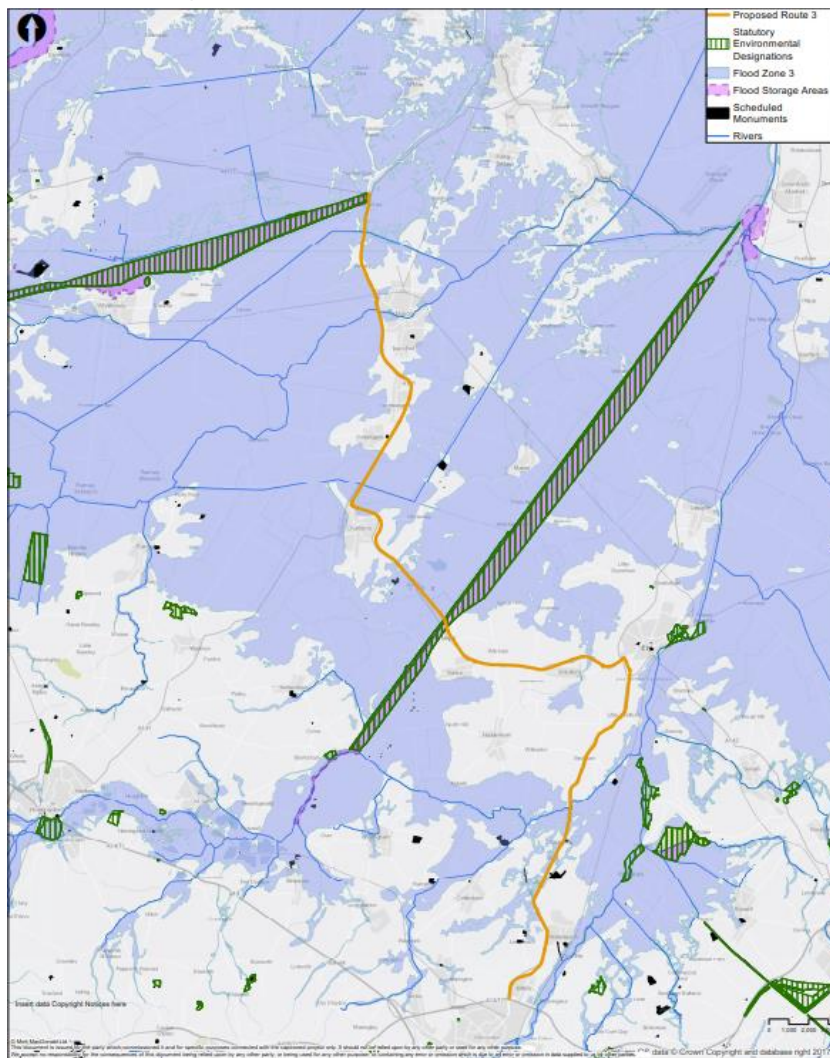
In total, the option is around 44 km in length.

For the purposes of this initial assessment, junctions have been assumed at the following locations:

- A14 Bar Hill interchange
- Longstanton
- A1123 east of Earith
- B1381 south west of Sutton
- A142 at Mepal
- New Road north east of Chatteris
- A142/A141 north west of Chatteris
- B1093 east of Wimblington
- B1101 north of Wimblington
- Wisbech Road/Whittlesey Road west of March
- A605 south of Guyhirn
- A47 Guyhirn roundabout

2.6.3 Option 3: A10 Corridor + Western

Options 3, 4 and 5 all initially follow an eastern, broadly A10-based corridor, as far as Ely. The purpose for this is to understand the case for potentially extending the proposed A10 improvement to Ely to the north of Cambridgeshire. The assumed Option 3 corridor is shown in Figure 2.14.

Figure 2.14: Option 3 – Indicative Corridor

Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

The southern end of the proposed corridor connects to the A14 at the Milton interchange. It is then assumed to follow the A10 corridor northwards to a junction with the A142 to the south of Ely, then follows the A142 corridor to cross the Ouse Washes around Mepal. It is then assumed to continue along the A142 corridor to the north of Chatteris before broadly following the A141 corridor to connect with the A47 at the Guyhirn roundabout.

In total, the option is around 51 km in length.

For the purposes of this initial assessment, junctions have been assumed at the following locations:

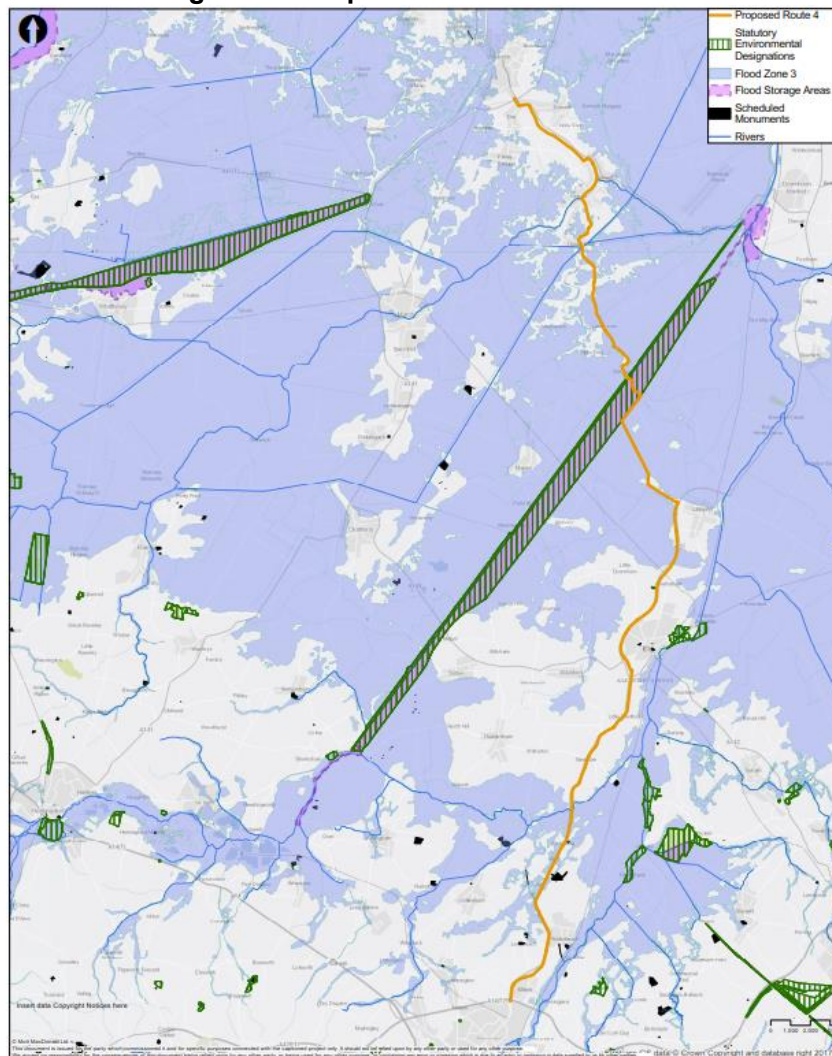
- A14 Milton interchange
- Butt Lane west of Milton
- Waste Management Park
- A1123 near Stretham
- A142 south of Ely

- A142 Witchford Road south west of Ely
- A142 at Mepal
- New Road north east of Chatteris
- A142/A141 north west of Chatteris
- B1093 east of Wimblington
- B1101 north of Wimblington
- Wisbech Road/Whittlesey Road west of March
- A605 south of Guyhim
- A47 Guyhim roundabout

2.6.4 Option 4: A10 Corridor + A1101 Corridor

This option follows the A10 corridor before heading north east along the A1101 corridor. This option is shown in Figure 2.15.

Figure 2.15: Option 4 – Indicative Corridor



Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

The southern end of this option connects to the A14 at the Milton interchange. It then follows the A10 corridor northwards past Ely to the junction with the A1101 to the west of Littleport. The route then follows the broad A1101 corridor to cross the Ouse Washes around the existing crossing at Welney. It continues to follow the broad A1101 corridor east of the Ouse Washes and connects to the A47 at the A1101/B1101 junction near Elm.

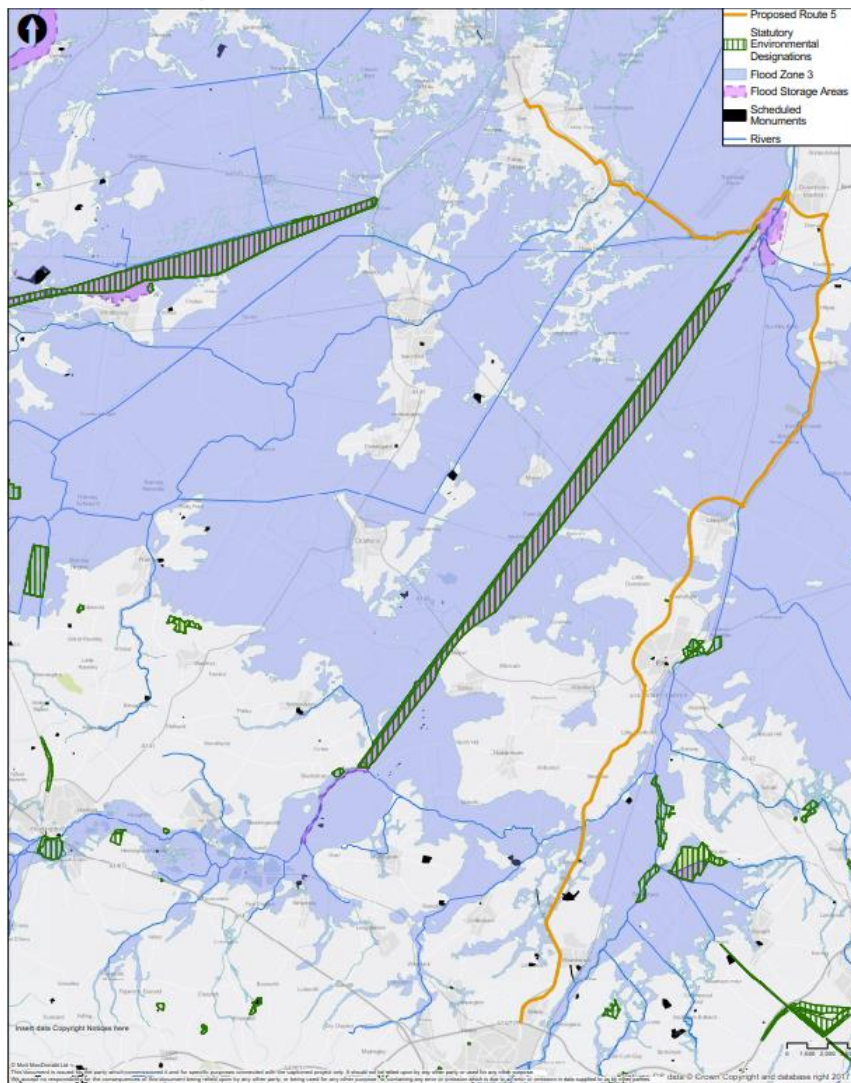
In total, the option is around 52 km in length.

For the purposes of this initial assessment, junctions have been assumed at the following locations:

- A14 Milton interchange
- Butt Lane west of Milton
- Waste Management Park
- A1123 near Stretham
- A142 south of Ely
- A142 Witchford Road south west of Ely
- West Fen Road east of Ely
- B1141 north west of Ely
- Grange Lane south of Littleport
- A1101 west of Littleport
- A1122 south of Outwell
- Basin Road north west of Outwell
- A1101/B1101 junction north of Elm

2.6.5 Option 5: A10 Corridor + A1122 Corridor

This option broadly follows the A10 corridor before heading east along the A1122 corridor. This option is notable for being the only option that would avoid the SPA/Ramsar designated section of the Ouse Washes. The proposed route is shown in Figure 2.16.

Figure 2.16: Option 5 – Indicative Corridor

Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

The southern end of the proposed corridor connects to the A14 at the Milton interchange. It then follows the A10 corridor northwards past Ely and Littleport towards the junction with the A1122 to the south of Downham Market. The option is then assumed to follow the A1122 corridor westwards to cross above the northern end of the Ouse Washes in the vicinity of the existing road. The option continues to follow the A1122 corridor until it joins the A1101 corridor near Outwell, to then connect to the A47 at, or in the vicinity of, the A1101/B1101 junction near Elm.

In total, the option is around 68 km in length.

For the purposes of this assessment, junctions have been assumed at the following locations:

- A14 Milton interchange
- Butt Lane west of Milton
- Waste Management Park
- A1123 near Stretham
- A142 south of Ely

- A142 Witchford Road south west of Ely
- West Fen Road east of Ely
- B1141 north west of Ely
- Grange Lane south of Littleport
- A1101 west of Littleport
- A1101 north east of Littleport
- B1160 near Southery
- Ely Road south of Downham Market
- A1122 south west of Downham Market
- B1094 south of Nordelph
- A1122 south of Outwell
- Basin Road north west of Outwell
- A1101/B1101 junction north of Elm

2.7 Initial Shortlisting of Options

2.7.1 Definition of Sifting Criteria

The five route options described in section 2.7 were assessed against five relevant criteria to provide a shortlist of options for more detailed assessment using the study traffic model. The assessments were made on a qualitative basis using a “traffic light” scoring system. The five criteria used to evaluate the different route options were:

- Potential patronage: how far is the link accessible to current and future population centres?
- Trip length: what would be the average journey time between north Cambridgeshire and Greater Cambridge?
- Network impacts: how will the additional demand be accommodated onto the new A14?
- Environmental impacts: how and at what cost will environmental impacts be mitigated?
- Buildability: what will the design and construction issues be of the link and what will the cost implications of this be?

2.7.2 Results of Shortlisting Assessment

Tables 2.7 to 2.11 give the results of the qualitative shortlisting assessment for each of the five route options. Table 2.12 gives an overview of results of the shortlisting assessment.

Table 2.7: Results of shortlisting assessment for Option 1

Category	Impact
Potential patronage	Although this is a direct route, there are limited intermediate settlements to attract patronage. However, this route will serve the major Northstowe development in the south of the study area.
Trip length	The route is very direct between the north and south of Cambridgeshire, making it short compared to the other options.
Network impacts	The junction at Bar Hill is a relatively constrained and complicated junction. Further assessment is needed.
Environmental impact	The route crosses the Ouse Washes at a point where waterways are close to their narrowest.

Buildability	64% of land crossed by this route land is of medium to severe difficulty (6% medium and 58% severe).
--------------	--

Source: Mott MacDonald analysis

Table 2.8: Results of shortlisting assessment for Option 2

Category	Impact
Potential patronage	This route has a good connection to the A47 at the Guyhim Roundabout. It will collect patronage from Fenland market towns such as March and Chatteris.
Trip length	The route is spread across several corridors making it less direct than Option 1. However, it has a shorter trip length than options 3 and 5.
Network impacts	The junction at Bar Hill is a relatively constrained and complicated junction. Further assessment is needed.
Environmental impact	The route crosses the Ouse Washes at a point where waterways are close to their narrowest.
Buildability	52% of land crossed by this route land is of medium to severe difficulty (8% medium and 44% severe).

Source: Mott MacDonald analysis

Table 2.9: Results of shortlisting assessment for Option 3

Category	Impact
Potential patronage	The route is very well-connected throughout, with connection to the A14 at Milton interchange, the A141 and the A47 at Guyhim Roundabout. It also collects patronage from March and Chatteris.
Trip length	This option has the most indirect route and longest trip length.
Network impacts	The new Milton Junction from the A14 is relatively constrained. Further assessment is needed.
Environmental impact	The route crosses the Ouse Washes at a point where waterways are close to their narrowest.
Buildability	32% of this land is of severe difficulty with the remaining 68% of moderate difficulty.

Source: Mott MacDonald analysis

Table 2.10: Results of shortlisting assessment for Option 4

Category	Impact
Potential patronage	This route has multiple connections throughout, such as the A1101 connection at Littleport, the A14 at Milton interchange and to the A47 at the A1101/B1101 junction near Elm.
Trip length	The trip is more spread out across the east of Cambridgeshire than option 1, making it a less direct option with a longer trip length. However this is a more direct route with a shorter trip length than options 3 and 5.
Network impacts	The new Milton Junction from the A14 is relatively constrained. Further assessment is needed.
Environmental impact	The route crosses the Ouse Washes at a point where waterways are close to their narrowest.
Buildability	54% of this land is of severe difficulty and the remaining 46% is of moderate difficulty.

Source: Mott MacDonald analysis

Table 2.11: Results of shortlisting assessment for Option 5

Category	Impact
Potential patronage	The route is well-connected throughout, with connection to the A1122 at Downham Market, the A14 at Milton interchange and the A47 at A1101/B1101 junction near Elm.
Trip length	By avoiding Ouse Washes, trip length is extended.
Network impacts	The new Milton Junction from the A14 is relatively constrained. Further assessment is needed.
Environmental impact	The option has been designed to avoid the Ouse Washes SPA and Ramsar site.
Buildability	64% of this land is of severe difficulty and the remaining 36% is of moderate difficulty.

Source: Mott MacDonald analysis

Table 2.12: Overview of results of shortlisting assessment for all options

Category	Option 1	Option 2	Option 3	Option 4	Option 5
Potential patronage					
Trip length					
Network impacts					
Environmental impact					
Buildability					

Source: Mott MacDonald analysis

Our initial qualitative assessment shows that the three options that score most highly overall are Option 1, Option 2 and Option 4. These three options have been chosen for more detailed modelling. They represent an eastern alignment, a central alignment and a western alignment for the M11-A47 Link.

2.8 Model Testing

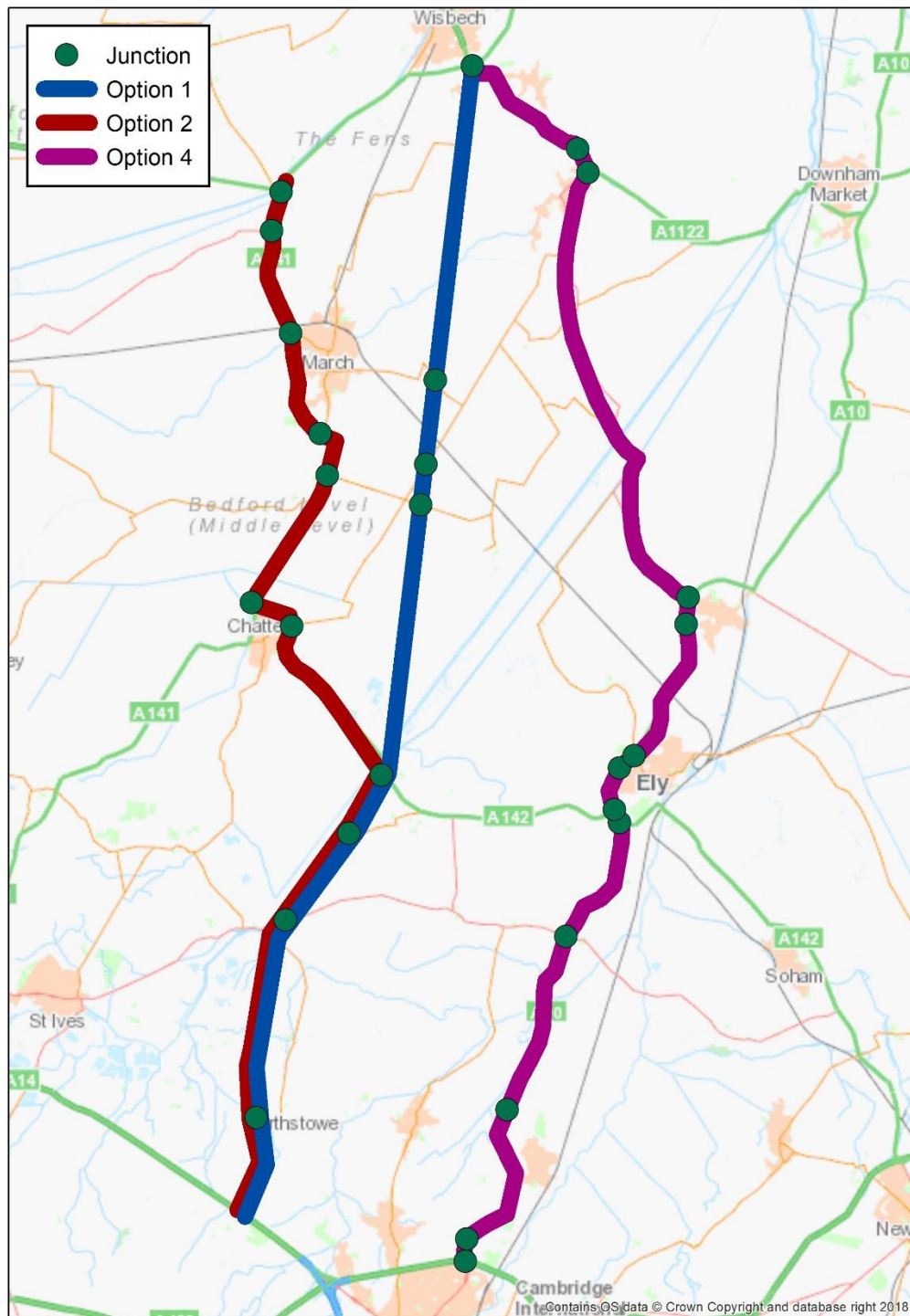
The three route options that scored highest in the initial shortlisting assessment were incorporated into the transport model to assess their effectiveness and suitability. Each of these options was compared to the Do Minimum scenario. The routes are shown in Figure 2.17 below.

All three route options (apart from a short online section along the Northstowe link road) were modelled as offline routes (new roads) with junctions providing connections onto the existing network at several locations. As the exact alignments are not defined at this stage of the project, distances have been assumed to closely match the parallel existing online routes.

The new routes and all junctions along the route are modelled assuming a fixed speed of 96kph along the length of each route. This is to identify the maximum demand that each of the route options might attract if there were no congestion along their length. This approach allows for direct comparison of the three routes based on their location, length and connectivity.

All modelling results presented below are for the AM and PM weekday peak hours, which are:

- AM peak: 08:00-09:00;
- PM peak: 17:00-18:00.

Figure 2.17: Shortlisted route options and location of junctions modelled

Source: Mott MacDonald (note: this is an indicative corridor for initial assessment only and has no formal planning status)

2.8.1 Network Analysis

All options improve journey times and increase average journey speeds.

Network analysis shows that each of the shortlisted route options results in reduced journey times across the network compared to the Do Minimum scenario discussed in section 1.4.2. Table 2.13 shows that in the AM peak, the largest journey time savings are achieved by route Option 4, followed by Option 2 and then Option 1. Distance travelled increases across all three options, while average journey speeds also rise.

Table 2.13: AM Peak Network Statistics: Do Minimum vs Do Something

Network Stats	Base 2015	DM41	Option 1	Opt1 - DM41	Option 2	Opt2 - DM41	Option 4	Opt4 - DM41
total travel time (pcu hrs)	98,145	155,808	154,464	-1,344	154,293	-1,515	153,876	-1,932
travel distance (pcu km)	6,106,169	7,731,888	7,756,892	25,004	7,769,262	37,374	7,815,623	83,735
average speed (kph)	62	49.6	50.2	0.6	50.4	0.8	50.8	1.2
Total trips loaded	323,404	448,399	448,399	-0.1	448,399	0	448,399	0
Average trip length (km)	19	17.2	17.3	0.1	17.3	0.1	17.4	0.2

Source: Mott MacDonald

Table 2.14 shows that total travel time is also reduced for each of the route options in the PM peak compared to the Do Minimum scenario. Distance travelled increases for Option 4 but is reduced for Options 1 and 2.

Table 2.14: PM Peak Network Statistics: Do Minimum vs Do Something

Network Stats	DM41	Option 1	Opt1 - DM41	Option 2	Opt2 - DM41	Option 4	Opt4 - DM41
total travel time (pcu hrs)	162,335	160,493	-1,842	160,855	-1,481	159,906	-2,430
travel distance (pcu km)	7,712,465	7,703,954	-8,512	7,711,059	-1,407	7,756,345	43,880
average speed (kph)	47.5	48.0	0.5	47.9	0.4	48.5	1.0
Total trips loaded	470,930	470,930	0.0	470,930	0.1	470,930	0.2
Average trip length (km)	16.4	16.4	0.0	16.4	0.0	16.5	0.1

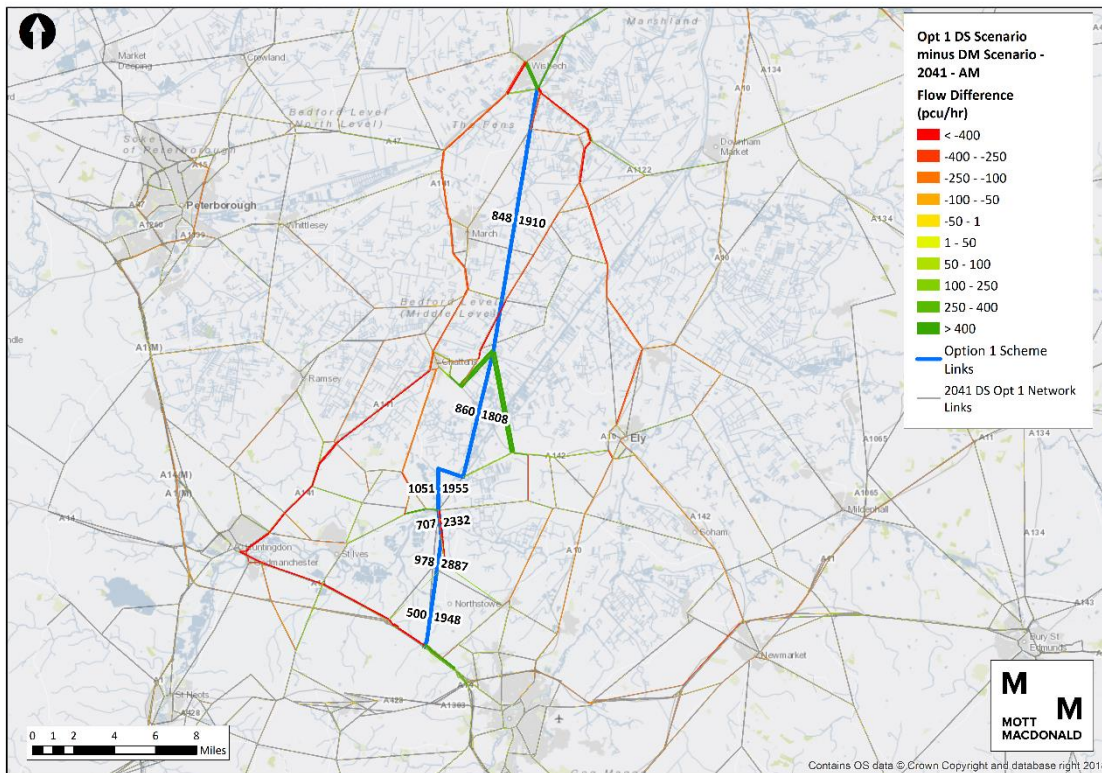
Source: Mott MacDonald

Overall, the network performance statistics demonstrate that extending the M11 on any of the shortlisted route options would improve the performance of the road network within the CPCA area by increasing journey speeds and reducing travel times. While these changes appear marginal, this is due to the scale of the model area.

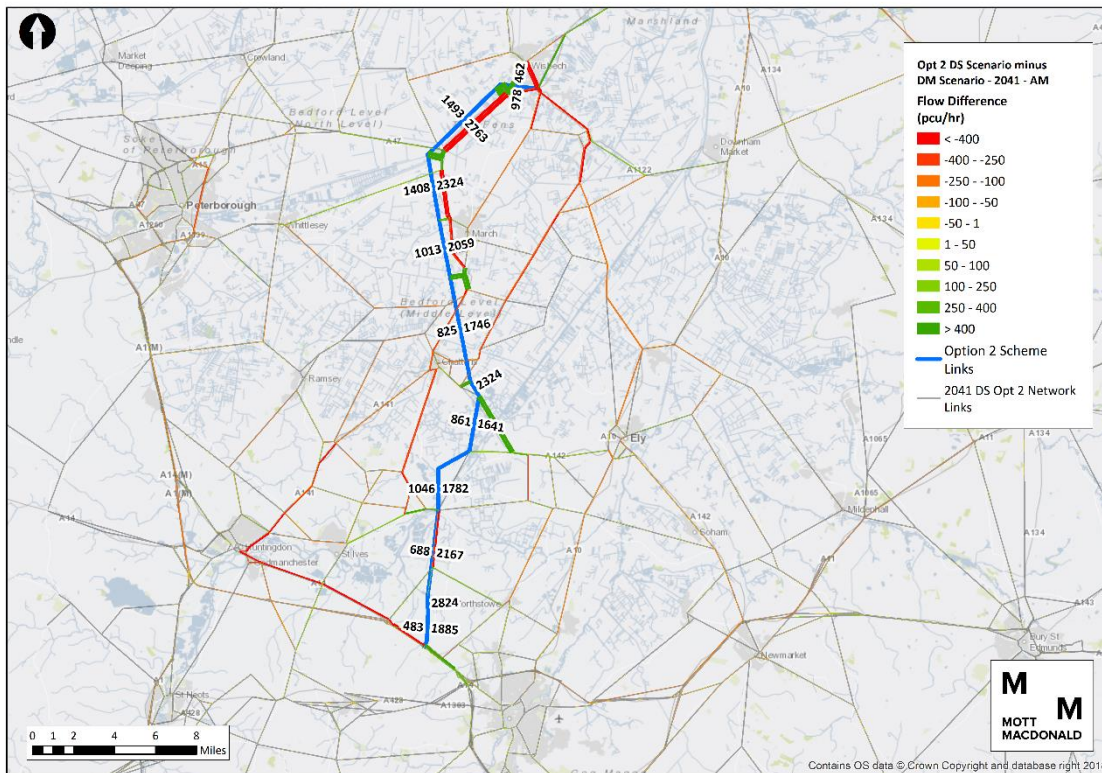
2.8.2 Option Demand

All options abstract significant demand from across the existing network

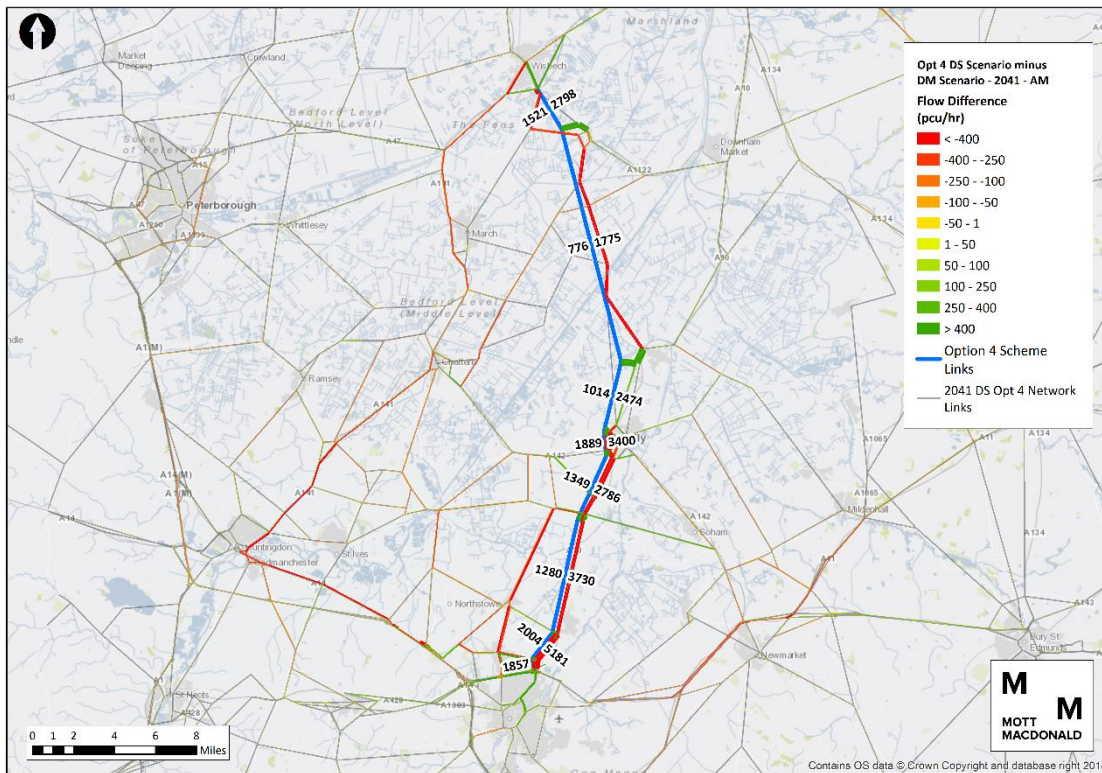
The flow difference plots in Figures 2.18 to 2.23 provide an overview of the changes in flow across the network for each of the shortlisted route options compared to the Do Minimum scenario. These plots demonstrate that traffic flow increases on each of the proposed route options, as well as on roads that provide access to these new routes. They also show that traffic flow is reduced on existing north-south roads in favour of the new route.

Figure 2.18: Flow Difference Plot for Option 1 – 2041 AM Peak

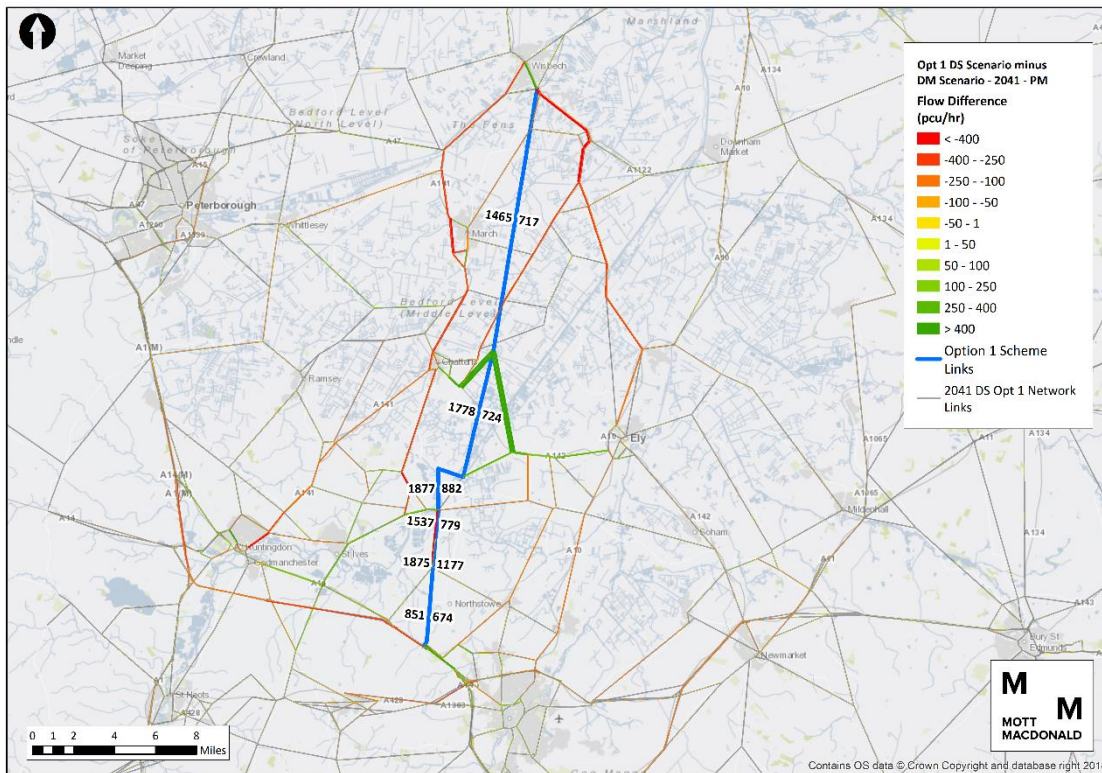
Source: Mott MacDonald, based on Ordnance Survey data

Figure 2.19: Flow Difference Plot for Option 2 – 2041 AM Peak

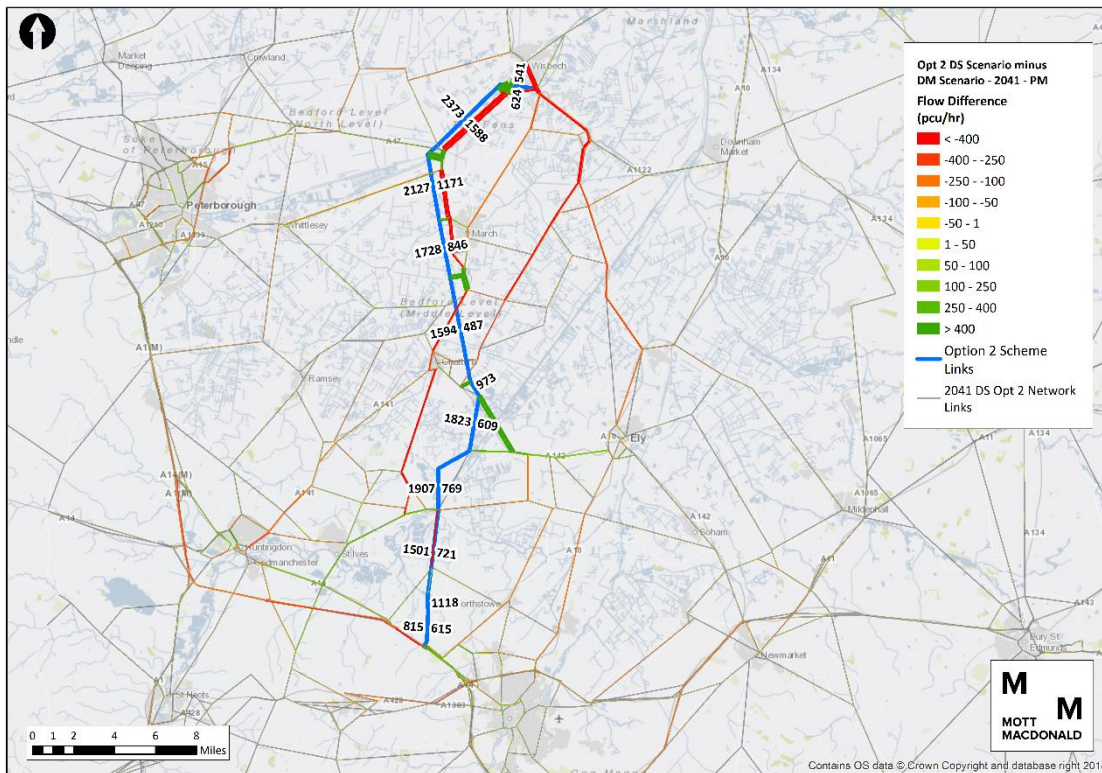
Source: Mott MacDonald, based on Ordnance Survey data

Figure 2.20: Flow Difference Plot for Option 4 – 2041 AM Peak

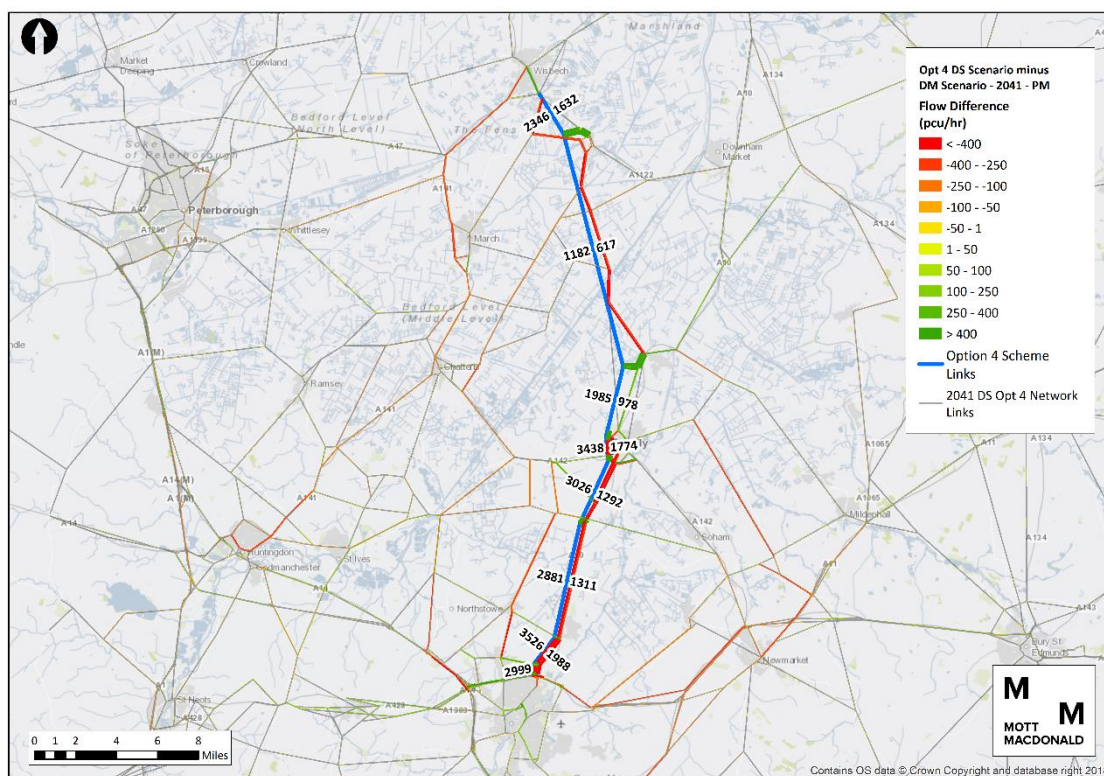
Source: Mott MacDonald, based on Ordnance Survey data

Figure 2.21: Flow Difference Plot for Option 1 – 2041 PM Peak

Source: Mott MacDonald, based on Ordnance Survey data

Figure 2.22: Flow Difference Plot for Option 2 – 2041 PM Peak

Source: Mott MacDonald, based on Ordnance Survey data

Figure 2.23: Flow Difference Plot for Option 4 – 2041 PM Peak

Source: Mott MacDonald, based on Ordnance Survey data

The flow difference plots demonstrate that all the route options tested attract traffic flow from across the whole of study area, rather than the abstraction being limited to local parallel links. This shows that it is beneficial for traffic to reroute to the new link, and potentially travel further in doing so, than to remain on existing less efficient and potentially congested routes. However, each option has varying impacts on the level of abstraction from existing highways, suggesting that any of the potential alignments may be a viable option as they each collect traffic from differing links.

2.8.3 Journey Time and Reliability

Significant journey time savings from all options could bring north Cambridgeshire within “commuter belt” of Greater Cambridge

The journey time for each of the route options has been compared to an alternative route that would be taken on the existing road network. Figures 2.24, 2.25 and 2.26 show the route of each shortlisted option and the alternative route that would need to be taken on the existing network. They also show the location of junctions used to track journey time differences between the two routes. For the purposes of comparability with the other options, the journey time comparison for Option 2 has been extended from the A47 Guyhirn roundabout to the junction of the A47 with the A1101/B1101 near Elm.

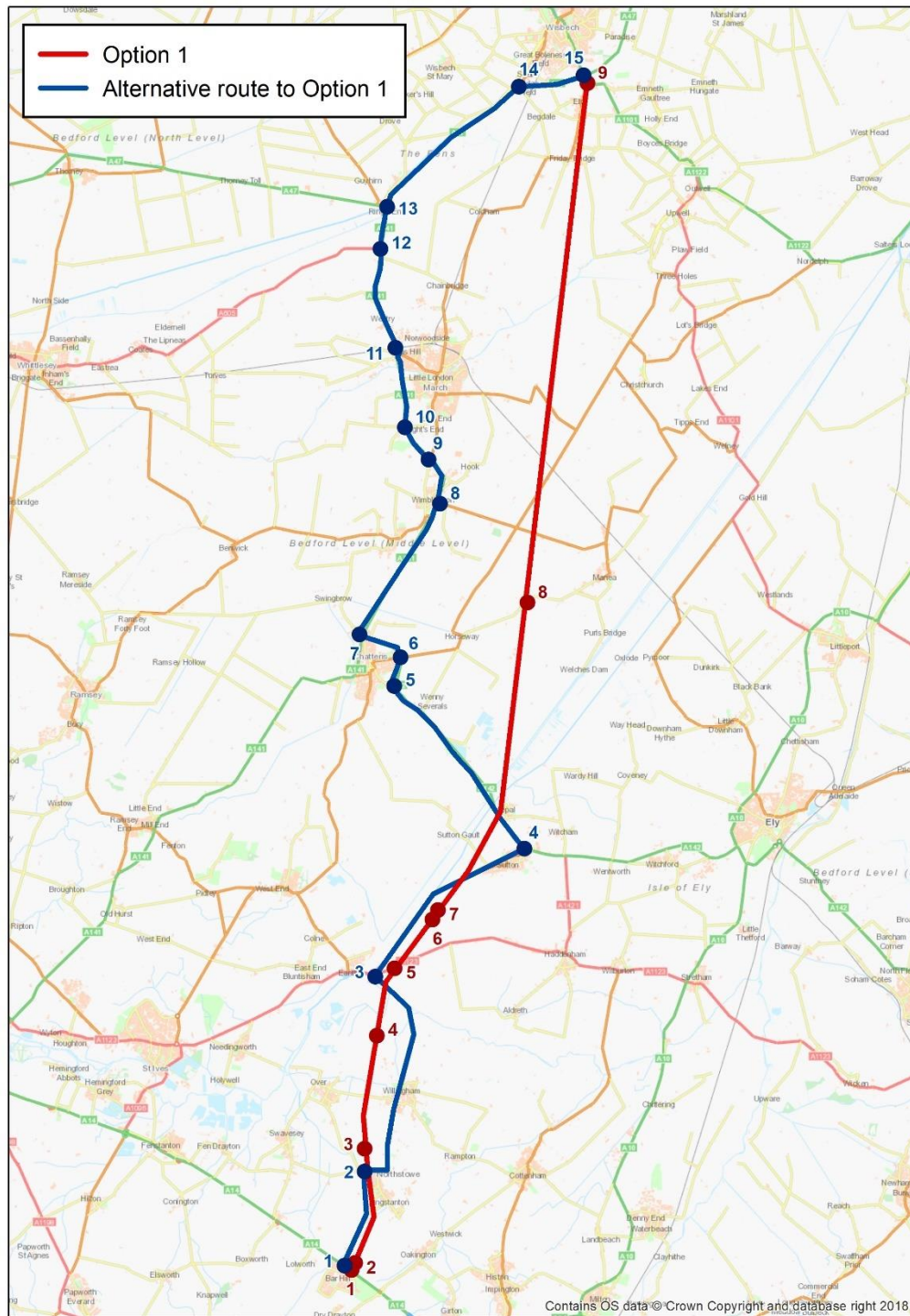
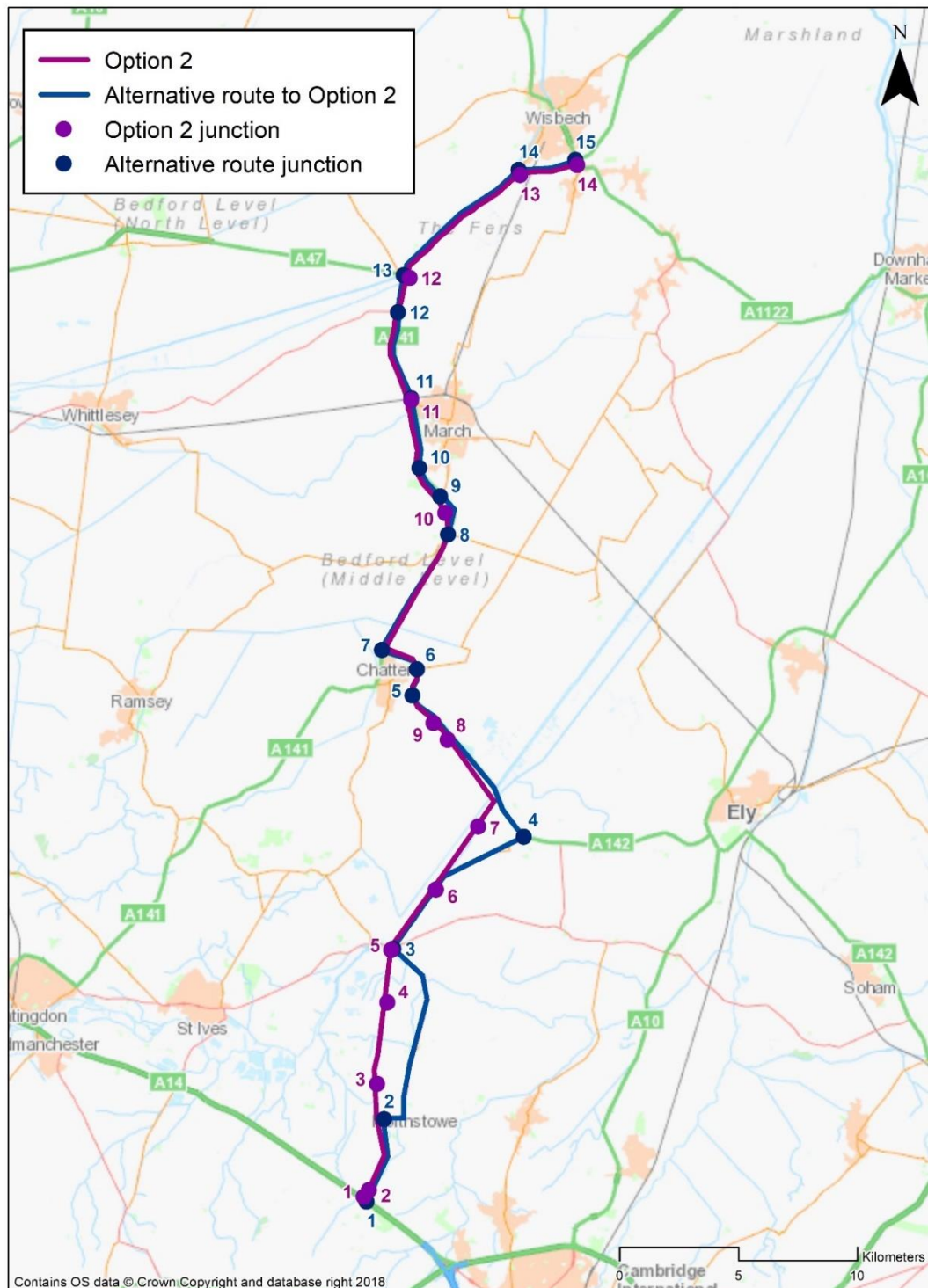
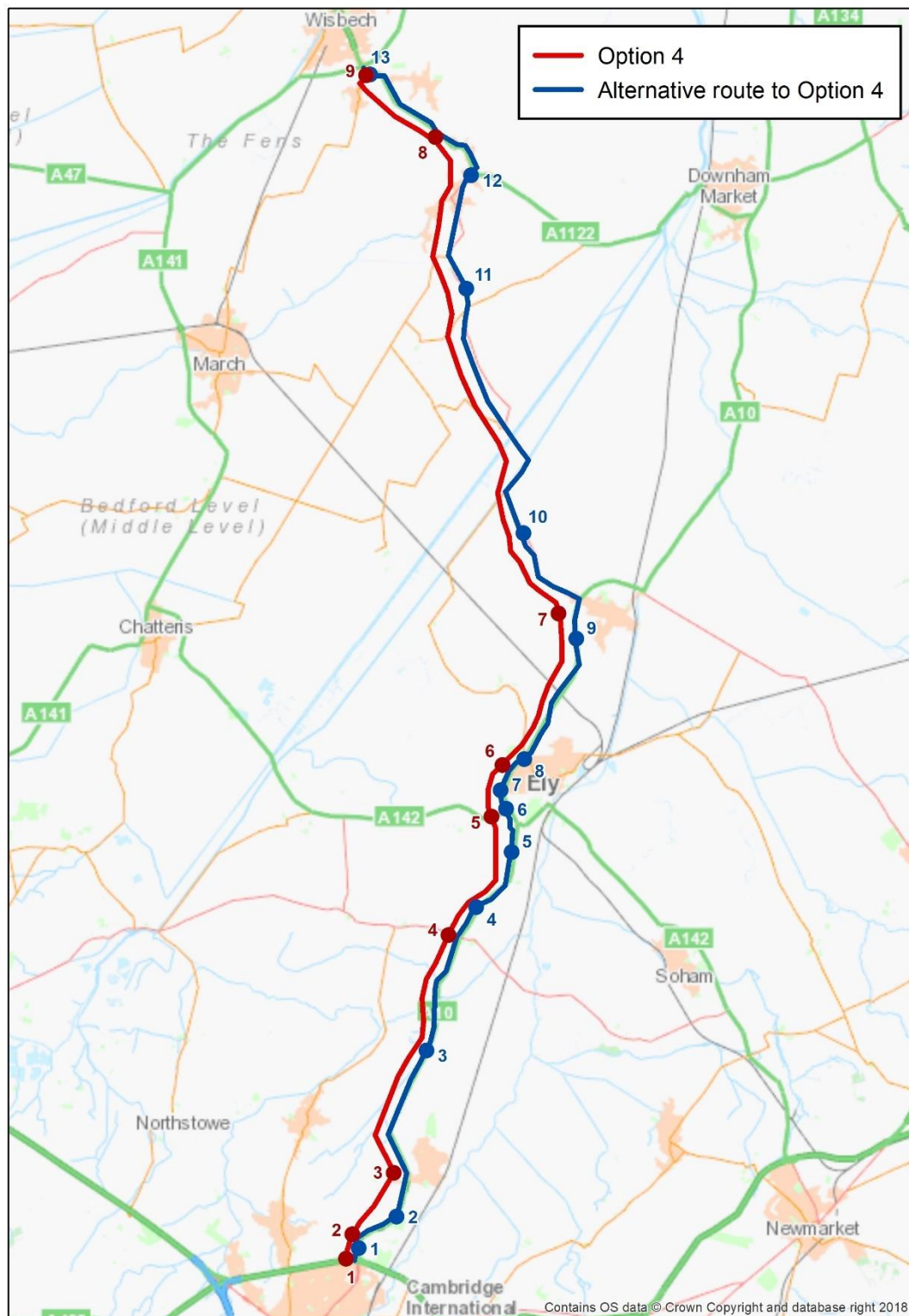
Figure 2.24: Journey time junction locations – Option 1

Figure 2.25: Journey time junction locations – Option 2

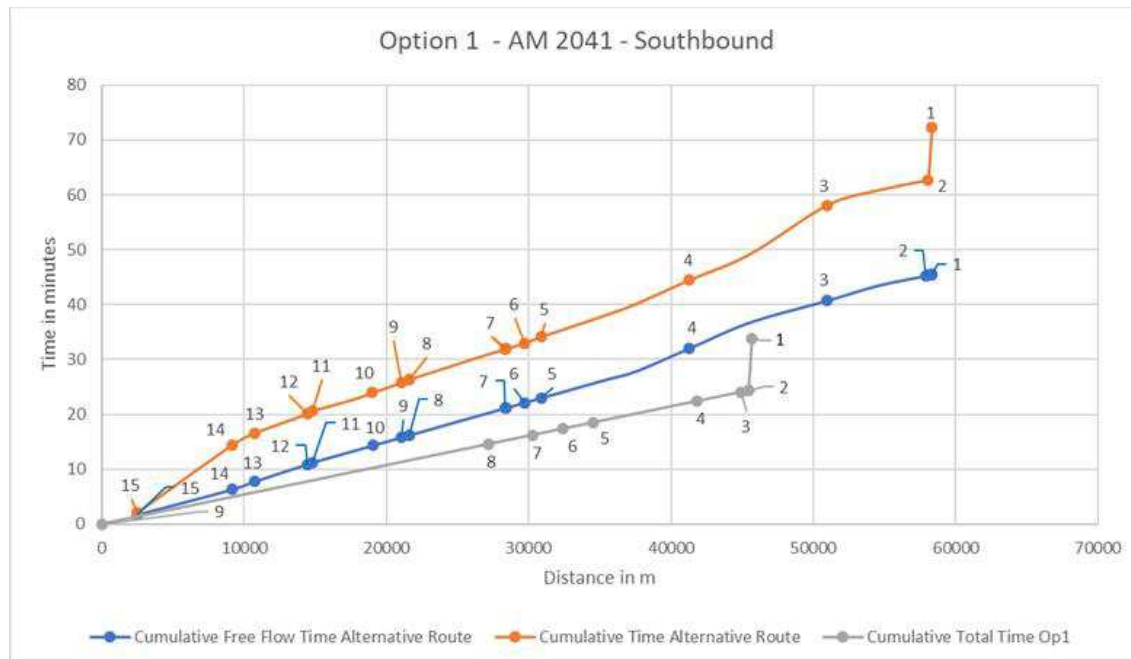
© Mott MacDonald Ltd. This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to use by other parties.

M
MOTT
MACDONALD

Source: Mott MacDonald

Figure 2.26: Journey time junction locations – Option 4

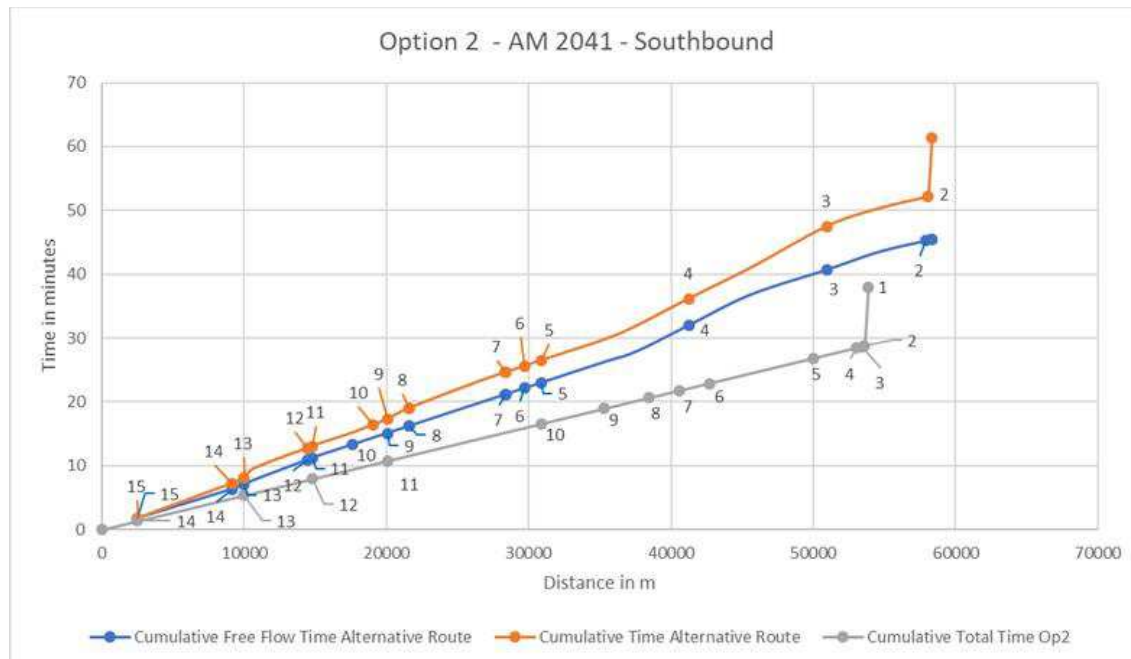
Source: Mott MacDonald

Figure 2.27: Journey time junction Option 1, 2041 AM, Southbound

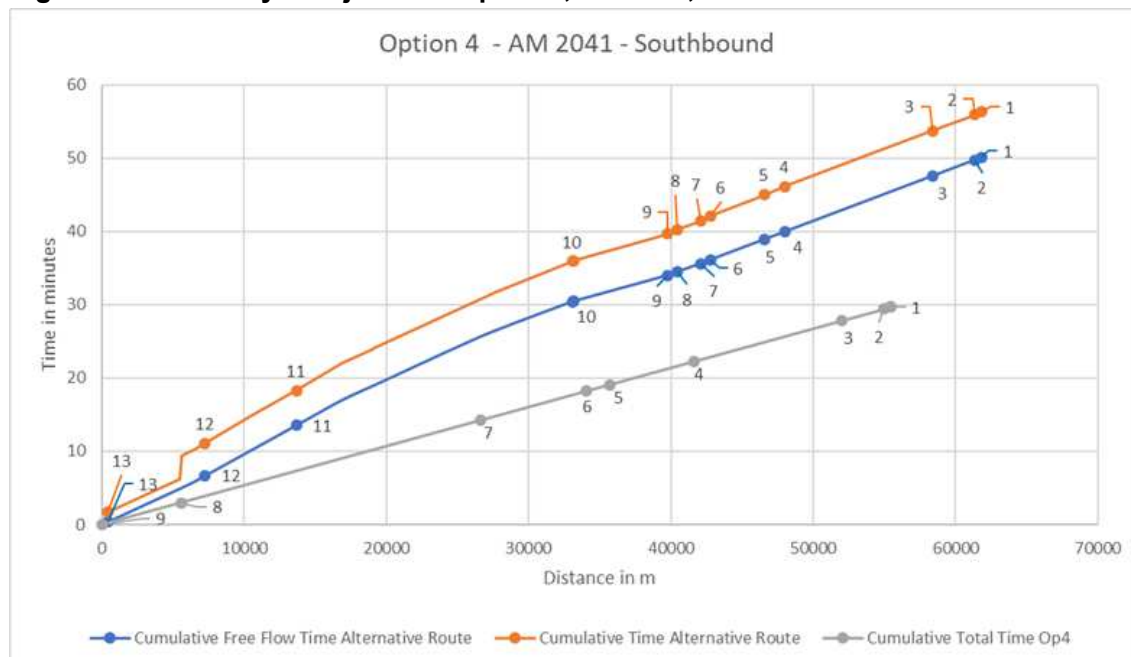
Source: Mott MacDonald

Figure 2.27 above shows that Option 1 would reduce the journey time from the A47/A1101/B1101 junction near Wisbech to the Bar Hill interchange to 34 minutes in the AM peak. This compares to 73 minutes on the existing route assuming normal AM peak traffic conditions, or 45 minutes assuming free flow. This represents a maximum journey time saving of 39 minutes.

Figure 2.28 below shows the same comparison for Option 2. It demonstrates that the journey time for this option is 39 minutes, compared to 34 minutes for Option 1. The fact that the journey time for Option 2 is higher than for Option 1 is to be expected, given that this route is less direct. However, Option 2 time still leads to a time saving of 23 minutes compared to the journey time of 62 minutes on the existing alternative route. There is a saving of six minutes over the free-flowing existing alternative route.

Figure 2.28: Journey time junction Option 2, 2041 AM, Southbound

Source: Mott MacDonald

Figure 2.29: Journey time junction Option 4, 2041 AM, Southbound

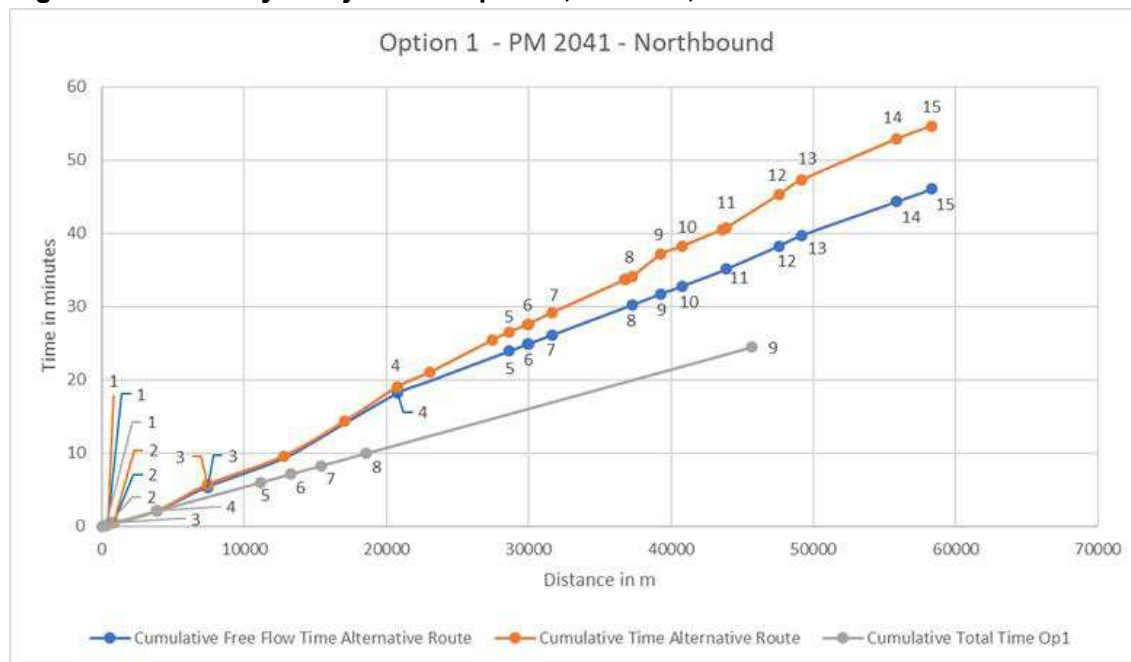
Source: Mott MacDonald

Figure 2.29 above shows the journey times in the 2041 AM peak from the A47/A1101/B1101 junction near Wisbech to the Milton interchange on the A14. It demonstrates that the journey

time for Option 4 would be 30 minutes, compared to a journey time of 56 minutes on the alternative route, a time saving of 26 minutes. The journey time for the alternative route assuming free flow would be 50 minutes, meaning that Option 4 would save 20 minutes.

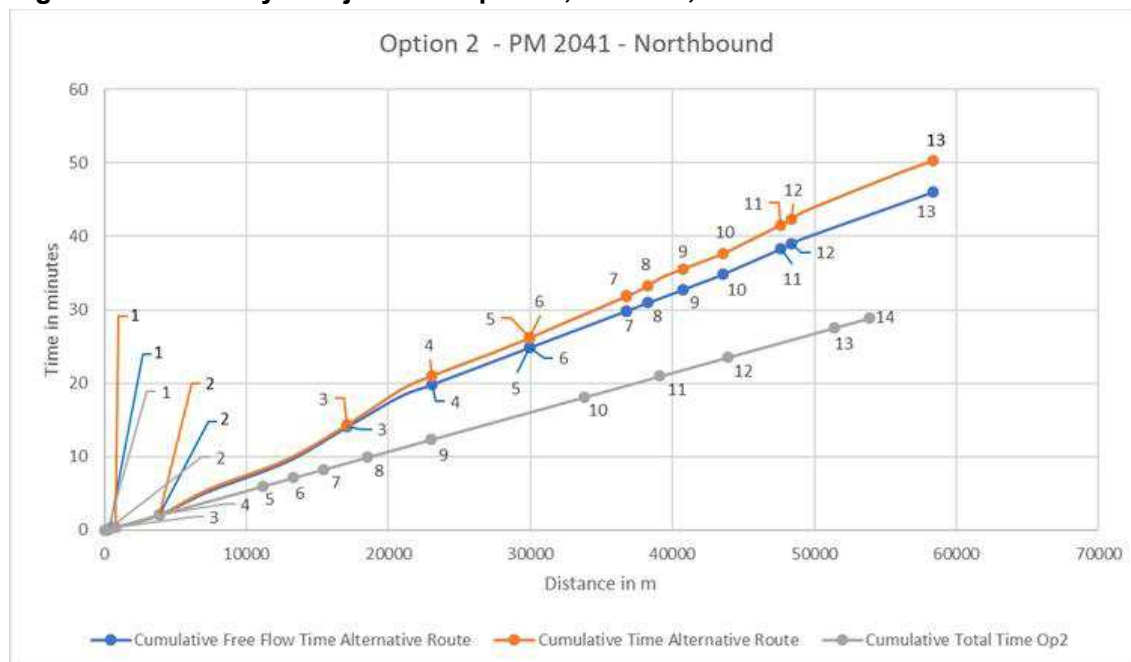
Similar journey time savings would be seen for northbound journeys in the 2041 PM Peak, as demonstrated by figures 2.30, 2.31 and 2.32 below.

Figure 2.30: Journey time junction Option 1, 2041 PM, Northbound



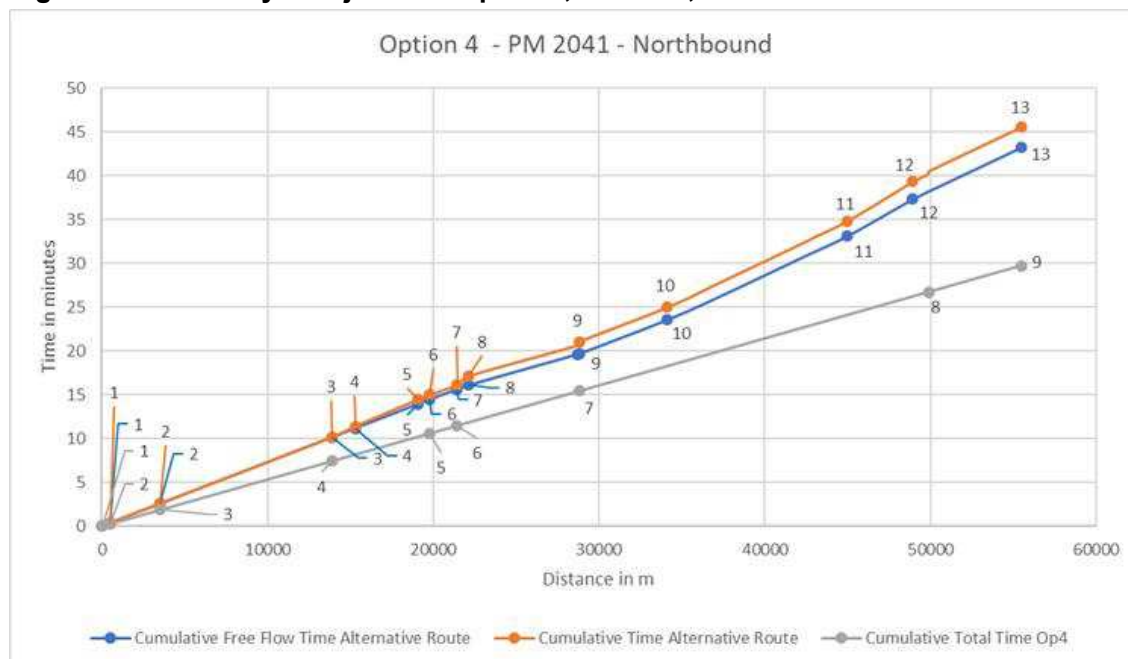
Source: Mott MacDonald

Figure 2.31: Journey time junction Option 2, 2041 PM, Northbound



Source: Mott MacDonald

Figure 2.32: Journey time junction Option 4, 2041 PM, North



Source: Mott MacDonald

Overall, these journey time plots demonstrate that an extension of the M11 from Cambridge to Wisbech would lead to much faster journey times between the north and south of the study area. For example, a “central” alignment may be able to reduce journey times during the peak by around 40 minutes relative to today, achieving journey times of just over half an hour from Wisbech to the junction with the A14. This is comparable to current journey times from commuter centres to Cambridge that are a similar distance from the city as Wisbech, such as Bury St. Edmunds.

It should be reinforced, however, that free flowing conditions have been assumed on each of the new route options for the purposes of this initial M11-A47 Link study. More detailed analysis will need to be undertaken of potential delays at key network pinch points – such as junctions with the A14 in the south of the study area and A47 in the north – as the project develops. Further assessment will also be required of end-to-end journey times to key employment centres within Greater Cambridge, noting, for example, that the Science Park, in the north east of the city, is expected to be relatively better served by any M11-A47 Link than the Biomedical Campus, in the city’s southern fringe.

2.8.4 Sensitivity Testing

Potential case for M11-A47 Link even with A10 South dualling

This section carries out sensitivity testing to consider the impacts on each of the route options if:

- 1) the A10 dualling between Cambridge and Ely were to come forward prior to each route option.
- 2) the model was run under variable demand conditions, allowing for travel patterns to change as a result of each route option.

Each of the sensitivity tests and associated outcomes are presented below.

2.8.4.1 A10 Dualling assessment

The A10 currently experiences queuing and delays during peak times. The A10 corridor will see additional demand in the future because of planned development at locations including Ely, Waterbeach and on Cambridge's Northern Fringe.

The Ely to Cambridge Transport Study assessed the transport requirements for the corridor given the anticipated growth in the area. It identified the need to dual the A10 between Cambridge and Ely ("A10 South"), together with a range of other transport measures. This scheme is not committed at this stage and therefore has not been included in the Do Minimum assessment to date. However, this report needs to consider whether there would be demand for each of the M11-A47 Link route options should the dualling of the A10 between Cambridge and Ely be implemented first. A sensitivity test was therefore undertaken to test the impact of dualling the A10 between Cambridge and Ely on Option 1 and 2.

Further details on the modelling of this sensitivity test are provided in the *M11-A47 Link: Modelling Report*, included as an appendix to this study.

The findings of the sensitivity testing of the A10 dualling are shown in Table 2.15 and Table 2.16 below. The network statistics demonstrate the network wide impacts of each of the link options if the A10 South dualling were already in place. They show that there are still overall reductions in travel time and increases in travel distance across the study area during the AM and PM peaks. These findings indicate that network improvements would still result from each of the route options modelled, even if the A10 South dualling were already in place.

Table 2.15: Network Statistics - AM Peak with A10 South Dualling

Network Stats	Base 2015	DM41	Option 1 with A10 (S)	Opt1 - DM41	Option 2 with A10 (S)	Opt2 - DM41
over cap Q (pcu hrs)	12,406	30,532	29,915	-617	29,862	-670
total travel time (pcu hrs)	98,145	155,259	153,734	-1,525	153,540	-1,719
travel distance (pcu km)	6,106,169	7,776,970	7,796,973	20,004	7,808,379	31,410
average speed (kph)	62	50	51	0.6	51	0.8
Total trips loaded	323,404	448,399	448,399	0.1	448,399	0.0
Average trip length (km)	19	17.3	17.4	0.0	17.4	0.1

Source: Mott MacDonald

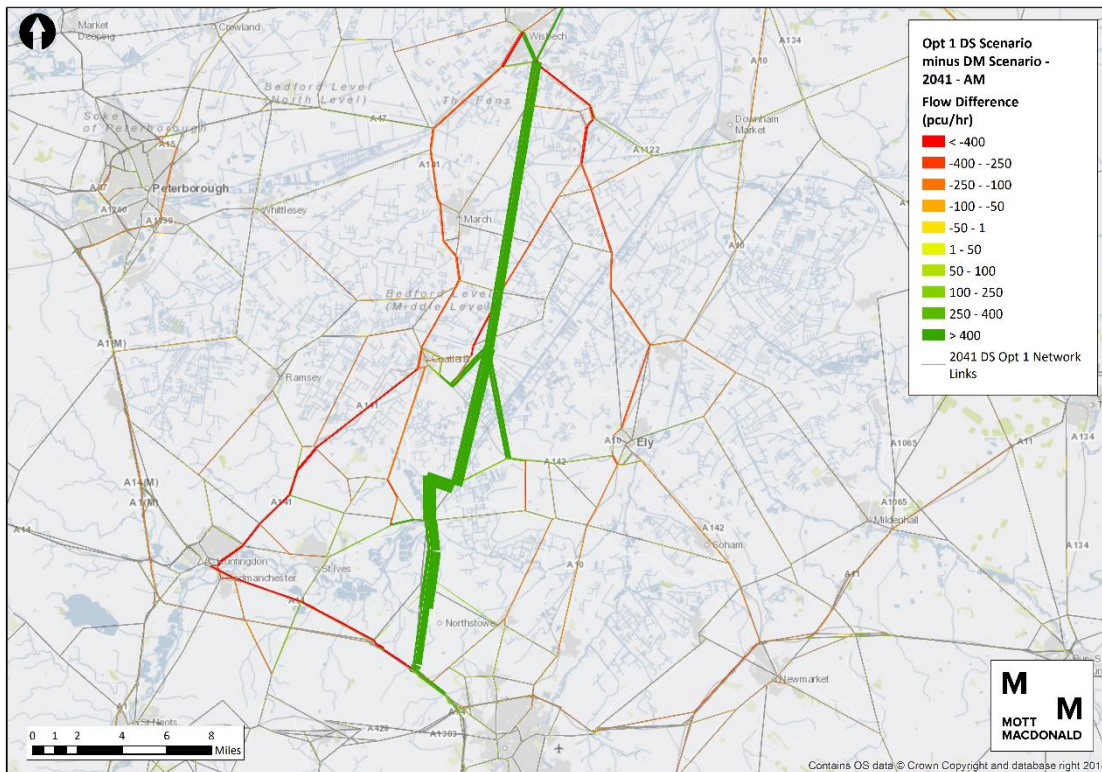
Table 2.16: Network Statistics - PM Peak with A10 South Dualling

Network Stats	Base 2015	DM41	Option 1 with A10 (S)	Opt1 - DM41	Option 2 with A10 (S)	Opt2 - DM41
over cap Q (pcu hrs)	11,727	38,494	38,163	-331	37,957	-537
total travel time (pcu hrs)	102,967	161,468	159,863	-1,605	159,435	-2,033
travel distance (pcu km)	6,318,459	7,763,885	7,765,664	1,779	7,772,853	8,968
average speed (kph)	61	48	49	0.5	49	0.7
Total trips loaded	344,142	470,930	447,930	-0.2	470,930	0.0
Average trip length (km)	18	16.5	16.5	0.0	16.5	0.0

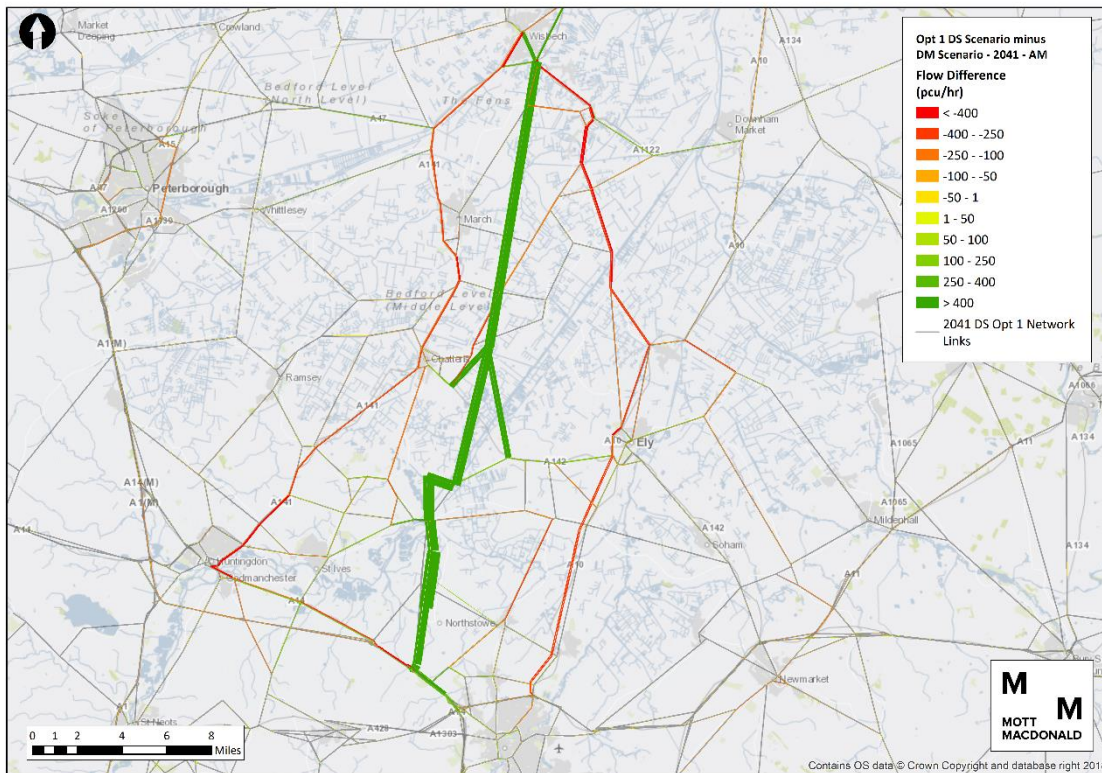
Source: Mott MacDonald

The demand for Options 1 and 2 is shown in Figures 2.33 to 2.36 below. Both options demonstrate that even with the A10 South dualling in place, there are still significant levels of abstraction from routes to the west and the northern section of the A10 (north of Ely). This indicates that the M11 route options 1 and 2 potentially generate sufficient travel demand to justify provision of the route options in addition to the A10 South dualling. However, significant further feasibility assessment is required to confirm this initial finding.

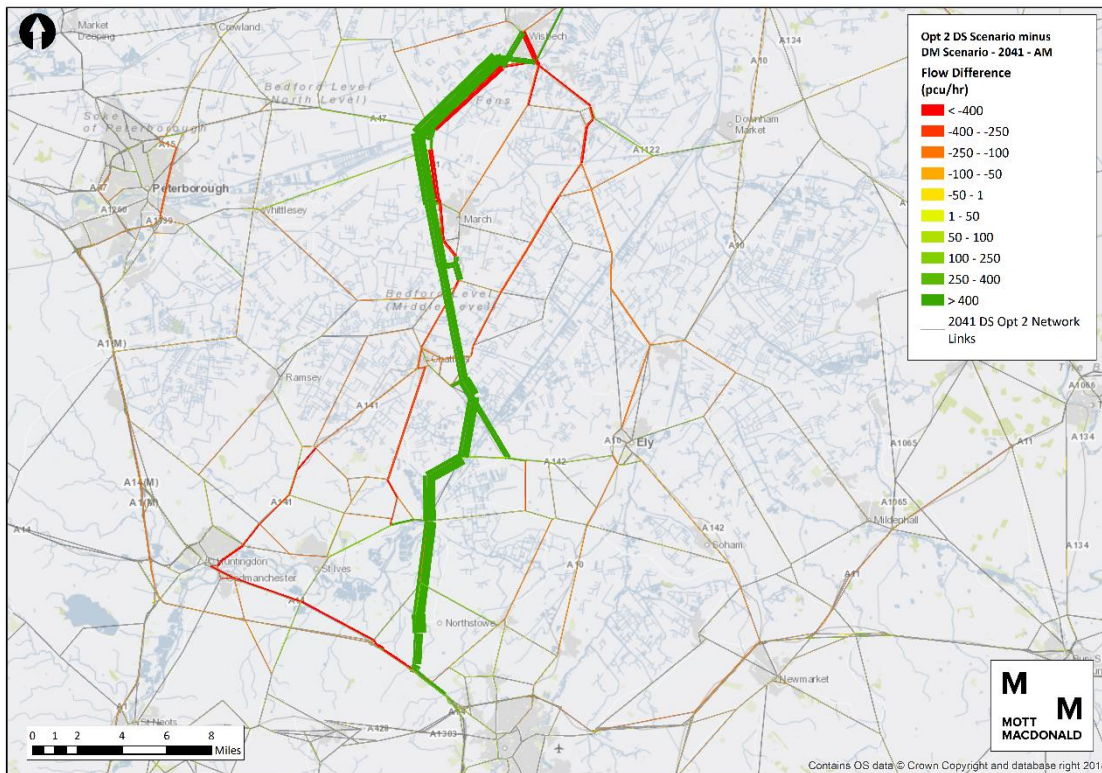
Figure 2.33: Option 1 without A10 South – AM Peak



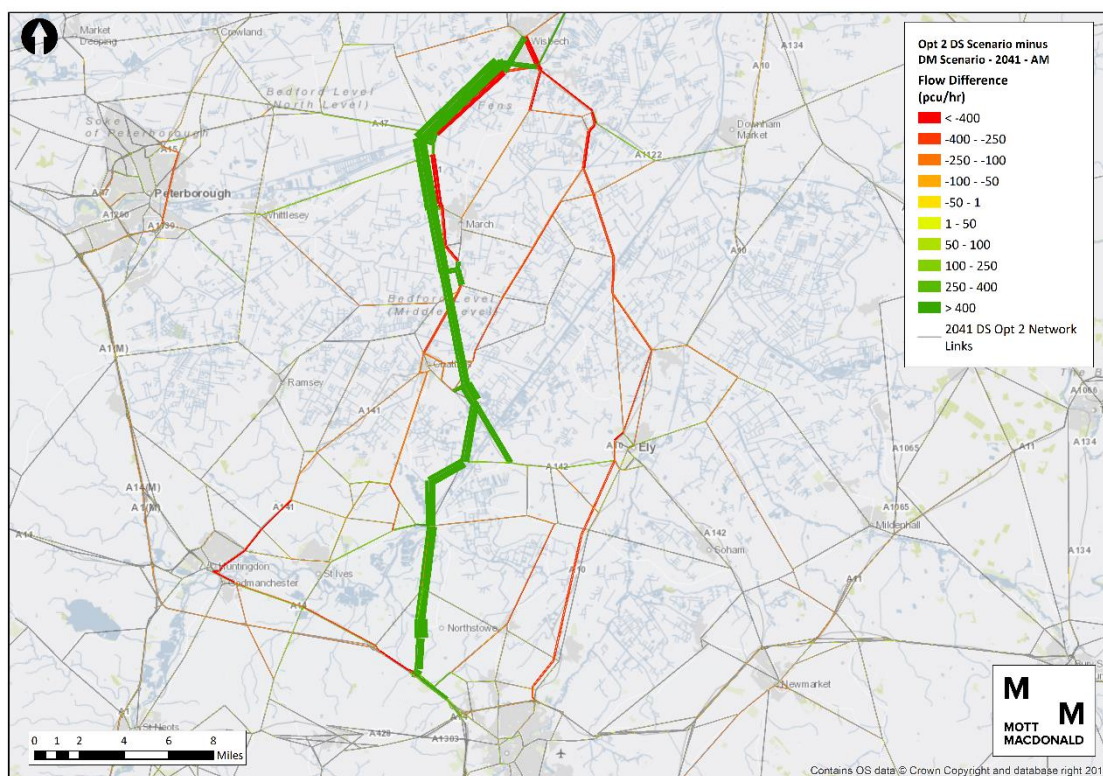
Source: Mott MacDonald

Figure 2.34: Option 1 with A10 South – AM Peak

Source: Mott MacDonald

Figure 2.35: Option 2 without A10 South – AM Peak

Source: Mott MacDonald

Figure 2.36: Option 2 with A10 South – AM Peak

Source: Mott MacDonald

2.8.4.2 Variable Demand assessments

The SERTM SATURN assignments (refer section 1.5.2) described above use a fixed matrix based on the assumption that travel patterns remain the same with or without the scheme in place. However, it is likely that travel patterns will change with such a major scheme. The new link is likely to lead to greater north-south interaction over this 50km distance by making such movements easier and faster. Destinations in and around Greater Cambridge will be more attractive to people living in north Cambridgeshire and similar changes would be expected in the reverse direction.

Therefore, a variable demand model was set up using DIADEM 5 software to test how sensitive the model is to the variable demand element, using SATURN for the highway assignment module. However, this is represented as a sensitivity test only as it is not fully in line with WebTAG guidance at this feasibility stage.

Variable demand modelling was carried out for the Do Something assignments only, while the Do Minimum was assumed to remain fixed. Therefore, it is expected that the results would overestimate the economic benefits (described in Section 4) as destination choice and trip frequency are fixed in the Do Minimum.

Separate DIADEM runs were carried out for each option and forecast year. Variable demand has been assessed for car commuting, car other and car employers' business trips. Light goods vehicles (LGVs) and heavy goods vehicles (HGVs) were assumed to have fixed demand. Results from the DIADEM modelling are included in the economic case in Section 4. Further

details on the model set up and methodology are provided in the modelling report provided in the *M11-A47 Link: Modelling Report*, included as an appendix to this study.

2.8.5 Model Results Summary

Three options have been modelled in the study, which broadly follow a “westerly”, “central” and “easterly” corridor in the study area from the A14 in the south to Wisbech in the north. Each of these options has merit for further analysis as each abstracts significant demand from differing existing corridors.

Each option offers overall network performance benefits as well as significantly faster journey times between the north and south of the study area. For example, a “central” alignment may be able to reduce journey times during the peak by around 40 minutes relative to today, achieving journey times of just over half an hour from Wisbech to the connection with the A14.

The case for a new highway between Greater Cambridge and north Cambridgeshire may hold up even if the A10 is duplicated to Ely. A sensitivity has been modelled which suggests that the central (Option 1) and westerly (Option 2) alignments may still generate sufficient travel demand in this scenario to support an investment case. However, significant further feasibility assessment is required to confirm this initial finding.

All options will require significant further model testing as they develop, particularly to understand pinch point and “last mile” issues in and around Greater Cambridge.

3 Financial Case

The Financial Case concentrates on the costs of a transport intervention, and how these are expected to be profiled out over time. It also discusses how allowances for risk have been accounted for in the cost estimates.

3.1 Methodology

The financial cost estimates were developed in line with national standards and guidance. Clearly these are broad-brush and indicative estimates only which is reasonable and appropriate given the very high level of scheme definition at this stage in the process.

As detailed in Section 2.8, there are five options which have been identified through the initial analysis for a more detailed appraisal:

- Option 1: 'Roman Road' Central Alignment
- Option 2: Western Alignment
- Option 3: A10 Alignment + Western
- Option 4: A10 Alignment + A1101
- Option 5: A10 Alignment + A1122

The indicative cost estimates for each option have been included in this section, which are then combined to provide overall costs for each proposed option.

3.2 Assumptions and exclusions

A number of more detailed assumptions and exclusions have been incorporated into the preliminary cost estimates which are set out in the Appendix *M11-A47 Link: Preliminary Cost Estimates*. However, in high level terms, the key assumptions made are that:

- the route would be of dual-2 lane all-purpose carriageway standard throughout its length
- standard assumptions have been made on junctions and structures-related costings and factored into the costs for each option
- we have not considered the tie-in the junctions in any detail, but in practice significant junction works may be required at either the Bar Hill or Milton Interchange on the A14, depending on the route option chosen and potentially at the A47. The costs of any additional work on these junctions to accommodate the new road have not been included.
- as is common practice when schemes and measures are in the early stages of their assessment, there are a number of exclusions as noted above. However, for the purposes of assessing the economic performance of the packages (see the Economic Case), factors reflecting optimism bias, risk and other elements including an assumed uplift for land costs have been applied.

3.3 Capital Costs

3.3.1 Baseline costs

Indicative baseline costs have been developed for each of the shortlisted corridor options.

Costs for each component were profiled out according to the following items:

- **Construction:** Cost of building and contracting the scheme itself
- **Preparation:** Preparation works prior to building
- **Supervision:** Costs of supervising the works

These are presented in Table 3.1 for each of the scheme options.

Table 3.1: Baseline Intervention Costs (£m, 2018 costs & prices)

Cost Item	Option 1	Option 2	Option 4
Construction	500.74	559.66	590.15
Preparation	76.65	85.46	90.02
Supervision	22.18	24.73	26.05
TOTAL	599.57	669.85	706.22

Source: Mott MacDonald

3.3.2 Risk allowances

At this stage in the option development process, a degree of risk has been factored into the cost estimates, given the level of uncertainty associated with each package of interventions.

Several risk items have been identified as follows:

- **Risk Allocation:** Set at 12.7% of baseline costs – this will be updated based on a Quantified Risk Cost Allocation (QRCA) as the scope of interventions becomes more defined
- **Legal Fees:** Set at 2% of baseline costs
- **Business Case Fees:** Assumed to be 3% of baseline costs
- **Land Costs:** Potential costs associated with purchasing up land for to each scheme in order to progress development, discounting any land required for construction compounds. At this stage this is assumed to be £12m for each scheme, minus the preliminaries associated with construction compound setup but this will need to be subject to detailed review as the interventions are refined
- **Utilities Diversions:** Assumed to be 3.3% of baseline costs

These allocations are summarised in Table 3.2 alongside each option.

Table 3.2: Risk Allocation Costs (£m, 2018 costs & prices)

Cost Item	Option 1	Option 2	Option 4
Risk Allocation	76.48	85.20	89.72
Legal Fees	11.99	13.40	14.12
Business Case Fees	17.99	20.10	21.19
Land Costs	12.00	12.00	12.00
Utilities Diversions	19.52	21.81	23.00
TOTAL	137.98	152.51	160.02

Source: Mott MacDonald

Additional optimism bias uplifts have been added to these costs for the purposes of the economic appraisal, as discussed in Section 4.1.

3.3.3 Point Estimate

The total cost for each package of measures combines the baseline costs with the risk allowances for each scheme component. These are summarised in Table 3.3.

Table 3.3: Point Estimates (£m, 2018 costs & prices)

Cost Item	Option 1	Option 2	Option 4
Baseline Cost	599.57	669.85	706.22
Risk Allowances	137.98	152.51	160.02
Point Estimate	737.54	822.35	866.24

Source: Mott MacDonald

3.4 Operating Costs

At this stage, operational costs have not been estimated as the scope of any changes to the maintenance regime or public transport services have not been fully defined.

3.5 Cost Profile

For the purposes of the initial economic assessment, it has been assumed that the total cost of the scheme will be profiled out across a three-year period leading up to an assumed package opening year of 2026. In practice, delivery would be phased with some elements of the route potentially delivered earlier than others. However, for the purposes of this initial assessment, this has been used as a working assumption and to allow for a like-for-like comparison across the scenarios.

The cost profiles will therefore need be examined in additional detail once the exact nature of the scheme and its delivery timescales have been scoped out further.

4 Economic Case

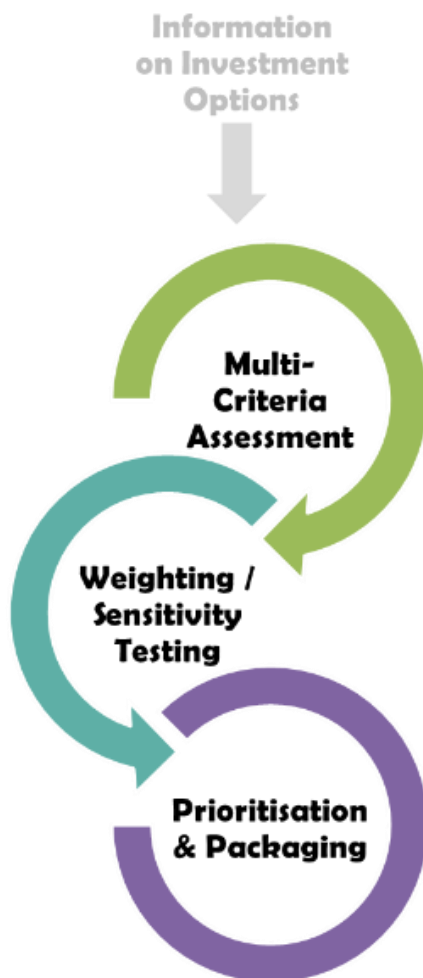
The economic case for the proposed investment will be demonstrated by an analysis of key impacts and their associated value for money. DfT guidance on undertaking a strategic outline assessment of a potential transport intervention requires that only initial findings on the associated value for money of a scheme are provided at this stage.

4.1 INSET Appraisal

In order to guide the option selection process, the five intervention options appraised in the traffic modelling scenarios have been subjected to a multi-criteria option appraisal using Mott MacDonald's Investment Sifting and Evaluation Tool (INSET).

INSET is a decision support toolkit based on Green Book compliant multi-criteria decision analysis and DfT's early assessment and sifting tool, 'EAST'. The INSET process is illustrated in Figure 4.1.

Figure 4.1: Outline of the INSET Appraisal Process



Source: Mott MacDonald

For this project the appraisal criteria have been developed around the project objectives set by the Combined Authority and the Principles identified in the Mayor's Transport Strategy Statement.

This section first sets out the INSET appraisal process in terms of the definition of themes, criteria and sub-criteria, before moving on to an examination of the scores and weightings assigned. The weighted scores for the options are then presented at the end of this section.

4.1.1 Definition of Sifting Criteria

The INSET appraisal is organised according to a hierarchy of themes, main criteria and sub-criteria. These are outlined in detail below:

- **Themes:** Represent broad policy or strategy categories that enable the main package or scheme criteria to be classified and weighted differently, depending on local priorities
- **Main Criteria:** Correspond to specific package or scheme objectives, classified into the themes defined above
- **Sub-Criteria:** Comprises measurable metrics that can be used to appraise the degree to which each package or scheme objective/main criterion has been met

For the purposes of this initial appraisal, four themes have been defined: Labour market, Business investment, Commercial investment and Residential investment.

Table 4.1: Summary of INSET Themes and Study Objectives

ID	Theme	ID	Main Criteria
A	Labour Market	1	Improve labour market access for inhabitants of the north Cambridgeshire market towns
B	Business Investment	2	Improve business investment in the north Cambridgeshire market towns
C	Commercial Investment	3	Increase commercial investment in north Cambridgeshire market towns
D	Residential Investment	4	Increase attractiveness of north Cambridgeshire market towns as a residential location

Source: Mott MacDonald

Sub-criteria were then defined against each of the main criteria to enable an appraisal of each package based on measurable data from the transport models and GIS layers showing the distribution of jobs and residents. These are outlined in Table 4.2 below. In all cases it has been assumed that Wisbech can be used as a proxy location for the north of the Combined Authority area.

Table 4.2: Summary of INSET Sub-Criteria

ID	Main Criteria	ID	Sub-Criteria
1	Improve labour market access for inhabitants of the north Cambridgeshire market towns	i	Improvement in travel time from Wisbech to Cambridge on the route option compared to the existing alternative route
2	Improve business investment in the north Cambridgeshire market towns	ii	Improvement in travel time from Cambridge to Wisbech on the route option compared to the existing alternative route
3	Increase commercial investment in north	iii	Number of residents within one-hour travel time of Wisbech

ID	Main Criteria	ID	Sub-Criteria
	Cambridgeshire market towns		
4	Increase attractiveness of north Cambridgeshire market towns as a residential location	iv	Number of jobs within one-hour travel time of Wisbech

Source: Mott MacDonald

4.1.2 Scoring of Options

The shortlisted options were scored using the measures shown in Table 4.2. The results of these scoring criteria for each of the shortlisted options are outlined in Table 4.3

Table 4.3: Summary of INSET Sub-Criteria

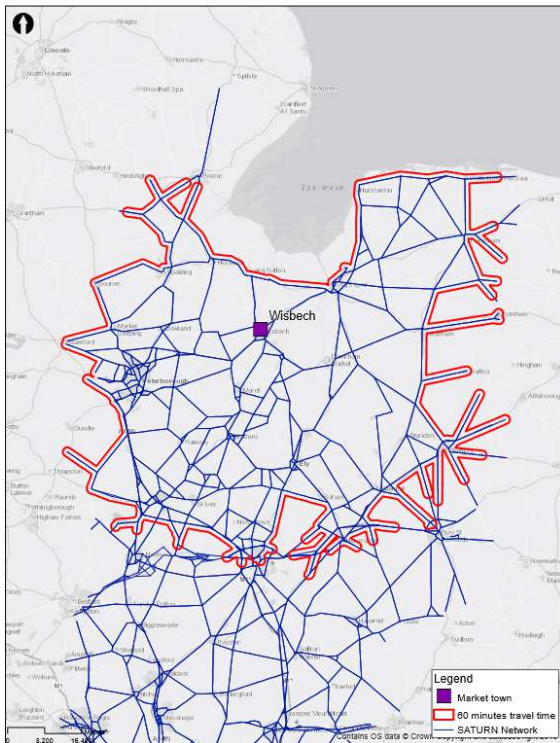
ID	Sub-Criteria	Option 1	Option 2	Option 4
1i	<i>Improvement</i> in travel time from Wisbech to Cambridge	39 minutes	23 minutes	30 minutes
2ii	<i>Improvement</i> in travel time from Cambridge to Wisbech	30 minutes	21 minutes	17 minutes
3iii	Additional number of residents within one-hour travel time of Wisbech	324,327	221,843	250,489
4iv	Additional number of jobs within one-hour travel time of Wisbech	176,310	131,160	163,370

Source: Mott MacDonald

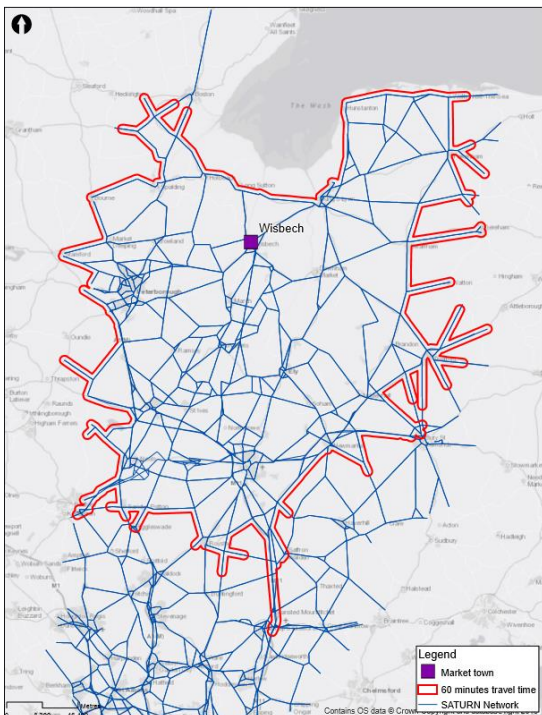
Travel times to Cambridge from Wisbech and from Cambridge to Wisbech were calculated on the route option compared to the existing alternative route. The methodology and results are shown in Section 2.9.3.

The number of jobs and the number of residents within one hour travel time of Wisbech were calculated using the SATURN model outputs and GIS. Each option's SATURN model outputs were loaded into routable GIS network datasets. This enabled the creation of drivetime catchment areas from and to Wisbech as required for each time period. Once the catchment isochrone polygons were generated, population and jobs values were assigned to these areas. This was achieved by summing the population and job values associated with LSOA that fell within the catchment area. It is important to note that some east-west catchment areas were limited due to the size of the SATURN model output layer but this is not considered to be a significant shortcoming as the proposed scheme is aimed at improving north-south connectivity for which the model has more than adequate coverage.

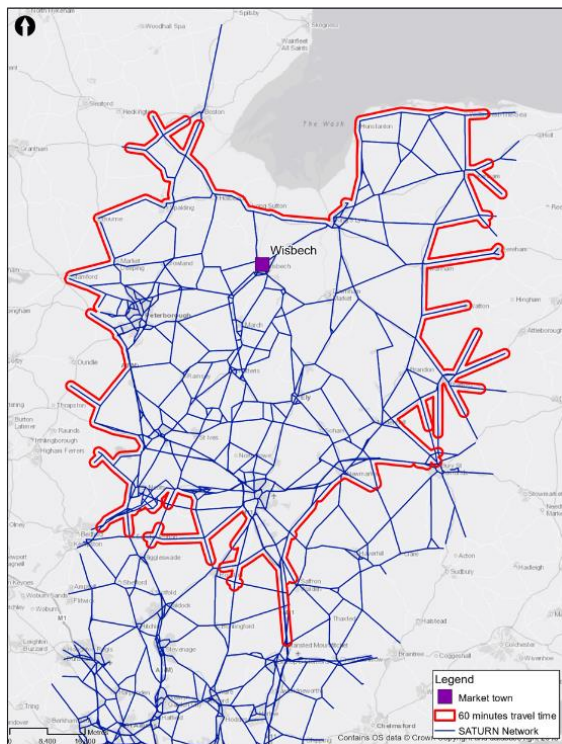
Figures 4.2 to 4.5 below show the area covered by a 60 minute travel time from Wisbech in the Do minimum and in each of the shortlisted options. The maps show that the presence of an M11-A47 Link greatly increases the area within a 60 minute travel time of Wisbech.

Figure 4.2: 60 minutes travel time from Wisbech: Do Minimum

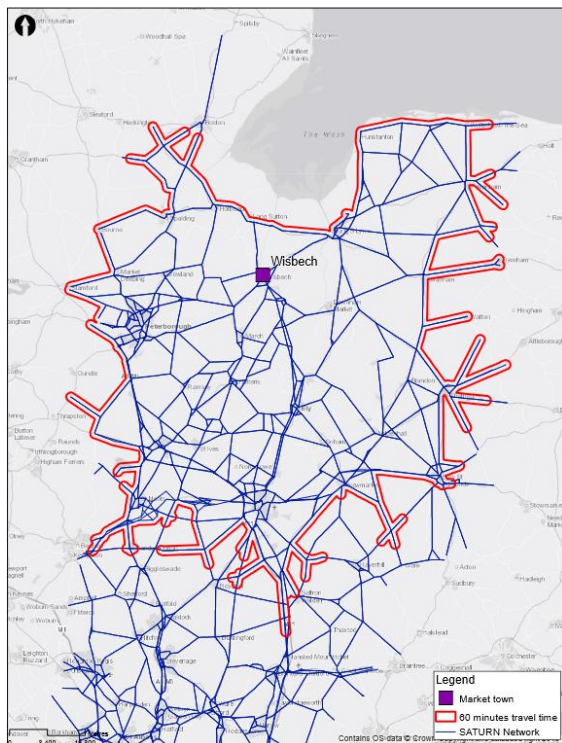
Source: Mott MacDonald, using Ordnance Survey data

Figure 4.3: 60 minutes travel time from Wisbech: Option 1

Source: Mott MacDonald, using Ordnance Survey data

Figure 4.4: 60 minutes travel time from Wisbech: Option 2

Source: Mott MacDonald, using Ordnance Survey data

Figure 4.5: 60 minutes travel time from Wisbech: Option 4

Source: Mott MacDonald, using Ordnance Survey data

In order to make each of the scoring criteria comparable, a scoring system was applied that gives three points to the option giving the largest benefit for each sub-criterion, two points for the second largest benefit and one point for the smallest benefit. This results in the scores shown in Table 4.4 below.

Table 4.4: High level scoring of INSET Sub-Criteria

ID	Sub-Criteria	Option 1	Option 2	Option 4
1i	Improvement in travel time to Cambridge	3	1	2
2ii	Improvement in travel time from Cambridge	3	2	1
3iii	Additional number of residents within one-hour travel time of Wisbech	3	1	2
4iv	Additional number of jobs within one-hour travel time of Wisbech	3	1	2

Source: Mott MacDonald

4.1.3 Weighting of Criteria

Scores can then be weighted according to their perceived relative importance. These have been defined as follows:

- Themes: Each theme has been weighted equally as the criteria are seen to be of equal strategic importance.
- Main Criteria: Each of the main criteria have been weighted equally as they are all seen to be of equal strategic importance.
- Sub-Criteria: Each of the sub-criteria have been weighted equally as they are all seen to be of equal strategic importance.

For the purposes of this initial assessment all elements have therefore been given equal weight.

4.1.4 Results of Shortlisting Assessment

The weighted scores are presented in Table 4.5 below.

Table 4.5: Final INSET Scores

	Option 1	Option 2	Option 4
Total INSET score	12	5	7

Source: Mott MacDonald

Option 1 scores highest overall. It results in the greatest reduction in journey times both to and from Cambridge. This Option also gives the highest increases in both residents and jobs within one hour travel time of Wisbech.

Option 4 is in second place. This option scores second for the increase in both residents and jobs within one hour travel time of Wisbech. It scores second in improvement in travel time to Cambridge and last in improvement in travel time from Cambridge.

Option 2 scores lowest overall. This option is in second place for the improvement in travel time to Cambridge but is in last place for all other measures.

It is important to consider that, as noted above, the INSET analysis has used Wisbech throughout as a proxy for the north of the Combined Authority area. We have focussed on Wisbech because over 10,000 new houses have been assumed to be provided here in the growth scenario due to the Wisbech Garden Town project. If alternative settlements were used then this might give rise to a different suite of scores and, as this scheme progresses, it should be reconsidered for future evaluation within the context of the Non-Statutory Spatial Framework and other relevant forthcoming policy documents.

This assessment is intended to be considered in conjunction with the economic appraisal of transport-user benefits set out in section 4.2 to give an overall picture, at this early strategic stage, of the relative merit of each of the broadly defined corridor options.

4.2 Transport-User Benefit Assessment Methodology

The DfT economic appraisal software TUBA has been used to calculate the transport user benefits for the scheme. TUBA calculates the user benefits in time, fuel vehicle operating costs (VOC), non-fuel VOC and charge, and the scheme costs, discounted to the present value year.

As detailed in Section 2.6, there are three do-something options which have been identified through the initial analysis for a more detailed appraisal.

In order to undertake economic assessment, a 'do minimum' case is also required for comparison purposes. The options appraised were:

"Do Minimum" (DM) Option – the existing transport network, amended to include committed schemes as agreed with the County Council and Combined Authority, and with increased demand reflecting planned growth in jobs and population to 2041 plus an uplift to reflect proposed development in the Wisbech area associated with the garden town proposals and further job growth in Greater Cambridge; and

Three "Do Something" Options;

Option 1 – 'Roman Road' Central Alignment;

Option 2 – Western Alignment

Option 4 – A10 Alignment + A1101

The assessment of the transport user benefits has been undertaken using the software TUBA, with inputs provided using the study-specific version of Highways England's SATURN-based South East Regional Traffic Model (SERTM).

4.3 Assumptions

This section provides a description of the assumptions used in order to undertake the economic appraisal. The approach has generally followed WebTAG criteria, but in certain cases a simplified approach has been used to reflect the early development of the interventions. The key assumptions of the economic assessment are:

- A 60-year appraisal period with an assumed scheme opening year of 2026 (as noted previously, this will be refined should the proposals be developed further, assuming that some elements would be delivered significantly earlier than others)
- Appraisal based on model forecast years of 2031 and 2041.

- Annualisation factors have been derived to enable modelled time periods to represent the full year. The annualisation factors used assume 253 working days in a year.

Furthermore, the following assumptions have been used with particular consideration for scheme cost inputs:

- Optimism bias taken as 44%, taken from WebTAG A1.2, Table 8
- All costs have been assumed to be construction costs with no operation and maintenance costs included, and a general uplift factor applied for land costs, which will require detailed review should the component schemes be taken forward
- A 4-year build period of 2022 to 2026 inclusive
- All costs calculated used a 2017 price base, these are converted to a 2010 price base for TUBA calculations with all TUBA output given in a 2010 price base.

4.4 Appraisal of Economic Benefits

This section draws together the cost calculations from Section 3 and compares these to the benefits calculated by TUBA to understand the net present value and benefit to cost ratios for each shortlisted option. These provide an indication of the potential value for money represented by each option.

4.4.1 Scheme Costs

The estimates in Table 4.6 have been calculated for each scenario, which incorporate the estimated costs of design, construction and risk allowances, but do not allow for ongoing operation and maintenance costs.

Table 4.6: Point Estimates (£m, 2018 costs & prices)

Cost Item	Option 1	Option 2	Option 4
Baseline Cost	599.57	669.85	706.22
Risk Allowances	137.98	152.51	160.02
Point Estimate	737.54	822.35	866.24

Source: Mott MacDonald

4.4.2 Risk and Optimism Bias

Risk allowances have been included in the prices outlined above, as detailed in Section 3.3.2. For the purposes of the economic appraisal, an additional 44% optimism bias has been added to the estimates to account for the level of uncertainty associated with the scope of the packages and the cost estimates themselves at this early stage of scheme development.

This is consistent with WebTAG Unit A1-2 on Scheme Costs, which states that early scheme development of highway projects should apply a 44% uplift.

Table 4.7: Cost Summary (£m, 2018 prices)

Cost Item	Option 1	Option 2	Option 4
Point Estimate	737.54	822.35	866.24
Optimism Bias(44%)	324.52	361.84	381.15
Total Scheme Estimate	1,062.06	1,184.19	1,247.39

Source: Mott MacDonald

4.4.3 Present Value of Costs

As described in Section 3, assumptions have been made regarding the years in which the schemes will be built and therefore the years in which costs will be incurred. For the purposes of this initial assessment it is assumed that the Link would be operational in the year 2026 and, for the purposes of this high-level initial appraisal, that each package will be built in the four years prior to 2026 then finished and opened that year.

TUBA uses a 2010 price base and therefore the costs given in Section 3 are converted to a 2010 price base using the GDP deflator and then discounted to the assumed build year at 3.5% per year until 2031 and 3.0% after. This results in the present value of costs (PVC) given in Table 4.8.

Table 4.8: Present value of option costs (£m)

Cost Item	Option 1	Option 2	Option 4
Scheme Estimate (2017 Prices)	1,062.06	1,184.19	1,247.39
Scheme Estimate (2010 Prices)	693.54	773.24	814.48

Source: Mott MacDonald

4.4.4 Value for Money

Table 4.9 summarises the TUBA benefits and resultant indicative benefit cost ratios for each option. Due to the strategic nature of the options under consideration, neither the safety benefits nor the wider economic benefits, have been examined at this stage.

Table 4.9: TUBA results (£m)

Costs/Benefits	Option 1	Option 2	Option 4
Consumer User Benefits	1,270.34	1,280.63	2,217.00
Business User Benefits	551.42	602.83	924.23
Private Sector Provider Impacts	0	0	0
Accident Benefits	-	-	-
Emissions Benefits	41.98	33.21	30.45
Indirect Tax Revenues	72.68	56.33	48.54
Residual Value	-	-	-
Present Value of Benefits	1,791.05	1,860.34	3,033.14
Present Value of Costs	693.54	773.24	814.48
Net Present Value	1,097.51	1,087.10	2,218.66
Benefit Cost Ratio	2.58	2.41	3.72

Source: Mott MacDonald

4.4.5 Value for Money Statement

All shortlisted route options generate sufficient levels of benefits to offset the estimated cost of implementation.

The DfT's Value for Money Framework outlines different categorisations for schemes achieving BCR values within defined ranges. This classifies any schemes that score a BCR above 2 as demonstrating "High Value for Money". All packages tested here generate a BCR greater than this and, at this early stage in the development process, are considered to demonstrate high value for money.

Comparing the options, the results are broadly in line with the traffic flow volumes forecast along the new routes. The BCRs for Options 1 and 2 are very similar. Option 1 shows a marginally higher BCR, even though the benefits of this scheme are lower, because costs are also lower as there are fewer junctions assumed for this option. The BCR for Option 4 is higher than both of the other options because more traffic currently uses this corridor, especially the southern section between Cambridge and Ely.

These initial modelling results suggest that the M11-A47 Link warrants further investigation as a means to reduce congestion in the study area and to combat economic dislocation between the north and south of the Combined Authority area. However, the BCR values should be considered indicative only as the options are at concept level only and will need to be subject to significant further development. Furthermore, for this initial 'range-finding' exercise, it has been assumed that traffic on the new link travels at free-flow speed. This arguably provides a best-case assessment of the potential benefits but, as agreed with the Combined Authority and County Council, this is a reasonable initial assumption for assessing the potential impact of investment in a high quality new highway.

The BCR results provide a like-for-like comparison between each of the shortlisted options. At this initial stage, the results suggest that Option 4 would provide the greatest value for money, but more detailed modelling would need to be carried out to explore this in detail should the Combined Authority be minded to take the scheme forward. This would include scoping out the design of each option in greater detail, including specifying the design of junctions along each route and taking the scheme through the normal highways scheme development process.

4.5 Sensitivity testing

Traffic has increased and congestion has worsened on the A10 between Cambridge and Ely in recent years. The Ely to Cambridge Transport Study assessed the transport requirements for the corridor given the anticipated growth in the area and included proposals to dual the A10 between Cambridge and Ely ("A10 South"), together with a range of other transport measures.

The A10 South forms the southern section of Option 4. This scheme is not committed at this stage and therefore has not been included in the Do Minimum assessment to date. However, this report needs to consider the impact on value for money for the other shortlisted M11-A47 Link route options should the dualling of the A10 between Cambridge and Ely be implemented first. A sensitivity test was therefore undertaken to test the impact of dualling the A10 between Cambridge and Ely on Options 1 and 2. Further details on the modelling of this sensitivity test are provided in the *M11-A47 Link: Modelling Strategy Report*, included as an appendix to this study.

The results of the sensitivity test are summarised in Table 4.10 below.

Table 4.10: Impact of Dualling A10 South on Option 1 and 2 TUBA results

Costs/Benefits (£000s)	Option 1	Option 2
Consumer User Benefits	1,100.42	1,256.60
Business User Benefits	470.54	542.39
Private Sector Provider Impacts	0	0
Accident Benefits	-	-
Emissions Benefits	33.89	28.69
Indirect Tax Revenues	54.70	44.71
Residual Value	-	-
Present Value of Benefits	1,550.15	1,732.96
Present Value of Costs	693.54	773.24
Net Present Value	856.62	959.73
Benefit Cost Ratio	2.235	2.241

Source: Mott MacDonald

The TUBA results show that the present values of benefits are lower for Options 1 and 2 under the assumption that the A10 dualling is included in the Do Minimum case. However, the benefits and BCR for these options only reduce slightly, as limited traffic from this north-south corridor re-routes east towards the A10 suggesting that the case for investment in a M11-A47 Link would not be substantially undermined should the A10 be dualled. This assessment will need more detailed assessment as this proposed scheme progresses through its development process.

5 Commercial Case

The Commercial Case considers whether a transport investment is commercially viable and the potential procurement strategies that will be used to engage the market. It presents evidence on risk allocations and transfer, contract timescales and implementation timescales.

5.1 Introduction

The main purpose of the Strategic Outline Case is to set out the need for intervention and define a preferred way forward. At SOC stage, the Commercial Case is therefore typically presented as a high-level outline, which will be further developed as the scheme becomes more defined and the scheme and associated decision-making processes proceed through wider Business Case process.

5.2 Outline of Procurement Options

The delivery body and preferred consents / procedural strategy will need further consideration and definition by the Combined Authority and its partners should the project be taken forward to the next stage in the scheme development process.

This will also need to include further work by the Combined Authority and its partners on the preferred procurement route for the scheme for which it would be premature at this stage to set out any definitive options.

Alternative procurement routes, and their advantages and disadvantages, will need to be considered in more detail should the scheme move forward through the Business Case process.

5.3 Programme Implications and Risk

An indicative timeline for delivery of a typical major scheme has been provided in the management case section to this report together with recognition of the Combined Authority's desire to accelerate the delivery of infrastructure projects. A more detailed programme for scheme will need to be developed should it be progressed including consideration of the following matters:

- Risk identification, allocation/transfer between commissioning authorities and contractor;
- Timescales for procurement;
- Contractor management strategy;
- Payment mechanisms and arrangements should there be cost overruns;
- Scope for accelerating the delivery programme and identification of risks, costs, and benefits associated with doing that.

These issues will all be refined as the schemes move through the Business Case process, with full details being required at the Full Business Case stage.

6 Management Case

The management case demonstrates that the proposed packages are deliverable. It covers issues of the project planning and governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

6.1 Introduction

At this early stage in exploring the case for investment, the management case is high-level only. It is, however, considered important that programme-level oversight across the development and delivery of the various CA-promoted measures is established and the recommended governance and management structures proposed in this section provide a start point for doing this.

6.2 Evidence of Similar Projects

The delivery mechanisms for the project, including identifying the promoting body, needs further consideration. However, Cambridgeshire County Council as the local highway authority for the area has successfully delivered several large-scale transport projects across this part of the Combined Authority area in recent years. These include:

- The Addenbrooke's Access Road is a single carriageway route with several junctions and structures that connect Hauxton Road in Trumpington on the south side of the city to Addenbrooke's Hospital. The route provides access to the expanding hospital and Bio Medical Campus, together with development on the Cambridge Southern Fringe, and reduces traffic in the Trumpington area and on Long Road. The scheme was funded through a combination of Growth Area Fund and developer contributions and was completed in October 2010.
- The Ely Southern Bypass is a single carriageway highway, currently under construction, connecting the A142 at Angel Drove to Stuntney Causeway. The scheme includes bridges over the railway line and the River Great Ouse and its floodplains and, when open to traffic, will relieve heavy traffic around Ely station, remove the need for heavy goods vehicles to use the railway level crossing, and avoid an accident-prone low-bridge. The route will open to traffic in late summer 2018.
- The Kings Dyke Crossing is a single carriageway road that will divert the A605 to avoid the level crossing at Kings Dyke that serves the railway line between Peterborough and Whittlesey. The scheme includes diverting the A605 to the south of the level crossing and building a new bridge over the railway line. When open, it will reduce the delays on the A605 due to the operation of the level crossing barriers. The existing alternative route is often closed for long periods in winter months due to flooding. Construction is set to begin in early 2019.

6.3 Governance Arrangements

This initial phase of technical work has evaluated several corridor options for an extension of the M11 near Cambridge to the A47 near Wisbech and has concluded that there is merit in further assessment of the proposed scheme.

The detailed governance and management arrangements for this scheme, should it be taken forward, will need to be developed in detail following approvals to proceed from the various

decision-making bodies. However, the scale of the scheme will invariably require strong project-level governance, with Project Boards and technical/administrative officer support. There would also be merit in considering the establishment of an over-arching Programme Board to oversee the Combined Authority's ambitious transport delivery programme of projects.

Given the complex transport funding and decision-making landscape in Cambridgeshire, strategic direction and approvals are likely to have to be sought from the Combined Authority and the County Council as transport and highways authorities, together with the Greater Cambridge Partnership. Given the strategic nature of the proposed link, and its tie in to the trunk road and motorway network at both its northern and southern ends, the role of Highways England in this process also needs consideration and clarification. The four bodies already work together on transport delivery, so this could effectively be an extension to existing arrangements.

6.4 Preliminary Indications of Delivery Timeline

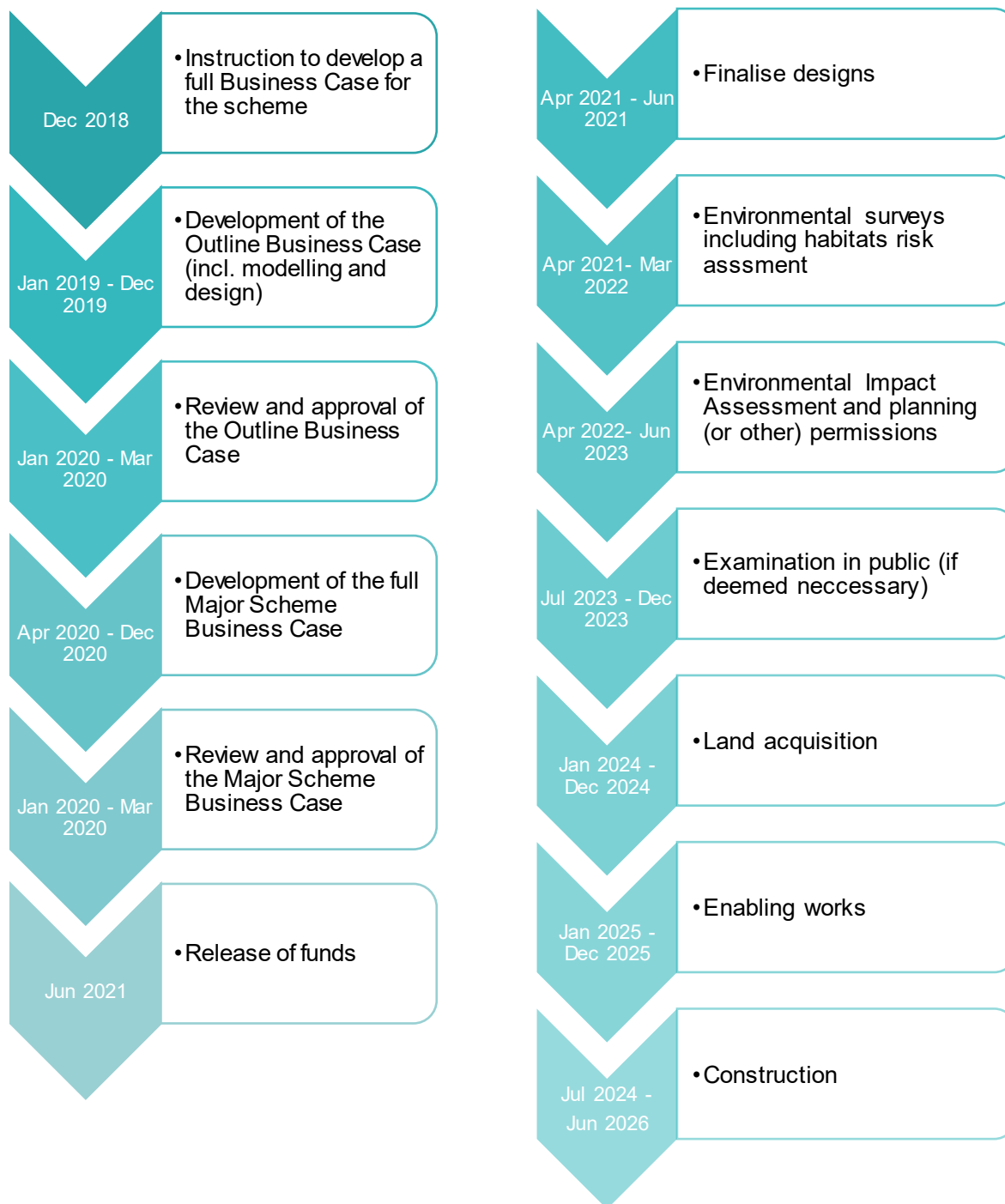
The programme for delivery of the scheme will need to be developed in detail as part of any next phase of the work depending on the recommendations and approvals from the various decision-making bodies.

A large road project can have significant lead-times but a preliminary indicative programme for delivery, assuming approval to move towards major scheme business case development is given by December 2018, is shown in Figure 6.1.

This indicative programme will need significant development and refinement when agreement has been reached on whether the scheme should be taken forward. As part of this process, consideration should be given to the optimum procedural route for delivering such a scheme, including on who the delivery body should be. Legal advice will likely need to be sought on these aspects.

It is recognised that the Combined Authority are keen to accelerate the delivery of infrastructure schemes generally and to bring schemes to fruition much more quickly than has traditionally been the case. This too will need to be subject to significant further consideration but, based on some initial thinking, there may be scope for some at-risk parallel implementation of some tasks which could potentially lead to being able to compress the overall timescale by several months.

Figure 6.1: Indicative potential delivery programme for a link road between the M11 and the A47 based on traditional timelines and DfT guidelines



Source: Mott MacDonald

6.5 Communications and Stakeholder Engagement

As shown in the indicative programme above, there are a number of key decision-making points at which a major scheme needs to be formally reviewed before it can proceed further.

These key decision-making points include:

- Approval of the Outline Business Case;
- Approval of the Major Scheme Business Case; and
- Approval of the planning application (or other powers depending on the adopted consents strategy).

The exact assurance and approvals process to be followed will depend on the type and sources of funding that are to be used to deliver the scheme.

If a scheme is funded locally (i.e. the final decision to invest is taken by either the Combined Authority, and/or the Greater Cambridge Partnership), a detailed assurance and approvals plan for the scheme will need to be developed using the existing Combined Authority and Greater Cambridge Partnership Assurance Frameworks. These describe the two bodies' processes for ensuring that investments provide value for money, based on best practice guidelines and require transport schemes to be appraised in line with the DfT WebTAG guidance.

Given the devolved transport funding regime within Cambridgeshire, local funding is considered to be a key funding route. However, if funding from central Government were to be sought, noting the scale of the investment proposed, then any subsequent Outline Business Cases and Major Scheme Business Cases would need to be submitted directly to DfT, with scrutiny of the business case provided by DfT officials and the final investment decision taken by a Minister.

There is also significant interest across the Combined Authority in capturing private sector funding through various mechanisms. The extent of this element, and mechanisms for securing this needs further investigation but could reduce the draw upon local or national transport funding pots.

In addition to these formal decision-making points, the identified scheme sponsor will also undertake regular operational reviews. The operational reviews will form part of project monitoring meetings conducted every month by the relevant Project Manager and Senior Responsible Owner and will sit within the overall governance and management regime.

The outcomes from the operational reviews will need to be reported to the relevant Project Board, potentially using a BRAG (Black, Red, Amber, Green) process with processes for remedy and escalation worked up in detail as overall governance arrangements for the projects are firmed up.

6.6 Risk Management Strategy

The lead authorities will adopt a robust risk management strategy to ensure effective management of risk for the proposed programme of works. The delivery partners (likely to be led by CPCA working with the County Council) already have well established, proactive processes to managing of risk, therefore risk management plans will be implemented in accordance with those principles and with best practice. All risk registers will be reviewed regularly throughout the detailed design, procurement, construction and post-construction phase.

This well-established process has enabled the successful development and delivery of many transport projects within Cambridgeshire from smaller scale cycling and traffic management projects through to the larger scale projects set out in Section 6.2.

6.7 Monitoring and Evaluation

Should the scheme be taken forward, monitoring and evaluation will follow established best practice procedures as set out by DfT and/or the local bodies. The delivery partners will agree clear objectives which will be documented within each scheme level (and potentially at programme level) monitoring and evaluation plan.

A logic map linking project inputs to outputs, outcomes and impacts will establish data requirements. The required baseline data, and the proposed methodology for monitoring impact/outcomes will all be established prior to formal project commencement. It is proposed that the level of reporting of the monitoring and evaluation plan will be at appropriate intervals, and will provide data to assess the success of each project in meeting the agreed objectives.

7 Summary and Conclusions

This report sets out the findings of a transport study that has undertaken a preliminary assessment of the case for investing in a major new highway link between the M11 in the south of Cambridgeshire and the A47 in the north of the county. The study has been commissioned to explore whether investment in new highway capacity in the corridor would help to address the spatial inequality that presently exists between the north and south of the county by improving accessibility to Greater Cambridge's thriving employment opportunities, as well as encouraging needed investment into north Cambridgeshire.

7.1 Recommended Strategy

The findings of this report have demonstrated that:

- The north and south of Cambridgeshire are two very distinct economies with limited interaction
- For Greater Cambridge, rapid jobs growth combined with housing supply constraints has pushed house prices out of the reach of many.
- In contrast, the rural and market town communities of north Cambridgeshire have high levels of deprivation. Most employment here is in low skilled "price taking" employment, and the area is struggling to attract high value industries.
- The lack of connectivity between the north and south of the Combined Authority area is one factor that has led to the economic dislocation between these two areas. Poor north-south roads, allied to a lack of public transport, means that there are extended journey times of over an hour between Fenland market towns such as Wisbech and March and Cambridge.
- At the same time, the strong growth of employment in Cambridge has resulted in increased levels of commuting from outside the area, which has resulted in congestion on many of the key roads and junctions around the city
- Travel demand is forecast to increase rapidly across Greater Cambridge in future years due to the significant growth in housing and employment forecast over the study period
- Congestion will rise at junctions around Greater Cambridge even with the significant highway investments already committed for the area, such as the upgraded A14

This study has investigated a long-list of five potential corridors for an M11-A47 Link to improve connectivity between the north and south of the Combined Authority area, with the intention of improving employment opportunities and investment in north Cambridgeshire and relieving congestion in the south. Only major highway interventions were considered in this study, although public transport investments could also play an important role in addressing the inadequate connectivity between the north and south of Cambridgeshire.

Initial qualitative assessment resulted in three broad corridors being chosen for more detailed modelling, representing an eastern alignment, a central alignment and a western alignment for the M11-A47 Link. Each of these options was considered to have merit for further analysis as each abstracts significant demand from differing existing corridors.

An assessment of journey times demonstrates that an M11-A47 Link would lead to much faster journey times between the north and south of the Combined Authority area. For example, a "central" alignment could reduce journey times during peak times to just over half an hour from Wisbech to the junction with the A14. This is comparable to journey times from existing commuter centres to Cambridge such as Bury St Edmunds.

Preliminary transport economic analysis suggests that investment in a new high quality north-south highway link would generate a positive economic return with the costs of investment being outweighed by the benefits. This is true for all three corridors that have been tested suggesting that, should the Combined Authority be so-minded, there is a rationale for continuing to examine the scheme.

The case for a new highway between Greater Cambridge and north Cambridgeshire may also hold up even if a dual carriageway were provided on the A10 corridor between Cambridge and Ely. A sensitivity has been modelled which suggests that the central and westerly alignments may still generate sufficient travel demand in this scenario to support an investment case. However, significant further feasibility assessment is required to confirm this initial finding.

7.2 Next Steps

Significant further work will be required to progress the M11-A47 Link. A key strategic question is the relationship of this scheme to other projects under development for the Combined Authority's Local Transport Plan, as well as its relative priority. For this study, an initial sensitivity test has been undertaken which indicates there may be a case for the westerly or central M11-A47 Link alignments even should the A10 Ely to Cambridge project proceed.

Other key planning and design questions for further assessment in developing the M11-A47 Link will include:

- Confirming the scale and timing of housing and employment growth in the Combined Authority area over the longer term through the Non-Statutory Spatial Framework;
- Whether any additional investment would be required at the junction of the new highway with the A14, and how any "last mile" impacts of additional journeys within Greater Cambridge itself would be managed, including the relationship with emerging proposals for the Cambridge Autonomous Metro (CAM);
- How this scheme interacts not only with CAM, but also other Combined Authority (CA) transport priorities including the proposed March-Wisbech rail scheme, which together are being considered as part of the area-wide development of the CA's Local Transport Plan; and
- How and at what cost the impacts from any scheme on the Ouse Washes, and other environmental designations, can be mitigated.

Other areas for detailed assessment that have been outside of the scope of this study include:

- The governance structure and procedural routes for progressing the M11-A47 Link and, in particular, whether it is envisaged as a highway under the jurisdiction of the Combined Authority or Highways England and under what powers such a scheme might be taken forward;
- Buildability questions for a new link of this scale, such as spoil import and removal in a largely challenging geotechnical environment;
- The procurement arrangements for a new link of this scale; and
- How the highway would be funded, including the role of other public-sector funding sources and, importantly given Combined Authority thinking more widely, the potential to capture private sector contributions and investment, given its scale is likely to exceed existing Combined Authority budgets.

TRANSPORT AND INFRASTRUCTURE COMMITTEE	AGENDA ITEM No: 2.2
3 APRIL 2019	PUBLIC REPORT

BUS REFORM TASK FORCE ENGAGEMENT PLAN

1.0 PURPOSE

- 1.1. The purpose of this paper is to seek confirmation of the stakeholder engagement plan for the Bus Reform Task Force.

DECISION REQUIRED	
Lead Member:	James Palmer, Mayor and Portfolio holder for Transport
Lead Officer:	Chris Twigg, Director of Transport
Forward Plan Ref: N/A	Key Decision: No
<p>The Transport and Infrastructure Committee is recommended to:</p> <ul style="list-style-type: none"> a) agree on the stakeholder engagement plan; b) note the Terms of Reference for the Bus Reform Task Force internal governance. 	<p>Voting arrangements</p> <p>Simple majority of all Members</p>

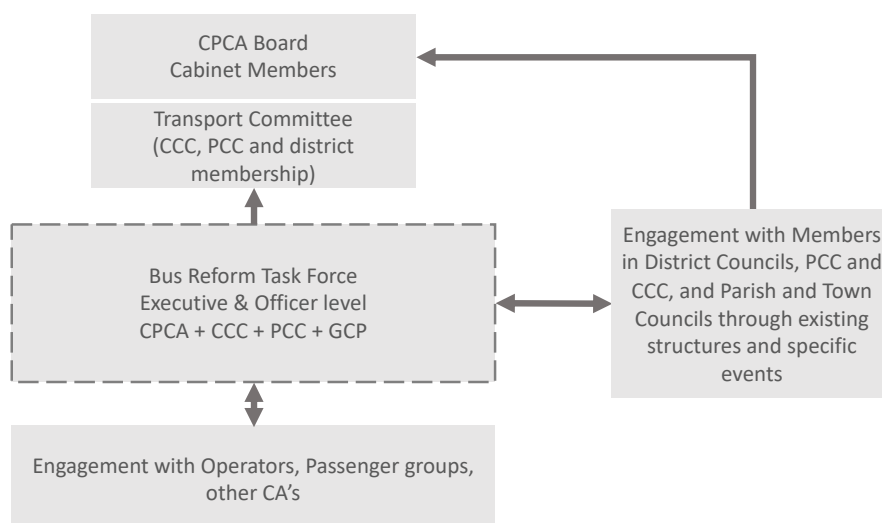
2.0 BACKGROUND

- 2.1. As part of the Devolution Agreement, Transport Authority powers were transferred to the Cambridgeshire and Peterborough Combined Authority (CPCA) from Cambridgeshire County Council and Peterborough City Council. Such powers include responsibility for passenger transport which, in the context of this paper, relate to bus services.
- 2.2. In November 2017, the CPCA Board approved the commission of the Strategic Bus Review. The study was intended to provide a high-level strategic review of current bus service provision across the Combined Authority area and provide a menu of potential options for improving the service in the medium and long term.

- 2.3. The study considered a broad range of factors, recognising that different areas of the Combined Authority may require different solutions. However, a key aim of the study was to recognise and understand the wider economic and social benefits of an effective bus service against a range of operating models.
- 2.4. An important outcome of the Strategic Bus Review is the need for a consistent and integrated way of managing public transport for the new geography of the Combined Authority.
- 2.5. In order to provide an integrated response to the recommendations from the report, the January 2019 paper asked the board to establish a Bus Reform Task Force (including Peterborough City Council, Cambridgeshire County Council, GCP, the Combined Authority and external consultants where needed). The commission of the Bus Reform Task Force would also include the development of an implementation plan including establishing a brief for what is most appropriate route network and operational model to the CPCA. This will serve as a base for engaging with operators to achieve public transport improvements, in line with the options given by the Bus Service Act (2017).
- 2.6. In its first meeting in February the Bus Reform Task Force discussed its internal governance arrangements and presented it to the CPCA Board for approval in March. It also said that the group would prepare a stakeholder engagement plan to be presented to Transport Committee.
- 2.7. This paper sets up the engagement plan as mentioned in the CPCA March Board Paper.

3.0 INTERNAL GOVERNANCE

- 3.1. The Bus Reform Task Force will have representation of the Combined Authority, Cambridgeshire County Council, Peterborough City Council and GCP officers.
- 3.2. Member engagement will be canalized via existing structures to avoid duplication of efforts and incurring in additional costs.

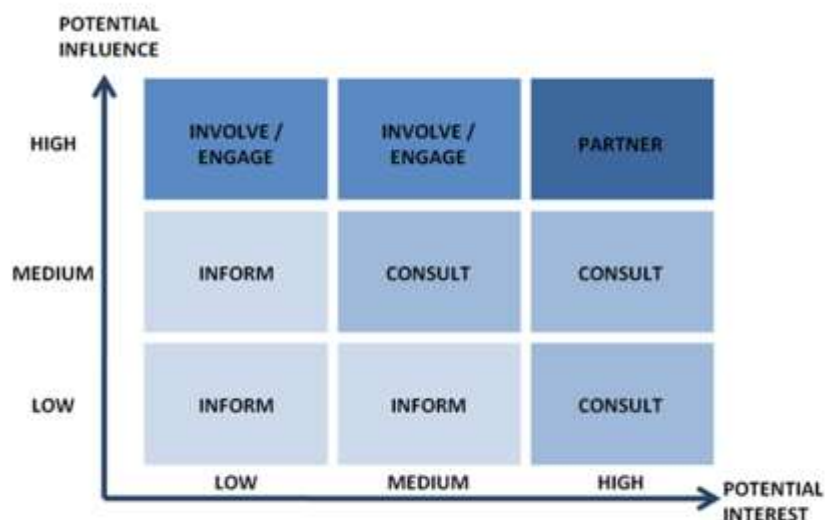


- 3.3. A version of the Terms of Reference for the Bus Reform Task Force can be seen in Appendix 1.

4.0 STAKEHOLDER ENGAGEMENT PLAN

General considerations

- 4.1. The Bus Reform Task Force will seek to engage with a variety of stakeholders in the development of the various workstreams the Board has allocated to it. As a general rule officers from PCC, CCC and GCP and the Combined Authority will be part of the internal governance of the Task Force. It is expected that officers will work as a liaison between the Task Force and the members of their own Local Authority.
- 4.2. Elected members will also be engaged in the approval of the documents and reports that emerge from the BRTF. Members participating in the Transport Committee, Overview and Scrutiny Committee and CPCA Board are intended to liaise with their respective councils and act as their representatives. Additional members briefings could be convened according to resources and need.
- 4.3. The Bus Reform Task Force will seek to engage with Parish and Town Councils in two ways. It will make use of existing all Parish and Town meetings as these are an already established forum in Peterborough and South Cambs. In Districts where such meetings are not organised, the Bus Reform Task Force will seek to organise ad hoc engagement meetings. The nature of the meetings will depend on the workstream.
- 4.4. Engagement with stakeholders will depend on the workstream the Bus Reform Task Force will be working on. There are 4 workstreams initially identified:
 - Review of Strategic Bus Review and Implementation Plan (IP)
 - Bus Service Assessment Framework (AF)
 - Brief for Bus Service Act Business Cases (BR)
 - Enhanced Partnership and Franchising Business Case (BC)
- 4.5. Stakeholders were classified according to an interest/influence matrix as shown below.



Degrees of engagement

4.6 The degree of engagement with each stakeholder will depend on the outcome of the classification:

- partner: working in partnership with stakeholders in each aspect of the decision, including the development of alternatives and the identification of the preferred solution. For example, voting for the approval of the implementation plan and brief for Business Case.
- Involving/engaging: working directly with stakeholders to ensure that concerns and aspirations are consistently understood and considered. For example, partnership boards, reference groups and service users participating in policy groups, internal governance arrangements.
- Consulting: Obtaining organisations and individual feedback on analysis, alternatives and / or decisions. For example, surveys, digital communications and focus groups
- Informing: providing stakeholders with balanced and objective information to assist them in understanding problems, alternatives, opportunities, solutions. For example, websites, newsletters and press releases

4.7. The stakeholder classifications and engagement plan have been mapped out in appendix 2.

Engagement principles

4.8. Appropriate: our consultation and engagement activity will be proportionate for the nature of the programme, project, policy or activity and will be appropriate to the levels of resources that the BRTF will count with. Where appropriate consultation will be supported by on-going engagement and pre-existing channels.

4.9. Legal: we will adhere to statutory guidelines with regards periods of statutory consultations such as the ones produces by DfT on the Business Cases for the options in the Bus Service Act.

4.10. Accessible: we will communicate in a simple manner, trying our best efforts to make complex information simple and accessible.

4.11. Timely: We will communicate and inform as frequently as appropriate. We will avoid consultation fatigue by incorporating organisational knowledge at our best endeavours before consulting.

4.12. Efficient: consultation should have a purpose and we will be guided by statutory duty to consult. We will make use of existing meetings and governance arrangements to engage with stakeholders as much as possible to avoid duplication of efforts.

4.13. Open: to improvement: we will remain open and available to receive feedback to improve our processes. We aim to share the information from our consultation and engagement activity across the organisation and with our partners, except when confidential or commercially sensitive.

5.0 FINANCIAL IMPLICATIONS

- 5.1. The work as set-out in this report will be funded from the £1m allocated in 2019/20 within the MTFP as approved at the January meeting of the CA Board.

6.0 LEGAL IMPLICATIONS

- 6.1 The Combined Authority is the local transport authority by virtue of the Cambridgeshire and Peterborough Combined Authority Order 2017. It is in this capacity as the local transport authority that it has the power to conduct this review.
- 6.2 Section 63 of the Transport Act 1985 places certain duties on Transport Authorities when they consider service provision in their areas. They should seek to secure the provision of public passenger transport services that they consider appropriate to meet public requirements. The Task force will review the services across the CA area. This process will enable the transport authority to identify routes that may attract a subsidy enabling the Combined Authority to identify and support certain local passenger services.
- 6.3 The Bus Reform Task force will be the body responsible for evaluating the routes and will be tasked with reporting back to the Transport Committee and ultimately to the Board later this year. The five stage approach that was described in the board report dated 27 March 2019 will lead to decisions made by the CA Board that will need to be compliant with public law principles. The questions raised in that process will be aired within the proposed consultation with the various stakeholders. The Task Force will need to ensure that they carry out their review fairly and rationally and can be seen to have undertaken the review for proper purposes.
- 6.4 There are statutory and judicial guidelines that advocate how consultation should be carried out and the time that should be given allowing for meaningful responses. An important element of this is the responsibility to ensure that relevant considerations are raised in the process, that relevant bodies are consulted, that representations are taken into account and are seen to be evaluated even if not accepted. Following these steps should protect the process from challenge.

7.0 SIGNIFICANT IMPLICATIONS

- 7.1 No other significant implications are anticipated.

8.0 APPENDICES

- 8.1 Terms of Reference for the Bus Reform Task Force

Bus Reform Task Force

Terms of Reference

Purpose

The Cambridgeshire and Peterborough Combined Authority Board approved in its January meeting the creation of a Bus Reform Task Force (BRTF) to create and oversee a programme to assess and implement the appropriate recommendations made by the Strategic Bus Review.

The function of this Bus reform group is to review proposals set out in the Strategic Bus review to assess and identify from that report the feasibly implementable options that will enhance the efficiency and suitability of the bus network across the Cambridgeshire and Peterborough geography.

The group is responsible for developing and implementing activities to enhance the Bus network, focusing on three key areas

- Immediate term – Develop a robust “Subsidy Analysis Framework” to set consistent platform for all partners of analysis, prioritisation and approval of subsidy requests
- Short term - Develop an implementation plan considering the enhancement recommendations suggested in the Strategic Bus review. This will involve engaging current operators to enhance the services, review inefficient subsidies and seek opportunities to cover currently poorly services areas of the Authority.
- Long term - Develop a business case to assess the opportunities held in different operational models such as enhanced Partnerships and franchising.

The members of the BRTF will be responsible for the following activities:

1) Establishing an effective bus subsidy analysis framework and review current service provision against the framework

- (a) Review and amend, if necessary, the Bus Service Assessment Framework and bring forward a recommendation about how to improve the efficiency of subsidies.
- (b) Seek to improve the efficiency and service of subsidies for the bus network addressing needs of communities.

2) Review short term implementation targets to enhance the current bus provision in alignment with recommendations in the strategic bus review

- (c) Review the recommendations of the Strategic Bus Review and develop an implementation plan including short and medium term solutions.
- (d) Engage with operators and passenger user groups to identify and deliver quick wins and improve the service provision at soon as possible.
- (e) This will consider many modes of improving the public service including MaaS and on Demand services

3) Commission the development of a Business Case to explore the operational options available in the Bus Service Act

- (f) Engage with operators, passenger user groups and members to determine what are the benefits the public network should deliver and identify trade offs that will lead into the brief for the business case and a negotiation strategy (not for disclosure).

- (g) Appoint specialist consultants to establish the brief. These include Bus operation specialists, legal specialists and Commercial specialists.

4) General responsibilities of the group

- (h) Members of the Task Force are responsible for communicating and briefing elected members from their respective organisations to ensure that members viewed are considered and incorporated as appropriate, as set out in the governance chart below.
- (i) Feed into the project team the experiences and knowledge of each organisation to ensure all relevant aspects across the geography are considered, to build credibility and believability across all key partners and organisations.
- (j) Act as a sounding group by which strategic and operational issues relating to the project can be tested, in an expeditious way, to facilitate its delivery.
- (k) Provide support for communications with internal stakeholders and senior buy-in of the project by its members

Membership

The BRTF membership will comprise:

- Up to 2 officers (operational) from PCC, CCC and CPCA (including PM)
- CPCA Legal Officer
- District representation
- Members from other agencies and organisations may be invited to participate as considered appropriate, to facilitate the function, development, and delivery of the study
- External consultants (when required)

Frequency

- The officers BRTF Group will meet fortnightly initially with the intention to move to monthly meetings.

Business Conduct

- The BRTF conducts its business in private with only invitees attending.
- Meetings will be at set intervals; however, any open and free dialogue between BRTF is welcomed to prevent “bottleneck” of information flow.
- The location of the meetings will rotate between CPCA, CCC and PCC offices.

The BRTF will include two different groups:

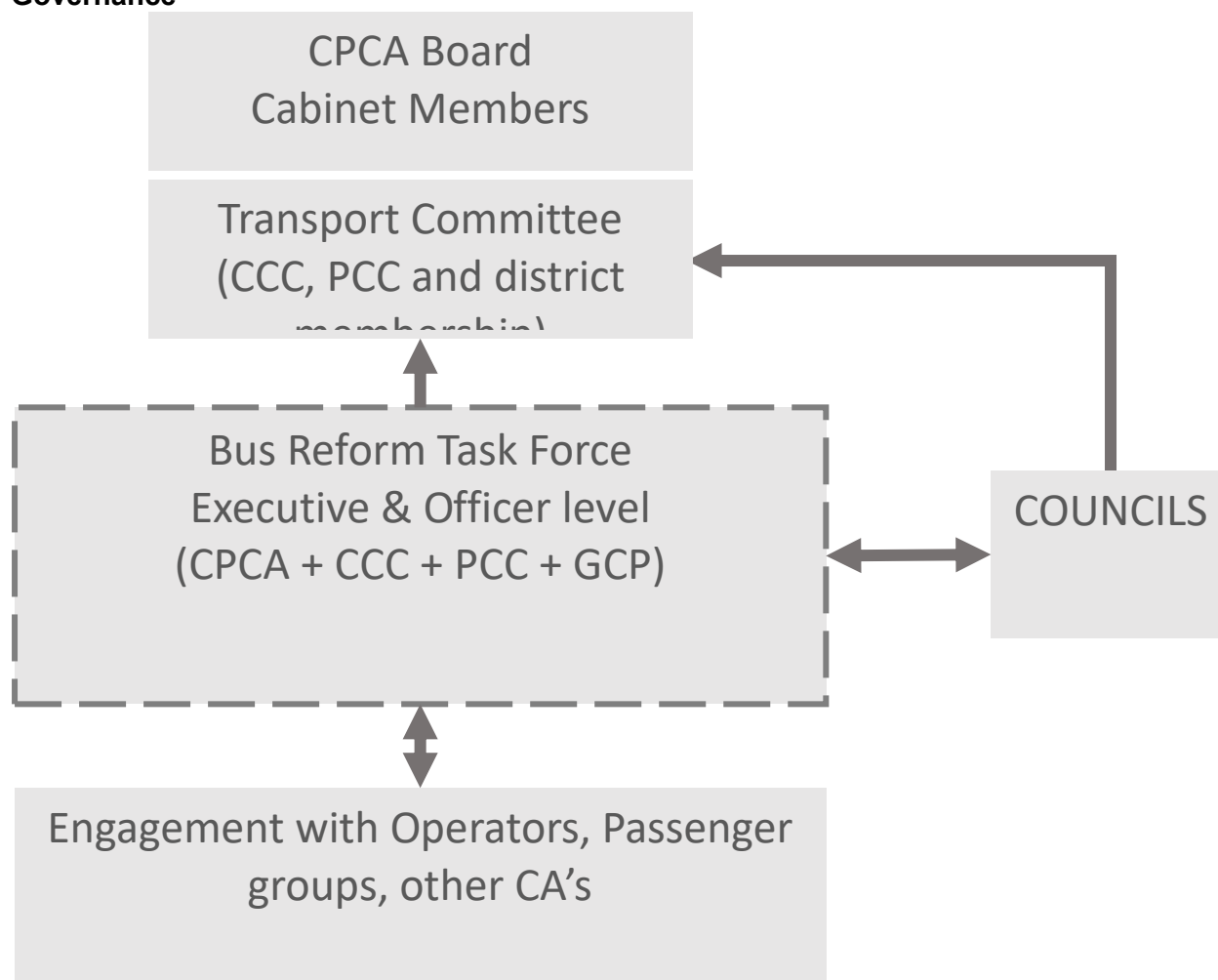
- **Executive Board of BRTF:** this group will include an executive representative of each participating organisation. The Board will meet monthly to set the direction of travel and overview the work done by the officers. It would be their responsibility to communicate and engage with members.

- **Officers meeting:** The officers will meet weekly to discuss progress made on the different workstreams. Officers will distribute the workload by consensus. The Project Manager will be responsible for the agenda, updating the risk register and taking note of the action log.

Agenda and Minutes of Meetings

- The agenda for each meeting will be determined by the Project Manager in consultation with the other members.
- All relevant information for discussion at the working group meetings will be issued at least 24 hours before the meeting to allow members to digest the information. The working group is intended to be a discussion and direction group, not a presentation forum.
- A record will be made of all decisions made at meetings.

Governance



Key points:

- Utilising existing member governance structures

Products

- Project Initiation Document
- Subsidy assessment framework
- Brief for Enhanced Partnership and Franchising (x2) The CA under article 123(c4) of the Bus Service Act (2017) needs to publish a notice stating its intention. The brief will include the specification of the network.
- Business Case : including audit and public consultation
- Short term Implementation Plan

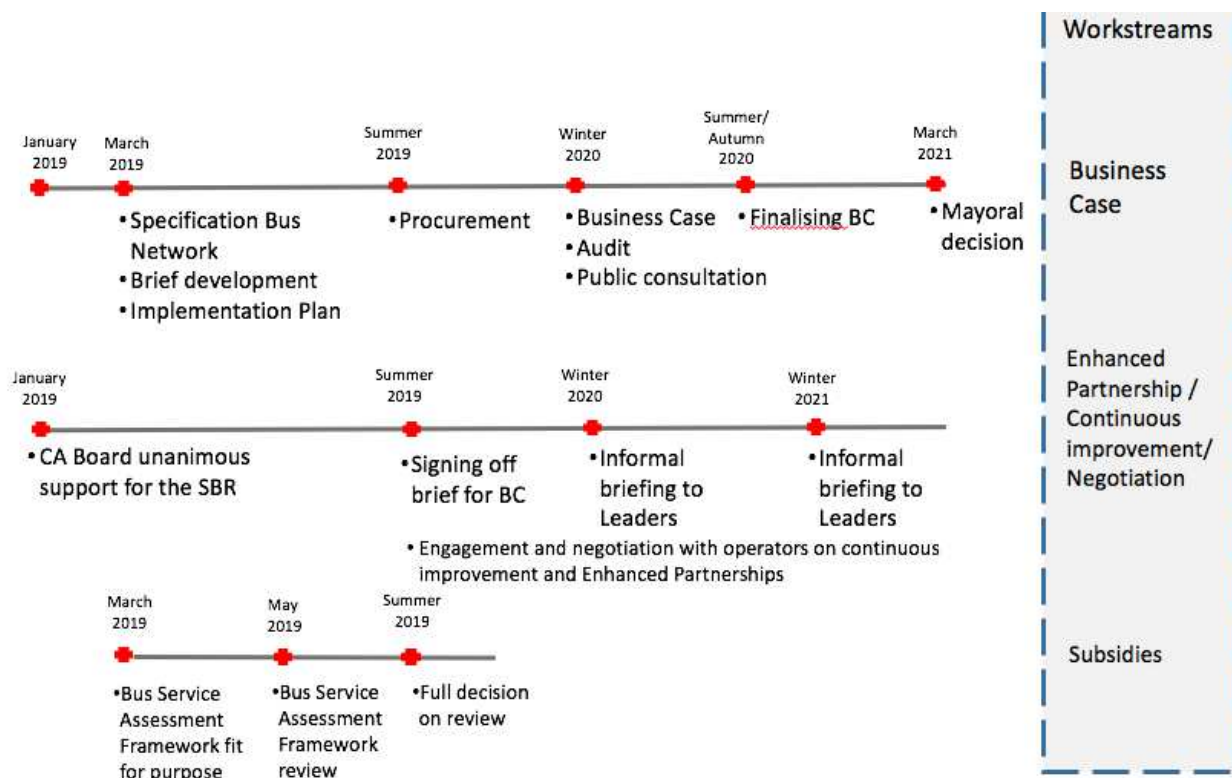
Target Outcomes

Improved network:

- Accessibility to work, to study, to shop , for health
- Connectivity: rural, interurban and urban networks
- Affordability
- Sustainability: environment & health, financial sustainability (subsidies)
- Satisfaction and user perspective

Note: the implementation plan and the briefs for enhanced partnerships and franchising will need to develop the outcomes further

TIMELINES.



5.2. BRTF Stakeholder engagement plan

6.2.2.2.1. Stakeholder Engagement plan					
Stakeholder	Description	Additional comments	Workstream	Degree of engagement	Activities
Cambridgeshire County Council	Highways authority / previous LTA	Members	All	Partner/Inform	Members are part of the internal governance of the project. Members from CCC are represented in CPCA Board and Transport Committee (in virtue of Chapter 2, section 2 of the CPCA Constitution). They will vote on the recommendations presented to them. Other members will be informed of the process through digital means and through its officers in existing briefing meetings. Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
		Officers	All	Partner	Participation in ordinary meetings (officer and executive level)
Peterborough City Council		Members	All	Partner/Inform	Members are part of the internal governance of the project. Members from PCC are represented in CPCA Board and Transport Committee (in virtue of Chapter 2, section 2 of the CPCA Constitution). They will vote on the recommendations presented to them. Other members will be informed of the process through digital means and through its officers in existing briefing meetings. Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
		Officers	All	Partner	Participation in ordinary meetings (officer and executive level)
Greater Cambridge Partnership	GCP includes representation from Cambridge City Council, Cambridgeshire County Council, South	Cambridge Network is a business-academia led	All	Partner	GCP officers will update the members on the update of the work of the Task Force using its current governance.

	Cambridgeshire District Council, The University of Cambridge and Cambridge Network	organisation.			
		Members			
		Officers	All	Partner	Participating in the internal governance
Fenland District Council	Local Planning Authorities /	Members	All	Partner/Inform	Members are part of the internal governance of the project (in virtue of Chapter 2, section 2 of the CPCA Constitution). Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
	Fenland Bus Reform Group	Officers	IP/BR	Consult	Specific meetings and calls
Huntingdonshire District Council	Local Planning Authority	Members	All	Partner/Inform	Members are part of the internal governance of the project (in virtue of Chapter 2, section 2 of the CPCA Constitution). Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
	Community Transport lead/Group	Officers	IP/BR	Consult	Specific meetings and calls
East Cambridgeshire District Council	Local Planning Authority	Members	All	Partner/Inform	Members are part of the internal governance of the project (in virtue of Chapter 2, section 2 of the CPCA Constitution). Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
	Ely Bus Group	Officers	IP/BR	Consult	Specific meetings and calls
Cambridge City Council	Local Planning Authority	Members	All	Partner/Inform	Members are part of the internal governance of the project (in virtue of Chapter 2, section 2 of the CPCA Constitution). Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following

					the guidance on the Bus Service Act options.
	Community Transport lead/Group	Officers	IP/BR	Consult	Specific meetings and calls
South Cambridgeshire District Council	Local Planning Authority	Members	All	Partner/Inform	Members are part of the internal governance of the project (in virtue of Chapter 2, section 2 of the CPCA Constitution). Ad hoc events could be convened if required. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
	Community Transport lead/Group	Officers	IP/BR	Consult	Specific meetings and calls
Parish and Town Councils	SouthCambs (Parish Planning meetings and Parish-Cabinet meetings) and Peterborough (Parish Council Liaison meetings) hold Parish Council meetings.	Members	IP/AF	Involve	Ad hoc meetings will be convened with current Parish groupings where possible. Parishes and Town councils will be engaged through the attitudes towards public transport survey. Councils will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
Secretary of State for Transport			BR/BC	Consult	The Combined Authority will seek technical input to develop a robust business case for the options in the Bus Service Act from the Secretary of State through ad hoc events.
Traffic Commissioner, Chief Officers of Police, Competition and Markets Authority			BC	Consult	Stakeholders will formally be consulted on the assessment of the Business Case following the guidance on the Bus Service Act options.
Members of Parliament			IP/AF	Consult	The BRTF will seek the opinions of MPs through digital communications, calls and meetings if possible.
Department for Transport			BR/BC	Consult	Ad hoc meeting to seek clarification on the process described in the Bus Service Act and engagement at BRTF and Director and Mayoral level to discuss funding for public transport and concessionary fares.

Subnational Bodies (EEH & East England)			BC	Inform	The CPCA, PCC and CCC are members of both sub national transport bodies. Officers that attend to their meetings will be available to inform.
Neighbouring Authorities	There is a duty to cooperate with neighbouring authorities and there is the need to coordinate with them as there are services that would start or end in a different Local Transport Authority.		IP/BC	Consult/Inform	TBD
National Health System	The Bus Review acknowledged the difficulty to access to key health locations by public transport. It is important the BRTF to seek the view of the NHS on challenges and opportunities in terms of mobility to hospitals and GPs.		IP	Consult	TBD
User/Passenger groups	Transport Focus Cambridge Area Bus Users Bus Users UK Campaign for Better Transport	There are several organisations working from a passenger perspective. We have identified 2 specific groups that work in the area and 2 UK wide organisations.	IP/BC	Consult	The BRTF will seek to collect the views of passenger and users' groups through digital communications and ad hoc meetings. Local passenger groups will be formally consulted in the Business Case workstream following directives of the guidance on franchising and enhanced partnerships.
	Organisations representing disadvantaged groups e.g. Disability Cambridge, Mencap, RNIB		IP/BC	Consult	The BRTF will seek to collect the views of passenger and users' groups through digital communications and ad hoc meetings. This stakeholder will be formally consulted in the Business Case workstream following directives of the guidance on franchising and enhanced partnerships, and under the Equalities Act.
Residents			IP	Consult/Inform	The BRTK will, depending on the resources, consult with CPCA residents regarding high level objectives for public transport and will research their opinions regarding public

					transport making use of online surveys. The BRTF will seek to inform residents about the development of the workstreams through CPCA newsletter and special releases.
Transport operators			IP/AF/BC	Involve/Partner	The BRTF will seek to engage, consult and partner with transport operators through a ordinary channel of communication. It will be decided later in the process, but it is envisaged that a group of negotiators will be instructed to work with operators for the enhanced partnership workstream. This will require a specific governance arrangement. This stakeholder will be formally consulted in the Business Case workstream following directives of the guidance on franchising and enhanced partnerships.
Representatives of employees of operators			BC	Consult	This stakeholder will be formally consulted in the Business Case workstream following directives of the guidance on franchising and enhanced partnerships.
Businesses/Private sector			IP	Consult	The Bus Reform Task Force will look into an appropriate way to engaging with private sector groups through the development of the attitudes towards public transport survey. The BRTF will also engage with representatives of Cambridge Connect and other regional business groups that will be liaised through the Skills and Business Directorate from the CPCA.
Tourism organisations			IP	Consult	
Universities			IP	Consult	
CPCA Board	Decision maker for reserved matters for transport.		All	Partner	The Board will be engaged at Board meeting level. Members in the Board will act as the link between the BRTF and its constituent council.
Mayor	Decision maker		All	Partner	The Mayor chairs the CPCA Board and Transport Committee. The BRTF will seek the Mayors views through ad hoc meetings with the executive officers.

Overview and Scrutiny Cttee	The committee will review papers presented to board before consideration		All	Partner/Inform	Activities include attending to O&S meetings to answer questions by members. Members are expected to act as representatives from their councils for the matters of this engagement plan in virtue of Chapter 13, section3 of the CPCA Constitution.
Transport Committee	Decision maker. Functions related to policy development under Chapter 8 Section 3 of CPCA Constitution.		All	Partner	The BRTF to present an update on the status of its works in each meeting. Members are expected to act as representatives from their councils for the matters of this engagement plan in virtue of Chapter 8, Section 6 of the CPCA Constitution.

<u>Source Documents</u>	<u>Location</u>
1. November Board Paper 2017	1. http://cambridgeshirepeterborough-ca.gov.uk/assets/Combined-Authority/Agenda-29th-November-2017.pdf
2. January 2019 Board Paper	2. http://cambridgeshirepeterborough-ca.gov.uk/assets/Combined-Authority/agenda-document-pack-30.1.19.pdf
3. March 2019 Board Paper	3. <u>Document not yet published in CPCA site</u>



TRANSPORT AND INFRASTRUCTURE COMMITTEE	AGENDA ITEM No: 2.3
3 APRIL 2019	PUBLIC REPORT <i>This report has a confidential appendix 2 at item 2.3 of the as they contain information relating to the financial or business affairs of any particular person (including the authority holding that information) under paragraph 3 of Part 1 of Schedule 12A of the Local Government Act.</i>

PERFORMANCE REPORT – APRIL 2019

1.0 PURPOSE

- 1.1. To share the Transport Dashboard with the Transport and Infrastructure Committee.

<u>DECISION REQUIRED</u>	
Lead Member:	Mayor James Palmer
Lead Officer:	Chris Twigg, Director of Transport
Forward Plan Ref: n/a	Key Decision: No
The Transport Committee is advised to: (a) Note the current activity within the Transport Team and be aware of status and progress to date.	Voting arrangements Simple majority of all Members.

2.0 BACKGROUND

- 2.1. The Transport Dashboard is produced in line with the Combined Authority's strategic policy to give an overview of current projects, programmes and studies within the Transport Portfolio, as well as the progress of the Combined Authority's key targets that relate to transport. The project highlight reports completed by officers on a monthly basis are reported to Directors and Combined Authority Boards/Committees.

Reporting arrangements

2.2. Please see appendix 1, the Transport Performance Report from January 2019, which includes the following:

- (a) A summary of the latest data available on key transport related Combined Authority priorities of commuting times, GVA and jobs
- (b) The 'RAG' status of the Transport Directorate's programme

2.3. Please see appendix 2 (exempt), which includes the following:

- (a) Updates of all ongoing Transport and Infrastructure projects to inform all members of current project status
- (b) Overview progress of projects to deliver outcomes

3.0 FINANCIAL IMPLICATIONS

3.1. None.

4.0 LEGAL IMPLICATIONS

4.1 It is a condition of the Devolution Deal that we have proportionate performance monitoring arrangements in place.

5.0 SIGNIFICANT IMPLICATIONS

5.1 None not mentioned above.

6.0 APPENDICES

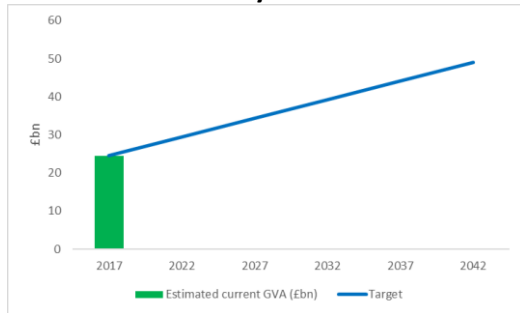
6.1. Appendix 1 – February Transport Dashboard

6.2. Appendix 2 – Confidential - (a) Updates of all ongoing Transport and Infrastructure projects to inform all members of current project status and (B) Overview progress of projects to deliver outcomes

<u>Source Documents</u>	<u>Location</u>
List background papers: Cambridgeshire & Peterborough Devolution Deal	http://cambridgeshirepeterborough-ca.gov.uk/home/devolution/



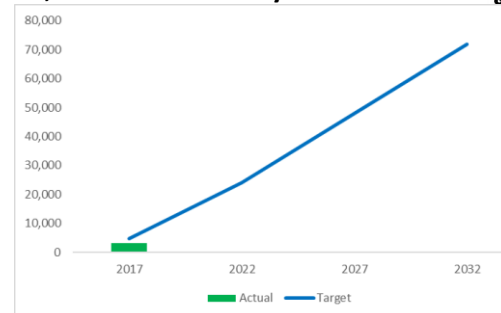
Double GVA over 25years



4.1%

2016

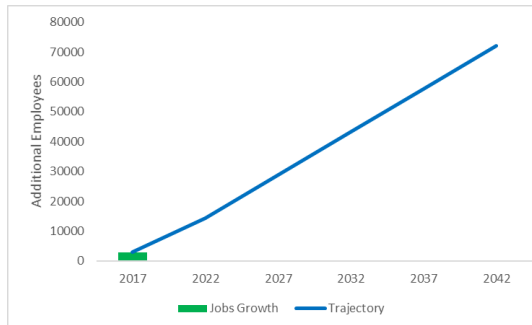
72,000 homes built by 2032



3160

2017/18

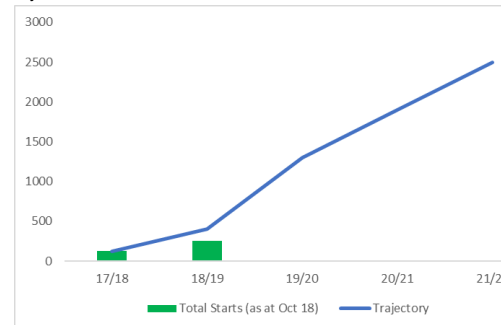
Jobs Growth



2900

2017

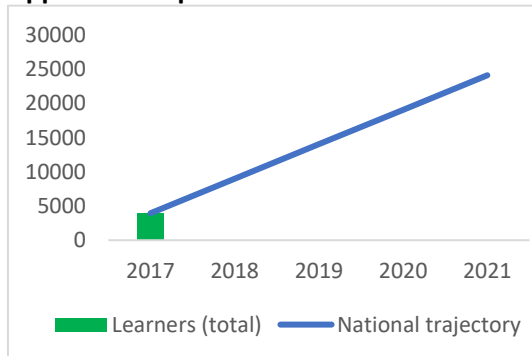
2,500 affordable homes



258

Total to Jan 2019

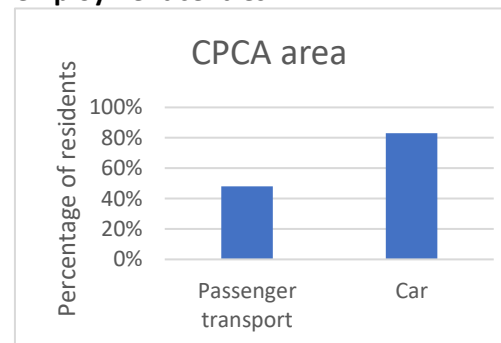
Apprenticeships



3940

2017

Within 30 mins travel of major employment centres



83%

2016

